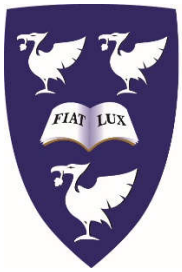

UNIVERSITY OF LIVERPOOL

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Alcohol Use in People Who Are Unemployed: Designing and Testing a Targeted Alcohol Brief Intervention.

Thesis submitted in accordance with the requirements of the University of Liverpool for the degree of Doctor in Philosophy

By

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“Never be so focused on picking a lock that you forget

kicking down the door is also an option.”

Grey Sister – Mark Lawrence (2018)

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Abstract

Alcohol Use in the Unemployed: Designing and Testing a Targeted Alcohol Brief Intervention – Michael Jecks

Unemployment has been identified as a risk factor for increased alcohol consumption (Bauld et al., 2010), which can then result in further barriers to finding and retaining long-term, meaningful, employment (Department for Work & Pensions, 2015). The increase in alcohol use evidenced during unemployment, has also been shown to remain, even after employment commences (Khlat et al., 2004), which is more likely to result in harmful health effects (NHS, 2019). People who are unemployed are also more likely to be from a lower socio-economic background, and therefore are more likely to experience multiple disadvantages, such as poor social networks, poor housing, and poor nutrition (Bellis et al., 2016; Meader et al., 2016). It is therefore important that this risk is identified early, and interventions are provided (Department for Work and Pensions, 2015) to avoid long term alcohol harms.

In this thesis, I investigated alcohol use in people who are unemployed and aimed to develop an Alcohol Brief Intervention (ABI) which could be used to help avoid the risk of increased drinking among this group. In a meta-regression, I demonstrated that the Behavioural Change Techniques (BCT) used in the control groups of ABI trials, were associated with smaller between groups effect sizes in ABI Randomised Controlled Trials. The findings were affected by the inclusion of unavoidable BCTs (i.e. recording alcohol consumption), as well as potentially avoidable BCTs (i.e. making the participant aware of the consequences of drinking). The findings of the meta-analyses also showed that there were sub-group differences in how much control groups decreased alcohol consumption based on study setting, type of control methodology, and level of participant screening.

The next two studies aimed to identify why people who are unemployed had higher alcohol use than the employed, and how they believed this impacted their lives. The first of these studies found that people who are unemployed consumed more alcohol due to coping and boredom motivations. Those who are unemployed were also more depressed and scored higher on AUDIT (Alcohol Use Disorder Identification Test) scores than the employed. The study found that boredom and coping motives were associated with higher AUDIT and AUDIT-C scores. The third study was an interview study which aimed to gain a deeper understanding of the relationship between unemployment, coping and boredom, and alcohol use. The findings showed that being unemployed was often inconsistent with how the participants viewed themselves, and that this, combined with frustrations at the systematic barriers they felt were present, was damaging to their mental health. The participants felt that poor mental health, and boredom with monotony, were key factors in why they had increased their alcohol consumption.

The final study was a pilot randomised control trial (RCT) of a modified ABI, targeted at people who are unemployed. The pilot study provided preliminary evidence for a decrease in alcohol use in the intervention group, and good retention of participants between baseline and follow-up. Participants reported feeling that the style of intervention was generally acceptable, but only on a voluntary basis and outside of the benefits system (i.e. with no links to the relevant government department).

Overall, the findings of the thesis show that the issue of increased alcohol consumption in people who are unemployed is often overlooked as reported in independent reports (Bauld et al., 2010; Department for Work & Pensions, 2015; Sutton et al., 2004) and that an online ABI could be an effective tool in reducing alcohol consumption. However, the findings also show that any efficacy of an ABI may be limited by the mistrust in the benefits system, and how any participant data may be used by the DWP or Job Centres.

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Chapter One

1. General Introduction

1.1. Part 1: Alcohol as a Public Health Problem

1.1.1 Alcohol as a Global and Local Problem

Alcohol is widely consumed in both low and medium income, and wealthy nations. Around 43% of the world's population (aged over 15 years) consume alcohol, including more than half the population for three WHO regions (European, 59.5%; Americas, 54.1%; Western Pacific, 53.8%) (World Health Organisation, 2018). The European region has the highest rate of alcohol per capita at 9.8 litres of pure alcohol per year (APC), compared to a worldwide average of 6.4 APC. (World Health Organisation, 2018). The European region also has the highest rate of heavy episodic drinking (HED), or "binge drinking" (defined as 60 or more grams of pure alcohol on at least one single occasion, at least once per month), with 26.4% of the population (over 15) engaging in HED (World Health Organisation, 2018).

Harmful drinking, defined as a pattern of alcohol consumption which causes health problems directly linked to alcohol (O'Flynn, 2011), can easily lead to the development of more serious Alcohol Use Disorders (AUDs) which are more complex to treat. AUDs are defined as a severe chronic relapsing condition, characterised by a loss of control over alcohol intake and a negative emotional state when not using (NIAAA, 2020). Treatment of alcohol related health problems has been estimated to account for 9-23% of healthcare costs in a selection of high income countries (Rehm et al., 2009). Due to the prevalence and availability of alcohol in most countries, alcohol treatment has high relapse with only 38.9% of people leaving treatment and not re-entering within 6 months in England (Public Health England, 2019).

Studies and reports can use different ways of categorising drinking levels, often these are simply different terminology for the same categories. To ensure accurate reporting, drinking levels will be reported in the same way as they are listed in the study. The different

terminologies are listed in table 1, with a short description for each as well as the relevant categories based on current UK Chief Medical Officer (CMO) guidelines (Department of Health, 2016), which will be used for any descriptions from the studies conducted in this thesis. An "Extreme" risk category was defined by Burton et al. (2016), as drinking over 75 units per week, due to possible negative, and positive, connotations with this phrase, for the purposes of this thesis, this level will be referred to as "Very high risk".

UK CMO Guideline terminology	Units per week	Other Terminology used
Abstaining	0	Teetotal
Low Risk	0-14	Light, Moderate
Increasing Risk	14-35 (F)/50 (M)	Hazardous, At-Risk
High Risk	35/50+	Heavy, Harmful
Very High Risk	*75+*	***Extreme**, Probable Dependent, Very Heavy*

*Table 1: Terminology for different levels of drinking which appear in different studies, and the approximate equivalent UK CMO terminology. *Very high risk is not a term used by the UK CMO, however is useful in defining those who drink far beyond the 'high risk' level, as used in Burton et al., 2016.*

According to the Health Survey for England 2018 (NHS, 2018), 50% of adults drink alcohol more than once a week, with 28% of men and 14% of women drinking above the low-risk levels of 14 units per week set by the CMO (Department of Health, 2015). Of this higher risk drinkers, it is also estimated that 1.3% of the UK population drink above 75 units per week (Burton et al., 2016), with the Health Survey for England reporting 4% of men and 3% of women drinking more than 50 units in a week (NHS, 2018), levels which are likely to cause harm to health (Department of Health, 2016). This population-level drinking, whilst not a high proportion of the overall population, still shows that there is a clear need for more action to help reduce the rates of harmful drinking. The latest cost of alcohol consumption to the NHS is estimated at £3.5 billion per year, and a rough estimation of £21.5 billion cost to wider society (this includes costs such as absence from work, crime, damages, and others) (Government's Alcohol Strategy, 2012; Health and Social Care Information Centre, 2015).

Whilst there are clusters of the population who drink at high and very high levels, there is evidence for declines in some specific groups. A recent study by Holmes and colleagues (Holmes et al., 2019) using the Alcohol Toolkit Study, a study involving 178,986 adults who

have responded to the General Lifestyle Survey, has shown that whilst overall alcohol consumption in the UK is falling (between years 1984 and 2011), this trend is not seen amongst high risk drinkers. In fact, it appears that consumption fell amongst low risk drinkers, but rose amongst heavier drinkers. A similar pattern is also seen across age groups, with younger age groups (16-24) showing a reduction in AUDIT scores over 16 (indicating harmful drinking), but an increase in older age groups (55-64) (NHS, 2014). Reductions in drinking in young people is most apparent in the heavy drinkers, but less so in the very heavy, moderate, and light drinkers (Oldham et al., 2019).

Whilst the current study takes a national approach, there are areas in Britain with higher levels of use, such as Liverpool where this study is conducted. Liverpool, and the North West in general, have historically had problems with both alcohol use and unemployment. Liverpool is one of the most deprived cities in the UK (Lloyd et al., 2017), and as such residents are at higher risk of increased harms from alcohol use (Erskine et al., 2010). During the 1980s, unemployment reached 40% in some neighbourhoods (Sykes et al., 2013), which massively increased the deprivation of the area. The number of deaths in Liverpool partially or fully attributed to alcohol has steadily increased since the 1980's, only recently showing a small decrease, potentially due to gentrification (PHE, 2016; Shipton et al., 2013).

1.1.2 Risks of Heavy Drinking

1.1.2.1 Health

1.1.2.1.1 Physical Health

When talking about health effects of alcohol, some conditions can be wholly attributable (i.e. are entirely caused by) or partially attributable (i.e. are impacted by a number of other risk factors) to alcohol. A partially attributable health problem is one where alcohol has contributed to the illness' development either through a small or large role. An example of this could be cancers of the mouth (NHS, 2019). In terms of fully attributable, this means that alcohol is solely responsible for the illness, an example being alcoholic liver disease (NHS,

2019). Cutting down on alcohol can reduce partially attributable illnesses by reducing the risk, and can completely eliminate any new fully attributable illnesses developing (Tod et al., 2018).

Alcohol has been shown to be associated with a large number of physical health problems. The most well-known issue associated with excess alcohol is damage to the liver (Walsh & Alexander, 2000), where excess alcohol causes Alcohol Related Liver Disease (ARLD) which can result in cirrhosis of the liver. Excess alcohol consumption has been linked with certain types of cancer, including cancers of the oral cavity, pharynx, larynx, oesophagus, breast, and colorectal in men (LoConte et al., 2018; WCRF/AICR, 2018), high blood pressure (Maheswaran et al., 1991), and strokes (Reynolds et al., 2003). The link with cancer prompted the Chief Medical Officer to revise the recommended alcohol guidelines to remove any reference to a "safe" drinking level, and reduced the weekly units threshold for 'safe' (now referred to as 'Low Risk') consumption in men to be the same as women (Department of Health, 2016)

An oft cited, but now outdated, health benefit of low levels of alcohol consumption, is that it appears to have cardio-protective properties (Mukamal & Rimm, 2001). This is often referred to as the "J-shaped curve", a relationship between a risk and a health problem where at low levels there is a positive effect on the health problem but at some level the relationship will change to a negative effect on health. In the case of alcohol, there is theorised to be a protective level of alcohol on coronary heart disease when there is low and moderate consumption, but beyond this level, the effects of alcohol on the heart become negative. However, doubt has now been cast on this health benefit, it is believed that due to better reported and better research practice, the J-Shaped curve has been 'flattened' (Dechartres et al., 2017). In a paper by Andréasson (1998) it was argued that the appearance of a J-shaped curve may be more due to confounding variables such as age, drinking patterns,

and the relatively heterogeneous “control” of abstainers. As a result, it is now believed that the J-shaped effect of alcohol had a far smaller protective factor than previously believed, and, when considering all the other health risks alcohol can cause, resulted in no net benefit compared to abstaining altogether. There is also the issue that people who did not drink would also include former heavy drinkers, people abstaining for health reasons, or previous sufferers of AUDs. Whilst the argument about the degree of the J-shaped curve is undoubtedly important, it is beyond the scope of this work. Current evidence adopted by the UK Chief Medical Officer, is that there is no safe level of alcohol and that all alcohol carries a risk (Department of Health, 2016), suggesting that the J-shaped curve is not enough to outweigh other health costs. As a result, this is the approach we shall adopt in this thesis.

1.1.2.1.2 Mental Health

Excessive alcohol use has shown a well-established co-morbidity with mental health diagnoses (Regier et al., 1990). Lai et al. (2009) demonstrated that people who were diagnosed with a mental disorder had an odds ratio of 2.7 of having a form of addictive disorder, with a lifetime prevalence of 29%. Among those with an alcohol disorder, 37% has a comorbid mental disorder. These mental disorders are often the more common mental disorders reported by the UK population; such as depression and anxiety.

Alcohol has been linked to depression in a number of studies (Boden & Fergusson, 2011; B. F. Grant et al., 1996; Kessler et al., 1997; Kuria et al., 2012), many of these studies demonstrate a causal link between increasing alcohol use and depression. For example, Boden and Fergusson (2011) demonstrated that the presence of either an AUD or major depressive disorder (MDD) doubled the risks of the second disorder. They argued that the most feasible explanation is that AUD leads to MDD, this is due to the neurophysiological and metabolic changes caused by alcohol. However, Swendsen and colleagues (2000) demonstrated that alcohol was used as a self-medication (Khantzian, 1990) to reduce some depressive symptoms, and therefore, the depression caused the alcohol use. It is likely that

the link between AUDs and depression is cyclical, with one increasing the other and with bidirectional effects.

The other most common mental disorder in the UK amongst those aged over 18 (Pilling et al., 2011), anxiety, is often co-morbid with depression (Kessler et al., 2005) so it is unsurprising that it too has strong co-morbidity with problematic alcohol use (B. F. Grant et al., 2004). Not only this, but anxiety symptoms are more likely to be associated with poorer AUD treatment outcomes (Wolitzky-Taylor et al., 2011) resulting in higher relapse rates, and more treatment resistant people. Similar theories to depression have been put forward, where anxiety increases due to alcohol due to the effect it has on brain chemistry via alcohol's effect and interaction with serotonin (Ho et al., 2011).

Excess drinking has also been associated with an increased risk of later life mental health problems including dementia, vascular dementia, and Alzheimer's Disease (Heymann et al., 2016; Langballe et al., 2015; Rehm et al., 2019)

1.1.2.2 Societal and Occupational Factors and Impacts

Aside from personal health effects, alcohol can impact a number of other areas in an individual's life. Children can be affected as a direct or indirect result of a parent's drinking. Directly, this can result in Foetal Alcohol Spectrum Disorder (FASD), where a child's physical and mental development are affected due to the mother's drinking during pregnancy (Riley et al., 2011; Streissguth et al., 2004). Indirectly, parental drinking can affect a child's mental and behavioural development, with children of drinkers showing higher scores on the Behavioural Problems Index (Jones et al., 1999). Parental attitudes to alcohol also predict the attitudes to alcohol of the children (van der Vorst et al., 2006), as well as the actual consumption of alcohol (Biederman et al., 2000).

A person's level of social support may also be affected by alcohol use, with heavy users reporting social isolation due to their drinking (Bauld et al., 2010), with isolation itself a risk

factor for further heavy drinking (Chou et al., 2011). The impact of heavy drinking is also associated with taking part in criminal activity (Pihl & Peterson, 1995; Popovici et al., 2012), particularly violent crime (McClelland & Teplin, 2001) and increases the risk of becoming a victim of crime, again particularly violent crime (McClelland & Teplin, 2001).

Alcohol's effect on a person's ability to hold on to employment is considerable, with higher sickness and absences reported amongst employees who are heavy drinkers (Johansson et al., 2009). It can also lead to a reduction in productivity even if the person doesn't miss any work, this is a phenomenon known as "presenteeism" (Gjerde et al., 2010; Schou et al., 2017). This is often related to the symptoms of heavy alcohol use such as depression, poor sleep, and lowered motivation. There is also the increased risk of being caught driving whilst under the influence of alcohol, and thus losing their driving licence (Stephens et al., 2017). In some cases, this will result in immediate termination from employment should the job involve driving as a key part of the role, impacting both social networks and income.

All of these factors may also be influenced by compound factors, particularly in people who are unemployed. This is discussed in section 1.1.4.2.

1.1.3 Reasons Why People Drink

People consume alcohol for many reasons, broadly speaking these can be classified in three groups; genetic, societal, and psychological. These broad groups often interact, particularly where genetic influences cause a predisposition to certain mental health traits.

1.1.3.1 Genetic

There is strong evidence to suggest a genetic predisposition to drinking (Mayfield et al., 2008). There is a four times greater risk of alcohol dependence in relatives of alcohol dependent adults. Twin studies and family studies have demonstrated that this is due to a genetic component, and estimate a heritability of 40-60% (Prescott & Kendler, 1999; Schuckit et al., 2001). Prescott and Kendler (1999) reviewed alcohol dependence amongst 3516 twins

and found that incidence of alcohol dependence was higher amongst identical twins than the fraternal twins. The authors concluded that there was significant evidence that there were genetic factors which influence alcohol dependence, with environmental contributing to the remainder of the variation of liability. A review (Rietschel & Treutlein, 2013) into the genetics of alcohol dependence concluded that, whilst there have been relatively few significant findings into genome-wide association studies (GWAS), there was considerable evidence to conclude that genetic factors contribute up to half the risk factors for developing alcohol dependence.

According to Mayfield and colleagues (2008), whilst there may be specific genes which increase the risk of alcohol dependence, it's more likely that a number of genes affect a range of "genetically intermediate characteristics", these are also known as endophenotypes. Endophenotypes affect both genetic and environmental influences on alcohol consumption (Crabbe et al., 2006). The example provided in the Mayfield review suggests a cluster of characteristics, such as reward seeking behaviour, higher impulsivity, and an impaired ability to easily learn from mistakes (Mayfield et al., 2008). This cluster of characteristics, whilst not directly leading to increased alcohol consumption, will increase the risk of alcohol dependency if the individual is exposed to the environmental or circumstantial cues which encourage drinking. This area can be discussed in far more detail, however it would go outside the scope of the current work.

1.1.3.2 Societal

Drinking for social reasons and to conform to the drinking behaviour of others is often overlooked when attempting to tackle unhealthy drinking habits. It has already been mentioned that social anxiety can increase the likelihood of an individual drinking due to attempting to conform to perceived social norms (Buckner et al., 2011) and that this works

with both the conformity as well as the previously discussed coping (i.e. with depression and anxiety) motivation to increase drinking (Terlecki & Buckner, 2015).

As posited by Cooper's 4 factor model (M. L. Cooper, 1994), drinking to improve an already enjoyable experience (enhancement) is a further reason people drink. This can account for "one-off" drinking episodes at times like Christmas, Birthdays, or holidays, and is not usually considered an "unhealthy" behaviour. However, it could manifest into an unhealthy behaviour if accompanied by other, more negative, drinking motivations such as depression, or an environment which encourages heavy drinking. A paper which discusses enhancement as a drinking motive (Newcomb et al., 1988), suggested there was strong inter-correlations between enhancement and other, more negative, drinking motives such as 'coping'. However, work by Windle and Barns (1988) found no such link. Lannoy and colleagues (2019), have demonstrated that the enhancement drinking motive can predict binge drinking in adolescence. Binge drinking is an unhealthy drinking behaviour and can lead to habitual heavy drinking, as well as anxiety in later life (Gilpin et al., 2012).

1.1.3.3 Psychological

The two most common psychological conditions which lead to alcohol use are depression (Regier et al., 1990) and anxiety (B. F. Grant et al., 2004). However, other psychological motivations have been shown to be present. For example, Cooper and colleagues (1994) developed a 4-factor model to classify the reasons people drink, and developed the Drinking Motivations Questionnaire. The factors in this model are; Coping (drinking to deal with low mood), Enhancement (drinking to improve an enjoyable experience), Social (drinking to be sociable), and Social Pressure (drinking to fit in). The model was initially developed based on adolescent drinking, however it has since been shown to be applicable to young adults (Kuntsche & Kuntsche, 2009), and older adults (Gilson et al., 2013). A study by Grant and colleagues (2007) split the "coping" motivation to differentiate between anxiety and

depression, and argued that the model fit the data better in an undergraduate population, however this has not been replicated in any other age group.

The link between alcohol use and depression is a complex one, and has been demonstrated as a co-morbid link with both often affecting the other (Kessler et al., 1997). Increased levels of alcohol consumption were associated with those showing more depressive symptoms (Crum et al., 2001). Some theories as to how depression can lead to increased drinking include the theory that there is an attempt at self-medication of the depressive symptoms (Bolton et al., 2009; Kuo et al., 2006). In self-medication (Khantzian, 1990), the individual consumes alcohol to temporarily relieve the low mood feeling associated with depression. This is similar to the tension-reduction theory posited by MacAndrew (1982) whereby alcohol is consumed to reduce the feeling of tension often associated with depression. This theory fits with the stress-coping model of drinking behaviour, where a component of this theory suggests that there is an expectation for regulating negative mood. Another theory, which links into the genetic causes of drinking, is Cloniger's theory of personality dimensions. Some of these dimensions may go some way to explaining co-morbid conditions, such as reward dependence or harm avoidance (Mulder et al., 1994). Both of these elements are likely to contain genetic components which may result in a predisposition making some individuals more at risk of heavy alcohol consumption.

Cooper's 4 factor model (M. L. Cooper, 1994) would suggest that people drinking due to the 'Coping' factor are either attempting to self-medicate, or reduce tension. However, a large study by Churchill and Farrell (2017) using the Health Survey for England 2017 dataset, suggests that excessive alcohol consumption promotes depression, and not the other way round. They concede, that this finding may vary according to gender, as women appear to report depressive symptoms before heavy alcohol use. In the study, men appear to develop heavy drinking habits before depressive symptoms are reported, however this may be due

to known underreporting of male mental health symptoms (Allen-Burge et al., 1994; Hunt et al., 2003).

Similarly, the link between anxiety and excessive alcohol use is often seen as a co-morbid relationship. Cooper's 4 factor model argues that the similarities of depression and anxiety are similar enough to be considered the same factor when considering their impact on drinking behaviour, and other verifications of the 4 factor model would agree. Both depression and anxiety appear to contribute to alcohol consumption via a form of self-medication to escape or forget about the problems causing depression or anxiety (Bolton et al., 2006, 2009; J. Robinson et al., 2009). Whilst not considered the same illness, anxiety and depression share many characteristics, often defined by high negative affect (Cohen et al., 2017). Negative affect is where an individual will show high levels of dissatisfaction and distress (D. Watson & Clark, 1984). Both depression and anxiety share high negative affect as an underlying dimension. The coping drinking motivation in this model provides examples of where drinking might be engaged in to relieve high negative affect (i.e. drinking to forget your worries). Many of the theories associated with alcohol consumption and depression (tensions reduction theory, stress-coping theory, theory of personality dimensions, and self-medication theory) would apply to anxiety (Bolton et al., 2006; J. Robinson et al., 2009).

In terms of social anxiety, Buckner and colleagues (2011) demonstrated a 4-fold increased risk of developing an AUD in individuals with clinical elevated social anxiety symptoms. This was demonstrated to be as a result of perceived social norms regarding drinking, and would fit with the items included in the 'Social Pressure' factor (i.e. drinking so that others in the group won't laugh at you for not drinking) in the Drinking Motivations Questionnaire (M. L. Cooper, 1994).

Not only does poor mental health lead to an increase in drinking, Bell and Britton (2014) concluded that it also acted as a strong maintaining factor in heavy drinking. This acted as a

barrier to reducing drinking in those suffering with poor mental health. As a result, poor mental health was seen as a very significant factor for increased drinking, which could also be made worse by increased drinking, demonstrating a bi-directional relationship.

In converse to drinking for social reasons, people could also drink for boredom reasons, as something to do. Many descriptions of boredom in the Multi-State Boredom Survey (MSBS) (Fahlman et al., 2013) would match onto symptoms of depression or anxiety such as feeling as if time is passing slowly, feeling as if they are stuck in an irrelevant situation, or being made to do things which have no value to the person. Boredom has therefore been linked to heavy drinking, particularly in younger adults (Biolcati et al., 2016), and it is suggested that interventions include elements that address boredom in order to stop an increase in drinking. In addition to this, boredom has also been linked to relapse in recovery from alcohol and drug use (Corvinelli, 2005), so identifying risk of boredom can help people resist the excitement alcohol could bring.

1.1.4 Drinking, Socio-Economics, Health Inequality, and the Alcohol Harm Paradox

1.1.4.1 Health Inequalities

Health inequality is the difference in people's health based on their personal circumstances (Marmot & Bell, 2012). These could be due to ethnicity, age, gender, or socioeconomic status (SES). In recent years, health inequalities in the UK have been increasing (Barr et al., 2015; Copeland et al., 2015), this is believed to be primarily related to cuts to budgets since the worldwide recession. These cuts have impacted the lives of the lower SES groups far more than those in the higher SES groups (Copeland et al., 2015). Education is often used as a proxy measure for SES, where lower SES corresponds with lower education levels attained according to the Regulated Qualifications Framework (RQF) and the Framework for Higher

Education Qualifications (FHEQ). Income and Occupation are also often used, however is less common (APA, n.d.).

One area where health inequalities are particularly stark relates to alcohol. According to Local Alcohol Profiles for England (Public Health England, 2019), admission episodes for alcohol-related conditions (using the broad measure, which includes instances where both the main reason for the admission and any contributory reasons for admission are recorded) are directly associated with deprivation levels. The most deprived decile of local authorities in England recorded 2839 alcohol related hospital admissions per 100,000 compared to 1814 per 100,000 for the least deprived decile (Public Health England, 2019).

1.1.4.2 Compounding Risk Factors

It is important to note, however, that much of this evidence may be caused by compounded risk factors. Many people who drink excessively may well also engage in associated behaviours such as smoking, poor diet, or lack of exercise. It is also important to understand the particular group being discussed in this thesis, people who are unemployed, who are likely to be of lower SES, and therefore may also face the issues of poverty, food insecurity, and poor or unstable housing. It is likely therefore, that drinking only makes up a part of the overall risk to poor health. Some of the associations between excessive drinking may well be specifically impacted on by other risk factors, for example, poor mental health. Poor mental health, whilst associated with heavy drinking (Boniface et al., 2020; World Health Organisation, 2018) will also be impacted by poverty (Walton, 2018; Zabkiewicz & Schmidt, 2007), poor diet (Appelhans et al., 2012; Kuczmarski et al., 2010), and lack of exercise through the impact on motivation (Daley, 2008; Smith, 2013).

Whilst much of this is outside the scope of this thesis, it is important to consider these factors as potential barriers to reducing drinking. It may also emerge that individuals, whilst reducing drinking, are unable to find further work or improve their situation as some of these other

risk factors may be too great. For example, someone out of work may well reduce their drinking, however are still unable to find work because they have poor social networks due to living in poverty (Rözer et al., 2020).

1.1.4.3 The Alcohol Harms Paradox

The Alcohol Harms Paradox (AHP) is the occurrence of more deprived people suffering with the harms of alcohol more than less deprived groups, yet consuming the same or less alcohol than the other groups (Bellis et al., 2016). A number of studies have demonstrated that deprived communities suffer far higher rates of alcohol mortality and morbidity despite reporting average alcohol consumption compared to more affluent communities (Erskine et al., 2010; Grittner et al., 2012, 2013; L. Jones et al., 2015; Makela, 1999). This appears to be a phenomenon that occurs in many high income countries and has been observed in the UK (Hart et al., 2010), Australia (Roerecke & Rehm, 2010), the Netherlands (Hatton et al., 2009), Norway (Skogen et al., 2019), Denmark (Møller et al., 2019), and Finland (Dawson et al., 2008). An international meta-analysis conducted by Jones and colleagues (2015) showed that people with lower educational attainment (used as a proxy measure for lower SES group) had higher rates of alcohol related disease, this increase was not explained by differences in the amount of alcohol consumed. In a study by Probst and colleagues (2014), alcohol was identified as an underlying factor in the increased mortality rates seen in more disadvantaged populations.

More deprived communities do, however, show more polarisation in their drinking compared to other groups (Bellis et al., 2016). This means that there are more heavy drinkers, but also more abstainers than less deprived communities. Nonetheless, this doesn't explain the AHP, as less deprived communities still suffer more harm, even after controlling for ecological differences (World Health Organisation, 2018). Evidence of the AHP is shown in figure 1, where those who are on benefits are more likely to score highly on the Alcohol

Use Disorder Identification Test (AUDIT), indicating probable dependence and harmful drinking. This measure can be an indicator of likely deprivation, with alcohol affecting the more deprived more severely. This pattern holds true across all benefit types measured in both sexes. The data in figure 1 shows that those who claim benefits, and therefore are likely to be more deprived, are more likely to experience the harms associated with alcohol consumption (as measured by the AUDIT) than those who do not claim benefits.

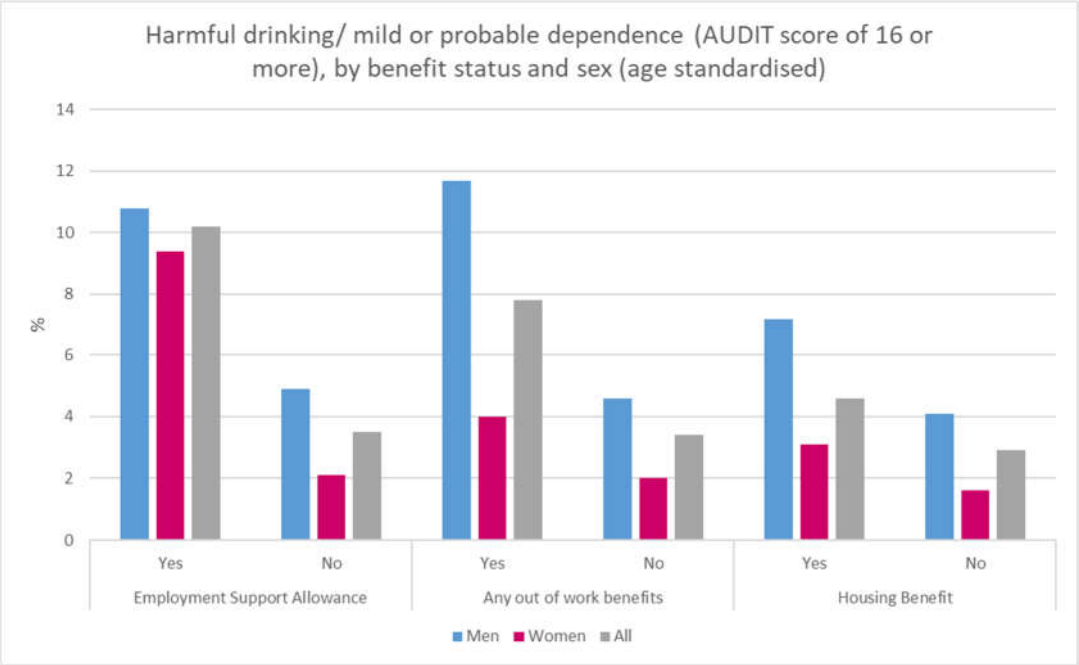


Figure 1: harmful and possible dependent drinkers by benefit status. Adapted from data from the APMS 2014.

A number of explanations have been proposed to explain the AHP. A commonly accepted theory is that more deprived communities are more likely to be exposed to multiple negative impacts on their health. They are more likely to smoke (Duncan et al., 1999), to have poor housing (Marsh et al., 2000), and have poor diets (Major et al., 2010) which lead to obesity and a lack of some key vitamins and proteins. These multiple negative factors appear to have a multiplicative effect, resulting in a harm which is more than the sum of each individual risk. For example, Hart and colleagues (2010) showed that there was a significant excessive risk of liver disease from the interaction between higher BMI and alcohol consumption, than the two risk factors individually. The combined risk of smoking and drinking was more than

double the expected risk of the sum of the two factors when looking at the development of cancer cells (Prabhu et al., 2014). It is reasonable, therefore, to assume that a community exposed to multiple risk factors are more likely to suffer from related morbidity and mortality rates compared to other groups due to the multiplicative effects occurring.

Another plausible explanation for the AHP is the lack of data investigating historic drinking. People from poorer communities may have historically consumed more alcohol, started drinking at a younger age, or have consumed greater proportions of alcohol through heavy and binge sessions. This may also translate into present drinking patterns too. Deprived groups may be more likely to drink in unhealthier patterns such as binge drinking (Fone et al., 2013), or could be drinking different types of alcohol (Kerr & Greenfield, 2007). Binge drinking has been shown to increase some expected harms of alcohol (Bala et al., 2014), and different types of alcohol are linked to different exposure to risk, for example wine intake may be beneficial to health in small amounts (however, this may not be the case as discussed in section 1.2.1.1) (Grønbæk et al., 2000) so those who drink other kinds of alcohol may be at more risk. More deprived communities may find it difficult to access help, either through costs, lack of transport, or the stigma associated with being deprived and alcohol dependent (Schomerus et al., 2011). Stigma is likely to have a very large impact on treatment seeking behaviour (Keyes et al., 2010), and may mean that alcohol treatment might need to be more active in reaching these communities, rather than relying on them to seek help.

We must also not rule out the possibility of underreporting of alcohol use. In the UK, 60% of alcohol sold is not accounted for, using extrapolations of consumption data reported in national surveys (Bellis et al., 2015). Deprived communities may still drink more than less deprived communities, but may underestimate how much they're drinking through poor recall of drinks, lack of understanding over units, or underestimating drink size. They may also deliberately underreport their drinking due to feeling guilty, proving some stereotypes

'right', or being considered a bad person for drinking at the level that they do. However, this remains poorly understood and would need further research (Bellis et al., 2016) .

The clearest illustration of how socioeconomic status could impact health inequalities is the Dahlgren-Whitehead rainbow (Dahlgren & Whitehead, 1991) shown in figure 2. This model demonstrates the relationship between individuals, the environment they are in, and their health. The influences on the individual's health (such as individual lifestyle factors) are layered around the centre. This structure demonstrates the 'layers' of influence upon the individual.

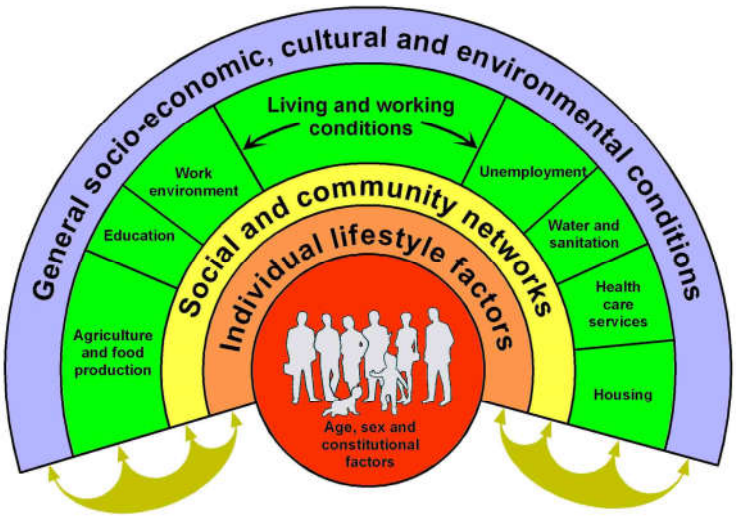


Figure 2: Dahlgren-Whitehead 'rainbow' of determinants of health

1.1.5 Drinking and Unemployment

Unemployment is a risk factor for many psychological, physical, and societal problems. The stigma, combined with low self-worth, and lack of expendable income all combine to make the individuals experiencing unemployment incredibly vulnerable to life-altering conditions. This is often exacerbated by government policies, which may be seen by some as unfair, such as the introduction of Universal Credit (UC) in the UK (Cheetham et al., 2019). The core concept behind UC was to simplify the benefits system (Welfare Reform Act. 2012) by rolling

multiple benefits into a single benefit. The claimants would find it easier to apply, and the administrative cost would be reduced for the government. However, multiple studies (Cheetham et al., 2019; Wright et al., 2018) have demonstrated that the introduction of UC has caused an increase in poverty, and a decline in the mental health of the claimants. Reports by the Department for Work and Pensions (DWP) highlighted the struggle of individuals who also suffered from alcohol and drug use, before (Bauld et al., 2010), and after (Department for Work & Pensions, 2015) the introduction of UC. Additionally, guilt and stigma may also lead to under-reporting of alcohol, tobacco, or drug (Moseson et al., 2015; Rao et al., 2015), further exacerbating the problem by creating hidden populations and harm.

1.1.5.1 DWP Reports

This section will summarise the findings of several research reports commissioned by the DWP looking into issues around unemployment and problem substance use. Problem alcohol use is also addressed in these reports as many of the difficulties faced by those dependent on alcohol use, are also seen in substance use disorder claimants.

1.1.5.1.1 Sutton et al. 2004

In 2004, the DWP commissioned a report aimed at identifying barriers to returning to work for those who are "problematic" alcohol users, and drug users (Sutton et al., 2004). The aim of the report was to identify these barriers and provide recommendations on how to assist clients to overcome the barriers. Whilst the report was primarily focused on those considered to be suffering with an AUD, or illicit drugs addiction, it did provide some insights relevant to the current work. The report identified four general categories where problematic substance use provided barriers to employment. This is shown in table 2.

Physical and health effects of substance use impacting on ability to work	Practical constraints impacting on ability to work/find work	Employment related problems	Issues relating to treatment and employment service provision
Withdrawal symptoms, pain; tiredness; 'gouching'; medication	Low or fluctuating motivation/confidence/focus or concentration; activities dominated by continued substance use.	Low education and vocational skills/qualifications*; literacy and numeracy problems	Reluctance of substance users to come forward, especially (women) alcohol users
Psychological-emotional and associated personal problems. Especially among alcohol users	Erosion of support/family/job information network; threatened or factual break-up of partnership	Gaps in CV/employment histories	Addiction remains undiscovered
Paranoia, anxiety; self-denial; low stress management ability	Adverse social/physical environment (milieu); financial problems/ reduced work incentive	Disclosure of health problems (or hiding addiction from employers); wish for anonymity; fear of experience of stigmatisation	Lack of trust in government services
	Need to collect prescriptions/ take drug/ alcohol/ medication at work		

*Table 2: Barriers identified to returning to work for those with alcohol and substance use problems. Adapted from Sutton et al. 2004 *Typical for population at risk of unemployment*

Many of these factors, particularly relating to withdrawal symptoms, are beyond the scope of this PhD project. However, the identified barriers demonstrate the necessity to act before individuals become too severely dependent on substances. Particularly relevant to heavy drinkers are barriers such as the psychological and emotional problems they experience, the erosion of the family and support networks and the fear of being stigmatised. People with heavy alcohol use were also more likely to show a lack of self-confidence and lower

motivation than people who use drugs (Sutton et al., 2004), this is likely due to the co-morbid effects of alcohol on depression and anxiety as discussed in section 1.1.3.3.

Gaps in employment history, due to potential relapses and erratic work patterns affected their chances of finding employment. This barrier is not unique to problematic substance users, but also to many other groups at the margins of the labour market, including ex-offenders (Metcalf et al. 2001). Whilst people with heavy alcohol use may not have as many gaps in their employment history, their chances of remaining in work may be affected by the consequences of the alcohol use, particularly the mental health problems that are prevalent in this group.

1.1.5.1.2 Bauld et al. 2010

In 2010, a report by Bauld and colleagues commissioned by the DWP (Bauld et al., 2010) aimed to explore the experiences of benefit claimants who were misusing alcohol, and their thoughts and experiences of the benefits system in the UK. The authors used a qualitative approach to understand more about how those who were struggling with alcohol use found the employment system and ways the system could be improved to support clients better, they interviewed 53 participants which provided good representation to those who would access the unemployment system. The authors also interviewed 12 professionals who were part of the system to understand any barriers to providing support to people with problem alcohol use.

Whilst the report found that the participants who were interviewed were all eager to return to work and saw many advantages to work, many were still experiencing mental and physical health problems related to their alcohol use and so felt they were not yet able to seek employment. The report also found that the participants who were interviewed generally fell into two categories, the first reported that their unhealthy alcohol use developed some years before, often in adolescence, this has then led to unemployment in later life. The second group reported the inverse, that an event triggered their heavy drinking, with some

citing redundancy or unemployment as the trigger (Bauld et al., 2010). Similar to the report by Sutton (2004), participants spoke about the breakdown of relationships often related to their alcohol use, as a result using networks as a way to find work or support were severely affected.

The barriers they reported mainly related to the system not working well with their needs, the lack of continuity of staff they saw meant they had to repeat information every time they spoke to anyone. Some reported frustrations at the way decisions were made over their medical assessments, feeling the decisions were poorly explained, arbitrary, and too focused on their physical health as opposed to their mental health, which was the main complaint.

When it came to returning to work, the main concern appeared to be over the type of work they'd be employed into, with some fears that the wrong type of employment could affect their recovery from heavy alcohol use, or damage their mental health. They also reported wanting "meaningful" employment as opposed to the kind of employment they'd been involved in previously. Some also became concerned with a so-called "benefit trap" whereby low-paying work would not be enough to support them if benefits were subsequently removed. The key messages from the report highlighted the need for more interagency working (between health and the DWP), the need for more support from JCP staff, and a more integrated approach to supporting clients. The report makes clear that there isn't sufficient evidence that mandating treatment as part of a benefit claim would produce more positive results.

1.1.5.1.3 Black et al. 2015

The most significant report on alcohol use in people who are unemployed came from the independent review conducted by Dame Carol Black in 2015 (Department for Work & Pensions, 2015). The review's aim was to explored the challenges faced by individuals addicted to alcohol or drugs when they seek to enter, return to or remain in work. Similarly to the report in 2010 by Bauld and colleagues (2010), they found that heavy alcohol use was

both a cause and consequence of unemployment, with heavy drinking acting as a predictor of future job loss. The report notes that many of the strategies laid out by the UK government in 2010 (some based on the Bauld report) had not been actioned, and many of the targets not yet realised.

One of the key findings of the report (Department for Work & Pensions, 2015) is that the Job Centre Plus (JCP; the 'at-arms-length' department of the DWP, responsible for running work-related benefits) staff lack the necessary training required to identify those at risk of dependence, or currently experiencing dependence, and as a result cannot offer the tailored support that individual needs. Many claimants who are dependent on alcohol are recorded as having "Mental ill-health", or in the case of non-health related benefits there is no health recording at all. The report highlighted the success of two programmes, the "Working Well" programme run in Manchester, and the "Universal Support" programme that had just finished its trial when this report was published. However, both programmes were run by local authorities which will result in a varied approach and coverage across the country. Particularly in councils where funding may have been cut or other areas had to take priority (such as social care).

A lack of staff incentives to deal with difficult cases was highlighted by the report, the staff at JCP were not encouraged to work with difficult or complex cases, and instead were focused on overall numerical targets set. This combined with clients talking about a lack of consistent support, results in more complex cases being ignored or under supported. The staff also felt this frustration, with many saying that they wanted to help, but weren't given the means, time, or information required to identify and support those who needed the extra help.

Whilst the Black report made many recommendations, they often followed the same theme when it came to heavy alcohol use, primarily that the DWP and JCP needed to be better at

identifying and supporting those who were at risk and to shift the focus from employment to a long-term recovery with a step-wise approach to finding work. It also showed the need for a more "linked up" approach working with local authorities, treatment providers, and health services to provide a more consistent form of support.

1.1.5.2 Current Literature on Alcohol Use in People who are Unemployed

Literature about alcohol consumption in people who are unemployed can be split into two categories; literature which shows an increase in drinking, and literature that shows no change or a decrease in drinking. This section will discuss each in turn and discuss the merits of each.

1.1.5.2.1 Literature Showing a Decrease or No Change in Drinking

The key argument that unemployment should reduce heavy drinking, centres around the "economic theory" of unemployment (Ettner, 1997). This theory stipulates that people who are unemployed will have less money, and therefore have less money to spend on alcohol, an expensive commodity. This understanding of the effect of employment comes from research into the effects of economic downturns on whole populations. It has been shown that alcohol consumption is pro-cyclical and reduces when the economy is in recession, it has been shown that this is primarily due to households cutting back on unnecessary items due to less expendable income (Pacula, 2011; Ruhm, 1995, 2000). This finding has been supported in a review paper by Henkel (2011), which suggests three explanations for this finding. Firstly, the economic theory, that individuals have less money and therefore spend less on alcohol. Second, there is a reduction in work-related stress, this will, in theory, reduce some forms of anxiety. As mentioned in section 1.3.1.2, anxiety has been shown to lead to increases in alcohol consumption. However, this doesn't consider the increases in other forms of anxiety resulting from unemployment (money-related anxiety, isolation anxiety etc.). The third reason put forward was that there is evidence that as unemployment increases, the fear of losing a job could lead to people reducing their alcohol consumption to

reduce potential risk of being made redundant. Two studies agree with this theory (Catalano, 1997; Catalano et al., 1997), however, this appears contradictory as worry about losing a job is likely to increase work-related stress and therefore increase drinking.

However, the economic argument doesn't consider a few important caveats. Firstly, alcohol is now more affordable and more accessible than it ever has been in comparison to other items. Since 1987, beer is now 188% more affordable, and wine and spirits are 131% more affordable (2018 figures) (Institute of Alcohol Studies, 2018). It also doesn't consider potential sacrifices people may make to ensure they have the money for alcohol as is hypothesised as a potential explanation of the alcohol harms paradox (Probst et al., 2014)

A paper by Kaiser and colleagues (2017) found no effect on alcohol to those who had been laid off due to a plant closure. Suggesting that being unemployed had no effect on alcohol consumption. The authors argue that, as they were able to assess causality, they could show that unemployment did not increase unhealthy lifestyle factors. However, this is a narrow sample to analyse and may have other confounding factors, such as the kind of plant they were working in. Likewise, a study by Arcaya and colleagues (2014) demonstrated that unemployment was associated with a one-drink reduction in drinking compared to the employed, and the spouses of those unemployed either showed no change in drinking, or also reduced their drinking. Nonetheless, there was an increase in smoking observed in people who are unemployed.

Both of these approaches fail to address individual level factors, and ignore the fact that whilst overall drinking may not increase, the individual risk factor of increased drinking caused by unemployment remains. This brings us back to the alcohol harms paradox, when an entire plant closes (as in the Kaiser study), there will be a mixture of SES levels within the company. The risk of increased drinking (as with the harms associated) is likely to be stronger

in the lower SES groups. Neither of these approaches controlled for SES, and as such, may have missed the impact of the risk factor.

1.1.5.2.2 Literature Showing an Increase in Drinking and Direction of Effects

There is strong evidence that alcohol use increases during unemployment, evidence from government report (Bauld et al., 2010, 2013; Department for Work & Pensions, 2015; Sutton et al., 2004), individual studies (Mossakowski, 2008), and reviews (Henkel, 2011) have shown bi-directional causation between unemployment and alcohol use. However, the discussion is often whether unemployment causes an increase in drinking, or whether those who drink are more likely to be unemployed. In a study by Ettner (1997), it was found that involuntary redundancy increased drinking by, on average, an "extra ounce of beer per day". However, the study also showed a significant reduction in dependence symptoms amongst the involuntarily redundant, suggesting that it could be the less risky drinkers increasing their drinking, whilst the riskier drinkers reduce due to reduced income. This is also supported by a study by Dee (2001) which also showed that, based on data from 700,000 respondents, binge and harmful drinking habits increased during times of economic downturn. The Kaiser study, mentioned in the previous section (Kaiser, Bauer, & Sousa-Poza, 2017), showed a reduction in alcohol consumption in their target sample of workers made redundant from plant closures, however, in a wider sample, they found an increase in alcohol consumption, suggesting that whilst full plant closures affect everyone, those who are at risk of increased drinking are laid off more often when there isn't wholesale redundancy. This highlights the difficulty in determining the causality in the relationship.

Mossakowski (2008), using longitudinal data from the US National Longitudinal Survey of Youth, demonstrated that the length of time someone was unemployed through no choice of their own, significantly predicted heavy drinking in their future. This finding was independent of gender, age, race, and marital status. More importantly this finding also remained when controlling for previous heavy drinking, which suggests that it is a

unidirectional relationship, and heavy drinking does not predict unemployment, in contrast to the findings in the DWP report (Department for Work and Pensions, 2015), but that unemployment is the cause of the higher alcohol consumption. Interestingly, the increase in drinking was also independent of SES, showing that this is not a result of the AHP, and that this is a harm likely to be experienced equally by any SES group.

A large study by Popovici and French (2013) using panel data from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC) survey, demonstrated positive and significant effects in all their models, showing that alcohol consumption increased after people become unemployed. Their model suggests that unemployment is the leading cause in this increase, and often comes before the increase in alcohol consumption. This is supported in a study by Boden and colleagues (2017), where the results support both social causation, where unemployment influences substance use, and social selection, where substance use increases the risk of becoming or remaining unemployed, arguments. Both of these arguments indicate that unemployment plays a causal role in problem substance use, including alcohol. The study also argues that it is likely that there is then a reverse causal process whereby unhealthy substance use increases the risk of unemployment and will increase the length of any unemployment spell. The study showed that those who were unemployed for three or more months had odds of an AUD 1.49 times higher than those who were unemployed for less than three months. This suggests that the effect unemployment has on alcohol consumption is cumulative, and the risk factor increases the longer someone is exposed to it (Boden et al., 2017).

The length of time of unemployment was also raised in the study by Khan et al. (2002). This study went some way to potentially explaining the discrepancy in results across other studies. It found that whilst the initial stages of unemployment showed a decrease in alcohol consumption, longer unemployment increased alcohol consumption. This would make sense

in light of some of the arguments from the previous section whereby, the initial loss of work would result in a reduction in work-related stress, immediately reducing alcohol consumption. However, as time goes on, other forms of anxiety (financial strain) and depression (Montgomery et al., 1999) begin to grow, and therefore increases the likelihood of greater alcohol consumption. This finding was also shown in work by Claussen (1999), who demonstrated that the high prevalence of harmful drinking amongst people who are unemployed was primarily caused by unemployment and not the other way around. He suggested that reducing unemployment would help reduce alcohol problems. However, this is a much more difficult goal to achieve in reality, it would be much more effective to help those who are unemployed before the effect of unemployment begins to affect them, ideally during the short period of time identified by Khan et al. (2002) where drinking decreases immediately after unemployment.

Khlat et al. (2004) suggest that one of the key contributing factors could be depression, as those who are unemployed also suffer from higher rates of depression, smoking, and psychoactive drug taking. There is a strong argument for the link between depression and drinking, it is one of the most common comorbidities (as mentioned in section 1.3.2.1) (Aneshensel & Huba, 1983; Regier et al., 1990). This was supported further by Hamalainen et al. (2005), who demonstrated a significantly higher risk of a major depressive episode amongst those who were long term unemployed, this then linked with a significantly higher risk of a comorbid diagnosis of alcohol dependency. Table 3 shows a summary of the studies listed in sections 1.5.4.1 and 1.5.4.2.

Authors	Year	Type of study	Number of participants/ observations	Summary of findings
Ettner	1997	Naturalistic	32,012	Involuntary unemployment had a mixed effect, increased consumption but decreased dependency
Pacula	2011	Review	-	Heavy users consume less alcohol, light drinkers increase drinking in economic downturn
Ruhm	1995	Naturalistic	Not described	Economic downturn is associated with fewer negative alcohol related outcomes
Ruhm	2000	Naturalistic	Not described	Improved economy is associated with unfavourable health outcomes in the short term.
Henkel	2011	Review	-	Unemployment is a risk factor for increased problematic substance use, evidence, however, is limited. Alcohol use appears to decline in poor economic times.
Catalano	1997	Review	-	Dependency increases, but alcohol use appears to fall. Data is limited.
Catalano et al.	1993	Cross-sectional	3,545	Dependency increases, but alcohol use appears to fall in areas with very high unemployment decreases
Probst et al.	2014	Review	133,000,000	Socioeconomic differences in mortality are more pronounced in alcohol-attributable causes of death - may not be due to increased alcohol use
Kaiser et al.	2016	Naturalistic	12,146 (alcohol)	Results provide little evidence that unemployment gives rise to unhealthy lifestyles
Arcaya et al.	2014	Naturalistic	2,495	Unemployment predicted a one drink reduction in weekly alcohol consumption. Differences appeared in gender when observing spousal behaviour.
Bauld	2010 & 2013	Review & Interviews	53	Unemployment is associated with an increase in drinking. Literature is mixed, but predominantly supports the finding.
Department for Work and Pensions	2015	Government Report	-	Unemployment and alcohol use are bidirectional. Unemployment increases alcohol use, alcohol use increases chances and longevity of unemployment
Sutton et al.	2004	Government Report	-	Study provides estimates of alcohol abuse within the benefits system and finds it significantly higher than the general population
Mossakowski	2008	Longitudinal	6,536	Incidents of unemployment have lasting effects on heavy drinking.
Popovici & French	2013	Naturalistic	43,093	Results show a positive and significant effect of unemployment on drinking behaviours
Boden et al.	2017	Longitudinal	1,265	Unemployment plays causal role in substance use, there is likely a reverse causal role whereby substance use increases risk of unemployment
Khan et al.	2002	Longitudinal	795	Recent unemployment decreases alcohol use, but longer unemployment increases alcohol use.
Dee	2001	Longitudinal	742,821	Recessions lead to increased prevalence of heavy and binge drinking, which may not be due to increased social time, more likely the influence of economic stress
Montgomery et al.	1999	Longitudinal	3,241	Unemployment is a significant risk factor for depression
Claussen	1999	Cross-sectional	228	Unemployment is associated with an increase in drinking, and is likely the cause of the increased alcohol consumption
Khlat et al.	2004	Longitudinal	4,185	Unemployed men are to have significantly higher prevalence rates of depression and alcohol use than the working population
Hamalainen et al.	2015	Longitudinal	6,962	Long-term unemployment is associated with increased risk of major depressive episode

Table 3: Brief Summary of studies mentioned in sections 1.5.4.1 and 1.5.4.2

1.1.5.3 Stigma and Stigmatising language

People who are unemployed experience significant amounts of stigma around their everyday habits and lifestyles. Common negative stigmas are seen regularly across the media (e.g. (Daily Mail, 2016)), social media, and in academia for many people who are either lower SES, unemployed, or suffer with poor mental health. These negative stigmas can often act as a barrier to seeking help, for fear of proving the stigma right. This is seen in people who are unemployed when it comes to alcohol use, as shown in table 3, whereby the stigma of those who are unemployed consuming more alcohol can prevent those who do want to seek help from doing so, due to fear of ridicule or shame (Keyes et al., 2010; Norlander et al., 2020; Sutton et al., 2004).

The language used to describe those with problem alcohol use can also be stigmatising and can act as a deterrent to seeking help through fear of being labelled (Keyes et al., 2010). The use of the phrase "alcoholic" is being gradually phased out of literature due to these very issues (S. M. Robinson, 2017). However, it has been suggested that other commonly used terms should also be avoided in academia, health, and treatment settings (Scottish Drugs Forum, 2020). Terms such as alcohol 'misuse' or 'abuse' can be seen as judgmental and moralistic with little to no regard as to what defines 'misuse' of something easily available. They can be seen as stigmatising due to the effect of labelling some alcohol use as inherently "wrong" compared to other people's use.

There are other terms which, whilst contentious, still continue to be used. Terms such as 'problem alcohol use', or 'dependency'. 'Problem alcohol use' refers to use which can harm the person or others around them. Generally, this term is accepted, however some argue that the use of this term suggests that there is some alcohol use which produces no harm, which is untrue, as suggested by the change in terminology over "safe" drinking levels to "low-risk" (Department of Health, 2015). Saitz (2005) recommends using the term "unhealthy alcohol use" as a more accurate description which would cover both 'risky use'

and ‘problem drinking’. However, this implies a form a “healthy” alcohol use, which as discussed in the report by the Chief Medical Officer, the only “healthy” amount of alcohol use, is abstaining (Department of Health, 2015). This makes a lot of definitions contentious and with a need to be defined clearly. Throughout this thesis, the term ‘problem alcohol use’ will be used to define those who are finding their alcohol use to be detrimental to their overall wellbeing, or is creating a barrier to achieving unemployment (Sutton et al., 2004).

1.1.5.4 Why is Drinking and Unemployment an Issue, and Why Should We Intervene?

Based on the current literature, unemployment carries the risk of acting as not just one, but three risk factors for increased deprivation, which are outlined as follows. As demonstrated in the report by Black for the DWP (Department for Work & Pensions, 2015), alcohol use and unemployment form a two-way relationship, both impacting each other. Increased alcohol use subsequently makes it less likely for an individual to find stable, long term employment (Sutton et al., 2004). This in turn means that they are more likely to re-enter the unemployment system. Unemployment (Khlat et al., 2004) and alcohol (Regier et al., 1990) both contribute to the development of mental health concerns, particularly depression. Depression could, again, decrease the chances of finding work, resulting in increased deprivation and an increased risk of developing an AUD. Unemployment also carries a risk of permanently increasing an individual’s drinking (as well as other unhealthy behaviours) (Gromadecka-Sutkiewicz et al., 2012), meaning that even if they do manage to find work, there is now an increased risk of losing that job due to a poor absence record (Johansson et al., 2009), or “presenteeism” (Gjerde et al., 2010).

By lowering alcohol use, mood and motivation should increase, leading to a higher application rate to job vacancies, which will increase their chance to gain meaningful employment. There is also the argument that, by including a screening questionnaire when first applying for the benefit, you are effectively targeting an at-risk group without adding any extra burden to the application process, particularly if you use recognised screening

methods such as the MAST (Michigan Alcoholism Screening Test) or AUDIT-C (Alcohol Use Disorder Identification Test – Consumption sub-scale).

By targeting individuals who are unemployed and seeking a form of unemployment benefit, an inequality will be addressed. Those who seek unemployment benefit tend to be from more deprived areas, as unemployment directly contributes to the calculation of deprivation (such as the Indices of Deprivation used by local government to rank Lower Layer Super Output Areas (LSOAs), and identify areas which may need further support (Department for Communities and Local Government, 2015)). Deprivation levels and levels of harmful drinking are also linked, with those from poorer backgrounds showing an increased chance of attending hospital due to alcohol-related illnesses (Public Health England, 2019). By using unemployment benefit as a method to target the intervention, the inequality could be tackled, and thus reduce pressures on the NHS, but also, potentially, reduce costs on the DWP by assisting those on long-term unemployment to reduce their drinking, hence increasing their motivation to apply for work. Fewer people on long term unemployment due to heavy drinking will save the NHS, Public Health Departments and the DWP money, as well as reduce inequalities in some of the most deprived areas in the country. Inequality is a clear risk factor for poorer health and wellbeing, it would be over simplistic to attribute it all to alcohol, but there is strong evidence that it plays a large role in maintaining inequalities in very deprived areas.

1.2 Part 2: What Can Be Done, and What is Already Happening?

In this section, we will discuss the current ongoing work around methods used to target vulnerable and difficult to reach groups such as people who are unemployed. I will discuss methods currently being tested, as well as individual components and the evidence around them. Finally, we will discuss the overview of the current body of work, and the aims of the thesis.

1.2.1 Alcohol Brief Interventions (ABIs)

Alcohol Brief Interventions (ABIs) (also referred to as Screening and Brief Intervention (SBI) and Identification and Brief Advice (IBA) in other areas of health treatment) refers to a process of identifying a potential alcohol problem and then discussing ways to avoid long term complications with aims to reduce consumption. When brief interventions are used to tackle alcohol consumption, there is often a screening phase (such as a drinking diary) with normative feedback, and then a series of tools to assist in reducing alcohol consumption (such as goal setting, evaluations of behaviour, or advice on how to avoid situations where the behaviour may occur). Similar methodology has been deployed in obesity (Aveyard et al., 2016), smoking (Glasgow et al., 2000) and illicit drugs (Humeniuk et al., 2012).

There is very little consistency in ABIs, with some lasting a very short time (5 minutes), and some lasting much longer (over an hour). There is evidence that very brief interventions (less than ten minutes) can reduce alcohol consumption compared to assessment only control groups (Kulesza et al., 2010). The components of the interventions also often vary depending on the target audience, length of time available to deliver the intervention, method of delivery, or theoretical underpinning. In the next few sections, we will discuss the evidence of ABI's and the variations often seen.

1.2.1.1 What Are They and Why They're Effective.

ABI's have been shown to be effective in a large range of populations including university students (Neighbors et al., 2010), A&E patients (Suffoletto et al., 2014), and in workplaces (McPherson et al., 2009). Overall, meta-analyses have shown a small, but consistent effect (Platt et al., 2016; Riper et al., 2014) in reducing alcohol consumption compared to controls. ABIs have the advantage of being quick, low cost, and easy to deliver to a large number of people within relatively fewer hours compared to traditional GP led interventions. This population approach is particularly appealing to health services such as the NHS where

budgets are under pressure. They also carry advantage of not needing clinical training for those delivering the intervention, allowing for a wider range of health care professionals to deliver, such as nurses, counsellors, or psychologists.

Initially ABIs were designed to act as an intervention for increasing or high risk drinkers, however more recent research suggests potential for ABIs to be used in alcohol dependent populations (Graham et al., 2000; Guth et al., 2008). There is strong evidence for the efficacy of ABIs in non-clinical populations, the effect is often small, but consistent (Kaner et al., 2017; Platt et al., 2016; Riper et al., 2008). The recent Cochrane review by Kaner et al. (2017) shows that, on average, ABIs reduce alcohol consumption by around 3 UK standard units per week (around 24g of pure alcohol per week) in those that received ABIs compared to the control groups.

The variation in content of ABIs is incredibly broad and often depends on the target group and the individual delivering the intervention, however they typically involve an assessment of an individual's risk, and provide the individual with feedback and advice (Heather, 2010). This is often combined with some form of motivational interviewing (e.g. Wagener et al., 2012) which is more person-centric. It is also common to see the intervention being linked to another negative element in their life. An example of this method being used is in the study by Sommers and colleagues (2006) where alcohol consumption was linked to a recent alcohol related car injury. This meant that participants were more likely to reduce drinking as it provided a more salient reward for reducing alcohol consumption. Whilst this is an extreme example, more subtle links could also be used. It is thought that the efficacy of ABIs comes from the short, low intensity nature which allows for wide-reaching distribution (Riper et al., 2014). Individuals are prompted to reflect on their drinking and reconsider their behaviours, thus leading to a change in drinking. This is often done via a form of Behavioural Change Technique (section 2.2).

1.2.1.1.1 Potential Issues with Type 2 Errors in the Literature

There have been many studies in recent years aimed at demonstrating the effectiveness of ABIs, broadly the literature shows a small but consistent effect size (Kaner et al., 2017; Platt et al., 2016). However, there are difficulties in determining the true effect size being observed. A number of studies (e.g. Fleming et al., 2010; Juarez et al., 2006; Maisto et al., 2001), have shown that the control groups also reduce their drinking significantly, in some cases this decrease is enough to show a non-significant effect on the effect of the ABI on the level of drinking, as seen in the SIPS trial by Kaner et al. (2013).

This reduction in control group drinking has been attributed to several possible explanations. One explanation for the reduction in drinking could be due to the control group drinking heavily and their drinking is simply returning to a normal amount during the study period. Jenkins et al. (2008) showed that low-risk drinkers increased their drinking in the control group, whereas heavy drinkers decreased drinking, both groups returning to the mean. However, this study did not take into account the potential components of these interventions. Another explanation could be that control groups are responding to some elements within the material causing a reduction in drinking. In analysis by Black et al (2016), some components of interventions caused increases in drinking in intervention groups. As a result, it could be that participants in control groups are responding to "active" components in the control. Many control groups contain some form of assessment, health information, and sometimes some feedback.

The third possible explanation is that participants are simply reacting to being part of the study, this is known as the Hawthorne effect. The Hawthorne effect occurs when a participant changes their behaviour in response to the behaviour being monitored. This was demonstrated by McCambridge and Day (2008) where it was demonstrated that participants reduced drinking after completing the AUDIT, a commonly used screening questionnaire used as part of control groups in studies.

Without knowing which of these is accurate, and by how much we can expect a control group to change to different components that may be present, the findings from some studies into ABIs cannot be fully understood. This phenomenon, and a larger discussion is explored in Chapter 3.

1.2.1.2 Computer and Electronic Alcohol Brief Interventions (E-ABIs)

Lately, more interest in computer based, or electronic interventions has occurred (Kaner et al., 2017). The components of computer or electronic ABIs are largely similar to that of a standard face-to-face ABI in that they contain an assessment, feedback, and often some kind of interactive task to make excessive alcohol use more salient to the user. The advantages of E-ABIs is that they are far cheaper and easier to run. Users can log in more frequently, or can complete the intervention without needing to attend a clinic, which may make people feel more comfortable engaging with the intervention. This can improve the honesty in reporting drinking (Booth-Kewley et al., 2007; Toll et al., 2003), as participants are less likely to feel observed or embarrassed by their drinking, compared with a face-to-face assessment. On the other hand, this can mean that there is no control over whether the user is actually engaging with the intervention, or just simply clicking through so they can complete it.

A number of large E-ABI projects are currently being tested. Down Your Drink is a web-based E-ABI where participants have repeated access to the intervention whenever they wish. It has been designed as a "suite" of tasks and guides to reduce alcohol consumption. In a cohort study, it has shown significant reductions in self-reported indicators of dependency in those who remained in the study and used the intervention. (Linke et al., 2007). Despite this initial finding, however, larger trials have not shown effectiveness in reducing alcohol consumption in the intervention group compared to the controls (Wallace et al., 2011). Check Your Drink is another web-based intervention designed to reduce drinking by allowing users to access a suite of tasks. This intervention showed a significant reduction in drinking compared to

controls at 3 and 6 month follow-ups (Cunningham et al., 2009), however the intervention effect was lost by 12 months (Cunningham et al., 2010). The authors hypothesised that, whilst successful in the relative short-term, to increase the efficacy long-term, there would need to be a different form of modality or intensity. E-ABIs can also be delivered via mobile apps, one advantage with these is that the user is more likely to always be carrying their phone and can log in more frequently than via computer. One such app is the Drink Less app which has been developed to target heavy drinking using five intervention components; normative feedback, cognitive bias re-training, self-monitoring and feedback, action planning, and identity change (Garnett et al., 2019). Although this app has not yet been fully trialled as an RCT, the early results show evidence (Crane et al., 2018) in reducing alcohol consumption over 4 weeks in those who received the intervention.

1.2.1.2.1 Evidence of Efficacy Compared to Face-to-Face Interventions

A study by Linke et al. (2005) tested the feasibility of a web-based intervention with the intention to understand whether such a programme could prove useful. The feedback received suggested that heavy drinkers would use it. However in different trials of the same intervention, there were high drop-outs with people commenting that it was too time consuming (Linke et al., 2004). Potentially due to this, there was no difference reported between control and intervention groups in terms of alcohol consumption.

A meta-analysis by Carey et al. (2012) demonstrated that whilst both face-to-face interventions (FTFI) and computer delivered interventions (CDI) produced reductions in alcohol consumption in the short term, FTFIs were more effective at maintaining the reduction in drinking, whilst the effect of CDIs faded over time. The authors, however, suggest this may be down to CDIs working through different mechanisms than FTFIs, as such CDIs may need to adapt more to be able to deliver the same effect size and duration as FTFIs. The meta-analysis also found that CDIs were less effective in women than men, and theorised that women preferred the personal contact. However, in another meta-analysis by Black

(2016), which looked only at the effectiveness of CDIs, they found that CDIs showed a bigger reduction in drinking in women than in men.

As these two reviews are four years apart, it is possible that CDIs have improved in this time, or that society's reaction to CDIs has improved. What is important to note is that both reviews show similar overall effect sizes for CDIs. It is also important to consider a careful balance between being a sufficiently intense intervention, and one that doesn't take up too much time. Both will suffer from high drop-out rates and low compliance reducing the efficacy of the intervention. This is something that FTFIs do not have to consider, as the person delivering the intervention can judge how the user is feeling, and tailor the experience on the go.

1.2.2 Behaviour Change Taxonomy

1.2.2.1 Background and What the Behaviour Change Taxonomy Is.

The Behavioural Change Taxonomy is a collection of different behavioural change techniques (BCTs) classified in a way to easily analyse the components of interventions. The taxonomy was designed to understand links between BCTs and mechanisms of action. This could be used to inform the systematic development of interventions (Michie et al., 2016). The taxonomy contains 16 categories which cover all techniques to change behaviour, including but not limited to; Goals and Planning, Feedback and monitoring, Social support, Shaping knowledge, and Comparison of outcomes.

1.2.2.2 How Behaviour Change Techniques (BCTs) Have Been Effective in ABIs and Different BCT Efficacy.

A meta-analysis by Black and colleagues (2016) tested the levels to which BCTs impact the change in drinking in computer based ABIs. The aim was to identify the most effective BCTs to reduce drinking, to act as a guide for any future researchers developing interventions. They found that larger effects were found in studies which included personal contact of some

sort, provision of normative information or feedback, encouraging participants to commit to goals and review them, and studies which took the social norms approach. Interestingly, they found that providing health information on alcohol produced smaller effect sizes, and when this BCT was considered by itself, produced an increase in expected alcohol consumption. In the Cochrane review by Kaner and colleagues (2017), the key BCTs which were linked to a reduction in drinking were behaviour substitution, problem solving (where specific triggers and risks are identified and analysed), and when the information was provided by a credible source. Using the BCT in ABIs has provided a more structured and reasoned approach to designing interventions.

1.2.2.3 How This Could Be Useful for Unemployment

The taxonomy could allow the interventions to address more specific needs, thereby improving the targeting of specific behaviours which might be more common in those who are unemployed. For example, our research may indicate that people are drinking to cope with a specific thought or feeling. We can use what we know from BCTs to use a specific technique which will target that common underlying thought. It also means that analysing the intervention efficacy at the end will be more structured and more can be deduced about what has worked and what hasn't.

1.2.3 Implementation Intentions (BCT 1.4: Action Planning)

Naturalistic studies have shown that a large proportion of people's everyday behaviour is repeated behaviour and is often repeated in the same context each time (Wood et al., 2002). Habits are formed by repeated action, this means a specific behaviour occurs in a stable environment to achieve a goal (Adriaanse et al., 2011). A direct mental association forms between the situation and behaviour, and eventually this situation-behaviour association becomes an automatic action. This can lead to unhealthy behaviours becoming a habit, and these habits can be difficult to break, even if the intention to change is there. A meta-analysis

by Webb & Sheeran (2006) showed that the most difficult part of self-regulation was overcoming habitual behaviour. Wood and Neal (2007) state that habits are often triggered by features that covaried with the behaviour occurring in the past. These features can include locations, preceding actions, certain people, or internal feelings (Orbell & Verplanken, 2010). If drinking has developed due to boredom (Biolcati et al., 2016) (as discussed in section 1.1.3.3), then this could also become habitual as way to relieve boredom, which occurs on a daily basis.

Implementation intentions (IIs) are a series of statements which prompt an individual into a change in behaviour. They are often framed as "If-Then" statements (e.g. 'If I feel tempted to smoke, then I will think about the effect it would have on my health'). Because a large part of people's daily lives form habitual actions (Aarts & Dijksterhuis, 2000; Wood et al., 2002), IIs provide an alternative response where a habitual response would have previously been used.

1.2.3.1 Evidence of Efficacy

II's have been demonstrated to be an effective tool in changing a person's behaviour away from an unhealthy habit. They have been demonstrated as effective tools in reducing smoking (Armitage, 2016; Epton et al., 2014), drinking (Armitage, 2009; Hagger et al., 2012), unhealthy eating (Chapman & Armitage, 2012; Tam et al., 2010), and increasing exercise (Prestwich et al., 2009; Wang et al., 2019).

In studies which target alcohol consumption, the efficacy has been varied, largely depending on the method of the II. Some IIs are generated by the researcher and participants are asked to copy them out, others provide pre-made statements to copy out, and then ask participants to complete their own statement based on what they'd already seen. In a study by Armitage (2009), it was shown that there was no difference in drinking behaviour between these two types of II. The only difference was that compliance was significantly higher in the user-

generated group, however this appeared to have no impact on the amount of behaviour change. Nonetheless, this could be a key finding in the use of targeted ABI's in groups who are difficult to engage in research, as compliance with a study becomes more of a challenge and drop-outs become more likely.

1.2.3.2 How These Could Be Used to Increase Efficacy in E-ABIs for People who are Unemployed.

Alcohol use in people who are unemployed is likely to have a habitual component (Bauld et al., 2010) where individuals will drink out of habit rather than for a specific purpose. This is possibly due to internal feelings being the trigger. It has been reported that people who are unemployed are more likely to be depressed (Khlat et al., 2004), so a depressed feeling, or a feeling of inadequacy, could well be a strong trigger to alcohol consumption and the eventual formation of habitual behaviours. II's have been shown effective in breaking habitual behaviour (Adriaanse et al., 2011; Webb et al., 2009), and could increase the efficacy of an E-ABI for people who are unemployed. In the study by Adriaanse et al. (2011), it was demonstrated across three trials that implementation intentions eliminated the cognitive 'advantage' that habitual behaviours had over alternative options. This made it easier for the participants to choose the behaviour they wished to engage in, instead of the automatic behaviour they had become accustomed to. The findings by Armitage (2009) about compliance increasing by using self-generated II's (Armitage, 2009) suggest that a similar approach could be utilised here. Particularly as unemployed participants are more likely to disengage with research due to their marginalised status.

1.2.4 How ABIs Could Be Used to Target People who are Unemployed, and E-ABIs compared to Face-to-Face Interventions in this Group.

ABI's could be used to target people who are unemployed by creating a salience between drinking and their unemployed status. Research has shown that, largely, unemployed people are motivated to find work and will work hard toward achieving this goal. By making the links between alcohol, poor mental health, and unemployment clear to the individual there will be an expected decrease in alcohol use. This is because it will engage a commonly used BCT, 'salience of consequences' to allow the participant to make the link between a negative behaviour and potential negative consequences they wish to avoid. This technique of linking drinking to a negative outcome has shown positive outcomes in several studies (e.g. N. P. Barnett et al., 2015; Ostafin & Feyel, 2019). A study by Haberecht and colleagues (2018) studied the impact of ABIs on people who are unemployed in Germany. The study found that the intervention did not affect unemployment rates 15 months after the intervention. However, they did find that AUDIT scores affected the development of unemployment over time, meaning a lower AUDIT score would mean an individual would find work quicker. Therefore, whilst the ABI did not directly impact unemployment levels, it would be expected instead that ABIs result in a reduction in at-risk drinking, improving health, and thus making it easier to find work. It is also important to note, that drinking increases the longer someone is in unemployment (S. Khan et al., 2002). A more prudent method of supporting this group would be to avoid the transition from low- to high- risk drinking caused by unemployment.

For people who are unemployed, using E-ABIs may be more effective. There is currently large-scale distrust in the benefits system in the UK since the introduction of Universal Credit (Cheetham et al., 2019). As a result of this, claimants may be unwilling to disclose information that may make them feel vulnerable. An E-ABI will allow them to keep their privacy regarding their alcohol use and may allow more honest self-reporting of alcohol use

(Booth-Kewley et al., 2007). This is suspected to be a bigger issue in lower SES groups (Bellis et al., 2016) and the current stigma is likely to supress reporting further. E-ABIs also require less man-power (Vernon, 2010) than FTFIs, this is particularly important as to avoid increasing workload on already stretched public sector staff in the DWP. This will also aid in keeping cost low, as current research shows that electronic interventions in substance use disorders shows a favourable cost-effectiveness (S. M. Murphy et al., 2016).

1.3 Aims and Overview of the Thesis

1.3.1 Overview of the Thesis

This thesis will ultimately test a pilot web-based ABI on a sample of unemployed participants. Before the ABI can be developed, studies will be conducted to determine the efficacy of ABIs, along with understanding the potential impact of changes in drinking, to understanding the risks people who are unemployed face when it comes to their mental health, drinking motivations, and ultimately their drinking.

The first study will be a review of reviews to determine three things. Firstly, it will be an update on previous reviews into the effectiveness of ABIs in the literature. Second, the review will explore the occurrence of control group drinking decreasing in trials, and subsequently the effect size compared to the intervention group. A number of theories for this change have been proposed, including regression to the mean, assessment reactivity, and demand characteristics. This review will look to report an expected amount of control group change, and determine the risk of reporting Type 1 errors (incorrectly accepting the null hypothesis) in this area of research. The final aim of the review will be to explore the use of BCTs being used unintentionally in control groups, and how much, if at all, these BCTs are affecting the change in control group drinking. This will allow us to provide expected changes for control groups if some unavoidable BCTs (such as self-monitoring of behaviour) are used. The findings from this review will be used when assessing the effect of the pilot RCT.

To design the intervention, two studies will be conducted to understand more about the target population, people who are unemployed The first of these two studies will be a cross-sectional observational study to compare the drinking motivations, AUDIT scores and boredom types between the people who are employed and people who are unemployed. This study has three main aims, the first is to determine whether boredom could be considered a drinking motivation separate from the existing "coping" drinking motivation. The second aim will be to discover any differences between people who are unemployed and the employed in terms of AUDIT scores, drinking motivations reported, and the type of boredom they experience. This aim will be used to target the intervention to motivations experienced by people who are unemployed. The final aim will explore the associations between drinking motivations and AUDIT scores and boredom.

The second of the studies into unemployed drinking habits will be a series of interviews with unemployed participants. The questions that form the semi-structured interview will be based on the findings from the previous study. The aim of the interviews is to gain a more in-depth view into the relationship between unemployment and alcohol use, and what drives the latter. The study will also explore how the participants deal with the boredom of being unemployed, both positively and negatively. This information will be used to improve the validity of the ABI, providing scenarios and alternatives that are realistic to the target group.

The final study will be a pilot ABI RCT targeted at people who are unemployed. This ABI will make use of the findings from the previous studies to make the intervention suitable and appropriate for people who are unemployed. As this is a pilot study, the feasibility of running a full RCT in this group will be looked at, considering how acceptable participants find it, the success of recruiting people who are unemployed into a study of this nature and the study retention, as well as determining the effect size of the main outcome which can help inform the sample size calculation of a full RCT. The study will also look to test the potential efficacy

of an intervention of this nature by comparing alcohol consumed between the two groups, as well as the impact on drinking motives. A change in drinking motives, accompanied by a reduction in drinking will demonstrate a successful manipulation of the main reasons unemployed people report drinking.

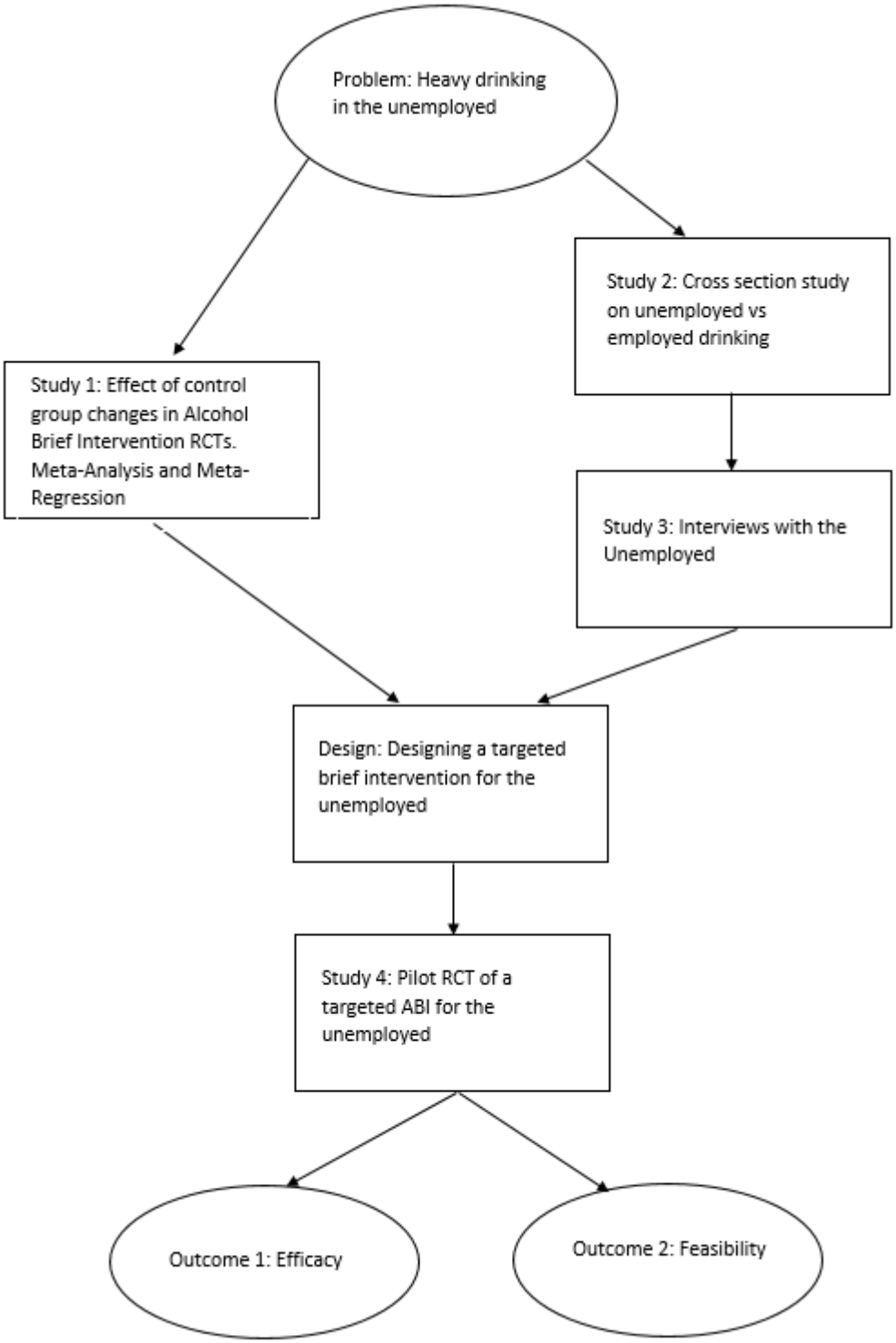
1.3.2 Aims of the Thesis

1. Meta-Analysis and Meta-Regression
    a. To conduct a review of reviews to ascertain the effectiveness of Alcohol Brief Interventions.
    b. To understand how much control groups change their drinking in ABI Randomised Controlled Trials, and whether this change is likely to obscure findings.
    c. To explore the possible unintentional use of BCTs in control groups, and how much these BCTs impact the change in control group drinking.
2. Cross-Sectional Study
    a. To conduct a principal component analysis of the modified Drinking Motivations Questionnaire (DMQ) to identify the drinking motivation constructs after the inclusion of a new boredom sub-scale.
    b. To determine the differences between unemployed and employed participants in terms of AUDIT scores, drinking motivations, and type of boredom experienced.
    c. To understand the associations between drinking motivations, boredom, and AUDIT scores in the unemployed group.
3. Qualitative Study
    a. To understand how people have experienced any changes in their drinking after becoming unemployed.
    b. To gain an insight into experiences of boredom during unemployment.

c. To understand how boredom, mental health, and unemployment are inter-related, the relationships between these factors, and how these relationships can affect drinking.

4. Pilot RCT
    a. To determine the scale of the change in drinking in those who received an intervention compared to a control group who receive a minimal intervention.
    b. To test whether those in the intervention group change their drinking motivations.
    c. To test the feasibility (via acceptability, recruitment, retention to the trial) and the potential to roll out for a full efficacy trial.

1.3.3 Flow Diagram of the Thesis



Chapter Two

2. General Methods

The primary objective of this thesis was to understand how the levels and motivations for drinking alcohol may differ in people who are unemployed, compared to the employed, and to design an alcohol intervention aimed to reduce consumption, based upon the factors identified to be associated with higher levels of alcohol use. In this chapter, the rationale for adapting a mixed methods design is outlined, including the linear phases of the study, descriptions of how each phase informs the next, and the methods for each study including the design, sampling, ethical considerations, outcome measures, steps of analysis, and theoretical justifications. This chapter concludes with a summary of how the quantitative and qualitative findings can be triangulated to provide an overall picture of the problems faced by those who are unemployed, and the challenges faced with targeting the alcohol consumption of people who are unemployed (as discussed in Chapter 1). This then informs the final component of the study; the pilot RCT (Chapter 6; Study 4).

Whilst unemployed participants share the fact that they are out of work, it is important to understand that unemployment can happen to anyone, and as such, people who are unemployed are a varied group. As a result, a 'bottom-up' approach is needed, to be able to understand the variability within the group, but also the similarities. This research tackles this problem by focusing on common themes which run through the group (as explored in the qualitative study (Study 3; Chapter 5)). By doing this, it ensured that the intervention contains relevant sections to all who are unemployed.

2.1 Design Rationale

The thesis uses a mixed methodology approach. Mixed methodology is a powerful and involved design which utilises the strengths of both quantitative and qualitative elements to produce a thorough understanding of the topic being explored. This is particularly important

in fields such as health research, where there are many nuances of health behaviours which cannot be thoroughly understood using a single approach (Tariq & Woodman, 2013). Mixed methods design can be useful for fields that require both a broad understanding of population level data, as well as understanding the individual impacts of the area being researched (Cresswell & Plano Clark, 2007). The Medical Research Council guidance on designing and assessing complex interventions (G. F. Moore et al., 2015) recommends using a mixed methods design to ensure a complete evaluation and design of the intervention in question. It recommends using quantitative methods to measure key process variables, and to measure the mechanisms of moderators, and to use qualitative methods to capture more nuanced data such as unanticipated or complex casual pathways. The design in this thesis takes on a simpler form than many mixed methods designs, with each part informing the next stage of the research. This allows for a more complete understanding of what is trying to be achieved by using the research to dictate the type, and methodological approach, of the study being conducted, rather than building research questions around a pre-dictated methodology, which may force an unnatural development of the study. For example, the topic guide and analytical approach in the qualitative study (Study 3; Chapter 5) became evident after the findings of Chapter 4 (study 2; the cross-sectional study) had been analysed. The findings of many of the sections were then integrated to inform the methodology and content final part of the study, the intervention (Study 4; Chapter 6).

Cresswell et al. (2007) outline five key rationales to guide mixed methodology these are; Triangulation, Complementarity, Development, Initiation, Expansion. Triangulation seeks to improve the credibility of the results by converging one set of results with another (Greene et al., 1989). Complementarity uses methods to progress the work by enhancing the results from other studies by using the different methodologies. Development uses one set of results to inform the next in the sequence or another part of the project. Initiation highlights any differences which emerge in the approaches chosen. Finally, Expansion, which extends

the range of enquiry by using multiple methods, reaching findings and conclusions which would be unobtainable with a single methodology (Plano Clark & Cresswell, 2008). As a result, there is a more comprehensive finding at the end of the research.

There are two typical approaches to mixed method design, a concurrent design runs both quantitative and qualitative methodologies alongside each other. Alternatively, in the sequential design, the methodology chosen is dependent on the previous study, and is informed by the findings.

2.1.1 Study Design

Based on the rationale set out by Cresswell & Plano Clark (2007) the current thesis employed a combined sequential explanatory approach, and intervention mixed methods framework approach for the development and testing of the intervention. The sequential explanatory approach consists of quantitative driven research, which then utilises qualitative methodology to explain the findings further. The final study, however, utilises all the previous studies in order to design, and explain, the findings.

The aims of the thesis are outlined in section 1.3.2 in the general introduction. The aims of the meta-study (Study 1; Chapter 3) primarily informed the design of the intervention by showing the effectiveness of ABIs and the expected effect size of an intervention of this kind. It also informed the design of the pilot RCT (Study 4; Chapter 6) by providing findings about the nature of control group behaviour when it comes to studies involving alcohol consumption, as well as control methods (such as specific BCTs) to avoid where possible. Where it wasn't possible to avoid a BCT (such as asking participants to record their drinking), the study provided a guide on how much to expect the drinking to change in this control group.

Study 2 (Chapter 4; the cross-sectional study) informed both study 3 (Chapter 5; qualitative study) and study 4 (Chapter 6; pilot RCT). The main aim of the cross sectional study in Chapter

4, was to provide information on where people who are unemployed differ to the employed in terms of drinking motivations, boredom types, levels of harmful and hazardous drinking (AUDIT score), and depression. The results were used in study 3 to design the semi-structured interview and to guide the topics of discussion to understand the differences (or lack of differences) found in study 2. The findings were then used in study 4 to guide the design and the 'targeted' element of the intervention, it allowed the intervention to target specific drinking motives experienced by people who are unemployed.

Study 3 is the qualitative piece, and guided the design of the intervention in study 4, particularly in terms of setting the tone of the intervention, and providing more information on why certain drinking motivations occur in people who are unemployed. Setting the tone of the intervention was important as to not alienate the participants, this was done by ensuring that the intervention's aims and wording matched how the participants described their own problems, thus removing the feeling of "us and them" that participants in this group could experience (Liljas et al., 2019; Rockliffe et al., 2018). This study provides information which cannot be obtained through quantitative methodology alone (i.e. Study 2) and complements the findings to develop a well-rounded intervention which appeals to the target audience, as well as provide effective help in reducing the risk of harmful alcohol use.

Study 4 was the pilot RCT of the designed targeted ABI. This used findings from all the previous studies in which to inform both the design and the analysis. Study 2 and Study 3 both informed the design and methodology of the pilot RCT, by producing the target motivations the ABI was to address and by providing an insight into how the participants would perceive an intervention of this nature. This was particularly important due to the target group typically being mistrustful of the DWP (see Wickham et al. 2018). The interviews in Study 3 produced valuable insight into the best ways to recruit, engage, and help the

participants. All the previous studies were also used in order to analyse the findings of Study 4 by providing context to the findings in order to fully understand how an intervention such as this could work pragmatically with the target group. This is typically referred to as the 'intervention mixed methods framework' (Fetters et al., 2013), whereby previous quantitative and qualitative studies are used to understand contextual factors that the intervention may need to overcome, and to explain results after the intervention has been completed.

An illustration of how the different studies are integrated is outlined in figure 3, this includes information on where and how information will be integrated and interpreted.

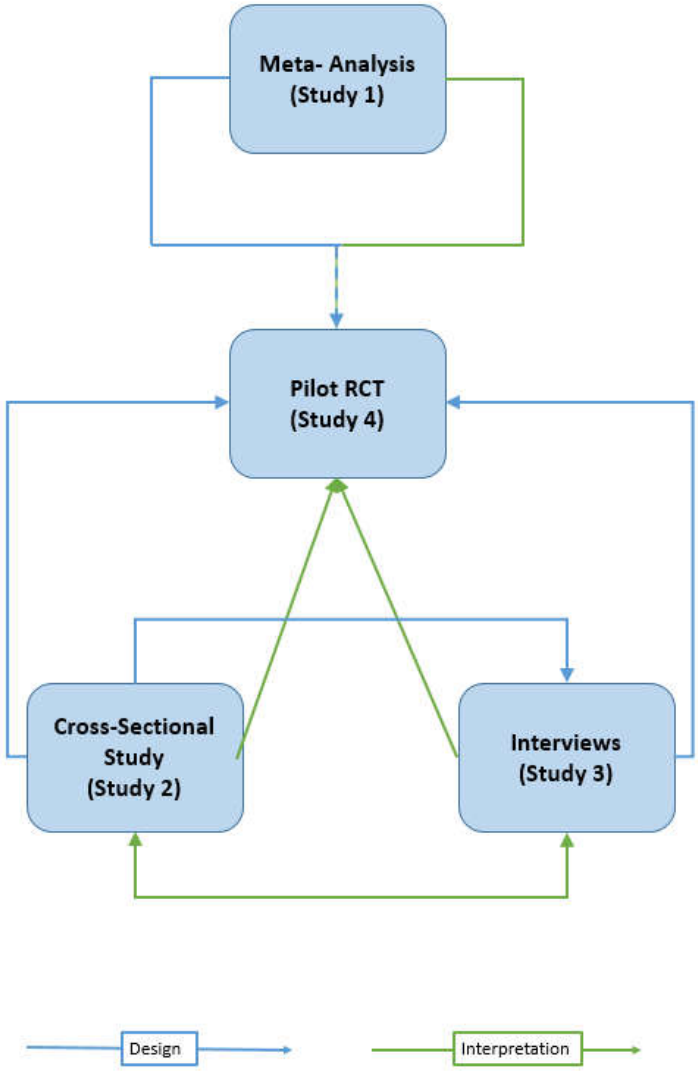


Figure 3: Diagram of study integration showing how each study contributes to the design or interpretation of findings in other studies

2.1.2 Integration and Interpretation

The integration of a mixed methods design is important as it allows for the research elements to be synergistic (Creswell & Plano Clark, 2011). Creswell and Plano Clark suggest that integration can occur through linking the data at the design level in four different ways; connecting, building, merging, and embedding. In the present study, embedding is principally used. This approach is used when data collection and analysis are linked at multiple points (Fetters et al., 2013). The quantitative work informs the design of both the qualitative and the pilot RCT, whilst the qualitative work is also used to explain the findings of the pilot RCT. The findings from the meta-regression informs both the design and the findings of the pilot RCT. This embedded style of integration ensures that the findings of each stage are used in multiple parts of the study and contribute more than the individual studies themselves. Integration also occurs through the narrative, in a contiguous approach (Fetters et al., 2013). This allows for each of the individual studies to show novel findings as standalone studies, but for all of the findings to lead to combined discussion at the end.

2.2 Quantitative and Qualitative Investigation

This section discusses the different methodologies used in each study and how they have been designed and link together. Study 1 is a systematic review which uses five previous meta-analyses to test the efficacy of ABIs in the literature, and then explores control group drinking behaviour, and what influences it. Studies 2 and 4 are both quantitative studies and Study 3 is a qualitative piece, using a semi-structured interview approach and thematic analysis.

2.2.1 – Review of Reviews (Study 1)

The first study consists of a meta-analysis and a meta-regression to explore current effect size of ABI's, to calculate the amount control groups typically change their drinking over the course of an RCT (and in comparison to change in the intervention group), and to determine if there are any Behavioural Change Techniques (BCTs) active within the control groups which may contribute to this change. The location of the study, the level of screening, and the style

of control group were also analysed to determine if there are any other factors which may decrease the control group self-reported drinking, which could then lead to a type two error in trials which assess the effectiveness of ABIs.

2.2.1.1 – Primary and secondary aims

This study had two main aims, the first was to determine the current effectiveness of ABIs by conducting a 'review of reviews'. The other aim was to identify possible causes for control group reactivity often observed in ABIs whereby control groups decrease their drinking, sometimes to the same degree as the intervention group. This study discussed current theories of this (such as assessment reactivity or regression to the mean) and goes on to explore the impact of any BCTs commonly used in control groups. These BCTs are often used without the intention of reducing drinking, however, this study argues that regardless of intent, they remain active and will reduce drinking. The aim of this study was to provide a guide for future research to enable researchers to explain control group drinking decreases.

2.2.1.2 – Application of findings

This study stands apart slightly from the main thesis, in that it doesn't directly contribute to the development of an intervention for unemployed alcohol consumption. Instead, the findings of this study aid in the interpretation of findings from the pilot RCT, and provide a guide for which BCTs should be avoided where possible in a control group. When BCTs are unavoidable (such as self-monitoring of behaviour), it provided a guide to explain any potential reductions in consumption seen in the control group. The effectiveness of ABIs was used to demonstrate the evidence for designing an intervention of this kind.

2.2.2 – Quantitative (Studies 2 and 4)

This section discusses the methodology shared by the two quantitative studies, with additional sections discussing any methodology unique to a study.

2.2.2.1 – Sampling and Recruitment

Recruitment for the two quantitative studies, in the first instance, took place via online adverts placed on social media sites and strategic stakeholders (such as vacancy websites,

housing associations, and recruitment agencies). They were posted in groups specific to job seeking, job vacancies, marketplaces, and community pages. A variety of types of groups are necessary to ensure the employed group in Study 2 is not skewed towards employed job-seekers, and included 'content' employed participants (i.e. people who are happy in their job and not seeking new employment or opportunities). For Study 2, a full-time, employed group was also recruited. The number of employed participants matched those who are unemployed. The study recruited all drinkers as the ABI in Study 4 was designed to both reduce heavy drinking, and prevent an increase in drinking which could occur due to the increased risk from unemployment.

As Study 4 was a pilot study, the study was not set up to be statistically powered, instead it was designed to obtain an effect size of the main effect and to test the feasibility of running a trial in this population. Similar pilot studies have aimed to recruit between 30 and 50 participants per cell, as a result the minimum number this study aimed to recruit was 60 participants (30 per cell). As there is a 1-month follow-up, this figure needed to be the final figure, based on dropout rates of ~30% (Blankers et al., 2011), as well as this being a hard to reach group, the study aimed to recruit 100 participants at baseline, to allow for dropout without affecting the ability to run the analysis.

2.2.2.2 – Difficulties recruiting and recruitment methods

People who are unemployed are a difficult group to recruit due to there being very few locations with high concentrations of unemployed people. As a result, without the support of government agencies (such as the Department of Work and Pensions (DWP) or Job Centre Plus (JCP)) there were some obstacles to recruitment. The original plan to recruit was to advertise via the Job Centres, either actively (i.e. directly approaching participants through work coaches) or passively (i.e. by adverts in the job centres). However, as discussed in 2.2.2.3, the DWP were reluctant to take part in the research at all. This created a new barrier to recruitment, and required far more resources to recruit. For Study 2 and Study 3,

participants were then recruited through social media, primarily via job seeking groups, 'buy-and-sell' groups, and community pages. Whilst successful, recruitment was slow and occasionally generated hostility due to the adverts being deemed 'off-topic'. Study 4 adapted the recruitment approach further and worked with some extra stakeholders to advertise, including job vacancy sites (e.g. GratisJobs) and unemployment support networks. As recruitment was likely to be a challenge for this study, more time was deliberately planned to allow for sufficient time to recruit, as this was something which could impact on the success of the pilot study. There was also a contingency plan put in place should difficulties prove too great, whereby Study 4 would close the control group and change the design slightly to a feasibility trial, however this was not utilised. Recruiting through social media and other online avenues required a high work load (daily refreshing of adverts on social media).

2.2.2.3 – Role of DWP

The DWP and JCP were both approached in order to assist with recruitment, and with the development of the intervention. The attempts went through several different stages which ultimately resulted in rejections for different reasons, despite the need for an ABI for people who are unemployed being a finding in their own reports (Department for Work & Pensions, 2015). Initially, contact was made to the DWP's health focussed department, there were initially positive responses prior to the application for PhD funding from PHE, and it was recommended that attempts were to be made to 'sell' the project locally. This was due to the DWP being reluctant to directly implement something into the "at arms length" JCP. There were initially some positive developments from some regional management who were interested in taking part, however, these routes became unavailable and contact was lost.

The next attempt saw contact with the DWP research team, who, whilst initially interested in the project, rejected the collaboration as there were concerns over increased workload for already overworked staff, a lack of direct control over the study, and concerns of conflicts

with current alcohol treatment providers based in JCP. Due to time constraints, the decision was taken to proceed without help from the DWP, but to attempt to shape the intervention to address concerns and thus, allow a demonstration of feasibility should a full RCT be attempted in the future.

2.2.2.4 – Ethical Considerations

The studies had to consider some ethical considerations. First, whilst people who are unemployed may not be considered a "vulnerable group" as such, there are likely to be an increased number of vulnerable people within the group. This could be through poor mental health, increased risk of AUDs, lack of money and support, or poorer physical health. As a result, the studies ensured that the risk of triggering any potential reactions linked to these vulnerabilities was controlled. In Study 2, should participants score highly on the PHQ-9 (Depression) scale, they were shown an alternative debrief sheet which recommended that they speak to their GP regarding their mental health if they haven't already done so.

Confidentiality is another consideration that needed to be made. Participants were providing potentially sensitive information related to their drinking and mental health. As a result, the data were pseudo-anonymised and stored securely as per data research governance and ethics protocols within the University (in line with DH&SC standards). Email addresses were required for the prize draw for the vouchers, and to send information sheets and debriefs to, however these were kept separate from the sensitive data. This ensured both confidentiality and anonymity of the participants.

Participants needed to be assured of confidentiality as the information they are providing is sensitive. There were concerns over the information being passed to DWP, especially if, as originally intended, the DWP had taken part in the recruitment of participants. It also needed to be made clear to participants that the intervention in Study 4 had not yet been formally evaluated to guarantee help with alcohol consumption and was only a pilot study, and so particular exclusions were made, including those who had been diagnosed with an Alcohol

Use Disorder. Participants who were concerned about their drinking were directed to also speak to their GP for help. Risk and distress protocols were designed and adhered to, and a medical officer (MG) was assigned.

2.2.2.5 – Social Desirability and Demand Characteristics

Social desirability is the phenomenon whereby participants in studies will answer in a way which will make their behaviour appear more socially desirable (Grimm, 2010). In alcohol studies, this often results in the participants reporting a lower alcohol consumption than is true (Davis et al., 2010; Latkin et al., 2017), although sometimes, they will report higher so as not to seem unsociable (Latkin et al., 2017). An advantage of online studies is that it appears to make the participants feel more anonymous and as a result the effects of social desirability bias appear less (Crutzen & Göritz, 2010).

Another similar area of concern was the impact of demand characteristics on the data. This can fall into two different 'types'; hypothesis guessing, and context effects (Collier & Lawson, 2017). Both of these are relevant in this area. Hypothesis guessing refers to an intentional attempt to unravel what the experimenter wants from the test, and either comply with or go against the deduced hypothesis. Context effects are influences on the Dependent Variable (DV) as a result of some aspect of the experimental setup that is not related to any conscious decision by the participant, e.g. asking two questions on the same trial where the response to the first question impacts the response to the second. Efforts were made to attempt to disguise which group the participants are in, in Study 4, to attempt to prevent the groups from showing potentially different levels of either types. As a result, some participants may well show demand characteristics and reduce their drinking in either group via hypothesis guessing or context effects. As long as these effects are balanced between the groups, the overall outcome comparison will remain unaffected. It is also important to consider that hiding the aims of a study to reduce alcohol consumption would make the intervention

unrealistic. As a result, there is no way to avoid the impact of hypothesis guessing and context effects in this study, without damaging the validity of the trial.

2.2.2.6 - Representativeness of the Sample

Whilst online studies may be beneficial in reducing social desirability bias in data, they may increase the risk of an unrepresentative sample. Typically, the studies were advertised across social media, this is predominantly used by those in the earlier or middle stages of their careers, so may miss elements of the population later in their career. Likewise, there was the potential of missing sub-samples of the population who have limited or no access to the internet. In the case of the latter of these problems, the studies were aimed at those who are currently claiming job seeking related benefits. One of the requirements in the UK to claim these benefits, is access to the internet to record job seeking activity and to book meetings with work coaches. Therefore, it was reasonable to assume that the studies captured a majority of the target population from this perspective. The later career sub-population will also likely have internet access for the same reason, but the lower likelihood of being able to access social media. Therefore, efforts were made to ensure adverts were placed in other areas such as with strategic partners (e.g. Job vacancy sites) or with potential related organisations (e.g. Citizens Advice Bureau).

2.2.2.7 Measures used in quantitative studies

Alcohol Use Disorder Identification Test (AUDIT) (Studies 2 & 4) The AUDIT (Saunders et al., 1993) is a ten item measure with the aim of screening for excessive drinking and to assist in brief assessment. It can be broken into three sub-scales consisting of; consumption (also known as the AUDIT-C), the first three items; dependence, items 4 to 6; and harm or alcohol related consequences, items 7-10. Participants answer the questions typically by circling their answer or by writing the corresponding number of their answer in a box at the end of the question. The scale is widely used in UK health care and has strong internal reliability (A. Schmidt et al., 1995). The survey was originally designed to measure three factors, alcohol

consumption, dependence symptoms, and harmful alcohol use, however some studies have shown either two factors (alcohol consumption, and alcohol related problems), or that there is little difference between two and three factors (Shevlin & Smith, 2007). For the purposes of the studies in this thesis, the original three factor approach will be used to differentiate between harm and dependence, as these two are likely to reflect any deviation from the Alcohol Harms Paradox (discussed in 1.1.4.3). Whilst this measure is accurate in assessing alcohol disorder risk, it is perhaps too blunt to be used to detect changes over short period of times as the scale often asks for behaviour over the past 12 months (e.g. "How often during the past year have you failed to do what was normally expected from you because of drinking?"). Because of this, the scale was not used to detect changes between time points, but only to assess baseline differences in risk between two groups. This scale was used in the cross-sectional study, and in the pilot RCT to assess differences at baseline. The AUDIT has been demonstrated to show validity at detecting AUDs and is a valid screener (Källmén et al., 2019), and has been shown to be a valid test in a British population (Shevlin & Smith, 2007).

Timeline Follow Back (TLFB) (Study 4) The timeline follow back (Sobell & Sobell, 1992) is a widely used measure to assess the amount of alcohol consumed over the past time period, often this is over the past 7 or 14 days. Participants were given a guide to show how many units are in each type of typical drink and were asked to work backwards and estimate how many units they have consumed. Whilst the exact accuracy of the TLFB could be questioned (Kaplan & Koffarnus, 2019) it is often the most convenient method of collecting data, with good response rates from participants and requires the least amount of instruction (Sobell et al., 1996). The TLFB is sensitive to changes within timeframes, so was used to detect differences between baseline and post-test drinking. Participants were required to complete this scale online, so they were asked to move a slider from 0-40 for daily consumption of units. This scale was used in the pilot RCT as the primary outcome measure to detect differences between and within groups.

Readiness Ruler (RR) (Study 4) The Readiness Ruler (Labrie et al., 2005) is a collection of three Visual Analogue Scales (VAS) on a scale of 0-100. The three VAS measures relate to three elements of behaviour change; confidence to change drinking habits, the importance of changing drinking habits, and their readiness to change. The RR shows good reliability in predicting actual changes of behaviour in alcohol consumption (Heather et al., 2008). Participants, as with the TLFB, were presented with three sliders scored 0-100 and asked to move the slider to the position they felt best reflected how they felt. This scale was used in the pilot RCT to assess changes between and within groups.

Drinking Motives Questionnaire Modified (DMQ-M) (Studies 2 & 4) A modified version of the DMQ was used in Study 2 and Study 4. The original drinking motivations questionnaire (M. L. Cooper, 1994) assesses the motivations behind alcohol consumption and contains 20 items, across 4 sub-scales. The sub-scales relate to the drinking motives of; coping, drinking to deal with a negative emotion or mood; enhancement, drinking to improve an already good experience such as celebrating; social, drinking at social events where other people are drinking; and social pressure/conformity, drinking because there is an implicit or explicit pressure to drink from others in the group. The modified version included a new sub-scale of 5 items to include items associated with boredom adapted from the MSBS-15 (see below). The original DMQ shows good internal reliability for a variety of groups that have been tested (Gilson et al., 2013; Martin et al., 2016; Öster et al., 2017). The items were presented in the form of a 5-point Likert scale from “Never/Almost Never” which scores 1, to “Almost Always/Always”, which scores 5. This scale was used in Study 2 (cross-sectional study) as one of the primary outcome measures to test for differences between groups. It was also used to test for predicting differences between AUDIT scores in the two groups. The sub-scales which unemployed participants scored higher compared to the employed in Study 2 were then used to test if the intervention has impacted the motivations to drink of people who are unemployed in Study 4. Only these sub-scales were used to assist with the brevity of the

intervention. The new items for the DMQ reflecting a Boredom drinking motivation are discussed in more detail in Chapter 4 (Study 2).

Multi-State Boredom Scale-15 (MSBS-15) (Study 2) The MSBS-15 is a shortened version of the MSBS, a 29 item scale measuring state boredom. The 15 item shortened version used here has shown similar reliability to the full version (Baratta & Spence, 2015; Oxtoby et al., 2016), so has been chosen to aid the brevity of the survey without affecting the outcomes. The MSBS-15 contains 15 items across 5 sub-scales as well as delivering an overall state boredom score. The 5 sub-scales are; Disinterest, struggling to show an interest in anything; Inattention, losing focus on something or not being able to focus on anything; Time Perception, the feeling of time passing slower due to boredom; Low Affect, suffering with low mood due to boredom; and High Affect, feeling frustrated, fidgety, and unable to settle due to boredom. Participants will be presented with a statement, followed by a 7-point Likert scale asking them to agree or disagree with the statement, the Likert scale ranges from 1 "Strongly Disagree", to 7 "Strongly Agree". This scale was used in the cross-sectional study as a secondary outcome measure, to detect if there are any differences in the type of boredom experienced by people who are unemployed compared to the employed. It was also used to confirm the new items in the DMQ-M, and was used to explain variability in AUDIT scores between the two groups.

Patient Health Questionnaire (PHQ-9) (Study 2) (Spitzer, 1999) The PHQ-9 is a nine item scale designed to assess depression over the previous two weeks. Participants were presented with statements to which they were asked to rate from "Not at all" to "Nearly Every day". The total score given is out of 27, with scores of 5,10,15, and 20 representing thresholds for mild, moderate, moderately severe, and severe depression. The PHQ-9 has been shown to have a high internal consistency of 0.83 (Cameron et al., 2008), and is widely used in UK health-care settings and research for detection and treatment of depression in

patients. This scale was used as a secondary outcome measure to test to see if depression contributed towards any differences found in Study 2. The scores of the PHQ-9 were also compared between the groups, it was expected that people who are unemployed would show higher levels of depressive symptoms.

2.2.2.8 – Data cleaning

Data was cleaned to ensure that no false data, or ineligible participants were included in the analysis. As this was online, the chances of false data being recorded was high. The location of participants (as recorded by Qualtrics) was monitored, any participants not living in the UK were removed from the analysis. Whilst not a perfect method of controlling eligibility based on location (due to possible use of Virtual Private Networks (VPNs)), it is the only option available. Email addresses were also monitored and any duplicates were removed from the study. In cases where there were duplicates, the first entry was retained as this was most likely to be the most accurate. This ensured that accidental duplicates did not result in removing valid data. Data was also checked for clear erroneous data such as clear outliers/mistakes and participants selecting the same answer for every item. Any data which appeared to be inaccurate during analysis was removed. Participants believed to be entering false or unreliable information were removed from the dataset and reasons were given in the results section for each removal.

2.2.2.9 – Missing data

As these are online studies, there was a higher chance of missing data occurring (Murray et al., 2009), however in the studies in this thesis, missing data was typically very low. Most of the time, missing data was due to participants not completing the study. Any missing data in key outcome variables (TLFB, DMQ, RR, AUDIT) resulted in that participant being removed from all analysis. This was a complete case analysis. The proportion of missing data was assessed to ensure that there wasn't a high proportion of data missing from important outcome variables which may skew the data. Missing data in demographics was coded as

"missing". False data being entered to claim the vouchers or to enter the prize draw was judged based on location, duplicate entries from the same email addresses, and lack of variation in answers (i.e. answer the same for every scale). Analysis of common missing data was conducted for each study and reported where there were patterns or common elements often missing (i.e. the age variable was most likely to be missed out during study four).

2.2.2.10 – Variable Management

The only variable management that was required in this dataset was to create the sub-groups, and overall scores. The details of which are outlined below.

- AUDIT – For the AUDIT, the data needed to be recoded to match the AUDIT scoring method. All items were combined to give an overall AUDIT score, with items 1-3 forming the "Consumption" sub-group, 4-6 forming the "Dependence" sub-group, and 7-10 forming the "Harm" sub-group.
- DMQ-M – The DMQ items were coded into the relevant motivation subscales. This was done according to the results from the principal component analysis in Study 2. The five groups were; coping, enhancement, social, conformity, and boredom.
- MSBS-15 – As with the DMQ, the MSBS-15 was grouped into the sub-groups and an overall boredom score was calculated. The items were grouped into sub-groups according to the literature. The grouping was as follows:
    - Disinterest – items 11 and 14
    - Inattention – items 8 and 10
    - Time perception – items 4, 19, and 13
    - Low affect – items 1,3,7,12, and 15
    - High affect – items 2,5, and 6
- PHQ-9 – After recoding the scores, an overall PHQ-9 score was calculated.

2.2.3 – Overview of methods Specific to Study 2 (Cross-sectional study)

2.2.3.1 – Primary aim and analytical plan

The aims of this cross-sectional study were to identify the types of drinking motivations experienced by people who are unemployed compared to those employed. This was done by also creating, and testing a new drinking motivation; boredom. As a result, there were two stages to the analytical plan in this study. First, the new Drinking Motivations questionnaire had to be validated and tested using a principal component analysis. Then, the comparison between the two groups was carried out.

Results of the DMQ with the new factor was confirmed for internal validity using a principal component analysis, using promax rotations. The number of factors was not forced to allow a true model to be created. Dual-loaded items and items which load below the accepted score (0.5) were removed. The new factors were used in the second part of the analysis, even if that meant items were included in different factors than they were in the original DMQ.

Principal component analyses (PCA) group items which correlate together within a scale to assist in identifying sub-groups within that scale. Those items which show strong intercorrelation, are identified as making up part of a sub-group. PCA includes correlated variables with the aim to reduce the number of variables, whilst still explaining the same amount of variance. Factor Analysis estimates underlying constructs that cannot be measured directly (Joliffe & Morgan, 1992). The strengths of PCA here is that the variables are already observed but require to be reduced into the sub-sets, which applies here. However, PCAs can be difficult to replicate in different populations, samples, and studies, requiring further testing with new data.

A MANOVA was run comparing the DMQ scores, AUDIT scores, Boredom scores, and PHQ-9 scores between groups. Multiple regressions were then run to determine how DMQ and Boredom contributed to AUDIT scores when controlling for other variables, such as

demographics and depression. The regressions were hypothesis driven, as opposed to data driven, to confirm or reject the stated hypotheses of the study.

2.2.4 – Overview of Methods Specific to Study 4 (Pilot RCT)

2.2.4.1 – Primary aim and analytical plan

As this was a pilot RCT, the efficacy was considered, however it was underpowered and may not reflect true significance values. Alcohol consumption between groups at follow-up was the primary outcome variable, which used results from the TLFB. The amount of change of alcohol consumption was also compared between groups (Post-test value – Baseline value). Changes in drinking motivations between, and within groups, as well as the changes in the readiness ruler scores were analysed. Finally, acceptance scores across different scenarios were compared across each scenario.

2.2.4.3 –Per Protocol Analysis

Participants were only included in the analysis if they completed all elements of each study. This is particularly relevant for Study 4 where participants were asked to return to complete a 1-month follow-up. Participants were sent reminders to complete the trial, however if they did not complete the follow-up (or complete all the elements in other studies), no analysis was conducted on that participant.

This is in contrast to an "Intention to Treat" (ITT) approach whereby participants are considered part of the study if they have been randomised, and any missing data due to drop-out is either imputed (by overall mean response, or by a stratified imputation method), or carried forward from baseline where no change is assumed. ITT was chosen against due to the study being a pilot study, and so wasn't powered to formally test for the group difference. Additionally, multiple imputation wouldn't have been appropriate given the small numbers of participants. All efforts were made to follow participants up and encourage them to complete the follow-up, and none of the participants switched arms. In a full RCT, it is likely that ITT would be opted for, but for the purposes of obtaining an effect size in the pilot RCT, per protocol analysis was deemed to be more appropriate. Baseline scores of

participants who dropped out were analysed to ensure that they did not differ significantly to the overall sample.

2.2.4.4 – Pilot RCT or Feasibility Trial

The trial of the intervention could arguably function as either a feasibility trial or a pilot study. According to NIHR (2019), a feasibility study should aim to answer the question of "can this study be done". It would focus on the how the study recruits and how willingly participants take part, the number of eligible participants, and the follow-up rates. Importantly, feasibility studies do not evaluate the main outcome, in this case, alcohol consumption. A pilot study on the other hand, aims to run a version of the study "in miniature" (NIHR, 2019) to test if the main components of the study work well. It considers significant parts of the feasibility study (i.e. recruitment, acceptability, and retention in the study) as well as evaluating the main outcome and the efficacy of the project as a whole. However, it does not include elements of the feasibility study such as comparing different recruitment or measurement methods. In the case of Study 4, it was intended as an external pilot study, aimed at guiding the further development of the intervention and to allow for power calculations to be run when considering a full RCT. Whilst the main outcomes of the trial were evaluated, special attention was made to ensure there was not an over-emphasis on these outcomes, a common mistake in pilot trials (Arain et al., 2010). Equal emphasis was given to evaluating the process of the pilot, i.e. how well the study ran and how a proposed full RCT could be run in the future. The study was conducted and written up to conform to CONSORT guidelines (Schulz et al., 2010).

2.2.5 – Qualitative Study

2.2.5.1 – Qualitative Enquiry

The qualitative interviews took place after the cross-sectional study. This way, the cross-sectional study was able to inform the questions for the semi-structured interview. Exploring the relationship between boredom, mood, unemployment, and drinking in this way provided an opportunity to identify personal differences in how these four elements interact, as well

as understanding overall themes which were generated. By running the interviews, it allowed us to make recommendations on the findings to improve the health and well-being of those seeking unemployment benefits.

2.2.5.2 – Recruitment

As with the study outlined in 2.2.3, participants were recruited online as well as by contacting those who wished to be informed of other studies. This time, adverts were only placed in work-related groups and busy marketplace communities on social media. Again, we looked to recruit nationally to gain a variety of viewpoints from people of different backgrounds. In this study, we initially aimed for ten participants but would have recruited more if necessary, until data saturation (i.e. no new themes emerging) had been met. After ten participants had been recruited, the decision was taken to end recruitment as it appeared that no new themes were emerging. The criteria to take part was more relaxed to gain a broad range of views, as a result, participants were eligible to take part if they are currently unemployed and seeking work, and regularly drink alcohol. The sampling chosen was purposive, we specifically targeted 'information rich' participants.

2.2.5.3 – Ethical Considerations

Confidentiality remained central to the ethical considerations for this study. Participants' interviews were recorded for transcription purposes and then deleted after the transcripts had been checked. The transcripts had all identifying information including names, workplaces, and references to events which could identify them removed and replaced with place-holders (i.e. "Participant 1", "previous employer", "large event".).

As well as these ethical considerations, attention was paid to the risk of "triggering" mental health conditions with the questions asked. Some participants could have found recalling information linked to some of the questions distressing. At the beginning of the interview, and during the preliminary phone call, participants were reminded that if they felt uncomfortable at any time, they could pause or end the interview. A risk and distress

protocol was designed and adhered to, and a medical officer (MG) was assigned. Participants who disclosed suicidal feelings, extreme distress, or causing harm or injury to themselves or someone else were to be immediately referred to the medical officer. This was also offered if participants expressed a wish to speak to a medical professional who is not their GP about their drinking or mental health.

2.2.5.4 – Interview Schedule

The interview schedule (IS) was designed with assistance from LG and CB. The interview took the form of a semi-structured interview focusing primarily on drinking and experiences of unemployment. Questions were based on the findings of Study 1 (Chapter 4, Cross-sectional study) and sought to understand the motivations behind drinking during unemployment, including the impact on mental health, and how in turn mental health could impact on drinking. There were sections devoted to key findings from Study 1, with a final section bringing all the topics together. There was a final question which allowed the participant to talk about anything they felt wasn't covered, or to emphasise any points they wanted to.

The IS was altered based on feedback from the supervisory team, alterations mainly included removing items which would lead to too narrow responses, changing the wording of items to be more accessible, and rearranging the order of items to improve the flow of the conversation. Once the IS had finalised, it was piloted amongst PhD students to check for any errors and to test the flow of the questions. During the interviews, the order or phrasing of questions could be changed to reflect the conversation and allow for the interview to flow well. After the second interview, a decision was taken to move one of the questions to the end of the interview as it was disrupting the flow of the conversation and was not required to be asked at any specific point.

2.2.5.5 – Transcribing

Transcribing was conducted by a Research Assistant (PE) paid for by the study. They were required to sign a non-disclosure agreement to ensure the anonymity and confidentiality of

the participants was maintained. This option was preferred to a transcribing service as there was more control over the sensitive data with a direct hire, rather than commissioning a service. The transcripts were then checked for accuracy by MJ, with two of the transcripts, selected at random, also being transcribed by MJ. Transcripts were completed verbatim, all sensitive or potential identifying information was then removed and replaced with pseudo-anonymous references (i.e. Participant 1, or by replacing their workplace with "[employer]"). Once the transcripts had been completed and checked for accuracy, the analysis of the data, via thematic analysis started.

2.2.5.6 – Reflexivity and Positionality

Reflexivity is the process by which a researcher accepts where they are in life and their own experiences, and how that might affect the data collection and interpretation of research. Whilst this isn't often an issue for quantitative analysis, qualitative analysis is inherently subjective and can be affected by implicit biases (Korstjens & Moser, 2018). Researchers should acknowledge how things make them feel, what perspectives are being introduced, and whether this affects how the data has been collected or interpreted. Data collection could be influenced by the relationship between participants and the researcher through perceived differences (such as power differences, or cultural differences) or similarities. These could impact whether the participants are likely to be telling the researcher the truth. Interpretation could be influenced by the researcher's own beliefs and biases, and whether the researcher accurately interprets what has been said. This should be an iterative process whereby the researcher is always reflecting on how these biases and beliefs could change with each new piece of information throughout the research (Braun & Clarke, 2006; Korstjens & Moser, 2018).

The research was conducted from my base in Liverpool, however data was collected nationally. Merseyside has some of the most affluent Lower Socioeconomic Output Areas (LSOAs) (such as in areas of Crosby) and some of the most deprived LSOAs (as seen in areas

of Bootle) in the country (Ministry of Housing Communities and Local Government, 2019). The target participants are likely to be from a variety of backgrounds, ethnicities, orientations, and social classes. Nonetheless, they are more likely to be from lower SES groups and lower educational attainment (Department for Work & Pensions, 2015; Janlert et al., 2015).

The following text demonstrates how my life events could impact my interpretation of qualitative data, particularly when it shows similarities to my life.

I am a white, lower-middle class, cis-gendered, straight, non-disabled male, who has experienced unemployment for a six-month period. I do not use alcohol excessively, whilst there have been times that I consumed above the 'low-risk' guidelines, these are largely restricted to my time at university. Whilst I was able to rely on family support during my time unemployed, participants in these studies may not be able to rely on this form of support and therefore would be considered more vulnerable and isolated. I found a number of topics raised particularly challenging to hear, particularly where participants were describing feeling trapped and how that was affecting their mental health. As someone who has experience of poor mental health, it provoked strong feelings of empathy, and frustration at the benefits system. By being aware of these feelings I was in a better place to ensure that my experiences and feelings did not affect my analysis, and the results were based on the participant's answers.

2.2.5.7 – Choice of Thematic Analysis

2.2.5.7.1 – Justification of Thematic Analysis

Thematic Analysis was chosen over other forms of qualitative analysis due to its flexibility and the ability to generate broad themes as well as drawing from lived experience (Braun & Clarke, 2006). The focus of this research was to collect patterns across data, rather than within each participant. As a result this rules out the usage of Interpretive Phenomenological Analysis (IPA) which is ideally used to draw out information from each participant, rather

than comparing across the series of interviews (Larkin et al., 2006). Grounded theory was another option which could have been used in this situation, however grounded theory is more appropriate in less structured interviews where participants gave longer answers to fewer questions (Birks & Mills, 2011). In the case of this study, there were two elements, a more structured interview in the first half, followed by a semi-structured interview in the second half. The interview asked mostly direct questions, with less structure at the end to allow for a freer discussion. Grounded theory would be poor in the more structured areas.

2.2.5.7.2 – Analytical Process

The analytical process of the interviews began with note-making on the general thoughts of each interview, these were combined with the notes taken during, and immediately after each interview to create a general picture of the expected themes which would emerge. From these notes, some codes to show common themes and topics mentioned were developed, the remaining codes were developed during an iterative process whilst working through each interview. Once the codes were completed, they were compared with codes developed by CB and an inter-rater score was determined based on two of the interviews. An inter-rater score above 75% (Norcini, 1999) is deemed acceptable, and the codebook was finalised. If the score was below 75%, the differences were discussed between MJ and CB until there was consensus on the codebook. Using investigator triangulation has been shown to improve the credibility of the findings (Korstjens & Moser, 2018). Themes were developed from these codes and notes, the themes and sub-themes were linked based on the data. A thematic map was developed and the analysis was based on this.

In qualitative analysis, themes need to capture something important to the overall research question (Braun & Clarke, 2006). As a result, the themes linked back to the questions developed from the cross-sectional study. This way there is a clear development over the course of the project of identifying exactly what causes the increased risk in alcohol use for this group, and associated factors which Study 2 may have failed to detect.

2.3 Designing a Targeted Alcohol Brief Intervention for People who are Unemployed.

Using information from both the cross-sectional study, and the interviews, an online intervention was designed. This was based on the current Down Your Drink (Linke et al., 2004) project, however was adapted to be both targeted, and more accessible to those who are seeking work. This included shifting the suite of interventions that DYD offers into a single-session intervention for people to access as a prompt or reminder about dangerous drinking. The targeted element of the study was designed around two new areas introduced for this study; Implementation Intention (II) tasks (e.g. (Armitage, 2016), and a guide directly relating to their situation. The development of these are discussed more in Chapter 6.

2.3.1 – Interpretation of previous results and Integration into Intervention

The results from Studies 1, 2, and 3 provided key information required to target the intervention to meet the needs of people who are unemployed. It is likely that people who are unemployed have very distinct needs which have not been fully addressed by previous interventions, as discussed in Chapter 1. The previous results from Study 2 and Study 3 provided three things; 1) the motivations to drink that people who are unemployed experience, 2) how boredom, unemployment, low mood, and drinking link together, and 3) how best to disrupt this cycle.

These findings were used to inform the two targeted sections of the intervention; the implementation intentions, and the positives to cutting down when related to work. The implementations intentions used the data which showed what people who are unemployed most struggle with, and the things that they have done in the past to resolve these problems. The positives of cutting down relied on data from the interviews, where people talk about their aspirations or what they feel is holding them back from finding work.

2.3.2 – Implementation Intention Design

Based on findings from both Study 2 and Study 3, a selection of common scenarios where people find themselves tempted to drink were selected. The interviews provided first-hand

examples of experiences of unemployed heavy and dependent drinkers and their behaviours, and what causes people who are unemployed to drink. These were used as example scenarios that the typical unemployed person could find themselves faced with. Study 2 provided the key drinking motivations which are unique, or more exaggerated in people who are unemployed, this was beneficial in order to keep the focus of the scenarios targeted at this group. The suggestions for the Implementation Intentions were developed from the interviews in Study 3, questions were asked around methods of successfully avoiding alcohol, or things they would find beneficial. These were used as the example alternatives to drinking.

2.3.3 – Work Related benefits design

As with the implementation intentions, the interviews were utilised to understand what unemployed people feel is holding them back from finding work, and how reducing drinking could help them improve their situation. This information was also combined with health information from various sources to provide useful information people who are unemployed can use and which could motivate them to reduce, or avoid increasing, their drinking.

2.3.4 – Justification of using Down Your Drink (DYD)

Down Your Drink (DYD) is a UK based, general use online alcohol brief intervention. The website contains a suite of tasks for people to take part in and use when they wish via a log-in option. This includes a "quick visit" option, which is similar to typical "single session" interventions. DYD has been chosen due to the flexibility and ability to customise and target it affords. The site received positive feedback from users in early feasibility trials (Linke et al., 2004), and those who used the site in subsequent trials have shown that whilst there wasn't a reduction in the primary outcome of alcohol consumption, there were reductions in secondary outcomes such as self-reported indicators of dependency, alcohol related problems as well as mental health symptoms (Linke et al., 2007). This positive finding

regarding mental health symptoms makes this intervention a good template to use amongst a target group who are likely to suffer with poor mental health (Paul & Moser, 2009).

Nonetheless, in a large naturalistic trial of the study, there were no significant differences at follow-up between intervention and the control group (Wallace et al., 2011). The authors believe this may be due to regression to the mean, however it could mean the intervention was ineffective. Another hypothesis is that the people recruited into the study were all motivated to reduce their drinking, as a result of a very minor intervention (i.e. a control group assessment) could have been enough to encourage a reduction in drinking. This is a common finding in alcohol brief intervention research, where the control group decrease drinking significantly. A more detailed discussion of explanations of reductions in control group drinking can be found in the meta-analysis and meta-regression chapter (Chapter 3; Study 1). Further discussion of how the DYD intervention was modified is included in Chapter 6 (Study 4). Ultimately, DYD was chosen due to its affordable customisability, the ease at which the platform lends itself to be adaptable, the accessibility for participants, and the desire to use a recognised platform which was designed for use in the UK, thereby making it culturally relevant to the target audience. There is currently no other intervention platform designed for use in the UK which has an evidence base demonstrating a reduction in alcohol use. The version of DYD to be used in the current study, will include new elements containing BCTs which have been shown to be effective, such as linking alcohol use to job seeking (BCT 5.2: Salience of Consequences) and Implementation Intentions (Armitage, 2009) (BCT 1.4: Action Planning).

Chapter 3

3. Study 1: Meta-Analysis into the Effects of Control Group Changes in Interpretation of Findings in Alcohol Brief Interventions.

In this chapter, the results and findings of a meta-analysis and a series of meta-regressions will be discussed. The purpose of this study is to update the literature on the effect of alcohol brief interventions (ABIs) by conducting a 'review of reviews'. The included studies will then be used to explore change in drinking in control groups within ABI studies and to understand the types of behaviour change techniques which may relate to the degree of change.

3.1 Introduction

3.1.1 ABIs and Current Previous Review Findings.

As discussed in chapter 1 (1.2.1), ABIs are short sessions aimed at moderating alcohol use. They can be delivered online, face-to-face, using mobile apps, or a combination of the three. The term is a broad term which covers many options for delivering the intervention, as well as the content, length, and number of sessions. Typically, past reviews have found a small but significant and robust effect of ABIs (N. Black et al., 2016; Jenkins et al., 2008; Kaner et al., 2017; Platt et al., 2016; Riper et al., 2014) with between-subject effect sizes ranging between 0.1 and 0.2. Despite the small effect size, ABI's remain cost-effective (Barbosa et al., 2015; Khan et al., 2013; Kouimtsidis et al., 2015) in large due to the low level of client contact they require to administer (Moyer et al., 2002), this keeps the number of work hours per client low whilst still delivering a robust reduction to drinking. Online ABIs require even fewer staff hours (Blankers et al., 2012) and deliver comparable levels of change in drinking compared to face-to-face interventions (Cuijpers et al., 2010). This cost-effectiveness demonstrates that even with a small effect size, the interventions remain one of the better options of moderating alcohol consumption in a wider population.

ABIs have been tested in a number of settings, with many of them showing significant improvements in alcohol consumption compared to controls. Health settings are the most common, with trials taking place in hospital wards (i.e. (Liu et al., 2011), emergency rooms or A&E services (i.e. (Schmidt et al., 2016), and GP clinics (Beich et al., 2007). Health settings are particularly effective in retaining participants in the trials and producing consistent reductions in drinking (Schmidt et al., 2016). However, a large number of ABIs in health settings also appear to demonstrate significant decreases in control group drinking, which is possibly due to the association between the setting and the trial causing a form of demand characteristic, often referred to as the Hawthorne effect. The Hawthorne effect is where participants begin to change their behaviours simply from being part of the study (McCambridge, Witton, et al., 2014).

ABIs are also often trialled in other settings where heavy drinking is a high risk. One common setting, possibly also due to the availability of participants, is in universities. Most studies either focus on first year students entering universities (Doumas et al., 2011), or in university health clinics (Schaus et al., 2009). Studies in universities appear to vary much more, both in design and outcome measures. For example, in study by Kulesza et al. (Kulesza et al., 2013) included the aim to reduce negative consequences of alcohol consumption, as well as overall consumption. The study (Kulesza et al., 2013) found that whilst alcohol consumption was significantly lower in the intervention condition compared to the control, there was no difference in the alcohol-related negative consequences. However, research by Palfai and colleagues (Palfai et al., 2011) showed that the experience of negative alcohol consequences had a moderating effect on the efficacy of an intervention, thereby suggesting that by aiming to highlight these negative consequences in an intervention, then a reduction in alcohol consumption could be easier achieved. The other common approach seen in university settings is a purely health focused outcome, similar to those seen in health settings, such as in research by Suffoletto et al. (Suffoletto et al., 2016) who aimed to reduce the prevalence

of binge drinking by students by using a text message based intervention. The intervention was successful in reducing binge drinking compared to the control groups, as well as increasing plan adherence amongst students.

Whilst health and university settings dominate the literature, other settings do exist. Some trials have taken place in the workplace, often with aims to improve productivity and reduce absences through reduced alcohol consumption. The study by Doumas and Hannah (Doumas & Hannah, 2008) tested this and showed a significant reduction in alcohol use, however the effect size was considerably smaller than those observed in health and university settings. This could be due to the reduced demand characteristics which the study caused by being in a more naturalistic setting, and therefore reducing the amount which participants may alter their answers to either guess the answer the researchers 'want', or to make themselves look better. Another study has looked at those out of work (Haberecht et al., 2018), with the primary focus being to improve chances of findings a job. However, this study failed to show any significant difference between control and intervention arms of the trial, with the authors suggesting that there needed to be longer follow-ups to detect any difference, compared to the 15-month follow-up the authors used.

Originally, ABIs were designed to intervene in cases of high or increasing risk drinkers, however evidence has shown that they may be effective in being used preventatively in at-risk populations such as first year university students (Bewick et al., 2013), as well as in more clinical, dependent populations (Guth et al., 2008). They are also being trialled to reduce 'secondary' outcome measures (i.e. things which are affected by high alcohol consumption, such as mental health, job productivity, or personal safety). The setting or target group doesn't affect whether the primary aim of the study is to reduce alcohol use or to alter the other possible outcomes mentioned.

The previous reviews included in this review of reviews all concluded either significant but small effect sizes overall, or did not report overall comparison effect sizes (Platt et al., 2016: d=0.14 ;N. Black et al., 2016: d=0.14 ; Riper et al., 2014: d=0.13 ; Jenkins et al., 2008: Overall comparison not reported ;Kaner et al., 2017: 23g reduction in alcohol consumed in interventions compared to control at follow-up). The review by Black and colleagues (N. Black et al., 2016) concluded that computer delivered interventions (CDI's) showed significant reductions in alcohol use over control groups. The review by Kaner et al (Kaner et al., 2017) concluded that there was moderate quality of evidence that digital interventions would lower alcohol consumption, with an average reduction of 3 units per week compared to control participants. Whilst the review by Platt and colleagues (Platt et al., 2016) demonstrated that there was a similar reduction to the study by Kaner when the intervention was delivered face to face seen in other reviews of digital interventions. The authors also reported that nurse led interventions seemed to be the most effective and were a key part of face to face interventions in health settings

3.1.2 Type 2 Error Problem – Current Explanations

In the current literature into ABIs, control groups also often decrease their drinking. If this change in control group drinking has been influenced by the methodology, then this could mask the true effect size of the intervention. As seen in numerous studies (e.g. Fleming et al., 2010; Juarez et al., 2006; Maisto et al., 2001) the control group's self-reported drinking also tends to decrease, and in some cases, even decreases enough to obscure the group difference (e.g. Kaner et al., 2013). This has often been put down to regression to the mean, where extreme variables, over time, return to an average level. However, this may not be the full explanation, and may be due to a difficulty in developing a true control group with no active intervention content.

McCambridge and colleagues (McCambridge & Day, 2008) have suggested that this change is at least partially attributable to the screening element of the control task. This is causing

an assessment reactiveness in the control groups making the participant aware of the nature of the study (in this case alcohol reduction). This effect remains fairly consistent across studies, as seen in this review. In this review we aim to ask the question whether the effect size seen in ABI studies and meta- analyses (N. Black et al., 2016; Platt et al., 2016) is a true reflection of the potential ability of an ABI to reduce alcohol consumption, or whether it is being underestimated due to a potentially difficult to avoid flaw in control methodology. Control groups could be experiencing assessment reactivity, regression to the mean, and potentially an intervention in its own right. On the basis of RCTs, we might conclude that ABIs are only minimally effective.

Another potential explanation of the decrease in control group drinking would be the effect of demand characteristics. Collier and Lawson (Collier & Lawson, 2017) suggest there are two forms of demand characteristics; context effects and hypothesis guessing. Hypothesis guessing refers to an intentional attempt to unravel what the experimenter wants from the tests, and either comply with, or go against the deduced hypothesis. This could occur in health settings where being asked about alcohol consumption could cause the participant to assume a reduction in alcohol consumption is being required of them, even in the control group. Context effects, on the other hand, are influences on the dependent variable as a result of some aspect of the experimental setup that is not related to any conscious decision by the participant. An example of this in alcohol research would be asking a participant to remember any negative things which may have happened to them whilst drunk, and then immediately asking them how important it is to them to alter their drinking behaviour. The first question is likely to influence the response to the second, without the participant even knowing it has occurred in some cases. This could go some way to explaining the paradox McCambridge and Saitz (2017) discuss whereby highly controlled trials are showing some form of efficacy, however this is not translating into 'real-world' results when used in the health sector. Elements of the trial, or the order in which the trial is conducted, are

influencing future decisions by participants consistently, this is then not seen in the real world, where there is more emphasis on pragmatism. It is feasible that both forms of demand characteristics are highly prevalent in control groups in ABI research.

The ultimate goal of an ABI is to reduce alcohol consumption, and RCTs are potentially doing a poor job of demonstrating the efficacy of ABIs. In an applied scenario, the within-subject change provides a true measure of the extent of change, as there is potentially no comparison (i.e. the comparison is nothing, something a control group cannot measure). An ideal control to use in ABI trials would be a Treatment As Usual (TAU) condition, to test the comparative efficacy of the new intervention versus the old. This method is often used in health based clinical settings, however even with TAU, if baseline and follow-up measures of alcohol consumption are taken then that provides some measure of self-monitoring, which is an intervention. As discussed in Chapter 1, components of interventions can be classified, work on these classifications has shown that self-monitoring of a behaviour is one of the most potent components in behaviour change interventions, including in ABIs (Michie et al. 2012). The inclusion of a form of self-monitoring in a control group, therefore, is likely to elicit behaviour change.

In a study by Hester and colleagues (Hester et al., 2012), they attempted to control for the effect of the control group learning about the study and reacting. To do this they ran two studies of an ABI, one tested the ABI against a control group with assessment only, the other tested the ABI against a control group who delayed recording their baseline drinking until post-test, recalling their drinking. The second study showed no change in control group drinking, however the control group in the first study reduced their drinking. The authors interpreted this as being evidence that baseline assessments cause the reduction in drinking often seen in control groups. However, this may be flawed, as the participants in the delayed recall control group may suffer from various biases (such as the kind demonstrated in Ekholm

(2004)) or even a form of demand characteristics whereby they have worked out that they shouldn't have reduced their drinking so complete the timeline follow back (TLFB) accordingly. An example of TAU controls being used would be that used by Daeppen and colleagues (Daeppen et al., 2011). In this study, participants were new recruits to the army undergoing the initial medical assessment, during this, recruits are routinely asked about their alcohol consumption. These routine assessments were used as controls, the participants did not experience anything other than what they were expecting as part of an army recruitment medical. In this study, the control group increased their drinking. This shows that it is not necessarily the act of screening which causes the reduction (assessment reactivity), but suggests that it could be the unexpected nature of an alcohol assessment which triggers demand characteristics.

Hughes and colleagues (2012) report that when placebo characteristics are interfering with a study, they represent confounding variables which can distort findings and cause over- or underestimations or a treatments efficacy. The authors continue to say that this must be controlled for or at least acknowledged as a potential confounding issue. What is being seen in control assessment reactivity could draw parallels with placebo effects in clinical trials. There is the potential that this placebo effect, demand characteristics, or even an uncontrolled clinical effect arising from a Behavioural Change Technique (BCT) (Michie et al., 2016) being included in the control, but not being acknowledged could be obscuring the effect size being reported in meta analyses.

3.1.3 BCT Possibilities

Behavioural Change Techniques (Michie et al., 2016) are a series of functions included in interventions with the goal of altering a person's behaviour. These are described in more detail in section 1.2.2. In theory, ABI's work by encouraging the individual to alter their behaviour by delivering BCTs. BCTs often appear in control groups and the BCT taxonomy (Michie et al., 2016) makes allowances for this. However, BCTs in a control group are likely

to act as an intervention in its own right. In cases where the control group is a "treatment as usual" (i.e. the current treatment individuals would receive), this isn't an issue as any change in the control group is expected. However, if there is currently no "normal" treatment, any BCTs in control groups are going to cause an unpredictable change in control group behaviours, which makes it difficult to assess the between group efficacy of the intervention. RCTs tell us that ABI's are minimally effective when effectiveness is judged as a difference from the control group, however these RCTs don't tell which BCTs were carrying the effect, and whether there were any active BCTs in the control group that we should consider when interpreting the results.

In a recent review by Black and colleagues (2020), BCTs included in written and face to face smoking cessations were analysed to assess those which appeared to have a greater impact on the findings. The authors found that BCTs associated with social reward, self-regulatory processes, identity, and prompting commitment all had a greater impact on smoking cessation. This work is similar in nature to the study, also by Black and colleagues (2016) included in this meta-analysis. In Black's 2016 paper, BCTs used in ABIs were assessed in a similar way. BCTs associated with social norms and normative feedback, and goal review were the most effective in reducing drinking. This chapter includes a similar approach, although a different aim. The papers by Black et al. (2016, 2020) involved using theory and data driven BCT clusters as well as individual BCTs, and primarily focused on the impact on changes in both experimental and control groups combined. Whereas this chapter will only consider the BCTs present in control groups, and will use a purely data-driven process to select the BCTs to include in the meta-regression.

3.1.4 Aims Study 1

1. To conduct a review of reviews to ascertain the effectiveness of Alcohol Brief Interventions, and to update the literature.

2. To understand how much control groups change their drinking in ABI Randomised Controlled Trials.
3. To explore the use of BCTs in control groups, and how much these BCTs are associated with change in control group drinking by:
    a. Analysing the total number of BCTs present in control groups and whether this is associated with the study effect size for within control group change.
    b. Analysing the individual BCTs present, to examine which BCTs are associated with the study effect size for within control group change.

3.2 Methods

3.2.1 Search Strategy and Selection Criteria

Studies were collected from five highly cited meta-analyses into Alcohol Brief Interventions, these were Black et al. (2016), Platt et al. (2016), Riper et al. (2014), Jenkins et al. (2008), and Kaner et al. (2017). The first four of these reviews focused on the ABI effect sizes from different perspectives (Face to face, Behaviour Change Techniques, and Computer based interventions), the final review by Jenkins et al. (2008) focused on the change of the control group over time and the elements of the control group which could influence these changes. The decision to use studies from existing meta-analyses was taken due to the vast undertaking a full systematic approach would have taken, it also meant that it was not necessary to conduct subjective decisions regarding inclusion or exclusion of certain studies. The decision was also taken due to the fact that it had already been done many times, so there was no justification to re-run the systematic search. It also allows the results of this chapter to be discussed in comparison to the five meta-analyses, such as potential type 2 error problem addressed earlier. The quality of studies was previously assessed in the original five meta-analyses, so no further assessment of the quality was required for the analysis.

Studies from the five meta-analyses were eligible for this review if written in English, and were peer-reviewed controlled trials of ABI's. We included all populations aged 16 years or older, although all studies included had populations aged over 18. Studies were excluded which included populations with complex medical needs, were seeking treatment for mental health conditions, or alcohol/substance use disorders, these studies were already excluded from the original five meta-analyses. The analysis included all control groups providing that the control group was not explicitly intended to reduce drinking (i.e. an old or former intervention a new intervention was being trialled against). The control groups included in the analysis included; treatment as usual, assessment only, information only, wait listing, delayed assessment, or no treatment. Brief interventions were considered if they were 1-4 sessions, but less than 2 hours total intervention time (as done in Platt et al. (2016)). All forms of intervention were included; face to face, computer and web-based interventions. Group interventions were excluded as they had been for the original meta-analyses; interventions which measured other variables were included as long as the main goal of the intervention was to reduce drinking.

3.2.2 Data Extraction and Synthesis

The primary outcome of interest was self-reported alcohol use over a fixed period of time, this includes Timeline Follow Back, AUDIT scores, and Estimated Peak BAC. Studies were only included if the control intervention was clearly described, pre- and post- test data was provided for the control group, and was possible to calculate the effect size. The data extracted included the mean, standard deviation (or standard error, which was then converted into standard deviation) and the number of participants at both baseline and post-test. Studies which reported alcohol consumption in terms of per drinking occasion, where it was not possible to calculate daily/weekly/monthly consumption, were excluded and because they were not directly comparable to other studies. A full list of all studies is provided at the end, including reasons for exclusion, where they were sourced from, and the

outcome variable used in the meta-analysis. Appendix 1 shows a summary of the studies included, the outcome measure extracted, number of participants and other key data.

The data was collected from all the studies that provided baseline and post-test raw data for both intervention and control. For sub- group analyses, we looked at three key elements occurring across ABI research (Table 4). Intervention setting was grouped into four major categories; University, Healthcare, Workplace and Other. University and Healthcare contained the majority of the studies, with far fewer taking place in the workplace or other settings. The setting may have an impact on the change in control group. The method of delivery is grouped into three broad categories; Treatment as usual, Treatment as usual after an unusual screening, and Non-normal treatment. We define these as being whether the measuring of alcohol consumption in this setting is a normal activity for these participants (i.e. in the Army, starting Universities in America etc.), whether there is an expected treatment but an unusual Screening method beforehand, or whether it is a completely unusual occurrence (i.e. Attending Accident & Emergency (A&E), attending a GP clinic for something unrelated to alcohol, in the workplace).

The terminology used in this analysis may be different from other areas of research, such as health. When Treatment As Usual is referred to in this analysis, it means that the participant did not experience anything 'out of the ordinary' about taking part in the study (i.e. they were not required to attend a GP clinic when there was no health-related reason to attend other than to take part in the trial). In health research, the term 'treatment as usual' refers to the standard treatment expected, as prescribed by the regulatory body, which often includes; screening for drinking, advice about cutting down, education about safe drinking levels, motivational support, and for this to be reviewed in the near future (National Institute for Clinical Excellence, 2019)

The third sub-analysis we used grouped the studies into two categories; Screened out low-risk drinkers prior to randomisation (Yes/No). This differentiated between studies which only tested the effectiveness of the intervention on high risk drinkers, and those which tested the intervention on all drinkers.

Setting	**Control Method**	**Screened out low-risk drinkers prior to randomisation**
Health	TAU	Yes
University	TAU with Additional Screening	No
Workplace	Non-TAU	----------
Other	----	----------

Table 4: Summary of sub-group analyses

3.2.3 BCT Coding and Inclusion

To achieve aims 3a and 3b, to determine any effects caused by Behavioural Change Techniques (BCTs), control methodology was coded for active BCTs according to the guidelines set out by the BCT Taxonomy (v1) guidance (Michie et al., 2016). A BCT was considered even if it was included in the assessment phase as the intention of this aim is to consider the impact of any BCT at any point in the control group methodology on the change often observed in control groups. To exclude these codes would leave elements of the change in drinking levels unexplained.

BCT coding was undertaken primarily by the author who has completed the online BCT coding training (MJ), 10% of the articles were then second coded by another researcher (GH) who had also completed the BCT Taxonomy training, provided online by University College London. The initial inter-rater reliability was poor (42% agreement), differences were discussed and a new set of 10 articles were second coded. The second inter-rater reliability was acceptable (82% agreement), with the remaining disagreements resolved through discussion. All articles were then re-coded by MJ according to the agreed criteria for codes.

3.2.4 Statistical Analysis

The primary outcome for this review of reviews was identified based on self-reported volume of alcohol consumed over a fixed period of time, or per drinking occasion. It was decided not to include any frequency-only (e.g. number of days consuming alcohol) measures as a shift from heavy, consistent drinking to binge drinking on a single night, would suggest a change, where in fact there was no decrease in units consumed. Frequency-only measures would fail to accurately reflect the change in the amount of alcohol consumed.

Aim 1: To test the between subject effects of the intervention group against the control group on the primary outcome, a multi-level meta-analysis method to estimate pooled effect size was used. Analyses used random effects on the study levels, and Standardised Mean Differences (SMD) using Glass's Delta due to the expected heterogeneity both within and between subjects. Glass's Delta was used to control for the potential variability seen in intervention groups, which can affect the standard deviation in the SMD calculation (Ialongo, 2016; Lakens, 2013).

Aim 2: To test the within-subject changes in the control groups, pooled effect sizes were calculated for the pre to post-test difference scores for the control groups from pre- to post-test. Within-subject correlations were used to correct the standard errors, out of the 91 studies used in this analysis, 9 were calculated from the data provided in the original study. These ranged from very low (R=0.08) to moderate strength (R=0.68) correlations. For studies where no within-subject correlations could be calculated, an imputed value of r=0.73 was used as recommended by Balk et al. (Balk et al., 2012), who demonstrated that imputing within-group correlation estimates does not create bias in the summary estimate of the treatment effect. A sensitivity analysis using the average obtained from the nine studies previously mentioned (highlighted with † in Appendix 1) (R=0.513) was also conducted for aim 2a to assess for any bias introduced by using imputed correlations. Sub-group analyses were run based on the groupings shown in table 4.

Aim 3: Meta-regressions were run to analyse two elements of BCT involvement; a) How the total number of BCTs affect the variation in within-subject control group change, and b) How commonly used BCTs (n>10) were associated with the variation within-subject control group change and by how much. Studies were coded for BCTs according to the Behavioural Change Taxonomy (Michie et al., 2016) with some minor adaptations for the purposes of this study. The taxonomy often requires no code to be given to apparent BCTs which are present for "the purposes of baseline data collection". However, in this study, instances where this was the case (such as the Alcohol Use Disorder Identification Test) were assigned the appropriate code. This is due to the reasons discussed in section 3.1.2 whereby assessment reactivity (i.e. reacting to the baseline data collection) appears to be present and actively causing reductions in drinking. To follow the taxonomy guidelines in this instance, would leave the subject of assessment reactivity untested.

Complex study designs: Some studies compared multiple different interventions against the same control group (e.g. Collins et al. (2014)). For these studies, the interventions were split in the between-subjects analysis (i.e. DBF and PNF versions of the Collins et al. (2014) study), when the within subjects analysis (Aim 2 and Aim 3) comparing the change in control groups was analysed, only one of these was used as they were compared to the same control group (to avoid falsely doubling the weight of that control group in the meta-analysis). Occasionally, the data were split into two subgroups within a study, in this case each subgroup was included as its own separate study providing that the control group was also split using the same rule. This occurred twice in Hester et al. (2012) and in Schuckit et al. (2015). In the study by Hester and colleagues (2012), two separate control groups were used, the only difference being a delayed assessment in study two. The study by Schuckit et al. (2015) split the data by High and Low Response to alcohol, these are shown in the data as "HR" and "LR" versions of Schuckit et al. (2015).

3.3 Results

3.3.1 Study Characteristics

The initial search of unique studies included in the five source meta-analyses were full text screened for eligibility. The final number of articles identified for inclusion was 88, three of the articles contained two different studies, and so all eligible studies were included (total N studies (observations) = 91). The characteristics of all the studies are included in the table in Appendix 1. There is a variation in the geographic location of the studies with 48% being conducted in the United States of America, and 44% being located in Europe, among which 18 studies were conducted in the UK.

3.3.2 Aim 1: Between-Subject Review of Reviews

The first analysis was to assess the current effectiveness of ABIs in RCT studies. Inclusion for this analysis was intentionally broad, and so a random effects analysis was run. As mentioned in section 3.2.4, Glass's Delta was used to calculate the pooled effect size. The overall standard mean difference (SMD) observed in the between-subjects analysis between the control and intervention groups was small but robust and statistically significant (SMD=0.17, CI=0.22-0.12, p<0.001). There was significant substantial heterogeneity (I^2=74%, p<0.001) across all studies included in this analysis. The forest plot for this model can be found in Figure 4.

3.3.3 Aim 2: Control Group Analysis

3.3.3.1 Aim 2: Change in Control Groups

The second aim was to analyse the change in control groups from pre to post test. As with analysis 1, inclusion was intentionally broad and so a random effects model was used. The within-group change showed a significant moderate decrease in control group drinking from pre to post test (SMD=0.25, CI=0.18-0.32, p<0.001). There was significant high heterogeneity in this analysis (I^2=96%). The forest plot for this model can be found in Figure 5

A sensitivity analysis was conducted to assess the impact of using the imputed correlation figures from Balk et al. (2012). The results were compared to alternate results using an imputed figure obtained from the average of "true" correlations obtained from authors (r=0.513). A sensitivity analysis was conducted to ensure that there was no bias being introduced by imputing average correlations based on a select number of obtained figures. The findings were similar to the original findings (SMD=0.29, CI=0.19-0.38, $p<0.001$), therefore it can be concluded that there was no bias introduced by using this method.

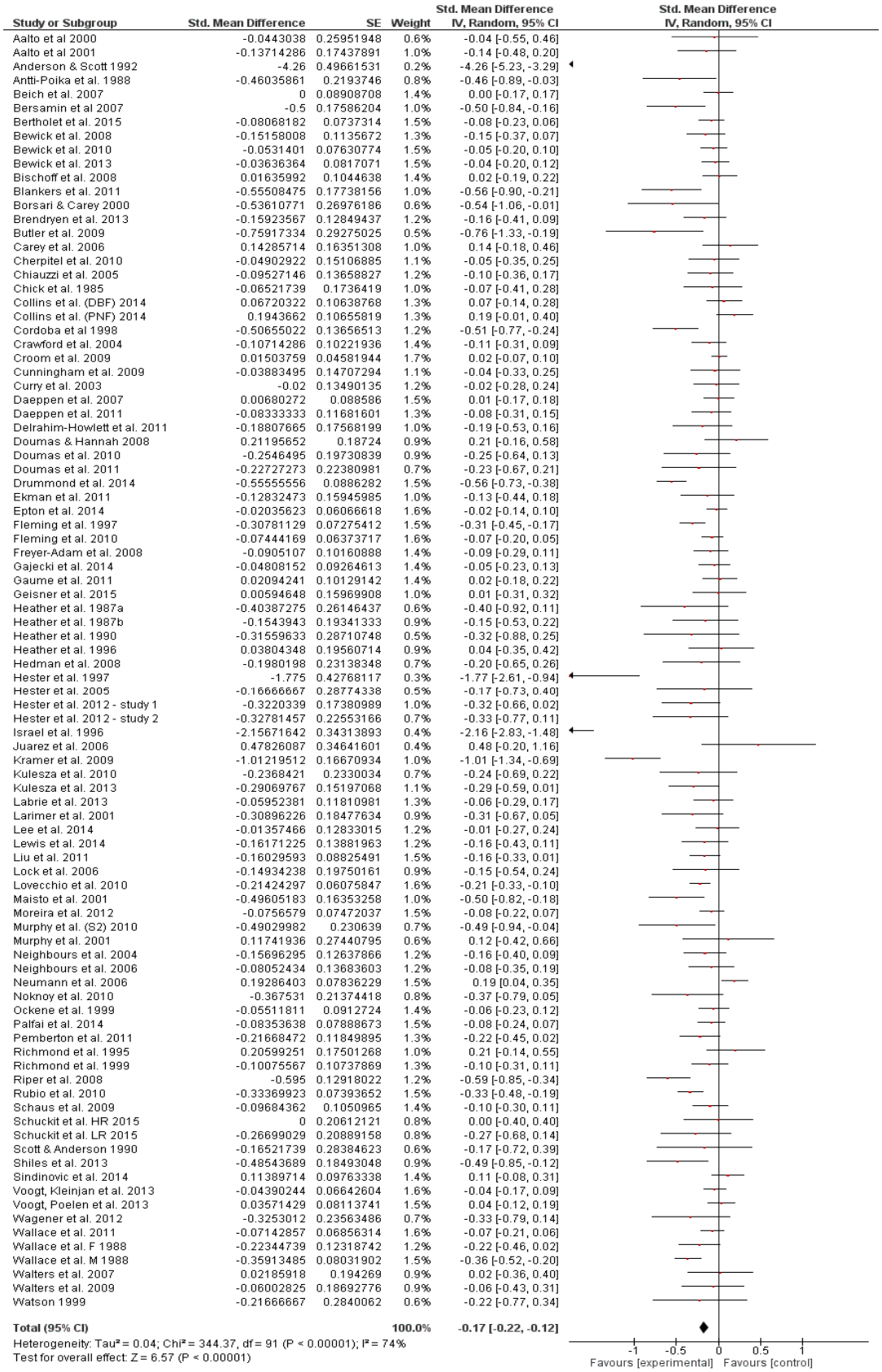


Figure 4: Forest plot showing between groups effect size (Aim 1)

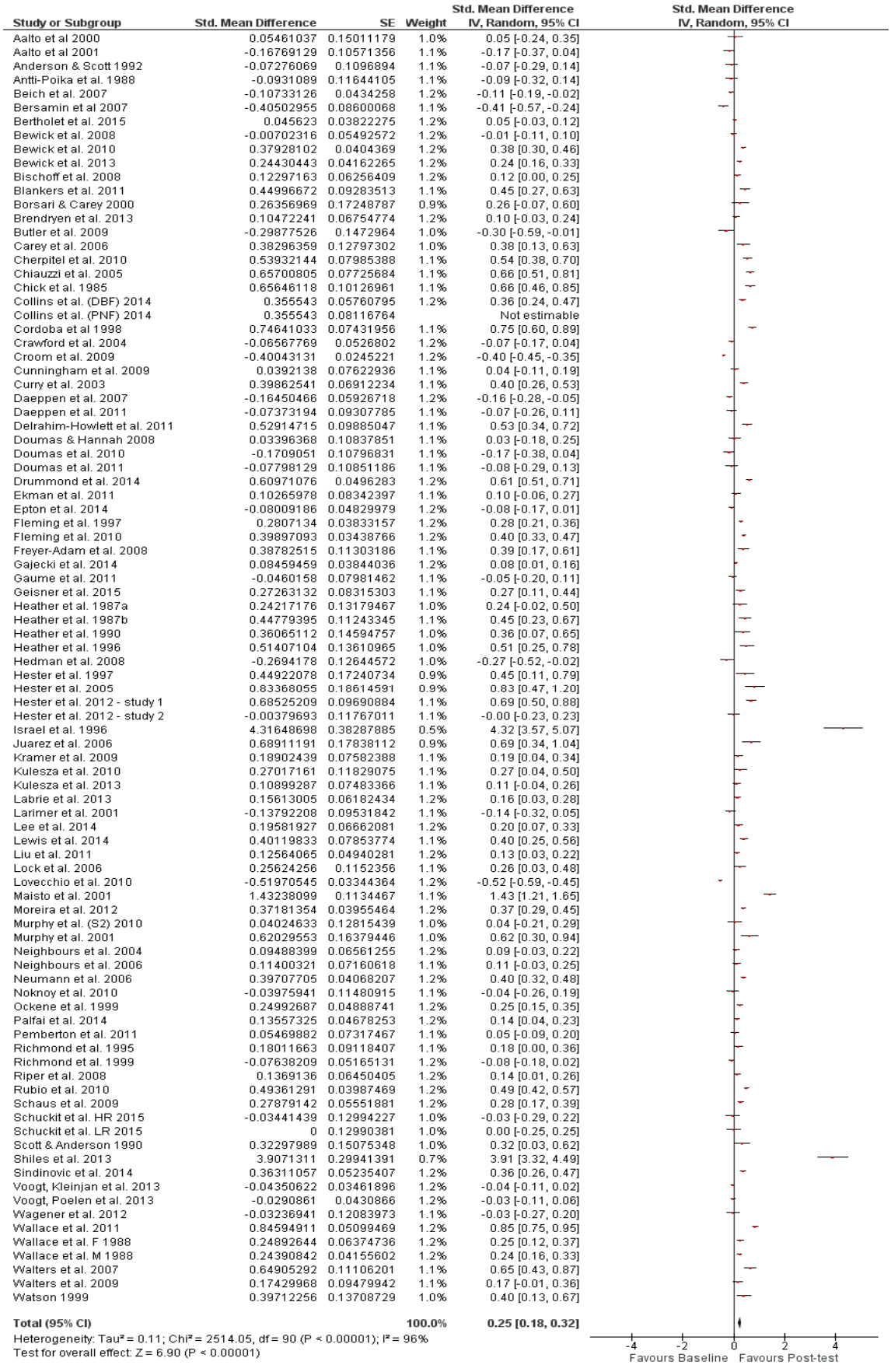


Figure 5: Forest plot of within group effect sizes of control groups (Aim 2)

3.3.3.2 Aim 2: Change in Control Groups: Sub-group Analysis

The next part of this aim was to determine if this change in control groups was associated with a number of differences seen between studies, these included the setting of the study, the level of the control group intervention, and the level of screening out participants.

When considering the level of screening, two common groups identified in the data, those that screened out low-risk drinkers (n=73), and those which kept them in (n=18). There was a significant difference between these two groups (χ^2=15.79, p<0.001), with studies screening out low risk drinkers showing a statistically significant decrease in control group drinking (SMD=0.37, CI=0.26-0.48, p<0.001) compared to studies which included all drinkers where there was no significant change (SMD=-0.02, CI=-0.18 – 0.14, p=0.79). Heterogeneity was significantly high in both sub-groups (All drinkers: I^2=98%; Heavy drinkers only: I^2=97%).

The sub-group analysis into the setting of the study was split into 3 groups; health (N=32), university (N=42), and the workplace (N=6). 11 studies were excluded from this analysis as it either wasn't clear where the study took place, or it took place somewhere other than the three defined sub-groups and would form a sub-group too small to be analysed. There was a significant sub-group difference in the change of control group drinking across the locations (χ^2=41.19, p<0.001). The largest reduction in control group drinking occurred in studies based in health-related locations, with a moderate and significant reduction (SMD=0.42, CI= 0.30-0.55, p<0.001). Studies which took place in universities showed a small but significant reduction in control group drinking (SMD=0.13, CI= 0.03-0.23, p=0.01). Studies in the workplace, however, showed no change overall in control group drinking (SMD=0.00, CI= -0.05 - 0.05, p=0.96). Studies in health settings were very heterogeneous (I^2=96%) the same was seen in university settings (I^2=97%). On the other hand, workplace settings showed homogeneity (I^2=4%).

The final sub-group analysis compared the three broad styles of control groups seen; the screened (S) control group (N=61), the Treatment As Usual (TAU) (N=9), and the novel control group (NT) (N=21). There was no overall significant difference between the three groups (χ^2=3.14, p=0.21). The NT (SMD=0.25, CI=0.13-0.37, p<0.001) and Screened (SMD=0.27, CI=0.20-0.35, p<0.001) types of control both show similar and statistically significant reductions in control group drinking. However, the TAU control groups show no change in control group drinking (SMD=0.01, CI=-0.26-0.29, p=0.92), with a very large variation in results. Heterogeneity was significantly high in all sub-groups (S: I^2=95%; NT: I^2=92%; TAU: I^2=99%). The forest plots for these models can be found in Appendix 3

3.3.4 Aim 3: BCT Analysis

To conduct the analysis for Aims 3a and 3b, BCTs were coded in the control group. A total of 18 codes were identified across the 88 control groups, a summary of the frequency of each code can be found in table 5. Of the 18 codes, 7 were used commonly (defined as occurring in more than 10 studies), these are highlighted in bold in table 5. These codes were then subsequently used in the meta-regressions for aim 3. Descriptions of codes taken from BCT Taxonomy (v1) guidance (Michie et al., 2016).

BCT Code	BCT Description	Frequency Occuring in control groups
1.1	Goal Setting (Behaviour)	3
1.4	Action Planning	2
2.2	Feedback on Behaviour	1
2.3	**Self-Monitoring of Behaviour**	**86**
2.4	**Self-Monitoring of outcomes of Behaviour**	**85**
2.5	Monitoring of outcomes of behaviour without feedback	5
2.6	Biofeedback	5
2.7	Feedback on outcomes of behaviour	1
3.1	Social Support (Unspecified)	3
4.1	Instruction on how to perform the behaviour	1
5.1	**Information about Health Consequences**	**17**
5.2	**Salience of Consequences**	**50**
5.3	Information about Social and Environmental Consequences	3
5.5	Anticipated Regret	2
6.2	**Social Comparison**	**13**
6.3	Information about Others Approval	1
7.1	**Prompts/Cues**	**28**
9.1	**Credible Source**	**22**

Table 5: BCT Frequency in control groups

3.3.4.1 Aim 3a: Effects of BCTs: Total Number of BCTs Present in Control Groups

The aim of this analysis was to determine whether the number of BCTs included in control groups was associated with either the between-subjects comparison, or the within subject control group change. BCT analysis has shown a range of 1-6 BCTs included in the 91 studies observed. In a univariate meta-regression, an increased number of BCTs in the control group is associated with a smaller post-test difference between the control group and the intervention groups, although showing a small beta coefficient (B=-0.0619, t=-2.45, p=0.016), 26% of the variance was explained in this model, with an I^2=70.76%.

When analysing the within-subject change, an increase in the number of BCTs was significantly associated with a greater decrease in control group drinking (B=0.166, t=3.18, p=0.002), however only 9.71% of the variance was explained, with an I^2=96.17%.

3.3.4.2 Aim 3b: Effects of BCTs: Presence of Commonly Occurring BCTs

The next analysis looked at the effect of individual, commonly used, BCTs in control groups on the change in drinking from pre- to post- test. Table 5 contains a summary of each of the BCTs used. BCTs were included in this analysis if they were used in more than ten control groups across the 88 articles. Results in table 6 are accepted as significant if they meet the Bonferroni adjusted p-value of p=0.007. The Bonferonni adjusted value was calculated by dividing the α-value (0.05) by the number of analyses on the dependent variable (in this case 7). Each BCT was added into the model along with gender of the control group, and the mean age of the control group. The BCT 2.3: Self-Monitoring of Behaviour regression model showed a significant final model (15.2% variance explained; $F(3,77)=5.1, p=0.023$). Whilst the variable was significant to the 0.05 level ($B=0.362$, $p=0.023$), it was not significant to the Bonferroni corrected level. The BCTs 2.4: Self-monitoring of outcomes of behaviour (8.37% variance explained; $F(3,77)=3.1, p=0.032$), 5.1: Information about health consequences (8.36% variance explained; $F(3,77)=3.09, p=0.032$), 6.2: Social Comparison (9.11% variance explained; $F(3,77)=3.26, p=0.026$), 7.1: Prompts/Cues (8.37% variance explained; $F(3,77)=3.1, p=0.032$), and 9.1: Credible Source (8.68% variance explained; $F(3,77)=3.15, p=0.030$) all showed significant models, however the BCTs were not significant predictors in any of the final models.

The final model of the BCT 5.2: Salience of Consequences was significant to the adjusted level ($F(3,77)=6.98, p<0.001$) and explained 20.41% of the variance seen. In all the models, mean age was a significant predictor to the 0.05 level, and was significant to the adjusted level in most of the models, however, the variable had consistently low beta coefficients. These results are summarised in Table 6.

Table 6: Results from Meta-regression for each BCT, showing Standardised Beta (B), T-scores (T) and significant levels (0.05, 0.01**, 0.001***)*

		BCT 2.3			BCT 2.4			BCT 5.1			BCT 5.2		
		1	2	3	1	2	3	1	2	3	1	2	3
BCT	*B*	0.369	0.272	0.362*	0.167	0.067	-0.012	-0.067	0.037	0.001	0.289*	0.140*	**0.216*****
	t	1.24	1.88	2.32	0.61	0.5	-0.09	-0.38	0.42	0	2.15	2.08	3.24
% Female	*B*	-	0.0515	0.245	-	0.036	0.217	-	0.038	0.217	-	0.006	0.217
	t	-	0.38	1.77	-	0.26	1.52	-	0.27	1.51	-	0.04	1.61
Mean Age	*B*	-	-	0.00844*	-	-	**0.009*****	-	-	**0.01*****	-	-	**0.013*****
	t	-	-	2.59	-	-	2.95	-	-	2.95	-	-	3.88
r^2		*0.006*	*0.019*	*0.152*	*0*	*0*	*0.084*	*0*	*0*	*0.084*	*0.004*	*0.003*	*0.204*

		BCT 6.2			BCT 7.1			BCT 9.1		
		1	2	3	1	2	3	1	2	3
BCT	*B*	-0.145	-0.047	0.067	0.335*	0.089	-0.001	0.209	0.131	0.032
	t	-0.74	-0.47	0.66	2.32	1.13	-0.02	1.32	1.61	0.36
% Female	*B*	-	0.051	0.199	-	0.093	0.216	-	0.102	0.227
	t	-	0.35	1.38	-	0.63	1.45	-	0.71	1.56
Mean Age	*B*	-	-	**0.011*****	-	-	**0.01*****	-	-	0.009**
	t	-	-	3.03	-	-	2.89	-	-	2.63
r^2		*0*	*0*	*0.091*	*0.049*	*0*	*0.084*	*0.009*	*0.013*	*0.087*

The final aim of this analysis was to identify which BCT was the most strongly associated with a reduction in control group drinking after accounting for each individually. This is different to the previous analysis as it is looking at which BCT is the biggest influence in changes in control group drinking when they are all included in the same model, as opposed to the previous analysis which analysed whether a BCT was a significant predictor on in control group drinking when accounting for demographics. All previously included BCTs were included into a single regression model. The results are summarised in table 7. The model was significant (F(7,83)=2.77,p=0.012) and accounted for 12.63% of the variance seen in the data. Of the included BCTs; 2.4: Self-monitoring of outcomes of behaviour (B=0.091,p=0.727), 5.1: Information about health consequences (B=-0.233, p=0.195), 6.2: Social Comparison (B=-0.174, p=0.367), and 9.1: Credible Sources (B=0.250, p=0.160) were not significant predictors in changes to control group drinking. BCT 5.2: Salience of Consequences was a significant predictor (B=0.437, p=0.002) as was BCT 7.1: Prompts/Cues (B=0.301, p=0.048). BCT 2.3: Self-Monitoring of Behaviour was not significant (B=0.558, p=0.060), however had the strongest coefficient of the BCTs analysed.

Table 7: Results from Meta-Regression showing association of BCTs with control group change. (Standardised Beta (B), T-scores (t), Significant results (p) in bold)

	B	t	p
BCT 2.3	*0.558*	1.90	0.060
BCT 2.4	0.091	0.35	0.727
BCT 5.1	-0.233	-1.31	0.195
BCT 5.2	0.437	3.14	**0.002**
BCT 6.2	-0.174	-0.91	0.367
BCT 7.1	0.301	2.01	**0.048**
BCT 9.1	0.250	1.42	0.160

3.4 Discussion

This chapter set out to investigate the efficacy of ABIs, as well as the phenomenon of control groups decreasing drinking. The findings of the analyses will be discussed to address the research questions outlined in the introduction, and will then be discussed as a whole and what this means to the wider literature.

3.4.1 Aim 1: To conduct a review of reviews to ascertain the effectiveness of Alcohol Brief Interventions.

The first aim of the study was to conduct a review of reviews to update the literature of the effectiveness of ABIs. The analysis included studies from five highly cited meta-analyses in the area and included studies which were both face-to-face and computer based ABIs. The primary reason for removing studies was due to lack of clarity over control group methodology, or lack of control group baseline scores. This analysis showed a significant, but small effect size between the intervention groups and control groups. This effect size (SMD=0.17) is consistent with other reviews in the field. For example, the study by Platt et al. (2016) showed a significant overall effect of d=0.15, the meta-analysis in emergency care ABIs by Schmidt et al. (2016) showed an SMD of 0.19. Meta-analyses into ABIs are showing a robust but small effect size consistently across type (face-to-face vs online), and demographic. This demonstrates the continued efficacy of ABIs, particularly as a population level approach due to its high cost-effectiveness (Angus et al., 2014; Purshouse et al., 2013) and accessibility to a wide audience.

The wide range of the confidence intervals in the present study (0.12-0.22) suggests a wide variation in scores, this matches work in other meta-analyses (i.e. Schmidt et al., 2016) and suggests several possibilities. One of these possibilities is that there is very little consistency in how ABIs are conducted or the content of ABIs. Newbury-Birch et al. (2018) showed that there are huge variations in ABIs even in limited settings and populations, such as in incarcerated people. There is a need for standardisation across ABIs and an agreed set of standards, basic content, and outcome variables (Newbury-Birch et al., 2018). Following on from this, a systematic review found that there was a large diversity in the outcomes used to measure behaviours or consumption in ABIs (Shorter et al., 2019). Interestingly, this found that in the 405 trials analysed, there was no single outcome measure used across all of them. This has led to a call for a Core Outcome Set, a standardised set of outcomes to be used across ABIs to aid in comparisons between studies and across the field. This has developed into the Outcome Reporting in Brief Interventions: Alcohol initiative (ORBITAL) to improve standards in the ABI field. This builds on the TIDieR checklist by Hoffman et al. (2014) which set out a clear way to present and report interventions. By combining the principles of TIDieR and ORBITAL, this will go some way to limiting the variation in results often found in ABI systematic reviews. The other possibility is that the setting of the studies is causing variation, this is discussed in section 3.4.2.

Across the studies included in the meta-analysis, there was a large variation in results, ranging from the extreme values favouring control groups, to the extreme values favouring the intervention group. Extreme values favouring the intervention group, such as Hester (SMD=-1.77) (Hester et al., 2005) and Israel (SMD=-2.16) (Israel et al., 1996) appeared to focus mainly on participants identified as “risky drinkers”. These participants appeared to be bordering on being alcohol dependent, and may well explain the heavy reductions in drinking in the intervention arm. Both sets of participants appeared to know they were expected to reduce drinking, and the Hester et al. (2005) study utilised a wait-list methodology for the

control group (i.e. recording baseline values, and informing control groups that there was a wait-list until they could start the trial) possibly reducing the impact of any BCTs or demand characteristics present in the control group. The study by Israel (1996), included a number of additional tests for the participants, many of them medical in nature, such as blood tests and analysis (with feedback) of gamma-glutamyl transferase (GGT) activity. This study is far more intrusive than many other studies which often rely on self-assessment to analyse the effect of the intervention. Whilst it has been suggested that the use of biomarkers such as GGT can improve the reliability of self-assessment data (Cole et al., 2005) by helping to avoid biases which can affect participants when using self-report methods of alcohol consumption (such as social desirability) (van de Mortel, 2008), they also have margins of error and traditional biomarkers (such as GGT) can be unreliable in different populations (Jastrzębska et al., 2016), and show low sensitivity. The more medical and intrusive nature may well have acted as a further intervention, and an additional BCT, for the participants which encouraged a further reduction without being accounted for in the methodology.

There were also results seen which heavily favoured the control groups, such as the studies by Doumas & Hanna (2008) (SMD=+0.21) and Juarez (2006) (SMD=+0.48). The study by Juarez (2006), appeared to suffer from a high variability in the results with a 95% CI between -0.2 to +1.16. The authors explained that there appeared to be a large effect of gender moderation, with females showing decreases, where males did not. The authors also suggest that the lack of reduction in alcohol consumption, despite a significant decrease in negative consequences and dependence symptoms is more consistent with other studies which show that Motivational Interviewing (MI) (the technique used) is more associated with reduced frequency and quantity of alcohol consumed (i.e. less binge drinking, alternating alcoholic and non-alcoholic drinks etc.), as opposed to a reduction in drinking. This study demonstrates the large variation in possible aims of ABIs. This could go some way to explaining some of the

variation in the findings, especially if the outcome variable is one which is difficult to compare to others.

The other study which showed a result heavily favouring the control group, Doumas & Hannah, (2008) appears to suffer from imbalanced groups at baseline. The authors report a significant difference in the amount of change in drinking, however, the baseline of the intervention group was far higher (2.37 drinks per day (dpd)) than the control group baseline score (1.37dpd). This study may well have suffered from regression to the mean, whereby the higher score in the intervention arm decreased more. The final comparison between the two groups showed the control group still reporting a lower drinking score (1.31dpd) than the intervention (1.70dpd). This could demonstrate the problem in classing all forms of ABIs as the same, some studies, for example, may use MI as the main element of the intervention with the main aim to be to reduce binge drinking or negative consequences instead of overall consumption. The authors appear not to have adjusted for the imbalanced baseline results, which could have resulted in them incorrectly interpreting the reduction in drinking in the intervention arm as a result of the intervention, rather than regression to the mean. Whilst baseline imbalance is always likely in randomised groups (particularly with smaller numbers), it is important to control for this imbalance either using latent growth curves (as in Freyer-Adam et al., (2016)), or by including baseline drinking as a covariate in general linear models (Vickers & Altman, 2001).

What this demonstrates is that whilst there is evidence that ABI's are an effective tool to reduce drinking across a population, there is clearly a lack of consistency in the approaches, and some studies are lacking clarity in how they have been conducted. There is also often a lack of exploratory analysis to discuss unexpected findings and to identify whether a form of Hawthorne effect (McCambridge, Witton, et al., 2014), or regression to the mean (RTM) may have taken place. This could lead to inaccurate estimates of true efficacy of ABIs and may

result in delays to rolling schemes out in applied settings. Overall, the findings show that ABIs are effective in producing a small reduction in drinking.

3.4.2 Aim 2: To understand how much control groups change their drinking in ABI Randomised Controlled Trials, and whether this is likely to account for the small effect size in ABIs

The second aim of the study was to understand how much control groups appear to be reducing their drinking in ABI RCTs, and to investigate instances where this may occur more often. The issue with control groups reducing drinking, means that studies are likely to find type 2 errors, where they accept the null hypothesis due to an uncontrolled or unexpected effect in the control group causing a reduction, thereby undermining the comparison made between the two groups. The meta-analysis found a significant decrease in control group drinking from pre- to post- test. This reduction produced a significant, moderate effect size and could account for the small effect sizes, as well as demonstrates a possible risk of type 2 errors in the literature. Furthermore, this could also cause a general underestimating of the efficacy of ABIs in real-world scenarios. The effect size reported in reviews, therefore, should probably be considered to be the minimum effect size expected. For example, the study by Schaus et al. (2009) showed a very small effect size of SMD=0.09 at post-test in favour of the intervention arm, however the within subject change of the control group showed a moderate decrease (SMD=0.49) in drinking. The study reported no significant difference in typical consumption level, however this may have been masked by the changes seen in the control group and may have been a type 2 error.

The sub-group analyses showed different ways in which the data varied, based on location, the type of control group, and the level of pre-screening before the study. The health setting sub-analysis showed the greatest decrease in control group drinking. Health settings, and to an extent Universities, showed significant decreases in control group drinking. Both of these settings are likely to elicit hypothesis guessing due to the aim of the study being easier to figure out than in the other settings, such as the workplace. Health settings in particular are

likely to affect the control group, as the aim of a study asking about alcohol is difficult to hide. For example, in the study by Drummond et al. (2014), the study was set in the emergency department of a hospital. The control group showed a moderate decrease in drinking. The authors conclude that it may be the virtue of the participant's distress of being in an ED that they make the decision to reduce drinking, this could be further prompted by being asked to record drinking behaviour (as a control group would need to be). On the other hand, the study by Daeppen et al. (2011) showed an increase in drinking, despite being in a health setting, however the intervention group also increased drinking and there was no difference between the groups. This suggests that the health setting may make it difficult to determine whether any effect is attributed to the intervention, control methodology, the hypothesis guessing, or the situation the participant finds themselves in.

Universities are not affected by this as much as the health settings, with a much smaller effect size in the control group drinking. Where participants increased drinking in the control groups, it was often matched by an increase in the intervention groups (e.g. Bersamin et al., (2007)), and decreases in control group drinking matched by a greater decrease in intervention group drinking (e.g. K. B. Carey et al., (2012)). Many of the university studies appeared to use formal, or compulsory recruitment into the trial as part of the induction into university. This could account for some of the decreases seen in the control groups, such as is the case in the Borsari & Carey (2005) study, where the participants were students who were mandated into a substance use program. This compulsory inclusion may have been a prompt to reduce drinking, without the need for any intervention, which merely enhanced the effect. Studies which were set in the workplace showed no decrease in control group drinking overall. This is likely due to the way that the intervention was issued, participants either believed the baseline assessment was part of the job (i.e Bertholet et al., (2015); Pemberton et al., (2011)), or where the baseline assessment was masked (i.e. Richmond et al., (1999)). In both the Bertholet and Pemberton studies, the participants were new army

recruits who were having health assessments before joining the army. Participants would have considered this a normal part of the process, so the control group would not have been subjected to any hypothesis guessing. In the case of the Bertholet (2015) study, participants were joining a mandatory conscription service, so desirability effects also are unlikely to have caused a conscious modification to the reported alcohol consumption. In the case of the Richmond study (1999), participants were police officers who were asked about alcohol consumption amongst other health issues such as stress, smoking, and diet. This is likely to have masked the primary outcome of the study and reduced any hypothesis guessing occurring.

When considering the type of control group, there were no differences across the three groups. This is likely due to there being a scarcity of true TAU control groups in the literature. Both the non-treatment as usual and the screened only control groups showed significant decreases in control group drinking. This suggests that the main effect of this decrease is occurring in the baseline assessments of the studies, as both of these types of control groups would have had baseline assessments that would have been out of the ordinary for the participants. This finding concurs with that of Kyrpi et al. (2007) who demonstrated the effects of assessment reactivity whereby participants reduce their drinking purely because they know they are being asked about it. The authors concluded that studies which rely on assessment may underestimate the findings of the intervention group, as the control group will decrease through assessment reactivity.

The final sub-group analysis concerned the inclusion of all drinkers against those studies which only included heavy drinkers only. The findings show that control groups in studies where the participants are only heavy drinkers (i.e. Epton et al., (2014)), showed a greater decrease in drinking than those in studies which included all drinkers (i.e. Palfai et al., (2014)). In fact, studies which included all drinkers, showed no change overall in control group

drinking. This is a strong argument for regression to the mean, and supports the work done by Jenkins et al. (2008) and McCambridge et al. (2014). Heavy drinkers are more likely to reduce their drinking to a more "normal" level without intervention. As a result, participants in control groups, whether affected by assessment reactivity or illicit BCTs or not, are more likely to decrease drinking of their own accord. This again means that some ABI RCTs may well be underestimating the effect of the intervention.

3.4.3 Aim 3: To explore the use of BCTs in control groups.

The final aim of the meta-analysis is to explore the use of BCTs in control groups. This was done in two ways, first to understand if the number of BCTs present in studies is associated with any change in control group drinking. The second was to understand how much the commonly used BCTs individually appear to be associated with control group drinking decreases.

The number of BCTs present in a control group is associated with a significant reduction in the difference between post-test intervention and control groups consumption levels. This was confirmed by the significant increase in pre-post test change (in this case, a reduction in drinking) seen in studies where control groups have a higher number of BCTs. Typically, the number of present BCTs ranged from 2 to 6. This suggests an accumulative effect of BCTs on control group drinking and supports the theory that BCTs are linked to mechanisms of action (MoA) (R. N. Carey et al., 2018), and therefore by increasing the number of BCTs present in the control group, there are more ways in which the behaviour change is influenced. For example, self-monitoring of behaviour (BCT 2.3: Self-Monitoring of Behaviour) a very commonly occurring BCT in control groups, is significantly linked with the MoA of Behavioural regulation (R. N. Carey et al., 2018). This finding suggests that, whilst regression to the mean may well account for some of the change in control groups, the presence of BCTs increase the strength of assessment reactivity when more are present. Increasing this

effect is likely to mask the findings of the intervention and arguably accounts for a higher proportion of the change in control group drinking.

To understand more about the impact of BCTs on the drinking in control groups, the more commonly used BCTs were analysed individuals to assess whether there was any evidence that they individually caused any changes. Out of the seven commonly used BCTs, three showed evidence of association with greater decreases in control group drinking, these were 2.3: Self-monitoring of behaviour (i.e. completing the AUDIT), 5.2: Salience of consequences (i.e. being asked about negative consequences of drinking, and 7.1: Prompts and Cues (i.e. used whenever something is likely to prompt the individual to consider their drinking or its impacts, such as posters in a hospital). The BCT for salience of consequences was a significant predictor in all models and may have prompted a conscious or subconscious decision to reduce drinking. A number of studies have shown that negative consequences have a moderating effect on the effectiveness of ABIs (Palfai et al., 2011). This finding also supports that of Black et al (2016) who showed that BCTs which provide information on consequences of drinking are significantly associated with a reduction in drinking in ABI RCTs. Unconsciously, this could produce the context effects of the demand characteristics (Collier & Lawson, 2017) where being asked a question could prompt an altered answer for the following question. This could occur at follow-up where a negative consequence question was asked, and immediately followed by the timeline follow back or AUDIT. This finding suggests that this BCT should be avoided in control groups wherever possible, and researchers should be mindful of the impact on control group drinking which may occur through this BCT.

The BCT of Prompts and cues was also found to be significantly associated with a greater decrease in control group drinking. This code was used when a participant was required to attend a location which may influence their behaviour, or were required to read prompts to

influence a change. This is strongly associated with studies which took place in a health setting, with 20 of the 28 studies which used this code taking place in health settings. This is likely to be partially the cause of the moderate decrease in control group drinking seen in health setting studies. The use of posters to improve public health outcomes in hospitals is well supported. Grice et al. (2008) demonstrated that posters being present in hospitals resulted in a significant increase in using gel dispensers in hospitals, Ritchie et al. (2019) demonstrated that posters could reduce the expectancy to receive anti-biotics for a common cold, and Raney et al. (2019) demonstrated the usefulness of posters in increasing physical activity in nurses.

The final BCT identified with a potential association with decreased in control group drinking, is 2.3: Self-monitoring of behaviour. Whilst this BCT did not significantly predict any change in control group drinking, it is the most similar to assessment reactivity of the BCTs analysed and did show the largest beta coefficient. This code was the most common coded BCT of all seven, with only five studies analysed not showing this code. Studies by Kypri et al. (2007) and Meier et al. (2017) have shown that by asking participants to record their behaviour, it caused a significant decrease in drinking, however the present study does not support this finding. The study by Meier et al. (2017) suggests that this reduction is seen regardless of the type of assessment completed, this could explain the lack of a finding in this BCT, as it is present in nearly every study, where there are already other BCTs active. The analysis conducted in this study was unable to separate the effect of BCT 2.3: Self-Monitoring of Behaviour out from other BCTs and so may not have accurately detected any association between this BCT and decreased control group drinking.

The findings explain similar results shown in previous work, such as McCambridge & Day (2008), which suggested that the change in control group drinking could be partially down to the screening element of the study. Our results support this theory but have also shown

evidence that the elements of the control group methodology, beyond mere screening (BCT 2.3), are also contributing to the reduction in control group drinking. As a result, more work should be done to report the outcome measures, as well as the elements, of the control group in a more consistent manner across research papers. In a review by Shorter et al. (2019), the authors concluded that there was a lack of consistency in how outcome measures were reported in ABIs, with no outcome consistently reported in all the trials analysed. This hampers efforts to compare studies, and can lead to important findings being missed or left out due to using a different outcome measure compared to other studies. Shorter et al. (2019), use this finding as evidence to create a Core Outcome Set (COS) which would provide guidance on consistent use of outcomes. The findings of this review, would suggest going further, and providing guidance on how to report control groups consistently across research, including clear references to BCT elements within the control group. This will aid in comparing studies and creating robust guidance.

3.4.4 Limitations

This study does have several limitations, firstly that whilst every effort has been made to ensure the coding of BCTs is accurate, ultimately the coding is subjective and may be coded differently by other authors. This is especially true in studies where control methodology is brief with limited discussion of the assessment materials used. As a result, some studies may be missing codes if there wasn't enough evidence to support coding a specific BCT. There is also a large variation in the studies included in the analysis, there were broad inclusion criteria to attempt to increase generalisability, however this can limit the degree to which results can be applied to individual studies.

The search strategy served to distance the decision making about whether to include or exclude certain studies and to avoid a vast undertaking of a full systematic strategy. By doing this, there was less chance of subjective choice over inclusions and left the decision to include solely based on whether the required data was published, a more objective approach.

However, this strategy is not without its limitations. By using previously published reviews and meta-analyses, it has limited our search to older studies and may have missed more recent publications. More recent publications could show different trends in setting, country of origin, or target populations.

The large variety of outcome measures reported, often meant that some studies were excluded from the analysis due to an incompatible outcome measure (e.g. drinks per drinking day). This is a common problem and could well limit findings from meta-analyses such as this one. Finally, this review was not pre-registered and as such may lack the transparency of other reviews where the planned aims and plans for data synthesis were registered beforehand. The intended analyses in the current review have not changed since the initial plan.

3.4.5 Conclusion

The study has shown several key findings. The first key finding showed that studies are underestimating the effectiveness of ABIs. This suggests that the current estimate of the expected effect sizes of ABIs could be on the lower end of the possible range, and this could impact the uptake by health services and local authorities to utilise this method of tackling excessive drinking. The study also found that this underestimation of the effectiveness of ABIs could come from two sources; the setting of the study, and the level of assessment the control group is exposed to. The study found that studies which took place in neutral settings showed far lower control group changes than those in more health focused settings such as hospitals. The level of assessment, including the specific components included in the assessment of control groups was also found to impact the control group drinking. Studies with more BCTs included in the baselines assessments and control group procedure showed greater changes in control group drinking. Specific BCTs appeared to contribute to this, BCT 2.3: Self-Monitoring of Behaviour, and BCT 5.2 Salience of Consequences both were shown to lead to greater decreases in control group drinking. However, it is important to note that

whilst BCT 5.2 Salience of Consequences may be easier to eliminate from control group assessments, components which would be coded as BCT 2.3: Self-Monitoring of Behaviour are more difficult to remove from assessments of control groups and therefore must be acknowledged in analysis of ABI findings.

The study shows that the impact of changes in drinking in the control groups of trials of ABIs is complex and multifaceted. Whilst setting, content, and intensity of control group methodology are shown to impact control group drinking, there is also evidence for regression to the mean and the Hawthorne effect. These are both likely to be moderated by settings and BCTs observed and separating them from each other is difficult. Whilst it is not possible to completely eliminate these triggers and effects, efforts can be made to reduce the impact, or acknowledge the presence of them in future research.

The findings illustrate that control groups could be described better by using BCTs to describe the components of the control groups. This would improve transparency, but would also encourage researchers to consider the elements being included in the control group, and require them to justify their inclusion. This also demonstrates the need to accept the limitations of control groups more often in research. Studies are unlikely to use 'true' Treatment-as-usual control groups (as defined by National Institute for Clinical Excellence, (2019)), and as such, this will present a limitation in the interpretation of results.

Chapter 4

4. Study 2: Cross-Sectional Study of Drinking Motivations Between Employed and Unemployed Populations.

4.1 Introduction

Unemployment is associated with many social, mental, and physical impacts on the individual. As summarised in chapter one, research has demonstrated how increased alcohol harms and consumption are associated with unemployment. These increased alcohol harms are likely to be the result of a combination of lower mental health and wellbeing, and reduced access to social and economic health and wellbeing and amenities to support them (such as social mobility and support networks, leisure activities). The literature suggests that unemployment can lead to increased alcohol harms as a result of social (as in the Alcohol Harms Paradox, AHP), mental (to deal with depression or anxiety), and physical (related to changes in daily habits) factors. People who are unemployed are a heterogeneous group, this is because unemployment, in theory, can happen to anyone regardless of background, gender, previous work, race, or socio-economic status (SES), as was demonstrated during the financial crisis in 2008 (UK Commission for Employment and Skills, 2014), as well as is predicted to happen again in 2020 in the aftermath of COVID-19 (Office for National Statistics, 2020). People who are unemployed are more likely to be of a lower SES and have a lower educational background (Doku et al., 2018), however one explanation for this may be due to the fact that roles categories in a lower occupational class are typically riskier and less secure (Rune & Neilsen, 2009). The fact that people who are unemployed are more likely to be lower SES, in theory, means that they should be more likely to fall victim to the AHP, namely the phenomenon whereby people in lower SES groups may not drink more alcohol than other groups, but they do appear to suffer more alcohol related harm than other groups (Bellis et al., 2016). As outlined earlier in the thesis (section 1.1.4.3), there are different explanations for this paradox including that people in lower SES groups may have more risky

drinking habits and patterns than higher SES groups, or that they are consuming a different kind of alcohol (Fone et al., 2013). Another possibility is that there are multiplicative effects, where alcohol is just one of many factors, with others (such as poor housing, smoking, or poor diet) also having an impact (Duncan et al., 1999). This can lead to worse overall health due to deprivation, poor mental and physical health, and lower healthy life expectancy.

Unemployment has been shown to lead to poorer mental health (Cheetham et al., 2019), and there is a well-established co-morbidity between poorer mental health and increased alcohol consumption (Regier et al., 1990). Both anxiety (B. F. Grant et al., 2004) and depression (Kessler et al., 1997) have been shown to lead to increases in drinking. Cooper's (1994) Drinking Motivations Questionnaire measures four motivations for drinking, one of which is 'coping'. Those who select the items associated with coping can be said to drink due to low mood and to deal with difficult experiences. A lack of finances may well contribute to this increase in stress, particularly if finances are worsening the longer the spell of unemployment goes on. Worry about finances has clear links to poorer mental health and increased stress (Sturgeon et al., 2016). As a result, unemployment may act as a trigger for increased drinking through poorer mental health.

A report commissioned by the Department for Work and Pensions (DWP) (Sutton et al., 2004) which looked into barriers to unemployed people getting back into work found that people claiming benefits often described the experience as frustrating and that they had nothing to do. They often cited lack of money as the main cause of their boredom, as they could not afford to engage in activities they find enjoyable. Boredom has been linked to heavy drinking, particularly in younger adults (Biolcati et al., 2016) so this suggests another way in which unemployment could increase drinking in a group already at risk of increased alcohol harm. No studies have looked into the impact of boredom on drinking in people who are unemployed to date. The ultimate aim of this thesis is to design an ABI to target people who

are unemployed, however before we do this, we need to understand the reasons behind the increased risk of drinking that unemployment brings.

To understand more about the target group, a cross-sectional study was designed to compare alcohol use, drinking motivations, depression, and boredom in those who are employed with those who are unemployed. This study aimed to investigate the differences in alcohol use (AUDIT scores), drinking motivations, and drinking due to boredom between individuals who were employed and unemployed. This is intended to provide a deeper understanding of the relevant aspects of unemployment when designing an effective brief intervention for this group.

4.1.1 Aims

1. To conduct a principal component analysis of drinking motives to identify the drinking motivation constructs after the inclusion of a new boredom sub-scale
2. To determine the differences between unemployed and employed participants in terms of AUDIT scores, drinking motivations, and experienced boredom.
3. To understand the associations between AUDIT scores and drinking motives, types of boredom and AUDIT scores in the unemployed group.

4.1.2 Hypotheses

1. Boredom will be identified as an independent drinking motivation.
2. Unemployed participants will score higher on the Alcohol Use Disorder Identification Test, and will show different motives to drinking, compared to the employed.
3. There will be associations between specific drinking motives and AUDIT scores in people who are unemployed.

4.2 Method

4.2.1 Design

The study was a cross-sectional, between-subjects study between employed and unemployed participants. We used an opportunistic, voluntary sample of participants of two groups; employed and unemployed. The dependent variables in the study were the Drinking Motivation sub-scale scores and the scores of the multi-state boredom scale (Aim 2), and the AUDIT score (Aims 2 and 3). A power calculation was conducted using G*Power (Faul et al., 2009) to estimate a study power of between 0.8 and 0.9, it was recommended that there should be 67 participants per group to achieve a 0.8 power, and 89 participants per group for a study power of 0.9.

4.2.2 Participants

Participants were recruited from numerous sources, primarily through online adverts on social media. Only full-time participants and fully unemployed participants were recruited. This was done due to the continuum of employment statuses making it difficult to decide where the varying levels of part-time employment would fall on the dichotomous comparison being explored. The adverts for the employed participants were placed on Facebook groups for local communities, buy and sell pages, and general advice pages. For people who were unemployed, adverts were posted on job seeking advice Facebook groups, groups which provided advice for claiming Universal Credit, and groups advertising job vacancies. 216 participants started the survey, 52 participants were excluded, primarily due to non-completion of the key questionnaires. Other reasons for exclusion were; part-time employed or student occupations, non-engagement (i.e. selecting the same answer throughout), not living in the UK, and duplicate entries. A total of 94 employed, and 70 unemployed were recruited to the study. Participants were given the option to enter a prize draw for shopping vouchers as compensation for taking part.

4.2.3 Measures

The study was an online survey accessed via links in adverts on social media. The survey consisted of five questionnaires; the Alcohol Use Disorder Identification Test (AUDIT), a modified version of the Drinking Motivations Questionnaire (DMQ-M), the shortened version of the Multi-State Boredom Scale (MSBS-15), the Patient Health Questionnaire (PHQ-9), and some Demographic questions. The AUDIT (Saunders et al., 1993) is a short Likert scale designed to measure the risk of developing an alcohol use disorder. Overall scores are categorised into one of four "risk levels". The AUDIT is scored from 0-4 for each question, a score of 0-7 out of the ten questions is associated with a low risk of developing an alcohol use disorder. The next two risk levels show increasing (score of 8-15) and higher risks (scoring 16-19), with scores of 20-40, requiring referral to specialist treatment and are considered to be probably alcohol dependent. (Babor et al., 2019) The increasing risk level is associated with hazardous drinking, where the quantity or pattern of alcohol consumption increases the risk of adverse health effects. The higher risk level is associated with harmful drinking, where the drinking patterns and quantities are beginning to have an adverse health effect, and the individual may be experiencing symptoms of these effects.

The DMQ (M. L. Cooper, 1994) is a scale designed to detect possible motivations for drinking. The original scale measures these motivations in four broad categories; Social (Drinking to be sociable), Coping (Drinking to forget your problems), Enhancement (Drinking to feel better or to do things otherwise impossible), and Social Pressure and Conformity (Drinking because others are drinking). Each of the four motives are measured by five items. A further five items were added to the scale with the intention to measure boredom as a possible motivation for drinking. These items were modified from items on the MSBS. The new items are highlighted with an (*) in the DMQ in Appendix 4. The new items were decided based on their loading score in Fahlman et al. (2013). Items from the Low and High arousal sub-categories were excluded as they were too similar to "coping" items already found in the

DMQ. (e.g. “I feel lonely” [MSBS-15] & “To cheer yourself up when you are in a bad mood” [DMQ]). The principal component analysis is shown in the results section, along with which items were used for which category. The original factor structure is shown in Table 8.

Table 8: Factor structure of original Drinking Motivations Questionnaire (M.L. Cooper, 1994)

Item number	Item	Factor
3	Because it helps you enjoy a party	Social
5	To be sociable	Social
11	Because it makes social gatherings more fun	Social
14	Because it improves parties and celebrations	Social
16	To celebrate a special occaision with friends	Social
1	To forget your worries	Coping
4	Because it helps when you feel depressed or nervous	Coping
6	To cheer up when you are in a bad mood	Coping
15	Because you feel more self-confident and sure of yourself	Coping
17	To forget abour your problems	Coping
7	Because you like the feeling	Enhancement
9	Because it's exciting	Enhancement
10	To get high	Enhancement
13	Because it gives you a pleasant feeling	Enhancement
18	Because it's fun	Enhancement
2	Because your friends pressure you to drink	Conformity
8	So that others won't laught at you about not drinking	Conformity
12	To fit in with a group you like	Conformity
19	To be liked	Conformity
20	So you won't feel left out	Conformity

The MSBS-15 (Baratta & Spence, 2015) was used to measure the individual’s current boredom. The MSBS (Fahlman et al., 2013) measures boredom across several sub-scales; low arousal (Similar to low mood; “I feel low”), high arousal (similar to irritability or anxious feelings “I feel agitated), time perception (feeling of time moving slowly “Time is dragging on”), disinterest (“I am stuck in a situation that I feel is irrelevant”), and inattention (“I am easily distracted”). The MSBS-15 is a shortened version which has shown similar validity (Fahlman et al., 2013). Due to the need of brevity (to avoid skewing the data due to study induced boredom), the MSBS-15 was preferred over the much longer MSBS. This scale was used to support the inclusion of the new drinking motivations items in the DMQ.

The Patient Health Questionnaire (PHQ-9) (Spitzer, 1999) is a short measure of an individual’s current mental health, by measuring objective symptoms associated with depression.

Examples of the symptoms it measures include feeling hopeless, having little energy, and thoughts of self-harm or taking their own life. The measure has high internal validity (Kroenke et al., 2001) and was an important inclusion due to the links between unemployment, poor mental health, and the subsequent impact on alcohol use.

Finally, participants were asked some basic demographic questions about age, gender, ethnicity, education level, and about their current employment status. If participants indicated that they were unemployed, they were also asked whether alcohol had any role in losing their last job or being unable to find another. This was an optional question, with a further free text box to allow them to elaborate if they felt it necessary (this was included to make participants feel more at ease with admitting a potential problem with alcohol use in relation to their employment status.) Education level was used as a proxy for Socio-economic status (SES), this has been done in a number of other studies (i.e. L. Jones et al., (2015)) and is a recognised proxy measure for SES. Whilst education will not reflect current occupational class, this proxy measure may be more helpful in a population currently out of work

4.2.4 Procedure

Participants were recruited and initially engaged in the study via adverts on social media, and printed adverts. The adverts on social media contained a link to the Qualtrics survey. The printed adverts contained the link as well as a QR code to make the study as accessible as possible. These adverts were distributed in Citizen's Advice Bureau centres, and housing association offices. Following the link led to a page where participants were informed of the study and what to expect. They then gave informed consent to begin the study. The first question was a screening question asking about their employment status. After enough participants had been recruited in either group, this screening question was used to close the study to that group. The participants were then able to opt in to several options including; being entered into the prize draw, receiving the information and debrief sheets as a pdf, signing up to be notified of further studies, and requesting a feedback sheet informing

them of the key findings of the study. Finally, the participants were presented with one of two debrief sheets. Both contained the same information, but one contained an additional notice for the participant advising them to seek medical help regarding their mental health. This additional text was presented if the participants recorded high scores on the PHQ-9 or if they answered the final question, “Thought that you would be better off dead or of hurting yourself in some way” as “Nearly Every day” or “More than half the days”, according to the risk protocol approved by ethics.

4.2.5 Analysis

The analyses were conducted in 3 parts: principal component analysis of the DMQ, analyses comparing the employed and unemployed groups, and regression of unemployed AUDIT scores. The analyses are in line with the stated aims of the study.

1) The DMQ items were analysed using principal component analysis (PCA) to determine the factors present and to determine if the new items formed a new factor. This was done using a principal component analysis with Promax rotations. All items were included in the analysis and items which did not load onto a single factor (based upon having a factor loading less than 0.5, whereby 0.5 is the accepted cut-off for studies with a sample size between 120-150 (Hair et al., 1998)), or did not meet the pre-defined criteria were removed. The items were then categorised into the new factors, which included some items being classified in new factors compared to the original measure. For example, an item previously considered a “coping” item, which fit with the “enhancement” factor in the principal component analysis, has been considered part of the “enhancement” motivation. PCAs make the assumption that there is no unique variance in the items, instead equating the total variance to the common variance, and maximising the variance on the first component.
2) Differences between drinking behaviours and habits were compared between those unemployed and employed using MANOVAs with AUDIT scores, PHQ-9 scores,

MSBS-15 scores (and all sub-scales) and DMQ scores (and all revised sub-scales) as the outcomes.

3) Finally, hypothesis driven regression models predicting AUDIT scores as the outcome were run based on the findings from analysis 2 (variables which showed a difference between groups) and from the literature (variables which have been previously linked with increase AUDIT scores). The data were normally distributed, so multiple gaussian Generalised Linear Models (GLMs) were conducted to explain the associations between the scales/sub-scales and the AUDIT scores recorded by the unemployed group. The models were built in steps; first the identified variable was run in a linear regression method against the AUDIT score. Second, demographics (age, gender, education etc) were added into the model. The third model included depression scores from the PHQ-9, and finally (if the initial variable wasn't a boredom sub-scale) the overall boredom score was included. This was done to examine whether these factors may have been partially explaining the association between the independent variable and the outcomes.

4.2.6 Ethical Approval

Ethical approval was granted by the University of Liverpool ethics board on 09.11.2017. Project Reference: 2188

4.3 Results

A total of 164 participants completed the survey; 94 full time employed and 70 unemployed and claiming Universal credit for unemployment, or Job Seekers Allowance. Of the 94 employed participants, 70 (74.5%) were female and 24 (25.5%) were male. The mean age was 32.68 (SD=9.38; Range=41) with 33.0% of participants reporting that they were married, 27.7% were living with a partner, 33.0% were single and 6.4% were divorced. The most common education level among the employed was a Bachelor's degree, with 31.9% reporting this as their highest educational level. Of the 70 unemployed participants, 50

(72.2%) were female and 20 (27.8%) were male. The mean age was 33.59 (SD=12.88; Range=42), with a higher proportion reporting that they were single (54.2%), 23.6% were living with a partner, 12.5% were married, and 8.3% were divorced. The most common highest education level attained was A-levels (26.4%), with 22.2 % gaining a Bachelor's degree. In terms of length of time unemployed, 22.2% reported unemployment time of over a year and 19.4% reported 1-2 months. Participants in the unemployed group showed significantly higher scores on the PHQ-9 test for depressive symptoms (See Table 12).

Table 9: Sample demographics of participants. Showing age, education, gender, and marital status for both employed and unemployed groups, and overall.

		Overall	Employed	Unemployed
----------	Age (Mean (SD))	33.05 (10.91)	32.68 (9.38)	33.59 (12.88)
Education	Degree or higher %	49.80%	68.10%	25.30%
	A-Level %	18.80%	12.80%	26.80%
Gender	Female %	73.50%	74.50%	72.20%
	Male%	26.50%	25.50%	27.80%
Marital Status	Married	24.20%	33.00%	12.70%
	Single	42.40%	33.00%	54.90%
	Other	33.40%	34.00%	32.40%

4.3.1 Aim 1: Boredom Drinking Motivation Principal Component Analysis

A principal component analysis was run on the results of the DMQ. This aimed to determine the number of factors present now that new items have been added to test for drinking due to boredom, both to test the revised scale as well as to understand the contribution of the boredom drinking motive, in relation to other motives.

4.3.1.1 Pre-analysis checks and participant characteristics.

Values of skewness and kurtosis for the modified DMQ ranged between the acceptable levels, thus no transformations were necessary (Lewis-Beck et al., 2003). The Kaiser-Meyer-Olkin statistic for the model was above the acceptable level of 0.05 (KMO=0.853) showing that there were no partial correlations and the sampling is adequate for principal component analysis. The Bartlett's test of sphericity was significant ($p<0.001$) suggesting that there may

be a statistically significant interrelationship between the variable and that the principal component analysis is valid.

4.3.1.2 Factor Structure of the DMQ modified.

A principal component analysis, using Promax rotations, showed a six factor model. However, there was very little difference between a six and five factor model and so it was reduced to a five factor model as the sixth factor comprised of dual-loaded items. Removing this factor allowed the model to fit the data better and made the factors clearer. The four original factors from the DMQ (M. L. Cooper, 1994) were accepted, with the principal component analysis primarily being used to justify the inclusion of a fifth factor which aligned with the newly added boredom items.

Sampling adequacy was deemed acceptable (KMO=0.853), Bartlett's test of sphericity showed sufficient correlations between items (X^2 (300) = 1954.68, p<0.001). The eigenvalues for the five factors were: 7.33, 3.54, 2.41, 1.58, and 1.16 respectively, accounting for 64.1% of the total variance. Factors 1 through 4 were related to social motivations (5 items), social pressure and conformity motivations (6 items), enhancement (5 items), and coping (4 items) respectively. Factor 5 comprised of 3 items related to boredom. Two of the new items, expected to be related to boredom, did not load onto boredom, instead, item number 19 loaded on to social pressure and conformity motivations, and item 25 did not load onto any factor above 0.5 threshold. One of the coping items included on the original DMQ by Cooper (1994) loaded poorly onto two factors (item 18), so was therefore removed from the analysis, this was confirmed when the factor loadings were compared by employment status. Table 10 shows the first factor loading with the new boredom items identified with a (*) and the items to remove identified with a (†), table 11 then shows the loading with the two items removed. This full first principal component analysis consists of 25 items (α=0.894).

*Table 10: Items and loading scores above 0.5 before items removed. Items to be removed highlighted in bold with †, new items highlighted with **

Item number	Item	1	2	3	4	5
1	To forget your worries			0.884		
5	Because it helps you when you feel depressed or nervous			0.716		
7	To cheer you up when you are in a bad mood			0.538		
18	**Because you feel more self-confident and sure of yourself †**	0.511		0.381		
21	To forget about your problems			0.898		
2	Because your friends pressure you to drink		0.633			
10	So others won't kid you about not drinking		0.700			
15	To fit in with a group you like		0.721			
23	To be liked		0.798			
24	So you won't feel left out		0.691			
3	To stop time from dragging *					0.743
8	To give you something to focus your attention on *					0.593
11	To pass the time *					0.861
19	To make something happen *		0.666			
25	**To stop you from losing attention so easily * †**		*0.498*			
4	Because it helps you enjoy a party	0.924				
6	To be sociable	0.795				
14	Because it makes social gatherings more fun	0.804				
17	Because it improves parties and celebrations	0.865				
20	To celebrate special occasions with friends	0.613				
9	Because you like the feeling				0.861	
12	Because it's exciting				0.604	
13	To get high				0.743	
16	Because it gives you a pleasant feeling				0.845	
22	Because it's fun				0.562	

Item 18 was removed due to dual-loading poorly on two factors. Item 25 was removed due to not loading onto any factor above the 0.5 cut-off. After the items were removed, sampling adequacy remained acceptable (KMO=0.786), and Bartlett's test of sphericity showed sufficient correlations between items (X^2 (300) = 997.67, p<0.001). The eigenvalues for the five factors were: 8.54, 3.24, 2.22, 1.50, and 1.22 respectively, accounting for 66.87% of the variance, showing a slight improvement on the previous sample.

*Table 11: Factors with loading scores after removing items. New items highlighted with *.*

Item number	Item	1	2	3	4	5
1	To forget your worries				0.879	
5	Because it helps you when you feel depressed or nervous				0.720	
7	To cheer you up when you are in a bad mood				0.577	
21	To forget about your problems				0.889	
2	Because your friends pressure you to drink		0.706			
10	So others won't kid you about not drinking		0.637			
15	To fit in with a group you like		0.755			
23	To be liked		0.765			
24	So you won't feel left out		0.699			
3	To stop time from dragging *					0.741
8	To give you something to focus your attention on *					0.647
11	To pass the time *					0.860
19	To make something happen *		0.653			
4	Because it helps you enjoy a party	0.930				
6	To be sociable	0.782				
14	Because it makes social gatherings more fun	0.777				
17	Because it improves parties and celebrations	0.862				
20	To celebrate special occasions with friends	0.632				
9	Because you like the feeling			0.853		
12	Because it's exciting			0.600		
13	To get high			0.753		
16	Because it gives you a pleasant feeling			0.842		
22	Because it's fun			0.555		

The final factor loading, used in later analyses, consisted of 23 items (α=0.884). The social motivations subscale consisted of five items (α=0.878), the social pressure and conformity motivations subscale consisted of six items (α=0.823), the enhancement motivations subscale consisted of five items (α=0.833), the coping motivations subscale consisted of 4 items (α=0.839), and the boredom motivations subscale consisted of three items (α=0.820).

4.3.2 Aim 2: Differences between Employed and Unemployed Groups

Between groups analysis on the AUDIT scores were run. Unemployed participants scored significantly higher on the AUDIT than the employed participants, see Table 12. This

remained the case when considering the AUDIT sub-scales of consumption, and harm. There was no significant difference between groups on the Dependence sub-scale of the AUDIT.

*Table 12: AUDIT scores and PHQ-9 scores by group and between group differences. Significant values at the p<0.05 level or lower highlighted by **.*

	Employed			Unemployed			Between groups	
	N	Mean	SD	N	Mean	SD	F value	p-value
AUDIT	94	10.35	5.66	70	13.31	7.29	8.59	<0.001**
AUDIT - Consumption	94	5.72	2.13	70	6.73	2.32	8.29	<0.001**
AUDIT - Dependence	94	2.14	1.92	70	2.80	2.82	3.20	0.076
AUDIT - Harm	94	2.49	2.67	70	3.79	3.35	7.61	<0.001**
PHQ-9	94	8.29	6.02	70	13.30	7.87	21.39	<0.001**

The first part of the analysis compared drinking motivations, based on the previous principal component analysis, between the two groups. The results are shown Table 13. There were significant differences found in the coping motivation and the new boredom sub-scale comprising the 3 items which loaded onto the new factor. This implies that boredom and coping are reported more highly as drinking motivations amongst those who are unemployed.

*Table 13: Table showing means and between group analysis for DMQ scores. Significant results highlighted with **.*

DMQ	Employed			Unemployed			Between groups	
	n	Mean	SD	n	Mean	SD	F value	p-value
Social	94	16.27	4.97	70	16.63	5.56	0.203	0.653
Coping	94	8.47	3.33	70	10.61	4.34	12.838	0.001**
Enhancement	94	13.84	4.51	70	13.79	5.06	0.022	0.882
Conformity	94	7.19	3.17	70	7.47	3.21	0.309	0.579
Boredom	94	6.67	2.18	70	8.61	4.02	15.794	0.001**

Furthermore, overall scores on the MSBS were significantly higher for the unemployed group, suggesting that boredom in general is also reported higher among this group. The unemployed group also scored higher across all sub-types of state boredom; disinterest, inattention, time perception, low affect, and high affect. The results are shown in Table 14.

*Table 14: Table showing means and between group analysis for MSBS-15 scores. Significance results highlighted with ***

	Employed			Unemployed			Between Groups	
MSBS	n	Mean	SD	n	Mean	SD	F Value	p-Value
Disinterest	94	6.38	3.53	70	9.09	3.90	21.506	0.001**
Inattention	94	6.52	3.52	70	7.74	3.92	4.391	0.038**
Time Perception	94	7.13	4.48	70	11.17	5.90	24.924	0.001**
Low Affect	94	16.18	7.99	70	20.39	9.53	9.413	0.003**
High Affect	94	10.29	5.00	70	12.17	5.38	5.34	0.022**
Overall	94	46.50	20.18	70	60.56	25.63	15.437	0.001**

4.3.3 Aim 3: Factors associated with Alcohol Use Disorder Identification Test (AUDIT) scores in the unemployed group

A series of multiple linear regressions were conducted to investigate whether boredom, coping drinking motivations, disinterest, or time perception boredom were significantly associated with unemployed participants' scores on the AUDIT and the AUDIT sub-scales. The first model included the coping drinking motivation, as well as other variables treated as covariates, including gender, ethnicity, marriage status, education level, overall MSBS (boredom) score, and PHQ-9 (depression) score. The results of the first regression indicated that the final model explained 41.8% of the variance and that the model was a significant predictor of AUDIT scores, $F(7,61)=6.248$, $p<0.001$. Coping motivation was the only variable statistically significantly ($B=0.541$, $p<0.001$) associated with AUDIT score, the other variables (demographics, state boredom, and depression) were not significantly associated. When considering the sub-groups of the AUDIT, the coping motivation remained as the only significant variable; AUDIT Consumption (38.7% variance explained; $F(7,61)=5.497$, $p<0.001$), AUDIT Dependence (27.7% variance explained; $F(7,61)=6.394$, $p=0.005$), and AUDIT Harm (36.3% variance explained; $F(7,61)=4.968$, $p<0.001$). The results of these models can be seen in table 15.

The second set of multiple regressions investigated the role of the new boredom drinking motive in predicting AUDIT scores. The model followed the same set up as the coping model. The results of the regression showed that the final model explained 37.6% of the variance and the model was a significant predictor of AUDIT scores, $F(7,61)=5.245$, $p<0.001$. As with

coping, boredom motivation was the only variable to contribute significantly to the model. Again, as with coping, boredom was the only significant variable to contribute significantly to the model for AUDIT Consumption scores (34.5% variance explained; $F(7,61)=4.593, p<0.001$), AUDIT Dependence scores (25.1% variance explained; $F(7,61)=2.918, p=0.011$), and AUDIT Harm scores (33.4% variance explained; $F(7,61)=4.379, p=0.001$). The results of the regression are displayed in table 16.

*Table 15: Regression table of Coping drinking motive as a predicting factor for AUDIT and AUDIT subscales scores. Presented as Standardized Beta (t-scores). P<0.001***, P<0.01**, P<0.05*. n=70*

	AUDIT				AUDIT Consumption				AUDIT Dependence				AUDIT Harm			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DMQ Coping	0.602***	0.607***	0.543***	**0.541*** **	0.513***	0.529***	0.592***	**0.592*** **	0.492***	0.512***	0.436**	**0.430** **	0.548***	0.531***	0.411**	**0.411** **
ß (t)	(6.174)	(5.74)	(4.032)	**(3.966)**	(4.886)	(4.899)	(4.288)	**(4.233)**	(4.630)	(4.430)	(2.903)	**(2.834)**	(5.366)	(4.752)	(2.920)	**(2.880)**
Gender	-	-0.152 (-1.453)	-0.173 (-1.596)	-0.175 (-1.596)	-	-0.095 (-0.893)	-0.075 (-0.672)	-0.075 (-0.667)	-	-0.157 (-1.347)	-0.182 (-1.508)	-0.186 (-1.529)	-	-0.133 (-1.211)	-0.173 (-1.529)	-0.173 (-1.515)
Ethnicity	-	-0.132 (-1.281)	-0.128 (-1.234)	-0.124 (-1.177)	-	-0.193 (-1.831)	-0.198 (-1.862)	-0.197 (-1.820)	-	-0.057 (-0.495)	-0.052 (-0.450)	-0.044 (-0.376)	-	-0.107 (-0.982)	-0.099 (-0.915)	-0.098 (-0.889)
Marital status	-	-0.081 (-0.792)	-0.083 (-0.813)	-0.087 (-0.832)	-	0.009 (0.088)	0.012 (0.112)	0.011 (0.103)	-	-0.047 (-0.416)	-0.050 (-0.440)	-0.059 (-0.507)	-	-0.143 (-1.327)	-0.148 (-1.379)	-0.149 (-1.354)
Education level	-	-0.051 (-0.493)	-0.060 (-0.573)	-0.055 (-0.518)	-	-0.219* (-2.069)	-0.211 (-1.967)	-0.210 (-1.909)	-	0.048 (0.412)	0.037 (0.318)	0.047 (0.391)	-	0.000 (0.002)	-0.016 (-0.151)	-0.138 (-0.138)
Boredom score (MSBS)	-	-	0.105 (0.772)	0.077 (0.686)	-	-	-0.105 (-0.748)	-0.109 (-0.559)	-	-	0.125 (0.823)	0.063 (0.300)	-	-	0.197 (1.381)	0.191 (0.960)
Depression Score (PHQ-9)	-	-	-	0.037 (0.214)	-	-	-	0.006 (0.033)	-	-	-	0.082 (0.424)	-	-	-	0.008 (0.046)
r^2 (SE)	*0.363 (5.89)*	*0.412 (5.84)*	*0.417 (5.86)*	*0.418 (5.91)*	*0.263 (2.00)*	*0.381 (1.89)*	*0.387 (1.90)*	*0.387 (1.92)*	*0.242 (2.47)*	*0.267 (2.51)*	*0.275 (2.51)*	*0.277 (2.53)*	*0.301 (2.83)*	*0.343 (2.83)*	*0.363 (2.81)*	*0.363 (2.83)*

*Table 16: Regression table of Boredom drinking motive as a predicting factor for AUDIT and AUDIT subscales scores. Presented as Standardized Beta (t-scores). P<0.001***, P<0.01**, P<0.05*. n=70*

	AUDIT				AUDIT Consumption				AUDIT Dependence				AUDIT Harm			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
DMQ Boredom	0.482***	0.442***	0.352**	**0.351** **	0.465***	0.435***	0.398***	**0.397*** **	0.391***	0.366**	0.283*	**0.281** *	0.405***	0.358**	0.258*	**0.257** *
ß (t)	(4.507)	(4.089)	(3.287)	**(3.253)**	(4.300)	(4.139)	(3.591)	**(3.591)**	(3.474)	(3.139)	(2.406)	**(2.377)**	(3.621)	(3.178)	(2.330)	**(2.305)**
Gender	-	-0.024 (-0.221)	-0.136 (-1.210)	-0.141 (-1.240)	-	0.013 (0.118)	-0.034 (-0.292)	-0.037 (-0.317)	-	-0.049 (-0.412)	-0.152 (-1.238)	-0.159 (-1.238)	-	-0.021 (-0.181)	-0.146 (-1.257)	-0.148 (-1.264)
Ethnicity	-	-0.147 (-1.302)	-0.123 (-1.140)	-0.114 (-1.045)	-	-0.201 (-1.830)	-0.191 (-1.736)	-0.185 (-1.654)	-	-0.071 (-0.579)	-0.048 (-0.405)	-0.036 (-0.303)	-	-0.123 (-1.047)	-0.096 (-0.864)	-0.091 (-0.809)
Marital status	-	-0.192 (-1.774)	-0.154 (-1.489)	-0.162 (-1.537)	-	-0.079 (-0.755)	-0.064 (-0.602)	-0.069 (-0.641)	-	-0.142 (-1.219)	-0.107 (-0.944)	-0.119 (-0.194)	-	-0.244* (-2.173)	-0.202 (-1.898)	-0.206 (-1.898)
Education level	-	-0.045 (-0.400)	-0.077 (-0.714)	-0.067 (-0.605)	-	-0.216 (-1.961)	-0.230* (-2.075)	-0.223 (-1.961)	-	0.053 (0.430)	0.023 (0.194)	0.037 (0.308)	-	0.006 (0.052)	-0.030 (-0.265)	-0.024 (-0.212)
Boredom score (MSBS)	-	-	0.331* (2.843)	0.264 (0.157)	-	-	0.138 (1.155)	0.092 (0.489)	-	-	0.307* (2.401)	0.212 (1.050)	-	-	0.371** (3.087)	0.335 (1.763)
Depression Score (PHQ-9)	-	-	-	0.085 (0.472)	-	-	-	0.057 (0.756)	-	-	-	0.120 (0.610)	-	-	-	0.045 (0.242)
r^2 (SE)	*0.233 (6.47)*	*0.292 (6.41)*	*0.373 (6.08)*	*0.376 (6.11)*	*0.216 (2.07)*	*0.330 (1.97)*	*0.344 (1.96)*	*0.345 (1.98)*	*0.153 (2.61)*	*0.176 (2.66)*	*0.246 (2.56)*	*0.251 (2.57)*	*0.164 (3.09)*	*0.231 (3.06)*	*0.334 (2.87)*	*0.334 (2.89)*

A multiple regression model was run to examine the associations of the two boredom subscales on AUDIT scores in those who are unemployed (Table 17). The same demographic variables were added into the model as were used in the drinking motives model, with the exception of MSBS overall scores, this was removed to stop duplicating data in the same model (as the overall MSBS score is a total of all sub-groups). With time perception in the model, it explained 32.2% of the variance and was a significant predictor of AUDIT scores, $F(6,63)=4.990, p<0.001$. Time perception was the only significant variable in the model ($B=0.634, p=0.001$). This remained the case for the AUDIT subscales; Consumption (24.5% variance explained; $F(7,61)=3.404, p=0.006$), Dependence (25.6% variance explained; $F(7,61)=3.617, p=0.004$), and Harm (28.8% variance explained; $F(7,61)=4.237, p=0.001$).

*Table 17:Regression table of Time Perception boredom as a predicting factor for AUDIT and AUDIT subscales scores. Presented as Standardized Beta (t-scores). P<0.001***, P<0.01**, P<0.05*. n=70*

	AUDIT			AUDIT Consumption			AUDIT Dependence			AUDIT Harm		
	1	2	3	1	2	3	1	2	3	1	2	3
MSBS Time Perception	0.511*** (4.897)	0.536*** (4.907)	**0.496*** (3.606)**	0.346** (3.043)	0.350** (3.041)	**0.333* (2.295)**	0.469*** (4.383)	0.504*** (4.410)	**0.465** (3.229)**	0.289*** (4.590)	0.303*** (4.550)	**0.278** (3.311)**
Gender	-	-0.181 (-1.641)	-0.196 (-1.699)	-	-0.072 (-0.618)	-0.078 (-0.642)	-	-0.190 (-1.643)	-0.204 (-1.693)	-	-1.443 (-1.653)	-1.561 (-1.716)
Ethnicity	-	-0.122 (-1.102)	-0.115 (-1.031)	-	-0.202 (-1.732)	-0.199 (-1.684)	-	-0.043 (-0.374)	-0.037 (-0.315)	-	-0.925 (-0.825)	-0.858 (-0.754)
Marital status	-	-0.084 (-0.797)	-0.088 (-0.828)	-	-0.053 (-0.476)	-0.055 (-0.628)	-	-0.050 (-0.452)	-0.054 (-0.484)	-	-0.306 (-0.971)	-0.318 (-1.002)
Education level	-	-0.069 (-0.625)	-0.063 (-0.576)	-	-0.227 (-1.949)	-0.225 (-1.900)	-	0.024 (0.211)	0.030 (0.259)	-	-0.044 (-0.163)	-0.028 (-0.104)
Depression Score (PHQ-9)	-	-	0.068 (0.479)	-	-	0.029 (0.190)	-	-	0.067 (0.449)	-	-	0.032 (0.500)
r^2 (SE)	*0.261 (6.53)*	*0.320 (6.46)*	*0.322 (6.50)*	*0.120 (2.19)*	*0.244 (2.09)*	*0.245 (2.11)*	*0.220 (2.55)*	*0.254 (2.57)*	*0.256 (2.58)*	*0.237 (3.09)*	*0.285 (3.08)*	*0.288 (3.10)*

The final set of multiple regressions run considered disinterest as a predicting factor in the model (Table 18). The regression showed that the model explained 18.5% of the variance, and was also a significant predictor of AUDIT scores, $F(6,63)=2.377, p=0.039$. However, disinterest was not a significant variable in the model ($B=0.133, p=0.669$). Depression score (PHQ-9) was the only significant variable in this model ($B=0.320$, $p=0.039$). When predicting AUDIT consumption scores, there was a significant model predicting 18.3% of the variance, $F(6,63)=2.345, p=0.042$), however disinterest again wasn't a significant variable in the model, in fact there were no significant variables. The model was not significant when predicting the

AUDIT Dependence subscale, F(6,63)=1.627,p=0.155. There was also no significant model when predicting AUDIT Harm, F(6,63)=2.103,p=0.065.

*Table 18: Regression table of Disinterest boredom as a predicting factor for AUDIT and AUDIT subscales scores. Presented as Standardized Beta (t-scores). P<0.001***, P<0.01**, P<0.05*. n=70*

	AUDIT			AUDIT Consumption			AUDIT Dependence			AUDIT Harm		
	1	2	3	1	2	3	1	2	3	1	2	3
MSBS Disinterest	0.259* (2.211)	0.276* (2.160)	**0.068 (0.429)**	0.168 (1.409)	0.173 (1.377)	**0.042 (0.265)**	0.226 (1.913)	0.249 (1.895)	**0.044 (0.271)**	0.261* (2.231)	0.277* (2.151)	**0.082 (0.513)**
Gender	-	-0.147 (-1.146)	-0.197 (-1.553)	-	-0.047 (-0.375)	-0.079 (-0.619)	-	-0.154 (-1.173)	-0.204 (-1.558)	-	-0.158 (-1.231)	-0.206 (-1.602)
Ethnicity	-	-0.169 (-1.356)	-0.133 (-1.084)	-	-0.233 (-1.908)	-0.211 (-1.716)	-	-0.089 (-0.695)	-0.054 (-0.424)	-	-0.137 (-1.091)	-0.103 (-0.831)
Marital status	-	-0.111 (-0.927)	-0.141 (-1.194)	-	-0.072 (-0.612)	-0.091 (-0.768)	-	-0.078 (-0.629)	-0.107 (-0.877)	-	-0.128 (-1.062)	-0.156 (-1.308)
Education level	-	-0.049 (-0.393)	-0.015 (-0.119)	-	-0.214 (-1.733)	-0.192 (-1.551)	-	0.044 (0.343)	0.078 (0.616)	-	-0.001 (-0.010)	0.031 (0.249)
Depression Score (PHQ-9)	-	-	0.334* (0.2.103)	-	-	0.209 (1.318)	-	-	0.328 * (2.006)	-	-	0.312 (1.943)
r^2 (SE)	*0.067 (7.34)*	*0.127 (7.32)*	*0.185 (7.13)*	*0.028 (2.30)*	*0.160 (2.20)*	*0.183 (2.19)*	*0.051 (2.81)*	*0.079 (2.85)*	*0.134 (2.79)*	*0.068 (3.41)*	*0.117 (3.42)*	*0.167 (3.35)*

4.4 Discussion

The findings are discussed in respect to the aims and hypotheses outlined earlier.

4.4.1 Hypothesis 1: Boredom will be identified as an independent drinking motivation.

It was hypothesised that including modified items from the MSBS in the DMQ would lead to the identification of an independent drinking motive, i.e. a unique factor. Principal component analysis supported this hypothesis, showing that boredom did reflect an independent drinking motive present in the sample. However, two of the included items did not load onto this factor and so only 3 of the 5 new items were able to be used to measure this drinking motive. Given these results, boredom does appear to be an independent drinking motivation.

The hypothesis that boredom would be an independent drinking motivation, was based on previous research suggesting that boredom may be related to increased drinking. Biolcati and colleagues (2016) found that boredom was associated with increased drinking, particularly in younger adults, and that boredom proneness (also categorised as dissatisfaction) was associated with binge drinking. They suggested that this relationship may be particularly strong in young people because dissatisfaction is a common emotion to

experience at this stage in life. Given the repetitive and unfulfilling daily life of unemployment described in reports by the DWP (e.g. Department for Work & Pensions, 2015), dissatisfaction and heightened proneness to boredom may be similarly experienced in those who are unemployed. The findings in the current study support these findings and extend what is known about potential risk factors of heavier drinking. The present study has provided evidence that boredom may be a risk factor for heavier drinking, independent of other motives, particularly in those prone to boredom or who lead potentially dissatisfying lives. There is also evidence that boredom can lead to an increase in relapse rates for those who had received alcohol and drug treatment (Corvinelli, 2005). The data, whilst not directly focusing on relapse rates, also support this as boredom appears to be associated with a higher risk of alcohol use disorder.

The structure found in this study is similar to that of the original Cooper structure (M.L. Cooper, 1994), in that it supports four distinct factors (before adding in Boredom). The items largely follow the structure alignment of the original study, with only a single minor exception, which was to be expected (i.e. double loading of one of the coping items (item 18: Because you feel more self-confident and sure of yourself)). The item which double loaded, was originally placed in the Coping factor, however in this factor structure, it also loaded onto the Social factor. As the item is assessing confidence in the individual, this suggests some participants considered their self-confidence in relation to others, therefore, it correlated with other social items. This supports other research into the DMQ, which show that either a four- (Hauck-Filho et al., 2012; Kuntsche et al., 2006; Sun et al., 2015) or a five-factor structure (the fifth structure being an "Overall drinking motivation" score) (Lac & Donaldson, 2017) were most appropriate. There are some studies which suggest alternate structures. Research conducted by Öster et al., (2017) suggested that the original four-factor model showed questionable fit in Swedish psychiatric patients, and that a short form was more appropriate. However, this study did not take place in a general population, and may

reflect other conditions and motives more relevant to a psychiatric population. Whereas in the study by Gilson et al. (2013), three-factor model was suggested. In their research in older adults, it was demonstrated that the 'conformity/social pressure' factor was not relevant and instead suggest that the remaining factors, demonstrated a better fit. This again may reflect the population whereby older adults are less likely to be influenced by their peers (Foulkes et al., 2018; Knoll et al., 2017) and so removes the conformity motive as a possible reason for drinking.

Despite the finding that boredom is a distinctive drinking motivation, it is possible that further investigation would uncover some shared similarities between boredom and other negative reinforcement motives, such as coping or conformity/social pressure (Cox & Klinger, 1990). In other research, both of the other negative reinforcement motives were significantly positively related to drinking problems after controlling for alcohol use, neither of the positive reinforcement motives were related to drinking problems (M. L. Cooper, 1994). This indicates that the discovery of a new negative reinforcement motive (i.e. Boredom) is an important further step in understanding the reasons for higher alcohol use among people who are unemployed. The fact that it isn't a factor of coping provides two different motivations to target in any intervention aimed at reducing drinking in those who are out of work.

4.4.2 Hypothesis 2: Unemployed participants will score higher on the Alcohol Use Disorder Identification Test, and will show different motives to drinking, compared to the employed.

The second aim was to identify differences in alcohol consumption and patterns of use comparing the employed and unemployed. Unemployed participants scored significantly higher on the AUDIT and two of the AUDIT sub-scales (consumption and harm) meaning the alternative hypothesis, as well as previous findings, are supported.

This result also provides some evidence that unemployed individuals may also be more likely to experience harm related to alcohol due to their likely lower SES (Bellis et al., 2016). Interestingly, however, this research does not entirely support the Alcohol Harms Paradox (AHP). Whilst participants who were unemployed were expected to suffer more alcohol related harm than the employed participants, they also scored higher on the AUDIT consumption scale, which suggests that they are also drinking more than the employed. The AHP suggests that those in lower SES drink less but suffer more harm. This could be due to people who are unemployed typically being, on average, lower SES than the employed, but not necessarily always lower SES than those in work. However, unemployment can – and does – happen across all SES groups. Our data shows that 25.3% of the participants who were unemployed had a degree or higher (or equivalent) education level, which suggest at least some in this group may be of higher SES and by extension may explain this divergence from the AHP.

In terms of drinking motivations, unemployed participants scored significantly higher on both boredom and coping motivations than the employed participants. This supports other studies, particularly those that show that drinking to cope with low mood or depression is a strong likelihood in people who are unemployed (Khlat et al., 2004).

Drinking due to boredom had been previously proposed by Biolcati and colleagues (2016), and there are reports about boredom becoming an issue in those who are seeking work (Bauld et al., 2013). The work reported here and the finding that drinking due to unemployment related boredom is, nonetheless, a novel finding. The literature searches suggest this is the first time this has relationship been directly tested and it adds to knowledge about the well-known but poorly understood link between drinking and unemployment. Boredom is difficult to address from an organisational perspective as it would require more external agency involvement in people's lives, something which is likely

to be resisted. To remove boredom as a risk-factor for increased drinking, the motivation would have to come from the person, something which is more difficult given the significantly higher depression scores in this group. The coping and boredom drinking motivations may well be interrelated and would need an intervention to interrupt the cycle and increase motivation to change.

It was important to understand which of the types of boredom (i.e. Low Affect, High Affect, Inattention, Disinterest, Time Perception) were most associated with the increased motivation to drink via the new boredom drinking motive. To do this the MSBS-15, a short measure of multi-state boredom (Fahlman et al., 2013) was used, which measured boredom overall, and in 5 sub-scales; inattention, disinterest, high affect, low affect, and time perception. No evidence was found that there was a specific type of boredom which unemployed people experienced more, instead they scored significantly higher in all types of boredom. The two types of boredom which showed the highest magnitude of difference between employed and unemployed were the Time Perception, and Disinterest types, however only Time Perception showed any link to increased AUDIT scores.

4.4.3 Hypothesis 3: There will be associations between the differences in drinking motives and any differences seen in AUDIT scores in people who are unemployed

The third aim was to test whether the differences in drinking motives observed were associated with the differences in AUDIT scores in people who are unemployed. Both coping and boredom drinking motives were significantly higher in people who are unemployed compared to the employed, and both of these were shown to be associated with higher AUDIT scores, and higher scores on all three AUDIT sub-scales (consumption, harm, and dependence). This supports the evidence that unemployment is associated with increased alcohol use (Henkel, 2011) and demonstrates that low mood and boredom whilst unemployed are both associated with increased drinking.

This research provides a key target to tackle in an intervention. The finding fits with research conducted by the DWP (Department for Work & Pensions, 2015), which showed that benefit claimants find the day moves slowly and that there is nothing to do, this leads to both frustration and boredom, and ultimately, low mood. In a meta-analysis by Thönes and Oberfeld (2015), whilst judgements of how much time had actually passed were unaffected when the participant suffered from depression, the perception of how quickly or slowly time had passed was altered, relating time perception to both the boredom and the coping drinking motives, and explaining why it is linked with increased AUDIT scores. By specifically tackling this feeling of time passing slowly, an intervention could help reduce alcohol consumption via addressing the boredom drinking motive.

4.4.4 Limitations and future research

The new boredom sub-scale in the DMQ appears to be a useful tool, however more research is required and two new items which load onto the boredom factor are required to maximise the value of the sub-scale. Whilst the findings indicate that boredom as a drinking motive was evident for both employed and unemployed participants, further testing in different populations and samples is still needed to confirm these findings and to make the scale truly generalizable. The use of a PCA, as opposed to a factor analysis, may present a limitation as the findings may be difficult to replicate in other, or larger, samples. As a result, it is recommended to replicate the PCA in other samples before using the structure shown in this chapter. There is also a chance of data-loss when using a PCA over a factor analysis, due to it maximising the amount of variance in the first component, as this is only a limited amount of the variance, this can mean that some data is lost when it moves on to subsequent components. As a result, some very important, but poorly intercorrelated items may be unrepresented (Mazziotta & Pareto, 2019).

Recruiting participants via social media may not result in the most representative sample due to the digital divide. Whilst current job-seekers in the UK are required to have internet

access to claim benefits, this does not negate the fact that for some lower SES people, internet access is a luxury they cannot afford. This may also have influenced the average age of the participants taking part, with social media potentially reflecting a younger sample than the those who the intervention would be targeted for. There is also no guarantee that those using social media to look for a job represent the wider unemployed population. However, there are very few other avenues to recruitment to this kind of research for this particular group. This issue is compounded by time-restraints and the use of online data collection tools to ensure anonymity. Whilst it is of the author's opinion that there is no better, feasible way, the restrictions this places on the data cannot be ignored.

4.4.5 Conclusion

The findings of this study support previous findings that unemployment increases the risk of heavy alcohol use. It also partially supports the application of the AHP in understanding drinking in those who are unemployed, by showing an increased risk of harm from alcohol for the sample population. However, typically the AHP shows higher harm in the absence of increased drinking, whereas in the present study, we also see an increase in drinking. Assuming that unemployed people are lower SES, this suggests that unemployment is particularly detrimental to health as both the increased harm expected in this group is present, with an increased alcohol consumption. The increased alcohol consumption and harm risk for people who are unemployed appears to be related to drinking to cope, and boredom with their situation. Most clearly this boredom is of the time perception type, where participants feel as if the days are dragging. Coping, general boredom, and time perception boredom are all negative reinforcement motives which are linked to developing alcohol use disorders. Boredom is a clear target to address when seeking to reduce alcohol consumption, or the risk of increased alcohol consumption, in people who are unemployed.

4.4.6 Next steps

To continue with the overarching aims of the thesis, the next project explores these findings further using a qualitative approach. This provides in-depth data about experiences of boredom, unemployment, and alcohol use among unemployed participants and their interplay. Another goal is to investigate ways in which people experiencing these challenges in their daily lives believe their problems could be most effectively addressed. Of particular importance are how elements of time perception boredom and drinking to cope are experienced in real life, and how these elements could be addressed in an intervention.

Chapter 5

5. Study 3: "Wheels within wheels, and fires within fires": A qualitative study on the impacts of boredom, drinking, and unemployment in job-seekers.

5.1 Introduction

The previous chapter demonstrated an association between increased levels of drinking and boredom and coping amongst people who are unemployed. The aim of this chapter is to explore this in more depth using a qualitative approach to understand what it is about unemployment which can result in drinking habits becoming more harmful. This information is necessary in order to inform the development of an intervention, to highlight key behaviours and beliefs to target. Correctly targeting an intervention can not only improve the outcome (Blankers et al., 2011), but also reduce the attrition of participants from around 50% (Eysenbach, 2005), to around 70% (Blankers et al., 2011). Unemployed people are at increased risk of developing increased or harmful risk drinking (Khlat et al., 2004), and are often in the lower SES groups (Leonard et al., 2017). Studies of the Alcohol Harms Paradox (AHP) have demonstrated that those in the lowest SES groups suffer the most harm from alcohol (Bellis et al., 2016) and are most likely to be hospitalised due to their alcohol consumption (Backhans et al., 2016).

To further understand the relationship between drinking and unemployment, and the role boredom may have in this relationship, a qualitative approach has been adopted. This approach has been chosen to answer specific questions about how the relationship between boredom, unemployment, and drinking develops over time from the perspectives of those who are unemployed. Qualitative approaches are best suited to understanding individual narratives and shared meanings (Braun & Clarke, 2006), which cannot be gained from quantitative designs.

There have been several studies already conducted which involve interviewing people who are unemployed, or those not in work, about their experiences of unemployment. A study by Cheetham and colleagues (2019) interviewed benefits claimants about their experiences of Universal Credit (UC; the current name for the main welfare benefit in the UK). They found that overall, the whole process of claiming UC damaged participants' material wellbeing, physical, and mental health. It also had detrimental knock-on effects on their family and social lives. The authors conclude that the main problem was the systematic failing of UC to protect those who were vulnerable, with many being pushed into debt, rent arrears, and had poor housing and food security. This study was conducted before the government rolled UC out across the country, however no major changes were made before the programme was expanded. These findings were supported by a longitudinal study on the mental health of those claiming UC (Wickham et al., 2020), the authors concluded that the introduction of UC led to an increase in psychological distress. Poor mental health is a key risk factor for developing alcohol use problems (Regier et al., 1990), and so the failure of the system to protect those who are vulnerable could indirectly (via poor mental health) increase alcohol consumption.

The interviews explore this relationship in depth, such as the triggers for drinking due to these widely reported pressures of unemployment; the role of boredom, personal experiences of unemployment, and other prompts for alcohol consumption- and when to stop. The interview also covers effects of unemployment in general, and the impacts of the wider environment including stigma, and other indirect challenges participants face to add context. Boredom was identified in this project as a motive for drinking, these interviews further investigate participants' experiences and beliefs about the relationship between unemployment, boredom, coping, and drinking.

5.1.1 Aims

To gain a deeper understanding of the associations between being unemployed, boredom, coping, and drinking, and how the experiences and contexts of unemployment can influence drinking via different motivations. The findings will be used to provide context to the cross-sectional results.

1. To understand how people have experienced any changes in their drinking after becoming unemployed.
2. To gain insight into experiences of boredom and mental health during unemployment, in relation to their drinking.
3. To explore the relationships between boredom, mental health and unemployment, and how these relationships impact on drinking behaviour.

5.2 Methods

5.2.1 Recruitment and Sampling

Job seekers claiming Universal Credit (UC) were recruited via contact from the cross-sectional analysis (Chapter 4) or via social media adverts posted in job seeking, "buy and sell", and local advertising groups on Facebook and Twitter. To facilitate open dialogue, Job Centre Plus or DWP sites and communications were not used for participant recruitment to reduce the potential they might fear their comments and behaviours would be relayed to the DWP, potentially risking sanctions. The selection criteria included adults of working age, of all genders and anyone experiencing vulnerabilities. Participants were required to consume alcohol regularly (at least once a week), claim UC for job seeking, were not in treatment for problem alcohol or drug use, and could speak sufficient English to understand the interview and explain their thoughts clearly. The sampling method was purposive (i.e. seeking participants who would provide a variety of experiences about the phenomenon under investigation), recruiting from a range of demographics across age, gender, length of unemployment, and previous working experience to ensure a broader range of perspectives

were captured. Whilst the sampling was primarily purposive there was also an element of opportunistic sampling, as we had to rely on participants volunteering.

Those who replied to the advert were asked to provide a phone number for an initial call with the researcher. The initial call's purpose was to check the participant met the criteria, make sure they understood the purpose of the study and that we were not affiliated with Job Centres, to arrange the interview, and finally to build rapport. The call gave participants the chance to voice any concerns about the study, and ask any questions that may have prevented them from answering honestly and fully during the interview.

Of the 38 participants who signed up, 16 were successfully contacted for the initial phone call, and 10 completed the final interviews (26.31% completion rate) (Demographics outlined in Table 19). The predominant reason for drop-out among the six was no answer when contacted for the interview and no response to reminder emails. One participant had gained employment, and one felt uneasy with the funder's (Public Health England) potential links to DWP despite assurances of confidentiality. The recruitment period was from November 2018 to January 2019.

Participant number	Age range	Gender	Marital status	Time Unemployed
1	25-34	F	Married	1-3 months
2	45-54	M	Divorced	7-12 months
3	25-34	F	Partner	7-12 months
4	18-24	M	Single	7-12 months
5	25-34	F	Partner	Over a year
6	25-34	F	Single	1-3 months
7	25-34	F	Single	1-3 months
8	35-44	M	Married	Over a year
9	35-44	F	Single	Over a year
10	18-24	M	Single	4-6 months

Table 19: Participant information

5.2.2 Data Collection

The interview guide was piloted with other academics with experience in alcohol related qualitative research, and was altered slightly based on the outcome of the first two

interviews where the order of the questions changed slightly to allow for better flow. Semi-structured interviews were undertaken covering topics such as their experiences of unemployment, home life, mental health, alcohol consumption, boredom, and their thoughts on the current benefits system. These topics were grounded in research from the previous chapter (Chapter 4) and designed to explore the association of the relationships observed. The study finished with three, more open, questions which allowed the participants to elaborate on areas we'd covered to give a fuller picture where they felt one was needed. The interview guide is included in the appendices (Appendix 5). After the interviews were completed, £15 of shopping vouchers were sent out to the participant and they were thanked for their time. They were also given the opportunity to request updates on the progress of the research. Initial contact, preliminary phone calls, and interviews were carried out by the author (MJ).

5.2.3 Transcription, Data Management, and Analysis

Interviews with participants lasted between 20 and 32 minutes, with the average being almost 28 minutes. The interviews were recorded simultaneously on two digital recorders (in case one malfunctioned), and transcribed verbatim by a Research Assistant (PE) (8 interviews) and the author (MJ) (2 interviews). Recruitment continued until data saturation was met i.e. no new topics were being identified. Transcripts were anonymised and were checked for accuracy by the author (MJ). Notes were taken immediately after each interview, these notes informed the analysis and allowed for general themes to begin to emerge. Thematic analysis was used, primarily for its ability to draw from lived experiences and to generate broad themes. This was important for this study, as the aim was to explore the patterns across participants rather than within each participant (for full rationale into using thematic analysis, see Methods chapter, section 2.2.5.7. Extraction and data retrieval were undertaken using NVivo 12 (QSR International, 2018). Transcripts were read and re-read by MJ and CB following which a coding scheme was developed and revised. The coding scheme

was developed over several stages, first the transcripts were made and notes on the interviews were taken. This allowed for familiarisation with the data. Codes were then drafted from the completed dataset and arranged into codes and sub-codes. CB and MJ then discussed and refined the codes. To ensure rigor in the analysis inter-rater reliability was calculated, CB used the framework and applied it to two of the interviews independently, the coding was compared and resulted in 0.88 matching coding across the two sample interviews, which is considered "good reliability" (Koo & Li, 2016). A copy of the finalised codebook can be found in Appendix 6.

5.2.4 Ethics

Participants gave fully informed consent before the interview, including providing them with brief general information about the topics that would be covered (drinking and mental health) to let the participants know what to expect. This information was provided both in written form as a participant information sheet, as well as during the initial contact phone call. They were reminded at the start of the interview that they could withdraw at any time if they felt uncomfortable, and that the recording would be deleted if they withdrew. Participants were told the purpose of the recording and were asked if they consented to being recorded. All participants were guaranteed confidentiality (i.e. all names and identifiable information removed from transcripts and referred to as Participant 1 etc.), and their contact details were deleted after the study had finished and they had received their vouchers. Finally, all participants were informed of the purpose of the study, and assured that their information, recordings, or transcripts would never be passed to the DWP or Job Centres. Despite this assurance, two participants still felt uncomfortable being recorded so opted not to take part, they were thanked and sent the debrief sheet. They withdrew after interview invitation and information but before the interview was conducted. Both participants clarified that their decision to opt out was not due to the nature of the

discussion, just mistrust over the DWP, and potential abuses of power leading to the recordings being handed to them.

Ethical approval was granted by the University of Liverpool ethics board on 15/11/2018. Project Reference: 3657

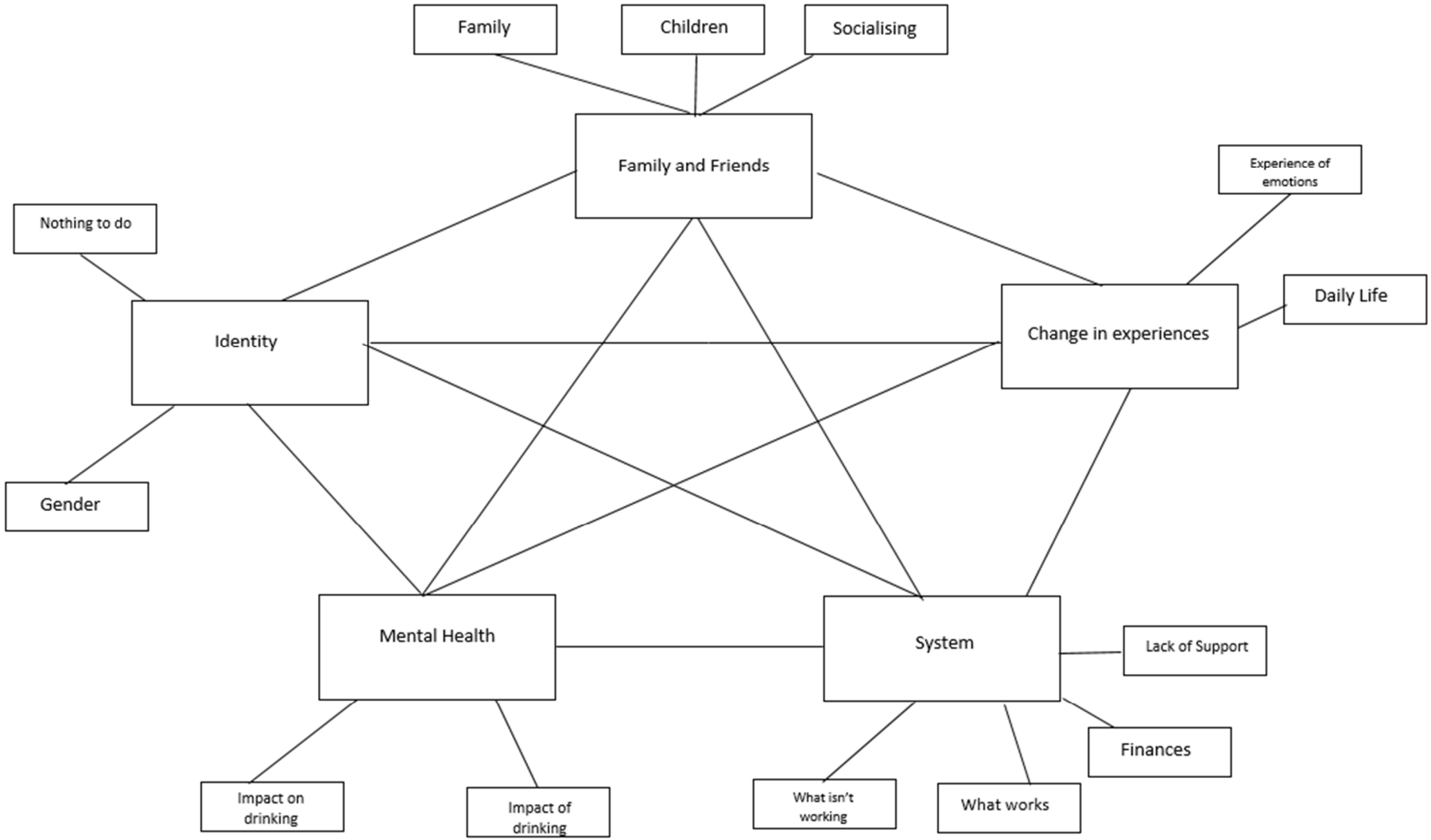
5.3 Results

5.3.1 Overall themes (Figure 6)

Thematic analysis revealed five themes which summarised participants' experiences of unemployment and their relationship to their drinking choices. These themes were: (1) The System, (2) Mental Health, (3) Identity, (4) Family and Friends, and (5) Change in Experiences.

Whilst all of the themes link to each other, "the system" seemed to be the key theme as everything appeared to link to participants feeling failed at some point, by some element of the system. The tight link between all themes is not unsurprising considering that unemployment encompasses entire lives, a change on one aspect of an unemployed persons lives will have knock-on impacts in other areas. The results will discuss each theme and sub-theme in turn, and will demonstrate how each theme is linked to others. The full thematic map is shown in figure 6.

5.3.1.1 Figure 6:Thematic Map



5.3.2 Theme 1: The System

The predominant impact on the participants' experiences of being unemployed was, what we have dubbed "the system". This includes all areas where the government, healthcare, or any other form of "societal structure" has impacted their lives. Often discussed were the challenges with dealing with the system, and how recent changes have affected them. The predominant feeling was mistrust and fear of a punitive system which took no excuses for failure to conform to its strict, and sometimes, unnecessary rules. This theme was broken down into a total of six sub-themes: What isn't working, what is working, finance, and lack of support. The final sub-theme can be further distinguished into 'health' and 'DWP'.

What isn't working. Participants believed that there were many issues with how the system operates. Participants felt that there was too much focus on their current situation without trying to understand why or how they ended up there. It was felt that this left people at risk of falling into the same problems repeatedly, or being punished for something which couldn't be helped as it would mean breaking a rule (such as missing an appointment), and thus having benefits removed for a short period of time.

"I feel like the Job Centres, like I don't know what people who are unemployed feel like when the Job Centres don't… like, it's ticking the boxes, it's not finding out reasons why they're unemployed or what type of work they want to do, they just try and shove them in" (Participant 3) (See table 19 for participant details)

"I wanted to go back to work, but it wasn't as easy as I thought it would be" (Participant 9)

It was also mentioned often that whilst the Job Centres encouraged people to find work, help in finding work was often not forthcoming. Many participants spoke of the need to be a wider range of help and advice for people on benefits including more education courses they could

go on, without losing benefits due to receiving student loans, or help with coping techniques to manage poorer mental health and daily struggles. This included how schools and colleges do not prepare you adequately to deal with unemployment and how to successfully apply for jobs and manage on very low budgets. This lack of support led people to look for alternative, and often damaging, coping methods such as alcohol.

"Job centres are no help, they don't help you find anything worthwhile" (Participant 6)

"But it comes down to like, you get your single mums like me, when you've got one that's four and one that's two, you're limited to what you can do (they seem reluctant to help you)" (Participant 4)

Another common complaint amongst the participants was that the expectations placed on them to find work were unrealistic and outdated. Typically, Job Centres set a target of conducting 37 hours of "job related activity" a week. This can include applications, job seeking, working casual hours, re-writing a CV amongst other things. However, for many participants, after the first week of job seeking they felt that there wasn't 37 hours a week of activity to do. With only a limited number of jobs appearing every day and the convenience of everything being online with alerts, job seeking could take as little as ten minutes some days, leaving them at a loss on how to fill the remaining time. This often led to repetitive tasks such as watching television or cleaning.

"Searching for jobs probably actually only takes up like, an hour or two of the day unless there's an extremely long job application that maybe it takes like three hours, but er, it doesn't take up like full days or anything like that." (Participant 4)

"I remember speaking to a careers advisor who said something like "treat it as a full-time job, do 9-5 on job searching" which, like… if I could apply myself to that it'd be

great, but I mean, I wouldn't say there's even… I mean I check Indeed [(job searching website)] daily, but there's not actually enough work out there to be spending a whole working day looking for work every day I wouldn't say." (Participant 10)

What is working. Participants did not believe many aspects of the benefits system worked, as they believed that the lack of support from the system impacted the way in which they were perceived by the general public. Whilst it is to be expected that positive comments aren't likely in this group, it is fairly surprising that there were so few positives spoken about the system. However, when it comes to the NHS and health services there were a few positives mentioned by the participants. One area in particular where there was a positive comment, was regarding some of the alcohol related health adverts. Whilst many participants say they hadn't noticed them, or ignored them, one participant felt that the adverts which made you think about your family had had a strong impact on her and made her re-evaluate her drinking.

"It's quite cutting sometimes the, like the advertisements of it, the proper campaigns. Like, who's affected by it? Your children, your mum…. That's something that stays with me. You know?" (Participant 1)

Finance. This sub-theme was a very common issue with all of the participants, and often linked indirectly to alcohol consumption through its impacts on poorer mental health and damaging support structures. Often they remarked how frustrated they were that they were unable to do the things they wanted due to lack of money. The small amount of money they had meant that there were very limited positive activities they could do, alcohol was one of the few things they could afford as compared to days out etc., as it is relatively cheap. This lack of money means that they also couldn't do things to improve their situation, including being able to do things which they felt would help them get work, or improve their chances of finding work they were happy in, such as going on courses. Some talk about taking

voluntary jobs, putting more strain on their finances, in an attempt to become more attractive to employers.

"I had an interview for a volunteer position at a charity shop to try and get some sort of experience on my CV, so I'm more attractive to employers" (Participant 10)

The poor financial situation impacts on their family lives as they are unable to buy things for their children, or to do things as a family. They are simply stuck working constantly to find a job with no break. The poor financial situations that they find themselves in, doesn't just affect what they can and cannot buy, but it affects their relationships, their sleep, and their self-confidence. This is likely to impact their mental health, increasing the chances of failing to find a job, or losing a job in the probationary period.

"Yes, it has. Erm… as I say you become very anxious about things, and it [poor finances] affects your sleep and your relationship with those around you. (pause) So, in my case that's wife, children, family." (Participant 8)

Lack of Support. Linked with issues discussed in the previous sub-theme, participants spoke about the feeling of being ignored when they ask for help, or that no one was reaching out to help them when they felt lost. Both the DWP and the health service were seen as responsible for this. Without support from the DWP and the health sector, those more at risk of heavy drinking were even more likely to fall into risky behaviours. The theme shows that participants felt that support was definitely lacking which they felt contributed towards their recent increase in drinking, or change to more risky drinking behaviours, such as binge drinking.

<u>DWP.</u> The DWP were seen as having a too narrow focus in their aims, simply aimed at getting people in to work without much regard for their wellbeing. However, a lot of the participants felt this ignored many of the reasons they were out of work, with other commitments such

as family, or other issues such as mental health, disregarded. Whilst they accept that they need to find work regardless of these problems, being expected to find "any" work was regarded as excessive and needless.

"I lost a job last year because, the business got closed down and I didn't want to not work, so I took a job as a cleaner, just to help me get some money and er it was awful. It was the most awful thing I've ever experienced in all my life." (Participant 1)

There did not appear to be any support for mental health or family issues amongst the participants when they were talking about the DWP. The sanctioning system was seen as draconian with no flexibility for real world issues that arise, such as children being ill or struggling to get to the appointment due to traffic or public transport issues. It appeared that this impacted the mental health of participants, who suggested that alcohol was used to cope with some of these issues.

"now this Universal Credit's come in to play, they're just on ya back about everything, and I'm a single mum of two, so when my kids are sick and I've gotta ring up and miss…try and change an appointment, they're absolutely… "it's not a good enough reason, we're sanctioning ya", and it's like…. So they cut your… they can sanction you from 7, 14, 21, or 28 days…" (Participant 5)

Health. There was a general appreciation for the health service amongst the participants in terms of accepting that what they can do is limited due to the financial strains of the NHS. However, when it came to supporting people with their drinking, many participants felt that the health service was missing the target, instead focusing on drinking reduction as an ultimate aim and not paying enough attention into why they had started drinking heavily.

"I feel the NHS are trying to make awareness with alcohol and they're creating groups and everything, but I just don't feel [it'll] ever connect between the people now and the

doctors and again this thing with universal credit, it's just not all aligned. I feel like they're not understanding the actual needs and the behaviours of the people to try and fix it." (Participant 1)

There also seemed to be an element of mistrust towards the health service from some participants. Whilst most understood the need to reduce drinking for health reasons, one participant was particularly critical of the approach towards encouraging people to reduce drinking, alluding to the "nanny-state", believing there was nothing wrong with the level of their drinking which could exceed 25 pints a week by his own admission. This, whilst only the view of a single participant, stood out as a firmly held view and was interesting in its uniqueness amongst the participants.

"Err I choose to ignore it because I had it rammed down me throat with me last wife" (Participant 2)

Aside from the nanny-state accusations which were likely wrapped up with this participant's perception of his wife's criticism of his drinking as much as a criticism of the health service per se, some were mistrustful of the health service believing that speaking to a doctor about mental health or alcohol consumption would lead to them being "labelled", and this information being passed on to the DWP or potential employers. They believed that this would ultimately lead to a worsening of their financial situation.

"The thing about alcohol use, now that I've spoken to my mum about it, erm she said basically not to go to the doctors because when you go to the doctors, it's on your file and things like that. And then in the future, they could maybe…. I don't know, I don't know what her insinuation was there erm, and I just er I just feel it's getting marks against myself with universal credit" (Participant 1)

5.3.3 Theme 2: Identity

The theme of identity came about where participants spoke about lacking any real idea of who they were since unemployment, or a general disappointment with the role they had begun to fulfil. There was a clear split along gender lines about how this impact on identity was different, however all genders demonstrated this issue of identity affecting their mental health, both in terms of anxiety and depression. Additionally, when answering questions which linked to this theme, participants seemed to mumble and hesitate a lot when answering, suggesting an uncertainty about themselves. Most of this issue with identity seemed linked to the participants having nothing else to do, which meant that the question of who they are often went unanswered. The dissatisfaction with their current perceived identity not matching with their current experience appears to lead to them drinking through poorer mental health and boredom, and subsequently leads to changes in alcohol consumption, as shown in theme 3.

> *"It was a dissatisfaction within myself" (Participant 1)*

Gender and traditional roles. Men and women appeared to react differently to the loss of identity that unemployment brings. They described feeling awkward and uncomfortable meeting new people as they didn't know who they were, and were unsure what to say when asked "what do you do for a living?". Men appeared to struggle with this sooner than women, saying that having nothing to do for the first few days was a pleasant change to working, however they found themselves stuck in a repetitive cycle of doing nothing. They seemed to be focusing their efforts on finding work, however the longer they were unemployed there was a general sense of restlessness. Men also seemed to suffer more with anxiety about having no job, this could be rooted in a traditional ideal that men are the "providers" of a household. As a result, being unable to provide conflicts with society's longstanding view of a man's role.

"It's hard because you don't feel worthwhile, you don't have, I guess…you don't feel like you have a point or something worthwhile to be doing with your time. So, you feel like you're not contributing to society." (Participant 10)

"[I find unemployment] Hard. I've worked a lot of my life. Like you're supposed to." (Participant 8)

Women on the other hand appeared to describe falling into the traditional "homemaker" role. They would describe a routine around taking children to and from school, cleaning, shopping, and preparing food. They describe this routine as monotonous and boring, which begins to make them depressed. This was particularly clear from one participant who used to have a high paced job, she described the experience like she was achieving nothing.

"No, repetitive, same every day. Literally get them up, get them dressed, then I go on the school run, I come home, put on TV or whatever my son wants to watch, I'm cleaning up, I'm prepping for dinner and tea, I'll visit my friend once or twice, that's about it. Or I'll have to go shopping or I'll feed the ducks before nursery, it's literally the same every day." (Participant 3)

"When you're not working and… put the kids in school, clean up, and then you pick the kids up from school, make their tea, put them to bed, and it's tiring, you're bored, you're more (extended pause), I don't know … meh?" (Participant 5)

Nothing to do. The second sub-theme in identity seems to be that the participants' vision of who they are, conflicts with their reality of doing and achieving nothing they consider to be worthwhile. The participants often link their drinking to having nothing to do, or to break the monotony of the day. Often this is linked more to having nothing stopping them drinking (lack of negative result), rather than a reason to drink (positive). Because the boredom was so unusual to some of the participants, alcohol became part of the habit as they looked for

things to do which didn't cost much. The increased likelihood of depression and anxiety will also impact their drinking levels.

"I think with boredom… it helps pass the time of day, erm… it helps you forget about boredom a little bit and if (stammers) you've got an element of boredom it stops you thinking about it, and it's a bit of fun as well, having a drink, it's like "well, I'm pretending to be out" or that sort of thing, or I'm pretending to be doing something" (Participant 8)

5.3.4 Theme 3: Mental Health

The first two themes both link into mental health. Participants say that they receive very little support when it comes to unemployment and the associated risk factors that come with it. With this lack of support, there is a higher chance of developing mental health problems as well as a potential associated increase in alcohol consumption. This is an important theme as there is a strong co-morbidity between mental health problems (particularly depression and anxiety) and increased alcohol use for coping reasons. Participants suggested that their mental health and their alcohol use shared a reciprocal relationship with alcohol affecting, and being affected by, mental health. This theme will be discussed in terms of two sub-themes reflecting this two-way relationship.

Mental Health Impacted by Drinking. Many participants spoke about alcohol affecting their mental health. Most stated that they felt like it damaged their mental health, particularly in terms of anxiety. They also felt that when they drank more, their sleep was negatively impacted. However, this was also mentioned as an effect of unemployment in general because they were doing nothing all day, they weren't tired in the evening. It is likely that both are impacting sleep, and with lack of sleep comes lower mood and an increased likelihood to feel "on-edge". Due to this lack of sleep, many participants report drinking more in order to make themselves sleep, a form of self-medication. Some participants spoke about the positive impacts on their mental health, one participant described the confidence it can give to them. This would almost form a type of self-medication whereby there are boosting

their confidence using alcohol to compensate for a situation where their confidence is likely to be regularly undermined via unsuccessful job applications.

"It affects your sleeping pattern it decreases your motivation; you end up having habitual behaviours that become more unnecessary because you're becoming an alcoholic." (Participant 1)

Mental Health Impacting on Drinking. Many participants spoke about the negative impact that their mental health was having on their drinking. Participants reported drinking to cheer themselves up after a job rejection, as a reward for getting through another day, or to feel anything other than boredom. One of the common reasons was that they needed something to cheer themselves up that didn't cost a lot. Drinking was often the only thing they could think of, so would often turn to having a drink at the end of a day where they felt they had achieved nothing. Often anxiety was also mentioned, particularly when it came to being social. Some participants felt that they needed to drink or they became worried about how other people would see them now that they were unemployed. Interestingly, one participant felt that their drinking often decreased when they were experiencing poor mental health. They reported avoiding alcohol because it made their anxiety worse, particularly when seeing friends.

"I think I've never had anxiety ever in my life, and I noticed the more I started drinking over the years, the more I got anxiety." (Participant 6)

In general, the participants were not coping well with unemployment, particularly those reporting that they were bored. Many of them were turning to drink as a way to cope with the monotony, frustration and boredom they were experiencing. Both their unemployment and their drinking are having mostly negative impacts on their mental health.

"So bored that I have to drink to get another feeling that isn't boredom" (Participant 4)

"It numbs it, it numbs it. It numbs the way your brain works so you don't think about anything, because you're just enjoying having a drink and getting tired and watching crap, and you're not even actually watching it, you're just staring at the screen but (pause) you're not… it makes you forget." (Participant 5)

5.3.5 Theme 4: Family and Friends

The fourth theme often mentioned by the participants was the impact of, and on, their family and friends. Often family and friends were described as protective factors, things which keep them going in difficult times and give them reasons not to drink. The theme of family and friends is split into three sub-themes; Partners, Children, and Socialising. The theme split across these three sub-themes due to the differing impacts each had on the individual's drinking and perception of themselves. Each of the participants spoke about how their drinking has changed since becoming unemployed, and how their family and friends have affected this drinking, either explicitly or implicitly via their mental health or via changes to their routine.

Partners. The partners of the participants had a varied effect on the participants drinking. Some reported that their partner would encourage their drinking in a sympathetic manner. This often came in the form of recognising how difficult the participant was finding unemployment and would encourage them to have a drink as a form of reward or to help them unwind. One participant in particular said they found this unhelpful and too much of a temptation. They were aware they were drinking too much, but with nothing else good happening in their life, the prospect of relaxing with their partner with a drink was often too tempting to turn down. This links strongly with the mental health theme, as with better mental health, they would be more likely to be able to turn down the drink and would feel less need to drink. One participant remarked how they drank more, mainly to spite a previous

partner who would pressure them to quit drinking, yet refused to quit drinking themselves. On the other hand, some participants spoke about how being with their partner made them reduce their drinking when they were around. One alluded to almost feeling ashamed of how much they drank, so would stop drinking when spending time with their partner.

"I don't usually drink on Saturdays and Sundays because that's when I stay at my girlfriend's house, like stay over, and she doesn't drink." (Participant 4)

"I had it rammed down me throat with me last wife. Who was a drug and alcohol abuse worker forrrrr erm, adolescents. [Annoyed/disgusted noise] I just got so blasé it just went over the top of my head by the end and thought, you know, bit political, because you're tellin everybody how to run their lives and they know what they're doin, some people can't help it. And she's got, she's ramming this shit down me throat all the time, and I went "naahhh, you're not on", because at the weekend she'd get more pissed than me, with her mates that she works with! So I think it's a load of bollocks to be honest." (Participant 2)

A couple of the participants spoke about the impact on their partner that their drinking has had. This was often a negative impact, and in one instance resulted in the breakdown of their relationship due to their drinking getting out of control. They said that the drinking worsened after unemployment as their mental health declined further, which was the final straw for her partner. Alcohol and unemployment clearly impact on relationships, and without that emotional support, the risk of further increases to drinking, and further damage to mental health will continue to grow. Many participants have spoken about the impact unemployment has had on their relationships, often remarking on the support from their partners, but admitted that it was a strain on the relationship, often due to finance.

"Yes, it has. Erm… as I say you become very anxious about things, and it affects your sleep and your relationship with those around you. (pause) So, in my case that's wife, children, family." (Participant 8)

Children. Most of the participants regarded their children as a protective factor, something which was stopping them from drinking. They would often say that the temptation to drink would come after the children had gone to bed, or if the children were away for the night. Participants discussed adverts from campaigns targeting the impact of alcohol on children, suggesting that these were more likely to be successful and tapped into a very effective protective factor. Nonetheless, when the children weren't there, the protective factor appeared to stop and most participants resumed drinking as normal. There seemed to be an indication from a number of participants, particularly women, that their children have now become their sole purpose and without them, they would lose their purpose.

"I'd probably drink a lot more if I didn't have the young children to deal with." (Participant 8)

The primary impact on children of unemployment appeared to be the financial pressures of unemployment. This meant that participants were unable to treat their children when they wanted to, and were unable to do things as a family because everything costs too much. This impact on a child's wellbeing is likely to put strain on the child's relationship with their parents and their friends at school. The impact of unemployment on children was one of the more passionately spoken about themes in the interviews and is clearly something which evokes anger and frustration. Nevertheless, one of the participants spoke about how his daughter (an adult), felt that unemployment had made him a better, more relaxed person, and their relationship had improved considerably since he had become unemployed. This reflects a potential difference between young children, and grown children. Potentially due to them being able to identify and understand the situation better, and not needing to rely on the parent financially.

"I can't give the kids what they ask for, I can't… if they see something that they want I've gotta budget and save and scrimp" (Participant 5)

"Errrm, a lot less stressful. Annd, err, makes me a better person being unemployed. Yeh, definitely. Even my daughter's mentioned that." (Participant 2)

Socialising. Many participants spoke of a decline in socialising since becoming unemployed. There appear to be two main reasons for this; financial, and mental health. Financially, the participants talk about not being able to afford to go out drinking anymore, this has had a knock-on effect of them falling out of touch with friends and potentially losing a vital part of a support network and changing the context of their drinking to drinking at home. More interestingly, unemployment has caused some of the participants to avoid socialising altogether, with a number of them talking about losing self-confidence and suffering from increased levels of social anxiety since becoming unemployed. This had led to them isolating themselves, which is having a negative impact on their mental health.

"I'd be too anxious to do that, so I don't really drink with friends" (Participant 4)

5.3.6 Theme 5: Change in Experiences

The final theme which came from the interviews was how different the participants were finding the general experience of unemployed life compared to employed. The most striking element of this theme is how little they were expecting it to be different until they experienced it. This sudden change and realisation could impact mental health and well-being, particularly if unemployment was unexpected. Two major sub-themes came out of this theme, the first being how unemployment had affected how they experienced their emotions and how they interpreted these feelings. The second sub-theme concerned how their daily lives had been affected. This theme ties together with the other four themes and is very much a linking theme, one which has knock-on effects on each of the four previous themes.

Experiences of emotions. Participants reported feeling very mixed emotions about unemployment. Along with the anxiety over finances, and the depression linked to losing their identity, some reported relief. This seemed to come from previously being in work that was either very stressful, or work which they found deeply unenjoyable and lacked fulfilment. The main change, however, came in the experience of boredom. Many participants reported feeling incredibly bored during unemployment, however they reported it being a unique type of boredom that they had never expected to experience. Instead it was a type of boredom that left them frustrated and feeling unable to end it due to lack of finances. Many reported that this type of boredom was deeply unpleasant compared to the boredom they had experienced when employed, one participant even went as far as saying that they would never call "employed boredom" boredom again. They said the awareness of the boredom, and numbness of the boredom where much more present during unemployment.

"It's like… your mind is just like switched off" (Participant 5)

Daily Life. Participants spoke of the lack of employment affecting their daily life in ways they hadn't expected. They had expected more free time, and less money, but what they didn't expect was the lack of structure in their lives. Women, as mentioned earlier, seemed to adopt a "homemaker" role which provided structure. However, men seemed to struggle with this lack of structure, it has affected their sleeping patterns, eating patterns and habits, and general concept of what "free time" is. This lack of structure has also led to changes in their drinking habits including drinking at unusual times, drinking heavily, and binge drinking.

"Erm, the amount I was consumed before when I was unemployed, I was losing patterns, I mean there was no structure to the day" (Participant 1)

"Some days I just can't be bothered getting up, because there's like, nothing to get up for!" (Participant 6)

5.4 Discussion

This study aimed to understand how people experience any changes in their drinking after becoming unemployed, to gain insight into experiences of boredom during unemployment, and to understand how boredom, mental health, and unemployment are inter-related. The findings will be discussed in relation to the aims, and then generally. Some of the findings of this study initially appear outside the scope of the aims, however provide a more complete picture of the experiences of the participants when included and linked in to the aims. This is known as a "thick description", where context is also considered in relationship to what has been said (Polit & Beck, 2010). Generally, the findings show a typical experience of frustration, boredom, and a severe impact of unemployment on the mental health of the participants. All of these experiences and the subsequent reactions cause an increase in drinking as a method of coping with the poor mood, or of dealing with the boredom they are experiencing. This was an important finding as this research was designed to feed into the development of the pilot RCT and to aid with the design of the intervention, the interpretation of the findings, and to identify possible barriers to recruitment and engagement of a tailored ABI for people who are unemployed.

Five inter-connecting themes appeared to describe their experiences of unemployment and drinking; the most dominant theme is the feeling of being let down by the systems intended to help, such as the job centres and the NHS. These factors, combined with unemployment, have led to changes in mental health, finances, and impacts on family life. All of which have led to an increase in drinking to cope with the low mood and the lack of anything to do. Another key finding was the impact of unemployment on the identity of the person. This conflict, either by forcing them to become something they didn't want to be (often seen in women having to revert to the traditional "housewife" role), or simply feeling as if they didn't have an identity anymore (often seen in men who defined themselves by their job). Identity

issues have been demonstrated to impact drinking (Ostafin & Feyel, 2019), and as such appear to be linked to the increase in drinking in people who are unemployed.

5.4.1 Aim 1: To understand how people have experienced any changes in their drinking after becoming unemployed.

Primarily, the participants spoke of all increasing their drinking after becoming unemployed, even though they had a reduced income. They reported this as being the only enjoyable thing that they could afford, and it often resulted in riskier drinking habits, such as binge drinking. This supports previous literature and goes someway to explain the increases seen in drinking in other studies, such as Henkel (2011). This also explains why the so-called "economic theory" (Ettner, 1997), which predicts a decrease in drinking in those out of work, has not been seen. People who are unemployed still need to find something recreational to do and, whilst alcohol may be seen as expensive, it remains a relatively cheap form of recreation (Institute of Alcohol Studies, 2018). Boredom has also increased, and they report it being a "different kind" of boredom from the boredom they experience while at work, citing frustration at being stopped from doing what they want to do. This frustration of having limited options while unemployed is then associated with increased alcohol consumption. This is also seen in other studies which have looked at the link between boredom and drinking (Biolcati et al., 2016), where drinking becomes one of the limited alternatives to doing nothing, and therefore becomes more habitual and regular.

Interestingly, participants reported that the changes they experienced were often unexpected. A number of the participants said that they felt that the first week or so of unemployment was pleasant and relaxing, however this faded quickly and they were left with an emptiness and a frustration at not being able to do anything. This early enjoyment of unemployment supports the findings by Catalano et al. (2011) who also showed unemployed people initially enjoying the decrease in stress, likely due to the decrease in work-related stress. One participant in the current study also spoke at length about how they

felt far less stressed than they had done during their employment. However, this participant was close to retirement, so the financial pressures of unemployment may not have started to impact their mental health as much (or at all) as other participants.

After the initial spell of reduced stress, some participants reported feeling numb and bored. This all led to them either drinking more, or drinking at times which they wouldn't normally have done, such as in the early afternoon. The reason for drinking also seemed to shift from being a relaxation technique, or to enhance a good mood, to a negative motivation i.e. to cheer themselves up, or to feel an emotion or feeling that isn't boredom. This is consistent with the findings in study 2 which showed that people who were unemployed scored significantly higher on the negative motives for drinking (boredom and coping) than the employed. This also supports previous literature (Biolcati et al., 2016; Harnett et al., 2000), including the reports by the DWP which show that that lack of something to do would lead to increased drinking, and that people who are unemployed are feeling frustrated and depressed (Bauld et al., 2010; Department for Work & Pensions, 2015).

Mental health impacts were also reported as being unexpected, many believed that the change in employment status could well be relaxing and would give them time to do things they hadn't had the chance to do before or had been meaning to do. This would be similar to findings by Catalano et al. 2011 (2011) which suggested that there was an improvement in mental health at the beginning of unemployment due to a decrease in work-related stresses (Ettner, 1997; Henkel, 2011). However, as earlier mentioned, mental health began to decline soon after, resulting in higher levels of depression symptoms and worsening anxiety symptoms. Both of these outcomes have been shown to increase alcohol consumption (Bolton et al., 2009; Buckner et al., 2011; Crum et al., 2001; J. Robinson et al., 2009), this in turn reduces mental wellbeing again, resulting in a potential downward spiral.

5.4.2 Aims 2 and 3: To Gain Insight into Experiences of Boredom and Mental Health During Unemployment, in Relation to Their Drinking and To Explore the Relationships Between Boredom, Mental Health and Unemployment, and How These Relationships Impact on Drinking Behaviour

These two aims have been combined due to the results demonstrating a close alignment between the aims. To separate them would lead to repetition and a disruption in the flow of the discussion. Boredom was experienced in a number of ways amongst the participants, and how that boredom was perceived varied on gender and life-stage. Frustration appeared to form in the younger participants who were becoming frustrated at being held back from their ambitions, whereas one of the participants who was closer to retirement was enjoying the time off and was content to wind down time until their pension started.

There was also a sense of frustration amongst the female participants, they described a repetitive experience with their day-to-day activities revolving around traditional housewife activities, such as cleaning, cooking, shopping and childcare. The participants who brought this up seemed to describe themselves as always seeking work and enjoying being in a job they felt suited them, so appeared frustrated that their identity didn't match their present life. This theme of identity held true for men who reported struggling to find anything to do. This could be because the traditionally held view of the man is that they are expected to work and provide for the family unit (Perrone et al., 2009). With this traditional view being violated, it is likely to cause a conflict with their identity and damage mental health. This link of identity in mental health matches work by McKee-Ryan & Harvey (2011) who showed that people who were underemployed and worked in a job which they felt did not fit who they were, were more likely to have lower self-esteem due to feeling excluded from any groups they identify with (Ashforth & Mael, 1989). McKee and Harvey (2011) also found that the lack of choice in underemployed people was likely to cause poorer mental health outcomes. A study by Waters (2007) showed unemployed people who were made involuntarily redundant were more likely to show depressive symptoms. The lack of choice and violation

in social identities for both men and women seen in people who are unemployed (and the current sample) is associated with poorer mental health, and frustration at their situation.

Mental health was discussed at length throughout the interviews, often linked to feelings of low self-worth, or heightened anxiety and stress (either through worry about finances, or social stigma. Anxiety and depression have both been linked to increased drinking (Awaworyi Churchill & Farrell, 2017; Bolton et al., 2006), and this would appear to be supported in the interviews. However, interestingly, one participant spoke about reducing their drinking due to anxiety, in particular, social anxiety. In research by Buckner et al. (2020), the authors suggested that there was a distinction to be made between anticipatory anxiety (which appeared to increase alcohol consumption) and post-event processing (which showed no alcohol association). And in the study by Cludius et al. (2013), the motive to drink via social anxiety was weakened if there were expected alcohol related cognitive deficits. So whilst, it is more likely that social anxiety can lead to increased alcohol consumption, there are forms and contexts which could show no effect on alcohol consumption, or even reduced alcohol consumption. This is demonstrated in the study by Puddephatt et al. (2021), which showed that there was a marked increase in those with mental health conditions to show no alcohol consumption, or harmful drinking

The failures of the system are also playing a large role in the impact of boredom and mental health on drinking. Participants have spoken about having nothing to do, and job-seeking taking far less time than claimants are being required to do. Even when fully committed to the process, participants report struggling to fill the 37 hours a week of job-seeking activity required of them. The Job Centres are seen as failing to provide extra help to those struggling (with mental health problems, drinking problems, or finding work) or who feel that they need further courses or education to assist them back into work. As a result, they are becoming depressed and anxious about their lack of progress in finding work, and this ultimately leads

them to drink to cope with the negative feelings. This impression of the Job Centre isn't unique to this study, it is also found in a long term, qualitative study which found that the strict rules around UC, designed to be an incentive to find work, did more harm than good by increasing pressure to apply for a high volume of job vacancies, some inappropriate, whilst providing very little support (Wright et al., 2018). The study followed 46 participants through the UC process and recorded their experiences, emotions and opinions at regular intervals over 3 years. The focus of UC of increasing the motivation of claimants is unlikely to have a positive impact on success in finding work as most of the participants are already motivated to find work, without the need of any extra incentive, positive or negative. Wright and colleagues (2018) also report on "anxiety-provoking threats to withdraw essential income without notice" for "minor infringements". Living in a constant state of panic about income will harm mental health long-term (Cheetham et al., 2019; Wright et al., 2018) and will lead to people seeking ways of coping, including drinking. It must also be noted that a number of the participants felt that the NHS as a system was failing them, mainly by failing to understand the underlying reasons for why they were drinking and were instead pre-occupied with reducing the amount consumed. This made participants feel ignored and treated "like a number", which will have again impacted on their mental health, and would have made it less likely that the intervention will have had any impact as they would likely become disengaged. The importance of how being ignored, or ostracised, by the system whilst unemployed can impact mental health, can also be compared to the impact of being ignored in the workplace. Both scenarios require support, both social and practical, from an external source (i.e. work-coach, line manager). Thompson et al. (2019) suggest that the action of being ignored leads to emotional exhaustion, which in turn increases psychological distress as well as poorer job-related performance. Ostracism has also been linked to being an acute stressor (Kothgassner et al., 2021) as social inclusion acts as a stress-protector. With the isolating nature of unemployment, combined with feeling ignored by the only source of

support, this is likely to rapidly increase stress levels and contribute to poorer mental and physical health. Participants in the current study often spoke about being worn down, which could be considered equal to the emotional exhaustion seen in those ostracised in the workplace.

5.4.3 What does this mean?

These findings link with the findings from study 2 by demonstrating a clear link between unemployment and negative impact on mental health and self-worth which could cause the increase in coping and boredom drinking motives discussed in the previous chapter. All of the participants interviewed agreed that their drinking had either increased, or had become more unhealthy through poorer drinking habits (such as binge drinking, or daytime drinking). This corroborates with the increased AUDIT scores seen in the previous chapter. Interestingly, the type of boredom the participants in study 3 experienced seemed to suggest a "high arousal" type of boredom, displaying fidgety behaviours and feeling frustrated, this did not appear in the previous chapter so may reflect an increased level of anxiety about their situation that the MSBS-15 did not detect.

The insights gained from the perspectives of participants in study 3 allows us to create an intervention which is more targeted to people who are unemployed, which will likely increase engagement. By increasing the relevancy of the intervention, participants will likely feel that they are being supported, as opposed to how they reported feeling when speaking to doctors. For example, when providing alternative options to drinking, the intervention will have to use scenarios which people who are out of work regularly encounter, and provide realistic, engaging activities as the alternative to drinking. These must be low-cost, easy to fit in to day-to-day life, and provide some feeling of accomplishment at the end. The intervention must also aim to demonstrate that the increase in drinking is likely to continue to impede their progress in finding work, without it coming across as negative. See sections

2.1.2 and 2.3.2 where there are descriptions of how the results from studies 1, 2, and 3 are integrated into the design of the intervention.

5.4.4 Limitations

Whilst the scope of the study was narrow, and so met data-saturation quickly, there may be more uncommon experiences that have been missed. This is a common limitation of qualitative work and must be considered in conjunction with the cross-sectional study in the previous chapter to create a full picture of what is being experienced. Similarly, to the cross-sectional study, the type of person who volunteers for studies of this nature are likely to be more outgoing and feel like they have a particular issue they want to raise, whilst quieter people may refrain from taking part. This may also be seen in terms of mental health, where those with good mental health and those with extremely poor mental health are likely to avoid taking part either because they don't feel the research is relevant to them, or because of the symptoms of their mental health condition (i.e. don't feel like their opinion is valid or of any worth). Positionality must also be considered, for more on this, see section 2.2.5.6 in the general methods chapter where this is addressed.

Subjectivity in qualitative research is a common criticism, to protect against this, a number of steps were taken to ensure the interpretation of the data was not impacted by my own positionality. All interpretations and coding was dual-checked with other researchers (CB and LG) to ensure rigour and neutrality. There is also a chance that participants could give either desirable answers (i.e. social desirability) or answers which would protect themselves for any potential punishment or negative effects. To ensure they felt as comfortable as possible, it was made clear that I had no formal association with the DWP, PHE or any other government agency, and that there were no 'correct' or 'wrong' answers. This helped ensure that the participants were as open as possible in their answering.

5.4.5 Conclusion

The participants interviewed illustrated a constant struggle to keep going. They felt that they were constantly fighting a system which was deliberately trying to trap them instead of providing the support they needed. Participants felt ignored and frustrated by the limited help they'd received and often became suspicious of the motives of both the DWP as well as health care. Typically, participants felt that they drank alcohol for two main reasons; to combat the negative experience of unemployment; and as the only "fun" activity they could still afford to do to alleviate the boredom. The participant's identity appeared to play a role in how they were coping with the experience of unemployment, with people feeling that their new "role" violated their identity coping far worse than those who had found a way to adapt. Many struggled to cope with this new role and appeared to actively resist the lack of choice they were experiencing which was, in turn, damaging their mental health, as well as the relationships with their family and friends. Nearly everything brought up in the interviews was linked, in some way, to worsening mental health and increasing drink, these then exacerbated the other factors (e.g. family life) and contributed to a downward spiral.

Chapter 6

6. Study 4: Pilot Randomised Control Trial of a Targeted Alcohol Brief Intervention for people who are unemployed.

6.1 Introduction

The final element of this thesis was to design and test a pilot Alcohol Brief Intervention (ABI) among people who are unemployed. This element of the project presents a number of unique challenges such as recruitment, working with a new target group, and presenting the trial as something which the participants would find acceptable. This final challenge is particularly sensitive, this is because the target group, as seen in earlier chapters, are particularly distrusting of research and interventions (and as seen in Chapter 5, the DWP and government) which could be used to increase the stigma against them rather than helping them. This is similar to research in other areas where the participants may be uncomfortable with being asked about drinking, such as the military (Daeppen et al., 2011), or those with poor mental health (Cunningham et al., 2018). Whilst the challenges are similar to those in previous chapters, the motives of the study are likely to be under more suspicion as participants are being asked to change behaviour rather than just report their current drinking.

Alcohol use in people who are unemployed is a well-documented health problem. The majority of studies show that alcohol use increases in people who are unemployed, due to their employment status. For example, the study by Ettner (1997) who demonstrated that whilst dependency scores decreased amongst the recently unemployed, that overall consumption increased. Mossakowski (2008) demonstrated that the length of time someone was involuntarily (as in not voluntary redundancy) unemployed significantly predicted future heavy drinking. Both Popovici et al (2013) and Boden et al (2017) showed that the increase in alcohol consumption came after the change in employment status, meaning that it was unlikely that heavy drinking led to the unemployment. This increase in drinking is important

to tackle as it can create barriers to finding new employment (Sutton et al., 2004) such as by damaging social networks which can help in finding work, or by affecting physical and mental health, which can impact a person's employability (Department for Work & Pensions, 2015). Not only is this increase in drinking damaging employment opportunities, but the health consequences which are associated with increased drinking can be long term (LoConte et al., 2018; Walsh & Alexander, 2000; WCRF/AICR, 2018). However, there are some studies which show either no change in alcohol use (Kaiser, Bauer, & Sousa-poza, 2017), or a reduction in alcohol when people become unemployed (Pacula, 2011; Ruhm, 2000).

The proposed method of countering this increase in drinking is to trial a pragmatic, short, alcohol brief intervention targeting those who are unemployed. As summarised in chapter 3 (sections 3.1 and 3.3.2), there is a small but robust effect on decreasing drinking from ABIs. ABIs have been shown to be effective in reducing drinking amongst the general population (Bertholet et al., 2015) as well as amongst smaller, targeted populations such as students (Bewick et al., 2013), hospital attendees (Drummond et al., 2014), workers (Hagger et al., 2011), and underage drinkers (Spijkerman et al., 2010). A previous study used an ABI to target people who are unemployed (Haberecht et al., 2018), however, it failed to show any change in drinking. The primary aim of the study, however, was not aimed at reducing drinking, but instead was to help people get back into work, with drinking levels as a secondary outcome. Due to this study targeting existing heavy drinkers who were unemployed, by this point, the damage to social networks and mental health may have already been done. This may explain why the intervention failed to work show an effect on job seeking.

The primary aim of the current study is to reduce drinking in people who are unemployed, by targeting specific drinking motivations. In chapter 4, our results demonstrated that both coping and boredom drinking motivations were significantly higher in people who are

unemployed than the employed, and they were a significant predictor of AUDIT scores. In an Ecological Momentary Assessment (EMA) study on drinking motives, Dvorak and colleagues (2014) demonstrated that changes in motives, in particular the coping drinking motive, were dynamic and appeared to predict differences in drinking patterns across days. EMA involves the repeated sampling of subjects in real-time over a prolonged spell, thus eradicating the potential recall bias of traditional clinical trials (Shiffman et al., 2008). Coping with chronic stressors is likely to lead to an avoidance style coping (Patterson et al., 1990), this style of coping with chronic stressors has been shown to be associated with increased drinking (Moos et al., 2006). This kind of avoidance coping motive would be classified as a "negative, internal" dimension in drinking motives (Kuntsche et al., 2005), whereby alcohol is used as a negative reinforcement to ameliorate negative mood. These forms of negative reinforcement drinking, particularly coping, are often associated with Alcohol Use Disorders (AUDs) (Cho et al., 2019; Kuntsche et al., 2005), and could explain increases in drinking amongst people who are unemployed, particularly amongst those with financial stress. The reduction in the coping drinking motive observed in this study (Dvorak et al., 2014) is an important improvement for all the participants. The boredom drinking motive could also be argued to be an external drinking motive, external drinking motives are defined as "…indirectly related to affect regulation through incentives" (Dvorak et al., 2014) and boredom would fit here. Combined with the evidence in study 2 that both coping and boredom drinking motivations were higher in people who are unemployed, targeting these two motivations with an intervention should theoretically be of benefit to those out of work. This study will target these drinking motivations, and provide a number of alternatives in the form of implementation intentions (IIs). The alternatives will be developed from the findings in study 3, the interviews. This is a similar approach to that used by Armitage (2009) which demonstrated that by using IIs, both researcher designed and II's written by the participant, the intervention was able to successfully reduce alcohol consumption at follow-up. A similar,

co-design approach was used in the INDEX study (Leightley et al., 2018), an ABI being designed to reduce drinking in veterans. IIs were used to encourage a reduction in drinking. Feasibility trials of the intervention have shown evidence with early results with participants regularly engaging with the app and using the various functions provided.

The aims of the present study are to conduct a pilot study of a targeted online ABI for people who are unemployed, as well as to test the acceptability, recruitment, and retention of such an intervention in this group. Drinking motivations, as reported by the participants, will also be analysed to see if the intervention has resulted in a change from pre- to post-test.

6.1.1 Aims and Hypotheses

1. To determine the scale of the change in drinking in those who received an intervention compared to a control group who receive a minimal intervention.
2. To test whether those in the intervention group change their drinking motivations.
3. To test the acceptability of the intervention, and recruitment to and retention during the trial.

6.2 Methods

6.2.1 Design

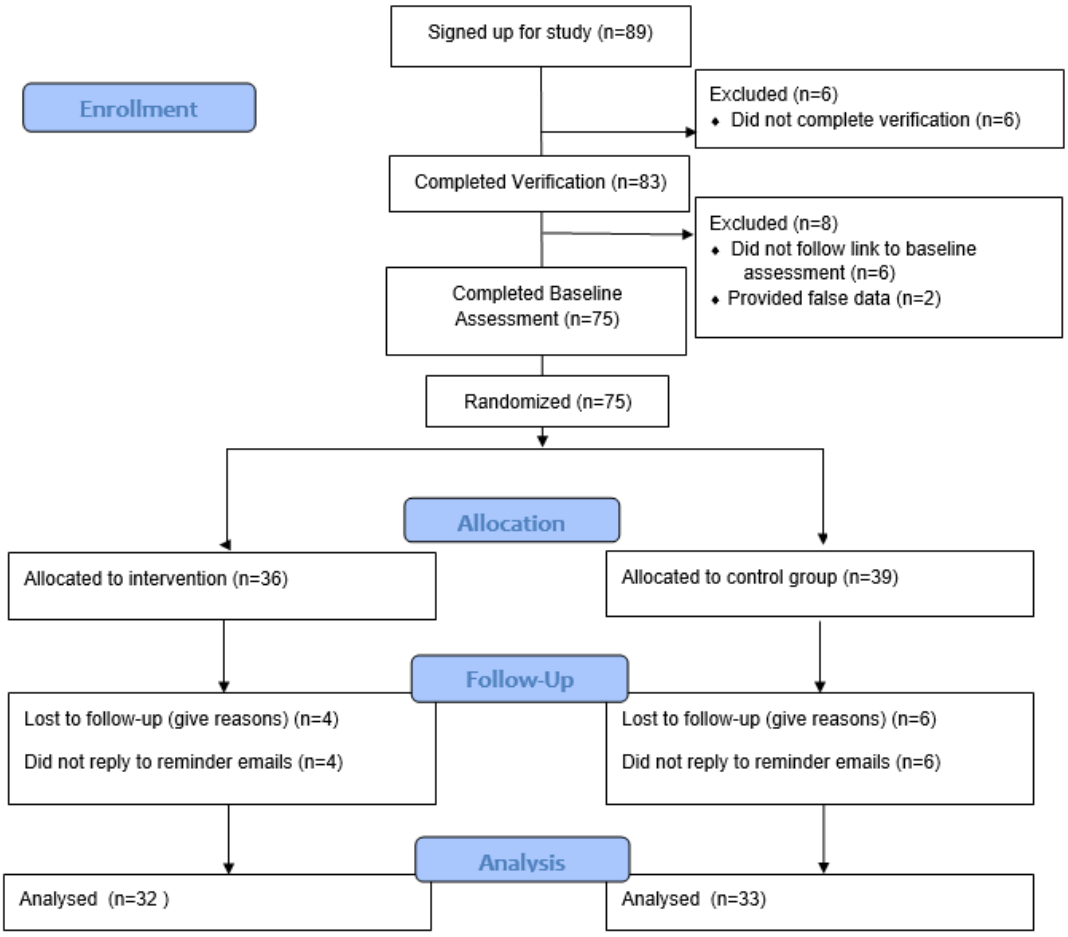
The study was a parallel groups, pilot randomised control study between a trial alcohol brief intervention and a minimal intervention control group. Participants were tested at baseline, and at a one-month follow-up. We used an opportunistic, voluntary sample of participants who were unemployed. The study only included those unemployed participants who were fully unemployed (averaging 0 hours of paid work). As in study one, participants who were part-time, temporarily employed, or students were excluded from the trial due to the difficulty in defining the level of work these participants would engage in. Participants were randomised using a block randomisation (blocks of 4) stratified by gender to ensure balanced but true randomisation. The dependent variables in this study were the Timeline Follow Back

score (Aim 1) to measure alcohol consumption, which was the primary outcome, the drinking motivations scores (Aim 2), and the perceived acceptability and retention of the trial (Aim 3), which were secondary outcomes. Retention and recruitment were quantified by measuring the study retention rate at each stage of the study, from recruitment, baseline, and then follow-up. Acceptability was measured via a series of scales asking how acceptable participants would find the intervention should it be included in different scenarios (i.e. as a compulsory part of Universal Credit).

6.2.2 Participants

Participants were recruited from various sources, primarily through adverts placed on social media either through algorithm targeting (paid adverts), or adverts placed in job seeking and job vacancy groups. Adverts were also placed on job seeking sites (Gratis jobs) and in Universal Credit and unemployed support groups with moderators' permission. Overall, 89 participants signed up to the study, with 83 completing verification, and 75 completing the baseline and being randomised into either the intervention group (36) or the control group (39) (see the Consort diagram, figure 7). Inclusion criteria for the study were intentionally broad to capture the largest range of people who could potentially benefit from the intervention, the criteria were; fully unemployed, live in the UK, consume alcohol at least once a week, and are actively seeking employment. Participants were excluded if they were pregnant, had been diagnosed with an Alcohol Use Disorder (AUD), or were unemployed due to health reasons (meaning they were not actively job seeking). Participants were compensated for taking part with up to £25 of shopping vouchers (£5 for baseline, and £20 for the one-month follow-up).

Figure 7: CONSORT Diagram showing participant flow (excluding false sign-ups, see section 6.2.8 for more details)



6.2.3 Materials

The study was an online intervention and survey accessed via links in adverts on social media. The baseline assessment consisted of five questionnaires, a demographics questionnaire, the Alcohol Use Disorder Identification Test (AUDIT), the Timeline Follow Back for 7 days, two of the subscales from the Drinking Motivation Questionnaire (DMQ) (Boredom and Coping), and the Readiness Ruler. As many of these are described in section (2.2.2.7) in the general methods section, the descriptions of these will be brief.

Participants were initially asked demographic questions, these covered age, gender, ethnicity, previous job, length of time unemployed, and a question on whether alcohol led

to them losing their previous job, this was an optional question so participants could avoid this if they felt uncomfortable answering.

The AUDIT (Saunders et al., 1993), as outlined in the general methods, is a ten item survey designed to measure the risk of an individual developing an alcohol use disorder. It is made up of three sections, consumption, harm, and dependence. The scale has been demonstrated to be accurate in a British sample (Shevlin & Smith, 2007). For information on how the scale is scored and the categories derived from the scale, see section 2.2.2.7 in the general methods, or section 4.2.3 in Study 2. The TLFB (Sobell & Sobell, 1992) was presented as a sliding scale to record the number of units the participant had consumed in the previous week by asking them to record each day's drinking separately. Participants were presented with a graphic to assist them in deciding how many units were in the drinks they had consumed. The Drinking Motivations Questionnaire (M. L. Cooper, 1994) is a Likert scale with several sub-scales designed to measure the motives for drinking. These subscales are; coping, enhancement, social, and conformity, boredom was also added as an additional sub-scale (Chapter 4; Study 2). The present study only included the two sub-scales which were determined to be associated with drinking motives in people who are unemployed, boredom and coping. The other sub-scales were omitted in favour of keeping the assessment stage brief and to potentially minimise assessment reactivity in the control group (McCambridge, Witton, et al., 2014). Finally, the Readiness Ruler (Heather et al., 2008) was presented to participants as another sliding scale allowing them to indicate how they felt about each statement. The ruler measures the participant's readiness to change a behaviour (in the case of this study, drinking behaviour), the importance to them to change the behaviour and finally their confidence in their ability to change the behaviour. The scale is measured 0-100 with zero representing no confidence, importance, or readiness in their ability to change. All of these scales were given to participants at both baseline and follow-up.

During the follow-up assessment, participants were asked to rate how acceptable they felt it would be to be asked to complete the intervention in a number of scenarios. These scenarios ranged from completely optional (i.e. an optional intervention accessed via the NHS website) to an enforced scenario (i.e. being required to complete the intervention before applying for Universal Credit). The items were scored from 0-100 with 100 indicating completely acceptable. Participants were also given the option to write why they had scored in this way; however, this was not utilised by many participants (n=12), and therefore was not analysed. The different scenarios are listed in table 20.

Table 20: List of scenarios given to participants. Participants were asked to imagine the intervention was included in each of these scenarios, and then rate out of 100 how acceptable they would find it.

An Optional NHS website tool
An Optional NHS App
Compulsory as part of the Universal Credit Application
Optional as part of the Universal Credit Application
Compulsory as part of a job application
Compulsory as part of a new job induction
Compulsory as part of job performance management

6.2.4 Procedure

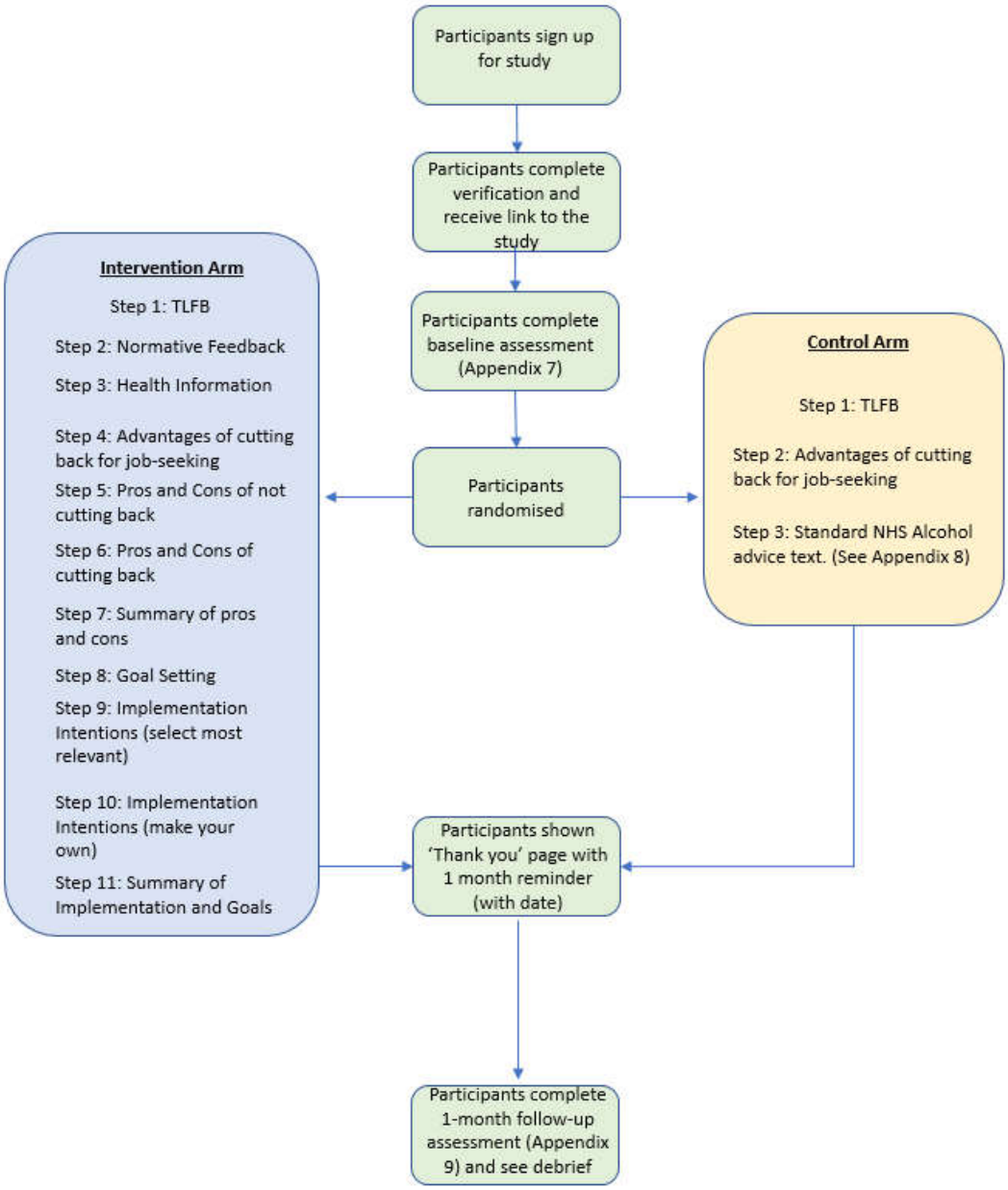
Participants entered the study via links in adverts on social media or paid adverts. Initially the link took the participants to the participant information sheet and into the baseline assessment, however, after an influx of fake participants during early recruitment (see Methods: Data Handling section), a new screening and verification step was added. During this new step, participants were shown the participant information sheet and then asked to submit a mobile phone number. A text was sent by the researcher asking them to verify their email address. Participants who verified their email address were sent a link to the baseline assessment. Participants who were unable to verify their email address, registered an incorrect or inactive mobile number, or were non-responsive were not sent a baseline assessment link. Duplicate phone numbers and email addresses also failed verification.

Baseline assessment included; demographic questions, the AUDIT, the TLFB, the DMQ sub-scales, and the Readiness Ruler in that order. Once the participant had registered their voucher preference (£5 now, £20 later/ £25 later/ Donate), they were automatically redirected to the purpose made Down Your Drink (DYD) site (dydjobseekers.org.uk) where randomisation would take place. Participants would remain on the DYD site whether they were control or intervention arm. For full details on the contents of each group, see the Methods: Design of Intervention section. Once participants had completed their assigned tasks, they were sent an email thanking them, and reminded they would be contacted again in a month's time (with a specific date provided).

Control group participants were presented with the same baseline assessment as the intervention group. When redirected to the DYD Jobseekers site, they were presented with a pared down version of the intervention consisting of a TLFB with no feedback, text about advantages of cutting down on drinking in terms of finding work, and text taken from the NHS website about alcohol consumption. They were then shown the same 'Thank you' message and followed the same post-test assessments as the intervention group.

One month later, participants were sent an email inviting them to complete the follow-up, with a link to the questionnaire. This stage consisted of the same questionnaires as the baseline, with the addition of the questions about acceptability. Once participants had completed the follow-up, they were shown a debrief page (which was also emailed to them) and thanked for their participation. The control group were offered the opportunity to receive the full intervention if they wished. All participants received a copy of the debrief sheet via email along with the voucher codes.

Figure 8: Each step of the study participants experienced.



6.2.5 Design of Intervention

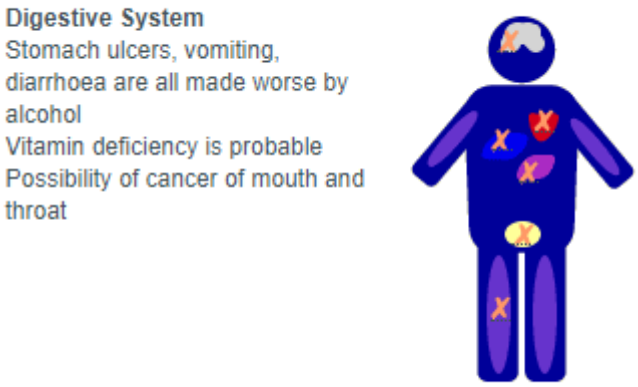
6.2.5.1 Down Your Drink

As presented in Chapter 2 (2.3.4), the trial used a modified version of Down Your Drink (Linke et al., 2004). The original intervention contains several options for participants to go through depending on their personal target as well as a 'quick visit' intervention to try to reduce

drinking in a very short 15-minute session. Participants can visit the site as many times as they wish, and use whichever modules they like in an attempt to provide ongoing support.

The core modules of the intervention are several commonly found elements. The first is a timeline follow-back designed in a way to make it easy to record drinking, this then feeds

Figure 9: An example of the graphic to show health consequences of heavy drinking.



into a normative feedback page which informs participants whether they are low, medium, or high-risk using graphics and descriptions of what each risk category means. The next step shows a graphic which encourages you to hover the mouse over different parts of the body to provide information on why you should cut back (see figure 9). The page also briefly outlines the benefits of cutting back.

Step four of the intervention asks participants to consider the benefits and costs of not changing their drinking, and the benefits and costs of changing (cutting back) their drinking, finishing with a summary table of their answers. The site encourages participants to consider their answers, and then asks them to decide if they wish to cut back their drinking. If they decide to change their behaviour, they are taken to the fifth step of the intervention, an opportunity to set some goals around their drinking. This page also gives an option to print the goals out for participants to hang up in their house as a prompt. This ends the quick visit intervention page.

In addition to the "quick visit" section, there are also a large number of information pages which provide information on whether cutting back is needed (BCT 5.1: Information about health consequences), how to tell if they have an alcohol problem, calculators to track their blood alcohol levels (BCT 2.6: Biofeedback), tasks to prioritise what is really important to them (BCT 13.2: Framing/Reframing), and tasks linked with assessing the costs of their drinking which go into more detail than in the quick visit intervention. Finally, there is help with staying on track in reducing alcohol use, as well as how to plan to manage a lapse and develop a balanced lifestyle. Overall, the intervention is in-depth and resource rich, ideal for those who are motivated to reduce their drinking. However, this could be seen as daunting to those who are less motivated about reducing drinking, or who may be pre-occupied with other, more pressing, issues in their lives (e.g. Unemployment, bereavement, or poor mental health). Therefore, it is important that the intervention is tailored toward those who will be using it, in this instance, people who are unemployed.

6.2.5.2 Alterations made to the original Down Your Drink intervention for Study 4

Benefits of Cutting back (Employment): From the interviews conducted in study 3, a number of participants spoke of the negative tone with which alcohol use is addressed, focusing on the negative aspects of heavy drinking instead of the positive aspects of cutting back. Whilst DYD contain elements of positive aspects, the amount of space given to such advice is relatively limited, so this is an area which has been expanded on. This in particular is being used to encourage people to cut down on drinking, with the aim of finding long-term, fulfilling employment. Information such as "Alcohol disrupts your sleep, by cutting down it will help you have a better night's sleep. You will be more likely to wake up refreshed and ready to tackle any challenges you might face, and to make the best of the day."

Tackling Common Issues Faced During Unemployment: During the interviews in study 3, participants discussed some of the daily struggles they have which either; impact upon their chances of finding work, impact upon their mental health or motivation through boredom,

or trigger the urge to drink. Using Implementation Intentions (Armitage, 2016) (II) a number of If-Then statements were designed for participants to choose from, allowing them to select the one they felt was most relevant to them. Examples of some of the statements include: "If I'm frustrated with job seeking and feel like a drink, then I will think about how more difficult it will be tomorrow if I also have a hangover and feel rough" and "If I'm bored because I've finished looking for jobs, and I'm tempted to drink, then I will try to do something else that makes me happy like learning a new skill I've always wanted to learn". The "If" scenarios were common negative situations which were identified from participants during the interviews, whilst the "Then" statements were often things which participants had identified as things which have helped them in the past. After completing this section, participants were given the opportunity to think about their own lives and write their own If-Then statement which they could write down and try to use in their everyday life. This technique has been shown to be effective in alcohol, tobacco, and public health related studies (Armitage, 2009, 2016; Armitage et al., 2014).

Pragmatic: A central element of this study is the need to develop a pragmatic intervention which will; be used by participants willingly, and is likely to be adopted by job seeking agencies or government departments (e.g. DWP). This means that it needs to be short and low burden on the participant and not cause increased workload for frontline staff who are already under increased pressure. As a result, the decision was made to limit the intervention to a one-off intervention using only the "quick visit" section of the site with the newer elements (II's and Unemployment advice) added in.

6.2.6 Behavioural Change Techniques

The intervention and control interventions both included a number of Behavioural Change Techniques (BCTs). Table 21 shows the BCTs included in the study, and whether the control group was also exposed to it. The control group was exposed to two BCTs; Information about Health Consequences, and Self-Monitoring of Outcomes of Behaviours. To ensure control

group participants remained engaged in the study, information about their health was included in the control arm. This was kept to information that was freely available on the NHS website (A full text copy of the information is available in Appendix 8). Participants in the control group were also exposed to a TLFB, however, they did not receive any information about how their drinking compared to others, or their risk level. The aim of this was to ensure there were still interactive elements to the control arm.

Table 21: BCTs Present in the intervention, and whether they were also present in the control group.

BCT Number	BCT Name	Intervention Step BCT is Present in	Control?
1.1	Goal Setting (Behaviour)	8	N
1.4	Action Planning	9 & 10	N
2.2	Feedback on Behaviour	2	N
2.4	Self-Monitoring of outcome(s) of behaviour(s)	1	Y
5.1	Information about health consequences	3	Y
6.2	Social Comparison	2	N
7.1	Prompts/Cues	5,6,8,9,&10	N
9.2	Pros and cons	5 & 6	N

6.2.7 Data Handling

Fake participants: During the early stages of recruitment, the baseline assessment was completed by over 300 participants within 2 hours. Data was often uniform (selecting the first answer for each option), used fake email addresses which did not reply, and listed mobile numbers with too few or too many digits. Often IP addresses provided by Qualtrics indicated the participant was located outside the UK (often showing an IP address from China) and used phone numbers which were not typical British numbers. These data were removed from the study, and a new verification system was added.

Incomplete data and Per Protocol Analysis: Whilst the study showed good follow-up rates, efforts were made to collect follow-up data from non-responders, this included a second email, and a reminder text. In a full RCT, the data would be analysed according to intention to treat design, however, with the current sample, using imputation methods would be inappropriate as it may skew the sample to become unrepresentative, especially if using

either multiple imputation or “last observation carried forward”, where the baseline data is used as the follow-up data assuming nothing has changed.

As intention to treat is not appropriate in this sample, the study used a per protocol approach to the analysis. Participants who were randomised but did not complete the follow-up were removed from the main analysis, as were participants who left the study before randomisation (i.e. completed the baseline assessment, but were not redirected to the DYD site to be randomised). All questionnaires which contributed to an outcome variable required an answer before moving on, so it was not possible to provide incomplete data within each stage.

6.2.8 Analysis

Aim 1: TLFB scores were analysed between the two groups. Data were tested for normality, TLFB was found to be non-normal and a negative binomial regression was chosen to control for over-dispersion. Baseline TLFB scores were controlled for, along with demographics of the sample. As this was a pilot RCT, more emphasis was put on generating an effect size, than significance. The primary outcome of the data was TLFB scores, both at post-test and when controlling for baseline TLFB scores to assess the amount of change seen in each group.

Aim 2: DMQ subscales, and readiness to change were analysed using a similar approach. These data were normally distributed and were analysed using multiple linear regression. Secondary outcomes included both the DMQ sub-scales and the readiness to change scores between groups, as well as within the intervention group.

Aim 3: Mean acceptability scores were compared across the intervention arm of the trial, and follow-up rates were calculated to measure the degree to which this intervention was received positively by the target group.

6.2.9 Ethical Approval

Ethical approval was granted by the University of Liverpool ethics board on 15/04/2019. Project Reference: 4573

6.3 Results

6.3.1 Demographics and Baseline drinking

A total of 65 participants were included in the analysis (86.67% of those randomised). Participants had a mean age of 33.32 (SD=10.23) with an age range of 18-62, there was no significant difference in age mean or distributions between the two groups (see Table 22). Overall, there were more women (56.92%) and single people (52.31%) in the study. There was a large proportion of participants who were of a white British ethnicity (84.62%), which is similar to current estimates of the British population (87.2%) (Office for National Statistics, 2019). Education level was varied, with the largest proportion (26.15%) reporting high GCSE grades as their highest qualification, overall 23.08% were university educated to either Bachelors or Masters degree level, this is below the current estimate for the UK (42%) (HM Government, 2018). Previous employment was also varied, with most participants previously working in service and sales jobs (23.08%). For a full breakdown of demographic data, see Appendix 10. At baseline, of those that completed the study, there were no differences between the intervention and control groups in terms of units consumed (t(64)=0.068,p=0.946) or AUDIT scores (t(64)=-0.140,p=0.890) (Table 22).

Table 22: Baseline characteristics of participants, overall and by group.

	Overall Mean (SD)	Intervention Mean (SD)	Control (Mean SD)	t	p
Baseline Drinking (units)	*51.55 (42.46)*	51.19 (36.36)	51.91 (48.22)	0.068	0.946
Baseline AUDIT score	*16.03 (7.07)*	16.16 (6.92)	15.91 (7.35)	-0.140	0.890
Age	*33.32 (10.23)*	34.19 (11.09)	32.49 (9.42)	-0.668	0.507

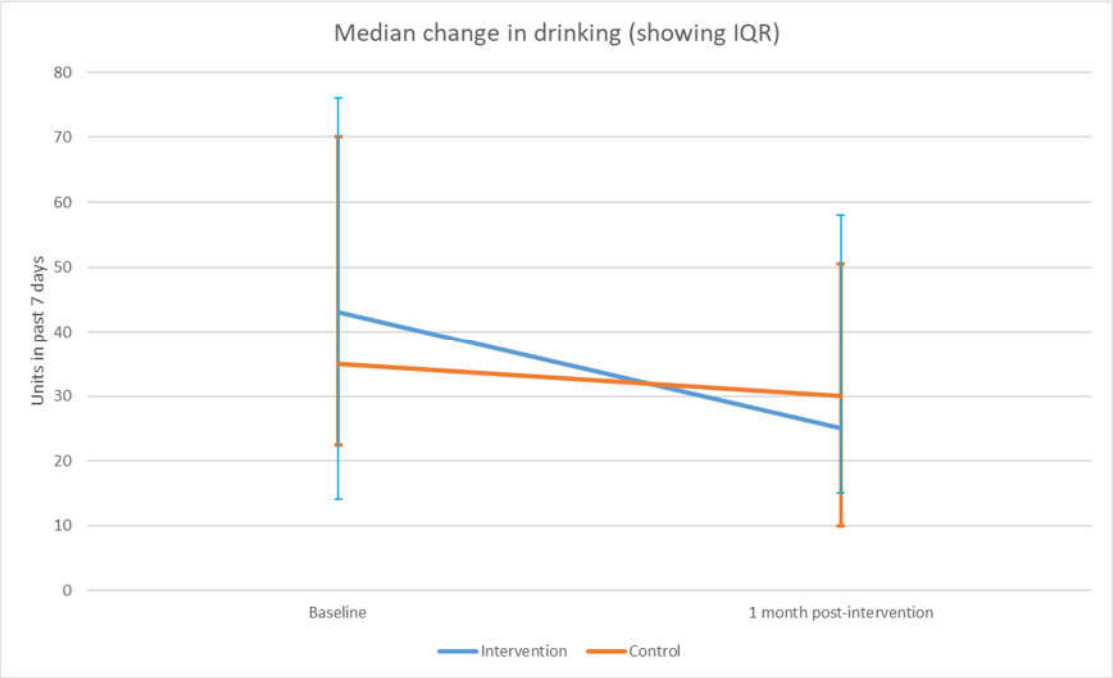
Ten participants dropped out of the study after the baseline and intervention and were not followed up (Control: n=6, Intervention: n=4). The participants who dropped out were slightly younger than the analysed cohort (M=30.29, SD=7.91), but were evenly split between gender (Female = 50%). Baseline drinking was lower (M=41.20 units, SD=29.8), but non-

significantly different to the analysed group (t(73)=-0.741,p=0.461). AUDIT scores were similar to the analysed cohort (M=16.00, SD=10.32; t(73)=-0.012,p=0.991). There were no major differences in terms of ethnicity (70% White British), Education level (20% University educated) or marital status (60% single) compared to the analysed cohort. A full breakdown of the demographics of non-responders participants can be found in Appendix 2.

6.3.2 Primary analysis: Drinking at post-test

Timeline follow back scores were compared at post-test between intervention and control groups. The post-test timeline follow-back scores were non-normally distributed (Skewness= 1.183). This was confirmed with a Kolmogorov-Smirnoff test ($D(65)=0.142$, $p<0.001$) demonstrating that the distribution significantly deviated from normal. Due to this, non-parametric analyses were used for the primary analysis. ANOVAs and ANCOVAs were inappropriate due to the non-normal nature data. The data was tested for a poisson distribution fit, the variance of the post-test TLFB scores (903.31) was much greater than the mean (31.96) indicating there was no fit, so a negative binomial regression was conducted (as suggested in Ismail & Jemain (2007), and conducted in Irizar et al. (2020)). The intervention group reduced median drinking from 43.00 units (Interquartile Range (IQR)=22.5-70.00) to 25.00 units per week (IQR=10.00 – 50.00). The control group reduced median drinking from 35.00 units (IQR=14.00-76.00) to 30.00 units per week (IQR=15.00-58.00). When controlling for baseline drinking, (as recommended in Vickers & Altman (Vickers & Altman, 2001)) there was no significant difference in drinking between groups at follow-up (IRR=0.853, CI=0.555-1.310, p=0.467).

Figure 7: Median Change in drinking by group. Inter-quartile range shown in error bars.



6.3.3 Exploratory sensitivity analysis of primary outcome variable

As the decrease in drinking observed is far greater than expected (i.e. Kaner et al., 2017), further analysis of sub-groups within the data was warranted to understand the potential factors influencing this size of change. It was not possible to formally test for moderation as the study was not powered appropriately for this, but data has been stratified to explore these changes informally. In future full RCTs, it is recommended that the study be powered for any planned sub-analysis. As this is a pilot, it was deemed appropriate to explore the unexpected (in comparison to the wider literature) findings with an exploratory sensitivity analysis.

When categorising the participants by baseline AUDIT categories, there were a high proportion of the participants in the "Probable dependent" AUDIT category, compared to the general population (Public Health England, 2019). Median alcohol consumption at baseline increased with each increase in category. Majority of participants were either in the increasing risk category (Cat 2: 46.87%) or probable dependent (Cat 4: 32.81%)

Table 23:Median units consumed at baseline by AUDIT Category. (N Missing= 1 (Incomplete baseline AUDIT))

AUDIT Category	Overall (IQR)		Intervention (IQR)		Control (IQR)	
	Median (IQR)	n	Median (IQR)	n	Median (IQR)	n
1 - Low Risk	12 (7-12)	5	12 (12-23)	3	7 (7-7)	2
2 - Increasing Risk	24 (13-62)	30	35 (18-62)	13	19 (13-40)	17
3 - Higher Risk	38 (33-56)	8	45 (38-60)	6	25.5 (16-35)	2
4 - Probable Dependent	65 (46-101)	21	62.5 (40-91)	10	65 (49-130)	11

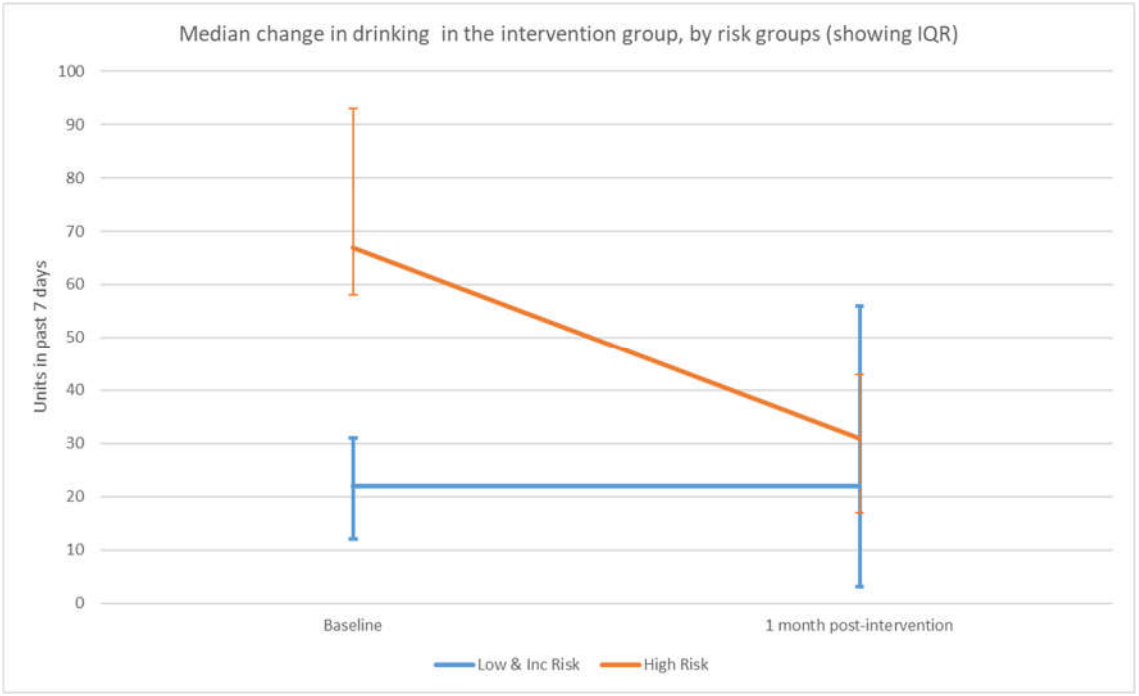
The sample included a far higher proportion of drinkers drinking above the low risk levels (81.5%) than the national average estimate (25.7% drinking above 14 units a week (Public Health England, 2019)). Due to the likelihood of different risk groups reacting differently to an intervention, and the possibility of regression to the mean (Jenkins et al., 2008) being a factor, the groups were split into two, comparing high risk drinkers (>35 for women and >50 for men units at baseline) to non-high risk drinkers (≤35 units per week for women and ≤50 units per week for men at baseline).

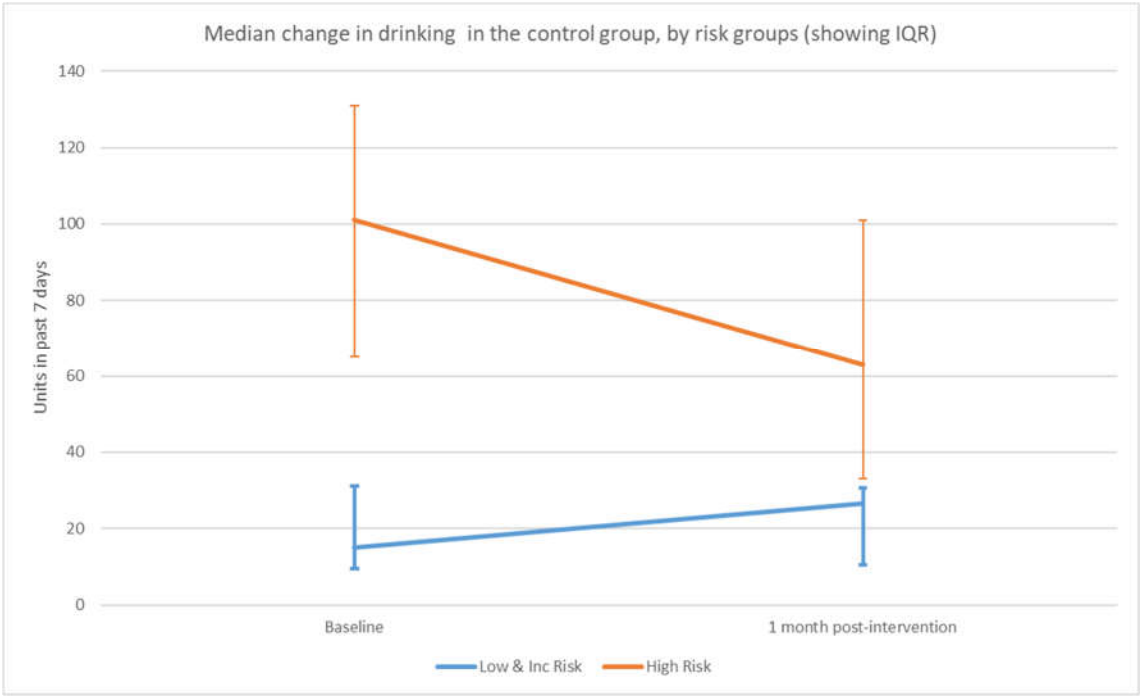
Table 24: Number of participants in each risk group, overall and by group. Percentage of group in brackets. Groups determined by consumption at baseline.

	Overall	Intervention	Control
Low Risk	*12 (18.46%)*	4 (12.50%)	8 (24.24%)
Increasing Risk	*23 (35.39%)*	11 (34.38%)	12 (36.36%)
High Risk	*30 (46.15%)*	17 (53.13%)	13 (39.39%)

In the intervention group, median drinking decreased in the high risk sub-group (from 67 units (IQR=58-93) to 31 units (IQR=17-43)), but showed no change in the low and increasing risk sub-group (from 22 units (IQR=12-31) to 22 units (IQR=3-56)). In the control group, the high risk drinker sub-group decreased their drinking, from a median of 101 units per week (IQR=65-131) to 63 units (IQR=33-101). Meanwhile, the low and increasing risk drinkers increased their median drinking from 15 units per week (IQR=9.5-31) to 26.5 units (IQR=10.5-30.5). This is shown in figures 11a and 11b.

Figure 8a and 11b: Median changes in drinking when split by high risk vs not high risk. Intervention (a) and control (b) groups.





6.3.4 Secondary analysis of effect of intervention

Secondary analysis was conducted on other variables which were collected, these included boredom and coping drinking motivations, and readiness to change. All of the secondary variables were normally distributed, and so a linear regression was conducted. Mean coping

motivation and boredom motivation scores at post-test were compared between groups (as the IV), controlling for baseline drinking. The second analysis consisted of a linear regression whereby group assignment was used to predict readiness to change scores at post-test, again when controlling for baseline scores.

Table 25: Mean Boredom and coping drinking motivation scores, and readiness to change scores, at baseline and 1-month post-test. (SD)

	Boredom		Coping		Readiness to Change	
	Baseline	Post-test	Baseline	Post-test	Baseline	Post-test
Intervention	6.94 (2.91)	6.13 (2.25)	11.84 (4.54)	9.78 (3.93)	151.94 (65.16)	173.31 (51.60)
Control	6.70 (2.71)	7.18 (2.65)	12.55 (4.73)	11.21 (3.87)	154.24 (51.09)	171.61 (58.92)

Both coping (Baseline: M=11.84, SD=4.54) and boredom (Baseline: M=6.94, SD=2.91) drinking motivations decreased in the intervention group at one-month post-test (Coping: M=9.78, SD=3.93; Boredom: M=6.13, SD=2.25). In the control group, only the coping motivation decreased between measurements (Baseline: M=12.55, SD=11.21; Post-test: M=11.21 (3.87). The boredom drinking motivation increased from baseline to post-test (Baseline: M=6.70, SD=2.71; Post-test: M=7.18, SD= 2.65). When controlling for baseline scores, there was no significant difference between the groups in either boredom (B=-1.13; t(62,2)=-1.93,p=0.058) or coping (B=-1.03; t(62,2)=-1.44,p=0.154).

Both intervention group (Baseline: M=151.94, SD=65.16; Post-test: M=173.31, SD=51.60) and control group (Baseline: M=154.24, SD=51.09; Post-test: M=171.61, SD=58.92) showed similar increases in readiness to change scores. There was no significant difference in the overall readiness to change between the groups when controlling for baseline readiness to change (B=2.41; t(62,2)=0.18, p=0.588).

6.3.5 Acceptability

Participants were asked to rate how acceptable they would hypothetically find the intervention being used in different scenarios. One participant opted not to answer these questions. In table 26, the mean scores and standard deviations for each scenario are listed. Scores for participants in the control group are not listed, as they had not seen the full

intervention at this stage. There were generally favourable scores when asked if the intervention would be acceptable in NHS settings (Website Mean=62.66, SD=34.77; App mean=68.84, SD=34.96), however acceptability dropped when asked about anything work-related. Participants seemed split on the idea of it being an optional part of the Universal credit application process (Mean 55.97, SD=36.25), however making it a compulsory part of the UC application process was deemed the least acceptable option (Mean = 34.84, SD =31.00).

Table 26: Means and SDs of acceptability scores n=31

	Mean Score (out of 100)	Standard Deviation
Optional NHS website tool	62.66	34.77
Optional NHS App	68.84	34.96
Compulsory as part of the Universal Credit Application	43.77	37.18
Optional as part of the Universal Credit Application	55.97	36.25
Compulsory as part of a job application	34.84	31.00
Compulsory as part of a new job induction	41.93	33.14
Compulsory as part of job performance management	38.03	29.79

6.4 Discussion

The study has shown several key findings as well as raising potential issues which would need to be carefully managed in a full Randomised Control Trial (RCT). The findings will be discussed in terms of the hypotheses and aims of the study.

6.4.1 Aim 1: To determine the scale of the change in drinking in those who received an intervention compared to a control group who receive a minimal intervention

The results showed a decrease in 1-week drinking from baseline to post-test in both intervention and control groups. The decrease in drinking was more pronounced in the intervention group than the control group. This finding however, was far greater than expected based on previous research (i.e. Platt et al., 2016) and led to a further examination

of the data. The decrease in drinking in the intervention group matches other findings in ABI research (Kaner et al., 2007; Platt et al., 2016; Riper et al., 2014) showing that ABIs can be used as an effective tool in reducing excessive drinking. The decrease in drinking, however, was far greater than the estimate of a reduction of around 3 units per week as shown in previous ABI studies (Kaner et al., 2017). The present study showed a median decrease of 18 units a week in the intervention group. When controlling for baseline alcohol consumption, there is a small effect size (based on estimates by Olivier et al., (2017)) in the reduction in drinking in the intervention group compared to the control group. Based on the findings there is a 14.7% reduction in risk to increased drinking for those who were exposed to the intervention, when controlling for baseline scores, compared to the control group. There are a number of possible explanations for this: a high number of excessive drinkers reducing drinking by a similar percentage, translating to a large unit per week decrease; context effects and hypothesis guessing (Collier & Lawson, 2017); social desirability (Crutzen & Göritz, 2010); regression to the mean (very high risk drinkers showing combined intervention effects plus the natural regression to the mean expected) (Jenkins et al., 2008); and the timing of the baseline which was mid- to late December for a large proportion of the participants, a time of the year when drinking tends to be higher than normal.

The data suggests that whilst not explaining everything, the presence of large numbers of high and very high drinkers appears to be causing a bigger than expected effect size. Similar findings can be seen in studies by Israel (1996) and Juarez (2006). In both of these studies, there were high numbers of heavy drinkers, the heavier drinkers reduced drinking by a much larger amount than lower risk drinkers, and studies which focused on lower risk drinkers. The present data shows that the high-risk drinkers decreased their drinking by far greater amounts whereas lower and increasing risk drinkers either remained the same (intervention), or increased drinking (control). This suggests that whilst the data mirrors that of Juarez (2006) and Israel (1996), there are also other factors causing the decrease which

would also impact the control group (as seen). Regression to the mean (RTM) is a risk when working with high risk drinkers. RTM is where heavy drinkers naturally reduce their drinking over time, and return towards the average (Jenkins et al., 2008). This is further discussed in Study 1 (Chapter 3). There is evidence that RTM is present as the very high risk drinkers in the control group also showed a large reduction in weekly units. This is likely to be increased as participants who are high risk drinkers and choose to take part in an alcohol study are likely to have a high motivation to reduce drinking (as seen in other trials of DYD e.g. Wallace et al. (2011)). This will also contribute to the greater than expected decrease in drinking observed in the high-risk drinkers.

There may also be an element of social desirability and context effects occurring which is more prevalent in the high-risk drinkers. Social desirability could occur from drinkers knowing that they are high risk drinkers, but also belong to a group with severe stigma about drinking (Krug et al., 2019). This could encourage a reduction in drinking, or a selective reporting of drinking at follow-up (Booth-Kewley et al., 2007; Crutzen & Göritz, 2010). It is unlikely that hypothesis guessing (Collier & Lawson, 2017) has impacted the findings here, as the low and increasing risk participants in the control group did not reduce drinking. If hypothesis guessing where likely, you'd expect to see all groups (and sub-groups) reduce their weekly consumption to varying degrees, which did not happen in the low/increasing risk sub-groups in both the intervention (remained the same) and the control group (increased).

Whilst this present study, as with other ABIs, was not designed to intervene in with high risk drinkers, no upper limit of drinking was included in the study. Instead, the study only excluded participants with a diagnosis of alcohol use disorder. This means that the participants who took part, and were very high risk drinkers, are potentially hidden from the public health system. This highlights the hidden risks of heavy drinking in those out of work

group (Department for Work & Pensions, 2015; Sutton et al., 2004), and supports the need for more alcohol interventions in people who are unemployed.

Whilst the low and increasing risk drinkers in the intervention group did not decrease their weekly drinking, this is still seen as a successful intervention. This is because unemployment is expected to increase drinking (Henkel, 2011; Mossakowski, 2008; Popovici & French, 2013), so the intervention appears to have negated the risks of unemployment on drinking in low and increasing risk drinkers. This expected increase in drinking can be observed in the low and increasing risk drinkers in the control group. This matches research by Moreira and colleagues (2012) where first year students, who are typically at an increased risk of increasing drinking showed no change, whereas the control group increased drinking, thus drinking was controlled, instead of reduced, by the intervention.

6.4.2 Aim 2: To test the whether those in the intervention group change their drinking motivations or readiness to change.

The aim of the intervention was to reduce drinking by altering the participant's drinking motivations, in particular the motivations which were associated with higher drinking in people who are unemployed (Chapter 4; Study 2). These data can be used to inform a larger trial, boredom and coping drinking motives both appeared to show decreases within groups, whilst readiness to change showed increases within groups. Whilst the pilot study showed no significant changes in these variables, the within group changes show an indication of how these scores may change in a full RCT. The intervention group showed reduced drinking motivation scores for both boredom and coping, whilst the control group showed a reduced coping drinking motivation, but a higher boredom drinking motivation. Both groups appeared to increase their readiness to change.

Elliot et al. (2015) showed that in an intervention designed to reduce alcohol consumption in patients with HIV, whilst the intervention group showed a greater decrease in drinking, there were no changes in the drinking motivations from baseline to follow-up. The authors

did show that the coping motivation for drinking was linked with increased drinking and dependence up to one year later. This demonstrates the importance of finding an intervention which could decrease these drinking motives. In HIV patients (as with the Elliott et al., 2015 study), the coping drinking motivation is likely to be, by far, the most important factor in heavy drinking in this group. Whereas in the present study, we have shown that whilst coping is important, boredom is also a factor to consider. The present intervention showed a reduction in the coping drinking motive in both groups, which may go some way to explaining the overall reduction in drinking seen in both groups. Wurdak et al. (2016) showed that by tailoring their intervention to address specific motives (as done in this study), they successfully reduced drinking in adolescent girls, but not boys. This might suggest a gender effect of the tailoring element of the intervention, and may explain why there is no significant effect of the current intervention. Further research will study any potential gender effects; however, this pilot dataset is not suitable for such small sub-groups. O'Hara (2014) argues that whilst drinking motivations are well validated, drinking to cope may be a difficult motivation for participants to describe, and it may well be that their drinking is causing the low mood, as opposed to drinking to cope with a low mood. This means that whilst the coping motivation decreased in the present study, it may be that the reduced drinking seen in both groups caused a reduction in the perceived low mood. O'Hara (2014) also argues that more fine grained measurements of mood, motives and drinking would be needed to measure the nuances in the direction of mood related drinking, such as ecological momentary assessment (EMA) (Shiffman et al., 2008)

Readiness to change (RTC) showed increases in both intervention and control groups. This may be a residual change through simply taking part in a study, as there would need to be a certain element of readiness to change to take part, and return one month later to complete the study. The increase in readiness to change could also be related to the severity of the alcohol use seen in this sample. Krenek et al. (2011) showed that high AUDIT scores

accounted for the biggest variation in RTC scores out of all variables, with high AUDIT-C scores predicting higher RTC scores in primary care patients. The sample in the present study showed some very high risk drinking levels, and so based on this, the fact that they have engaged in the study, is likely to increase RTC scores. However, the increase in RTC scores, in either group, is positive as it shows a need, and a desire for this kind of intervention in this group. Combined with the decrease in drinking seen in the study, it shows evidence to continue to move to a full-RCT, as high RTC scores are related to a bigger reduction in alcohol consumption at follow-ups (Bertholet et al., 2009).

6.4.3 Aim 3: To test the acceptability, retention, and recruitment to the trial and the potential to roll out for a full efficacy trial.

The final aim of the study was to assess whether an intervention aimed at people who are unemployed would be feasible and pragmatic. To do this we will discuss three areas, the perceived acceptability of the trial, the engagement, and the ease to which participants were recruited to the study. Acceptance was varied across the seven scenarios, with optional NHS solutions faring best, and compulsory work-related solutions fairing worst. An optional intervention as part of the signing up to Universal Credit process was seen as slightly acceptable by the participants. This is an interesting finding, it demonstrates the same wariness of being able to trust the Department for Work and Pensions as described by interview participants in study 3, as well as in the study by Cheetham et al. (2019), yet shows that there may be a possible solution to this problem. Whilst a full RCT would continue to explore this option, it must be suitable to be adapted to move to a more independent health focused provider to remain truly pragmatic.

Participants were recruited primarily through social media, whilst this is not the best recruitment solution, it was the only feasible option available which would guarantee a large unemployed audience. Recruitment was slow, primarily due to the lack of ability and potential sample biasing impact, to recruit directly via the DWP, however despite these

limitations, the target sample size was met within four months. Once in the study, retention was good, with 86.7% retention to follow-up. This exceeds the expected retention rate of 70% as achieved in the study by Blankers et al. (2011). High attrition rates have been observed in many other internet based ABIs, sometimes as high as 50% (Christensen & Mackinnon, 2006; Eysenbach, 2005), which Blankers (2011) argues is due to interventions not being successfully tailored to the individual. The fact that we have achieved a high follow-up rate suggests that the participants found the content relevant and were engaged in the study. This supports the high RTC score mentioned earlier, that unemployed participants are generally motivated to engage with interventions of this nature, particularly those who are drinking at very high levels.

6.4.4 Conclusions and Limitations

Overall the pilot study shows evidence that an intervention targeted at people who are unemployed should be tested with a full RCT. Alcohol consumption showed decreases in both groups, with greater reductions seen in the intervention group. When split by consumption levels, none of the sub-groups increased drinking in the intervention group, whereas the low and increasing risk drinkers increased their drinking in the control group. From a feasibility perspective, the engagement and retention of participants is positive and shows a need for an intervention in this group. Whilst recruitment was impeded by the lack of direct access to a large unemployed audience, recruitment goals were still achieved through targeted adverts on social media.

The decision whether to recommend progressing to a full effectiveness trial is often subjective as there are no clear guides on this (Hallingberg et al., 2018). Avery et al. (2017) suggest focusing on three main components of a pilot study to gauge rationale to progress to a full RCT, they are; recruitment, non-adherence, and the outcome data. In terms of recruitment, this study achieved its recruitment aim within the initial planned timeframe. This timeframe was longer than most pilot RCTs, however this was guided by the recruitment

of people who are unemployed in the previous two studies, and the lack of assistance from DWP. Recruitment was deemed successful as participants were able to sign-up and complete the study with few difficulties once key stakeholders were in place. There was a good balance of demographics of those taking part, suggesting only the already identified barrier of the 'digital divide' being a barrier to recruitment. Protocol adherence was considered excellent due to the lower than expected drop-out between baseline and follow-up, no cross-over, and no off-protocol intervention occurring within the study sample. There was no difference in demographics in participants who dropped out of either of the groups, and similar numbers dropped out of both the intervention and the control group, suggesting that the drop out was not as a result of the trial arm. The final criteria suggested by Avery et al. (2017), is the outcome data. Here it is suggested that data should be complete and of high quality to allow identification of any problems with the study, to allow this to be rectified. The data, whilst showing some unexpected findings, showed low levels of attrition between stages (86.67%), little to no missing data, and no group bias in attrition or demographics. The study succeeds against the three key criteria set, and therefore, should be considered to progress to a full-RCT.

The study has two main limitations, firstly, as this study was not registered, it lacks some of the transparency of other studies which have been. Future work should aim to be pre-registered, including analysis plans, recruitment plans, and power calculations before commencing. Secondly, the post-hoc nature of the exploratory analysis was not planned, in full RCTs it is recommended that the study plan for, and power for, this analysis. As the main outcome variable showed an unexpectedly large change, it would not have been possible to plan for this post-hoc analysis, however it does limit the generalisability of the findings.

The pilot study also succeeded in one of the components of an ABI, which is to identify those at risk of increasing drinking or damaging their health through drinking. The study has

successfully identified a high number of people who would benefit from a targeted intervention, or medical help to reduce their drinking. The unexpected high proportion of participants who were probable dependent and were drinking at very high levels, yet had not been diagnosed with an AUD, suggests two things. Firstly, that there is currently a large hidden population who are unemployed and require help, either with mental health, or controlling their alcohol consumption. Secondly, that these individuals want to seek help, but are reluctant to use any of the current support provided either by the NHS or the DWP. This demonstrates useful findings in utilising an anonymous, targeted, ABI for people who are unemployed, and provides adequate evidence to proceed to a full RCT. It also demonstrates that, whilst services are seen as "accessible" to those who design them, there is often a lack of consultation with the intended users. This makes services appear accessible, but creates barriers to those who actually need or want to access them. The results also achieve the aim of providing the data required to conduct a power calculation to estimate the required sample size for a full RCT.

The design of the study, being only a pilot-RCT, means that is it not possible to draw a full conclusion over the efficacy of the intervention itself as the study is inherently underpowered to conduct such analysis. The study does, however, show evidence that under a full RCT there is a good chance that the intervention will prove to be effective and show good engagement. As the study is also an online study, there is some element of doubt over the reliability in the scores provided by participants. Whilst some studies (e.g. Booth-Kewley et al., 2007) show that when discussing sensitive topics, complete anonymity produces more accurate results, others question the ability to verify the results (Murdoch et al., 2014). To counter this, the full RCT could employ a face-to-face subgroup to receive the intervention and complete baseline and follow-up surveys. This sub-group could then be used to weight the results of the main trial to increase accuracy.

Whilst the high retention rates suggest that participants found the content positive (there is a risk that some unemployed would feel alienated by the content), there is the chance that the financial incentives artificially increased retention rates. When testing the intervention on a wider scale, the incentives may be reduced or removed, which could impact the retention rates of the study. This must be considered when designing further research with this intervention.

Chapter 7

7. General Discussion

This thesis aimed to understand alcohol use during unemployment, and then design an intervention which could be used to help prevent an increase in drinking when people become unemployed. The thesis did this through a systematic method whereby the underlying drinking motivations of increased alcohol consumption in people who are unemployed were identified (via the cross-sectional study in Study 2), with a more in-depth understanding of the experiences (via the interviews in Study 3), and then the intervention was implemented based on the findings and tested in the pilot RCT in study 4. Potential pitfalls in interpreting the findings of Study 4 (Pilot RCT), such as possible type 2 errors or unexpected changes in control group drinking, were considered in the meta-analysis (Study 1). The original plan for this project came about as a response to the report by the Department for Work and Pensions (2015) into the barriers faced by people who are unemployed into finding work, focusing on alcohol and drug use. This chapter will regularly refer back to this report as a means of attempting to further explore this relationship and whether an ABI would be an appropriate measure. This thesis contains four studies related to understanding the relationship between involuntary unemployment (as opposed to voluntary redundancy or choosing to leave the job) and alcohol use, and whether the introduction of a tailored ABI could be effective. This chapter will outline the key findings and discussion points from each of the four results chapters, and then discuss the findings as a whole, evaluating themes which have been generated across the studies. Finally, it will discuss whether the aims of the thesis have been met, and the limitations of the research. This will lead into a final chapter which will outline the recommendations stemming from this research.

7.1 Summary of Individual Findings

7.1.1 Study 1 (Chapter 3): Do control arm participants change their drinking in alcohol intervention trials, and what are the main causes when this occurs?

The aims of the meta-analysis were to; confirm the current expected efficacy of ABIs, to understand how much control groups change their drinking in these trials, and to explore how the unintentional, and sometimes unavoidable, use of BCTs in control groups was associated with change in drinking. The reason this study was needed was because research has shown that control groups regularly decrease their drinking (Fazzino et al., 2016; McCambridge, Witton, et al., 2014), sometimes to the same level as that of the intervention groups. This raised a number issues, including the increased possibility of Type 2 errors in the research, as well as a potential underestimate of the effect size of interventions in meta-analyses. A number of theories had been put forward including regression to the mean (Jenkins et al., 2008; McCambridge, Kypri, et al., 2014) whereby heavy drinkers naturally decrease their drinking over time, a form of demand characteristics where either the participant guessed the hypothesis or the order of the questions created an effect (Collier & Lawson, 2017). The findings of the meta-analysis showed that control groups decreased their drinking by a statistically significant amount, and that BCTs may explain the reduction in drinking. In particular, three BCTs appear to contribute significantly to a decrease in drinking: BCT 2.3 (Self-Monitoring of behaviour), 5.2 (Salience of consequences), and 7.1 (Prompts and Cues). Whilst one of these is unlikely to be avoidable (2.3: Self-Monitoring of behaviour) due to the need to record baseline drinking, which would be included within this BCT, the other two could be carefully avoided when designing a study.

7.1.2 Study 2 (Chapter 4): Are people who are unemployed at higher risk of alcohol use disorders, and which drinking motivation is associated with any increased risk?

The second study, was a cross-sectional survey in, which recruited employed and unemployed participants through social media to compare AUDIT scores, drinking motivations and boredom levels. The main aims of this study were to identify differences in AUDIT scores between those employed and unemployed and additionally to explore what

motivated them to drink, as well as examining how this was related to the increased AUDIT scores. Boredom as a drinking motivation was tested due to previous research suggesting a high level of boredom amongst people who are unemployed (De Witte et al., 2012) and that boredom could lead to increased drinking (Biolcati et al., 2016). The results showed that people who are unemployed scored higher on the AUDIT questionnaire, suggesting that they are at an increased risk of developing an alcohol use disorder, as well as scoring higher on the AUDIT consumption sub-scale and the AUDIT Harm sub-scale. People who are unemployed also scored statistically significant higher scores on both the coping and the boredom drinking motivations, as well as scoring higher overall boredom across all state-boredom types (inattention, disinterest, low and high affect, and time perception). The higher scores in people who are unemployed on both the coping and boredom scales of the DMQ were associated with higher AUDIT scores. The overall findings show that people who were unemployed were at risk of increased alcohol consumption compared to the employed and that they were drinking due to coping and boredom significantly more often than the employed.

7.1.3 Study 3 (Chapter 5): How does unemployment lead to increased drinking due to coping and boredom?

The findings from the cross-sectional study informed the development, and interpretation, of the interviews for the qualitative study (Study 3). Ten unemployed participants were recruited via social media and asked questions about their experiences of their drinking, mental health, and their daily life whilst unemployed, specifically around their experiences of boredom. The interview was conducted in two parts, the first part consisted of a structured interview asking specifically about mental health, unemployment, boredom and the relation of these to drinking. The second part consisted of a more semi-structured approach which asked about how they felt these experiences related to each other and how they felt that affected their day-to-day lives. Whilst some participants were initially hesitant, most quickly eased into the interview.

The findings from the interviews highlighted that the participants felt there were problems with the current benefit system, primarily that participants felt let down, ignored, and generally failed by a system that was supposed to support them. This then impacted on their finances, family, physical and mental health. All of these experiences contributed to them turning to alcohol to cope and to fill the day as something enjoyable to do. The findings from the interviews have generated many of the topics discussed in this chapter and have become central to the project.

7.1.4 Study 4 (Chapter 6): Could a targeted ABI be used to help people who are unemployed avoid the increased risk in drinking? A pragmatic pilot RCT.

The findings from the interview, and the findings from the cross sectional, both provided information towards designing a tailored, pragmatic, ABI. The ABI was a one-off intervention with a one-month follow-up. Participants were recruited into the study via social media, provided a baseline assessment of alcohol consumption, drinking motivations, and demographics and were then randomised into either the control (health information) arm, or the intervention arm. The intervention included Implementation Intentions (Armitage, 2009) which were designed to address the issues participants had told us about boredom during the interviews. Recruitment was completed via social media and successfully reached participants, retention was also considered excellent for a trial of this nature. The findings showed a large decrease in drinking in both control and intervention groups, however, when this was split by drinking levels, it was found that there were high numbers of very high risk drinkers (who had not been diagnosed with an AUD). These very high risk drinkers decreased their drinking in very large amounts in both groups, however the low and increasing risk drinkers showed no change in the intervention group, but an increase in drinking in the control group. There is enough evidence here to support the extension into a full RCT of a tailored ABI for people who are unemployed.

7.1.5 Overall Findings

Overall, the findings of the studies show that people who are unemployed are an at-risk group who would benefit from a targeted ABI. The findings show that people who are unemployed are a valid target for such an intervention and that early results are positive, with some evidence to suggest the ABI would be effective, as well as the acceptability and viability of the intervention in this group. Both Study 2 and Study 3 show that people who are unemployed are more likely to suffer from worse mental health and higher alcohol consumption and that there is a need to target this. The studies also showed that, due to the presence of different drinking motives compared to the employed, a targeted ABI is necessary to gain the greatest effect of the intervention and to keep the participants engaged. The effectiveness of this approach is seen in Study 4 with good recruitment and retention rates, and positive findings around the potential efficacy of the intervention. However, the general distrust towards the benefits system, shown in Study 3, highlights the barriers needed to be overcome to regain the trust of those who are unemployed, especially should the DWP decide to roll-out an intervention as part of the Universal Credit process.

The findings across this thesis are comparable to research by the DWP (Department for Work & Pensions, 2015) which also show that the main barriers to finding long term work are the risk of increased alcohol consumption and poorer mental health. Study 4 also identified a large number of very high risk drinkers (exceeding 75 units per week), suggesting that an unemployed sample may include a "hidden population" who are either being missed, or are reluctant to find help, by the relevant services. The next sections in this thesis will outline the over-arching topics found across the thesis and discuss possible theories around the concept of unemployed drinking.

7.2 Emerging Topics from Across the Thesis

7.2.1 Very Heavy Drinking and Hidden Populations

Very heavy drinking is a problem amongst so-called "hidden" populations. These are populations who are often over-looked or missed by services, such as GPs and the health

service (Ellis et al., 2017). Hidden populations often come about where the population doesn't feel like they can come forward about an issue (Ellis et al., 2017), or that if they do, it will negatively impact their lives further through damaging stigma (Krug et al., 2019) or other negative outcomes. There is potentially a high prevalence of very high risk drinking (defined as over 75 units per week in hidden populations as they are often missed by health services (Ellis et al., 2017) and therefore receive no treatment at the early stages of an Alcohol Use Disorder (AUD), and so the drinking is able to increase and exacerbate the problem (Moos & Moos, 2003).

In study 2, it was found that those who were unemployed were scoring higher on both the AUDIT consumption, and the AUDIT harm sub-scales. This shows that not only were people who are unemployed drinking more, they were also reporting symptoms indicating that they were experiencing harms from their drinking, compared to their employed counterparts. High drinking levels were also seen in the Pilot RCT (study 4) with very high risk drinking was evidenced in both intervention and control groups. It is important to remember, that there was no upper "cut-off" for drinking for taking part in study 4, instead, only those who had received a diagnosis of an AUD were excluded. This can be linked back to the interviews (study 3) where the participants appear to raise this as an issue, with many of the participants talking about how they know that they drink more than they should, with some waiting for an appropriate time to start drinking. Most importantly however, they also admitted not feeling like they were able to speak to their doctors or a health professional for fear of losing their benefits, or being sanctioned, demonstrated a mistrust in the welfare system.

In the DWP report (Department for Work & Pensions, 2015), the authors highlighted that there were issues in reporting and identifying AUDs, especially if the client was not telling their GP about their drinking. This differs from the general population where there are already a considerable number of interventions and means of identifying those at risk of

AUDs. The reports by the DWP highlight that whilst people who are unemployed are able to access the general population interventions, they often don't and may need to be encouraged (Department for Work & Pensions, 2015). One way of doing this would be to provide a targeted intervention, as trialled, where the content is specific to the issues that the target group face. Research has shown that a targeted intervention is more effective than a general intervention (Blankers et al., 2011). Our findings suggest that this has not yet been rectified in the UK benefit system, and that very high risk drinkers are still a hidden health problem. In a study looking at the treatment gap (i.e. the number of people who should receive treatment but were missed), Kohn and colleagues (2004) showed that alcohol abuse and dependence had the highest treatment gap of all mental health conditions with 78.1% not receiving treatment, with the ONS (Singleton et al., 2000) showing a UK treatment gap of 96%, the poorest performing country analysed in the Kohn study.

Digital interventions have been shown to be effective in engaging and identifying hidden populations who fall into the treatment gap. This advantage comes from the broad reach that a digital intervention will have over a face-to-face intervention (Kaner et al., 2017) as well as avoiding any potential stigma that seeking help could incur. For example, Postel and colleagues concluded that their pilot ABI successfully engaged problem drinkers who would not have sought help (Postel et al., 2010). This was demonstrated in study 4, where there was a high number of very heavy drinkers who would likely fall into this same category of a hidden population were identified and engaged with the trial. Due to the good study retention figures seen in the study, our findings support the use of digital interventions in hidden, or potentially hidden, populations.

The issue of stigma could well be playing a role in both people not seeking help, or potentially not realising they have a problem, particularly in the UK. Unemployment has been associated with social-stigma (Krug et al., 2019) which can result in a number of other negative

outcomes, such as social exclusion (Rözer et al., 2020), financial shame (Rantakeisu et al., 1999) or ill health (Krug & Eberl, 2018). This negative stigma can also limit employment opportunities for those who are unemployed (Krug et al., 2019; Norlander et al., 2020). The longer people find themselves unemployed, the more social-stigma they tend to feel (Blau et al., 2013) and the more likely they are to report poorer life satisfaction. Historically in the UK, unemployment benefit claimants have been referred to as "scroungers" by the UK media (e.g. The Daily Mail headline of "Shameless TV benefits scrounger who boasted 'My only job is to be me' smiles in court…." (Daily Mail, 2016)), with particular focus on their lifestyles and habits. This was mentioned in study 3 by one of the participants who felt like they couldn't speak to anyone about their drinking for fear they would be judged poorly. This is supported by a study which showed that people who were both unemployed and smoked were more likely to feel heavily stigmatised, and as a result showed poorer mental health and were less likely to feel as if they could quit (Fielding-Singh et al., 2020). This concern over stigma and the risk of being judged poorly, could prevent people who are unemployed from seeking help, or may mean that they feel that they are unable to quit even if they were to seek the help they need. The role of stigma and very high risk drinking in those seeking work, seen here, is linked to poor mental health, and the coping mechanisms they feel like they have available to them.

7.2.2 Mental Health, Coping, and Boredom

Mental health has been raised as a common factor throughout this thesis, and this largely supports the existing literature (Boden & Fergusson, 2011; B. F. Grant et al., 1996; Kuria et al., 2012). In study 2, we saw a significantly higher mean depression scores score amongst people who were unemployed compared to the employed, there was also a significantly higher drinking to cope motivation score amongst those seeking work. The results suggest that people who are unemployed are suffering with more mental health issues, and as a result are drinking to cope with them. Previous research has shown that people who are

unemployed often do suffer with poorer mental health than the employed. A meta-analysis by Paul and Moser (2009) concluded that unemployment is not only related to poorer mental health and distress, but also causes it. Several studies specific to the UK have also concluded similar findings, particularly in relation to Universal Credit, suggesting that becoming unemployed, combined with , what the authors describe as a "hostile" benefits system, increased the chances of poor mental health, depression and anxiety (Cheetham et al., 2019; Wickham et al., 2020; Wright et al., 2018). This was supported in the interviews (Study 3) where participants spoke about drinking to cope with the stress of unemployment and potential financial hardship, combined with the perceived lack of alternatives to coping with unemployment the participants felt was available to them.

The UK benefit system for unemployment has been criticised in several studies for the negative affect it is having on the mental health of claimants. The qualitative study by Cheetham et al. (2019) demonstrated a serious impact on claimants mental health, with participants complaining of an impersonal, hostile, and demeaning experience. This was almost identical to the results found in study 3, where participants felt as if they were simply treated "like a number", with no tailored help for any issues they were encountering. In a longitudinal study of 52,187 individuals (Wickham et al., 2020), it was shown that Universal Credit was associated with a significant increase in the levels of psychological distress as UC was rolled out across the country. This finding reinforces findings by Barr et al. (2015) who showed that during the period of austerity and welfare reform (2004-2013), mental health declined. The authors attribute this decrease in mental health to increasing inequalities particularly amongst the low educated and women. These increasing inequalities were identified to be the impact of the austerity policies and the reforms of the welfare state, one of which was the introduction of universal credit (Barr et al., 2015).

The association between lower SES and poorer mental health has been demonstrated in a large study by Boniface et al. (2020) finding potential nuances in the relationship between drinking, socio-economic status, and common mental disorders. The study of 1052 participants showed that there was increased drinking in three of the lower SES groups (the two economically inactive classes ("renters" and "homeowners"), and one class labelled "professional renters") compared to the higher SES group (categorised as "professional homeowners"). Common mental disorders explained some of the increased drinking in the economically inactive renters group, which appeared to be the most deprived of the six classes. This class were also the most likely to report common mental disorders in a related study (Goodwin et al., 2018). Whilst it is possible for people who are unemployed to come from any SES background, it is more likely that they will fall into a similar class as mentioned in this study (i.e. economically inactive renters) as opposed to homeowners (Taşkın & Yaman, 2019), however the relationship is complex due to social mobility impacting the likelihood of finding work (Battu et al., 2011). Poorer mental health in those who are more deprived is associated with increased alcohol consumption (Crum et al., 2001).

Both depression (Crum et al., 2001; Regier et al., 1990) and anxiety (B. F. Grant et al., 2004) show co-morbidities with alcohol use disorders, indicating a relationship between heavier alcohol use consumption and coping with mental health issues. Cooper's (1994) model of drinking motivations uses this as its basis for the drinking to cope motivation. Hogarth (Hogarth et al., 2018) demonstrated that alcohol seeking behaviour is linked to depression and negative mood via negative reinforcement (i.e. to remove a negative stimulus). This would make sense with our findings as many of our participants in study 3 reported drinking to feel better, with participants who were unemployed in study 2 showing significantly higher drinking to cope motivation scores, as well as higher PHQ-9 (depression symptom scale) scores. One participant, who during the interview appeared very upbeat, did refer occasionally to being alone and happily drinking by themselves. This could be a subconscious

drinking to cope with loneliness (McKay et al., 2017), another negative stimulus associated with depression (Cacioppo et al., 2006). This links in with research by Holahan et al. (2004) who demonstrated that people who experienced more negative life events were more likely to show an increase in drinking.

It should also be recognised that the role that industry can play, can be incredibly detrimental to those who may feel as if they are in need of self-medication. The findings of this, and many other studies (Cheetham et al., 2019; Paul & Moser, 2009; Wickham et al., 2020) have demonstrated the difficulties faced by those who are unemployed. Unemployment is a difficult, and unpleasant experience for anyone. A common advertising message from the alcohol industry is that alcohol can make life easier to cope with, or that alcohol is rewarding when you've worked hard (for example, the Strongbow advert "Bowtime, Hard Earned" (Campaign Live, 2009)). A recent example of this type of behaviour can be seen in the work done by the NCD Alliance (2020) who demonstrated that the alcohol industry has taken advantage of the covid-19 pandemic by increasing and adapting the marketing to encourage consumption, as well as by aligning themselves with health workers 'fighting' covid-19. This kind of behaviour by the alcohol industry isn't new, work by Critchlow and colleagues (2016, 2019) has demonstrated how powerful and pervasive marketing can be. With this kind of exploitative behaviour, and linking difficulties in life with "rewarding" with alcohol, there is a clear detrimental impact on the health of people who are potentially already looking for something relatively cheap to reward themselves with.

In the three key DWP reports related to this thesis, poor mental health and the associated increase in drinking were highlighted as key barriers to finding long-term, sustainable work. The Black report for example (Department for Work & Pensions, 2015) highlighted the difficulties that people who are unemployed face, emerge as soon as they enter the system, and that the JCP and DWP fail to identify those who need help. These issues were both

highlighted as in serious need of being addressed, however, our findings support other studies (Cheetham et al., 2019; Wickham et al., 2020) which show that recent changes to the DWP and with the introduction of UC have increased these barriers by increasing anxiety (study 3), depression (study 2 and study 3), and as a result, increased drinking (study 2 and study 3). This suggests that any changes made to UC have not addressed the main concerns presented, particularly in the Black report (Department for Work & Pensions, 2015). This will be discussed more in the sections "How do these findings link to DWP Publications" and "The System".

Boredom among people who are unemployed was raised as a potential explanation for some of the increased drinking seen in this group (De Witte et al., 2012; Hammarström & Ahlgren, 2019). The current thesis has shown that people who are unemployed are significantly more bored in all the sub-scales of boredom (study 2) and overall compared to those in full-time employment, and that boredom was a motivation to increased drinking. During the interviews, many of the participants spoke about drinking as "something to do" as well as something to entertain them as it was the only option they could afford. Studies by Biolcati (2016) and Corvinelli (2005) have both linked boredom with increased drinking and an increased risk of relapse respectively. Further to this, high boredom has also been linked with poor mental health (Fahlman et al., 2013; F. K. S. Lee & Zelman, 2019) which, as already established, increases the likelihood of risky drinking.

The chances of becoming bored are also influenced by boredom proneness (the propensity to feel boredom), which is associated with negative life outcomes (F. K. S. Lee & Zelman, 2019). High boredom proneness is considered an aspect of sensation seeking which has been associated with increased drinking as well as binge drinking (Carlson et al., 2010). Sensation seeking leads to increased drinking through positive expectancies held about alcohol and drinking motives (Urbán et al., 2008). If people who are unemployed have higher drinking

motives (as seen in study 2), and are more likely to see alcohol consumption as a positive aspect (something to do, or something to take their mind off their situation (as seen in study 3 and the study by Biolcati et al. (2016)), then this could explain the increase in drinking observed.

It could be argued that unemployment increases sensation seeking tendencies, via low mood or lack of other stimulation (i.e. boredom susceptibility (Hittner & Swickert, 2006)) and increases the person's proneness to boredom, thereby increasing the likelihood of heavy drinking. This distinction would explain the differences seen in study 2 whereby drinking to cope was considered a unique motivation to drinking because of boredom. There was a risk that drinking because of boredom would simply be a facet of drinking to cope (i.e. drinking to cope with boredom). However, through this action, drinking because of increased proneness to boredom and increased sensation seeking is different to drinking to cope with low mood via negative reinforcement. Drinking due to boredom would be a positive reinforcement behaviour.

Participants talking about drinking more alcohol as it was the only recreational activity they could afford, opposes the economic theory of alcohol use in people who are unemployed. The economic argument (as discussed in papers by Ettner, and Popovici and French (Ettner, 1997; Popovici & French, 2013)) argues that people who are unemployed should drink less alcohol as they have less disposable income. However, this argument does not take into account that whilst those out of work have less disposable income, they will still seek recreation, especially when suffering with poorer mental health and increased boredom. Due to this, alcohol remains a viable form of recreation as it is still relatively affordable compared to other forms of recreation. Other forms of recreation can still remain affordable, such as local parks and libraries (which often also provide internet access), or free courses which can help build skills. However, due to austerity, many of these options are no longer

easily accessible in areas of deprivation (G. Jones et al., 2016; Slay & Penny, 2013). So whilst there are alternatives to alcohol for recreation, these have become more limited in the past decade.

Combining the element of poor mental health with the issue of stigma (as mentioned earlier), results in a multiplicative effect (as per Fielding-Singh et al., 2020). This is likely to create a downward spiral, as seen in the DWP report by Black et al. (Department for Work & Pensions, 2015).

7.2.3 Alcohol Harm Paradox

The alcohol harm paradox (AHP), as discussed in chapter 1 (1.1.4.3), refers to the phenomenon that people from more deprived backgrounds appear to consume less alcohol yet experience more of the harm, compared to those from more affluent backgrounds who consume more, yet suffer less harm. People who are unemployed are considered to be predominantly lower income and of a higher deprivation group (Bellis et al., 2016; Sadler et al., 2017), whilst not all unemployed will fall into the category, a large proportion will share similarities with this group such as financial instability, restricted social and professional networks, and poorer mental health. This means that they are more likely to suffer the negative impact of the AHP. Whilst there are numerous explanations for this phenomenon, (see 1.1.4.3) the most accepted is that those in more deprived backgrounds suffer from multiple health risks and disadvantages such as increased likelihood of smoking (Duncan et al., 1999) poorer housing condition (Marsh et al., 2000), and social networks which are less likely to be in a position to help, or may have been damaged through the process of becoming unemployed (Nagy et al., 2020; Rözer et al., 2020; Sutton et al., 2004). The research in studies 2, 3 and 4 support the application of the AHP to people who are unemployed.

The research supports the AHP by demonstrating that people who are unemployed appear to be more at risk of the harms of alcohol than the employed. Study 2 showed that people who are unemployed scored significantly higher on the Harm sub-scale of the AUDIT

compared to the employed. This was confirmed in study 3 where participants spoke of drinking habits which are all considered risky drinking behaviour, such as solitary day drinking (Meque et al., 2020), secretive drinking (Parke et al., 2018; Pretorius et al., 2009), and binge drinking (Kim et al., 2016). This is supported by research by Sadler et al. (2017) who showed that those who were from low socio-economic backgrounds were more likely to present to hospital with alcohol related illnesses or accidents compared to those from higher SES backgrounds. This is backed up by data from Public Health England's (PHE) Local Alcohol Profiles for England data (LAPE) which shows that local authorities which are considered more deprived have far higher cases of alcohol related illnesses compared to more affluent areas (Public Health England, 2019). In 2018/19 data, people from the most deprived decile there were 821 per 100,000 people admitted to hospital for alcohol related conditions (Narrow), whilst there were only 534 per 100,000 people admitted to hospital in the least deprived decile. Of course, there could be other explanations for this other than simply alcohol harm, for example, it could be due to the level of support in these areas being lower. Erskine et al. (2010) showed that in more deprived areas, there was higher alcohol mortality which appeared to be associated with a poorer level of support in deprived areas. This could contribute to the AHP by potentially meaning that people delay seeking help due to the difficulty in accessing the help needed. It may also be that there is a more stable supporting environment and access to informal support among heavier drinkers in more affluent areas, and associated problems and incidents are less likely to result in unplanned care.

The data in studies 2 and 3 suggests that people who are unemployed consume more alcohol than the employed. Initially, this would appear to contradict the AHP, which suggests groups from more deprived backgrounds should drink less than their more wealthy counterparts (Bellis et al., 2016). However, in a study by Lewer et al. (2016), it was shown that groups from lower socio-economic status groups appear to be more likely to drink at very high levels than other groups. This is supported by the findings in study 4, which showed a significant

proportion of the participants were very high risk drinkers. The study by Lewer et al. (2016) demonstrated that the lower SES groups were both more likely to exceed the very high risk drinking threshold, but also less likely to exceed the lower risk drinking threshold than those in higher SES groups (I.e. management). They theorise that, whilst the "J-shaped" curve of alcohol harm (whereby low levels of alcohol consumption are cardio-protective (Mukamal & Rimm, 2001)) is disputed (Dechartres et al., 2017), it would appear that the majority of alcohol related harm is clustered amongst the very high risk drinkers, and may partly explain why increased levels of alcohol harm are seen in lower SES groups.

One potential explanation of the AHP which our studies do not support is that it is more likely that people from lower SES groups would be reluctant to report all of their drinking (thereby deliberately underestimating, or completely ignoring some drinking occasions), possibly due to stigma, or simply through inaccuracy (Bellis et al., 2015). Our findings in study 4 show some very high risk drinking which, whilst submitted pseudo-anonymously, would not be expected if people were concerned about stigma. A similar finding was also reported in the Lewer (2016) study which, like ours, showed very heavy drinking in those from lower SES groups. It's more likely that the low drinking figures often reported by the AHP come from the other side of the low SES group, those who were less likely to exceed the lower risk drinking threshold, meanwhile, the harm observed in the low SES groups is heavily focused in the very high risk drinkers.

7.2.4 Identity, Meaning in Life, and Cognitive Dissonance

Whilst identity only appeared to come out of the interviews (study 3), it raised an interesting point which had not been considered by other studies or reports. Participants seemed to be raising the issue of identity in relation to two main issues; that their identity was related to their work and job, and that they had been impacted by "traditional" gender roles (i.e. the woman is the housekeeper and the man is the provider). A number of the participants raised an issue with the fact that they weren't the kind of person to "be doing nothing", and that

they often spoke about enjoying their previous long-term employment. This appeared to raise a frustration that whilst unemployed, they felt stuck and as if they weren't achieving anything meaningful. The frustration the participants spoke about is very similar to the concept of "meaning in life", the pursuit of intrinsically valued goals. Popular media often identifies witnesses by their age and job, and upon meeting new people a question about occupation usually swiftly follows-on from the initial introduction- so being unemployed is both stigmatised and readily discovered.

Harmful drinking typically peaks in young adulthood (White & Jackson, 2005) and then begins to fall as people begin to take on more adult responsibilities, this is a process referred to as "maturing-out" (O'Malley, 2005). The theory behind maturing out is known as the incompatibility theory (Yamaguchi & Kandel, 1985) whereby adult responsibilities are no longer compatible with harmful drinking and the lifestyle associated with this level of drinking. One of the responsibilities associated with maturing out is employment (O'Malley, 2005) (as well as parenting, financial strain, and marriage). The loss of employment, therefore, could have an inverse effect, essentially weakening one of the key drivers of the incompatibility theory of maturing out.

This can be related to other unhealthy life transitions, such as the work by Cockshott and colleagues (2018, 2021) which looked at the effect of recent university graduates who then were faced with unemployment. The authors highlight themes from the participants referring to "Stigma and Shame" and "Fall from Grace" which left them feeling 'tarnished' and struggling to manage their mental health conditions. This appeared to lead to participants agreeing with some public stereotypes about unemployment, almost as a coping mechanism, which negatively impacted their existing mental health conditions (Corrigan & Watson, 2002; Rüsch et al., 2006).

Employment is related to a persons' meaning in life (Negru-Subtirica et al., 2016). As detailed in the article by Copeland et al. (2020), the concept of meaning in life can be split into two forms;' presence of meaning', and the 'search for meaning'. 'Presence in meaning' is the "extent to which a person pursues intrinsically valued goals and experiences meaning in their life" (Copeland et al., 2020). Conversely, 'searching for meaning' is the level to which someone is actively seeking meaning to their lives. This could be applied to those who are seeking employment, as was mentioned during the interviews, participants would talk about lacking purpose in their lives, a hole in their lives left by losing their job. Typically, searching for meaning decreases as people age, and they begin to experience more adult responsibilities which feed directly into 'presence in meaning' (Steger et al., 2006). However, when someone loses work, 'searching for meaning' will increase to a similar level as that of a young adult. A key difference though, is that at a later stage in life, there will be added financial pressures which will lead to more mental health strain. Meaning in life has been shown to be conversely associated with harmful drinking (Csabonyi & Phillips, 2020; Schnetzer et al., 2013)

Meaning in life may also impact an individual's valuation in alcohol, someone who does not feel like they have much meaning in life may see alcohol as a higher value than someone who has clear goals where harmful drinking is incompatible (Miller & Rollnick, 2012). Therefore, someone who feels as if their current experience of unemployment is nothing like the kind of person they identify to be (i.e. a self-identified "go-getter" who has become unemployed and is struggling to find work), then they may be perceived as having low meaning in life, which will result in a higher value in alcohol, and thus higher levels of harmful drinking. Ostafin & Feyel (2019) demonstrated that those with greater meaning in life show lower levels of incentive salience. Incentive Salience is defined as a specific motivational "want" which drives behaviour. This was demonstrated by showing fewer Stroop errors in an alcohol task when participants showed higher levels of meaning in life. In the case of people who are

unemployed, it is likely that they currently feel lower levels of meaning in life, which is likely to increase the incentive salience of shorter-term motivations, such as alcohol.

The second issue raised regarding identity appeared to split by gender. The women in our research seemed frustrated that they were repeatedly doing cleaning and housework instead of being in work. They reported it as being boring and repetitive, and caused them to feel frustrated and depressed. Men, on the other hand, seemed disappointed, and would speak about how they wanted to provide for their family. This would suggest that whilst women are more determined to defy traditional gender norms, men feel pressured by society to follow them still. Typically, previous recent literature seems to suggest that whilst men struggle most with unemployment due to the traditional role of being the provider, women adapt quickly to the traditional role of "home maker" and do not find it a burden. Forret et al. (2010) concluded that, generally, men with children deemed unemployment "a failure", whilst women with children were more likely to see unemployment as an opportunity. This is potentially explained by men tending to draw more of their self-identity from their job than women do, who draw their self-identity from a wider range of roles and relationships (Cinamon & Rich, 2002; Ford et al., 2007; Sullivan & Mainiero, 2007). Many of the women who took part in study 3 were single mothers (of those who made it known, n=4), who may have found that the financial strains and the limits of childcare restricted their ability to see unemployment as an opportunity, instead craving stability and to provide, which is similar to men. Women who either had partners or did not have children seemed more frustrated at the lack of opportunities and training available. The findings by Forrett et al. (2010) support our findings, but not when considering single mothers.

All of the raised issues in this section; the conflict between identity and reality, the low levels of meaning in life, and the gender norms problems, could all be linked to cognitive dissonance. A conflict between a perceived identity and reality is likely to lead to a form of

cognitive dissonance (Harmon-Jones & Harmon-Jones, 2007). Cognitive dissonance is where a person will have conflicting attitudes, beliefs, or behaviours which can cause anxiety and stress (Elliot & Devine, 1994). Where there is cognitive dissonance, there is often a form of rationalisation (Jarcho et al., 2011) whereby the difference between that person's perception and reality is explained away. In the case of unemployment, this could be by accepting their unemployment reluctantly, which could lead to the high value in alcohol as a form of coping with the reluctant acceptance. This could occur due to the increase an increase in impulsivity, one of the components of the "maturing out" phenomenon (Littlefield et al., 2009). Increased impulsivity is associated with harmful drinking, it would make sense that this could occur in people with lower Meaning in Life (Ostafin et al., 2014; Ostafin & Feyel, 2019), higher cognitive dissonance (George & Yaoyuneyong, 2010), and lower self-esteem (Paul & Moser, 2009). In other cases, rationalisation can lead to something external being blamed for the perceived failure, this could explain some of the hostility towards the system and the DWP. This isn't, however, to exclude shortcomings in the system entirely, however it could start to explain some of the hostility, particularly in the cases where the person hasn't actually been disadvantaged by the system.

Cognitive dissonance can lead to increased alcohol consumption as a means of "drinking your troubles away" (Steele et al., 1981). Steele and colleagues ascertain that dissonance could be reduced by behaviours which inhibit the feelings of dissonance without involving any specific cognitive change. As discussed earlier, the drinking to cope motivation is prevalent in people who are unemployed and, whilst there are strong links between depression, anxiety and drinking, it could also be argued that people who are unemployed could be drinking to cope with the cognitive dissonance they are facing when their identity and meaning in life is challenged.

7.2.5 Confidence in The System

Trust and confidence in the system has been shown to be poor in a number of instances. As highlighted further in the section on the DWP (section 7.3), claimants don't typically believe that their best interests are being looked out for, and mental health is poor across the benefits system. This has been reported in both studies (Cheetham et al., 2019) and independent reports (Department for Work and Pensions, 2017). However, as shown in findings in study 3, this lack of trust is not limited to the DWP, but other areas of, what is referred to here as, "the system". What is meant by "the system" is anything linked to the welfare state, health services, or any 3rd sector support, which people who are unemployed might find themselves working with, or need help from. This includes health services such as the NHS as a whole, General Practitioners (GPs), walk-in-centres, drug and alcohol treatment services, or local authority public health teams. It also includes the DWP and job-centres, and any service which is set up to assist with finding work or helping navigate the system, such as the Citizen's Advice Bureau (CAB) or any local authority work programme (i.e. Sefton Council's "Sefton@Work" scheme (Sefton Council, n.d.) or Liverpool City Council's "Liverpool in Work" scheme (Liverpool City Council, n.d.)).

The impact of the DWP has already been discussed at some length in the previous section, however other points were raised during study 3 which could explain some findings in study 2 and study 4 which were not raised in the DWP reports. The primary concern from participants, besides the general feeling of lack of support, was a lack of understanding of their previous experiences subsequently ignoring how they ended up in need of UC or health support. These findings were echoed in a report by Mustafa et al. (2020) whereby participants reported that they felt unheard in the DWP. This was a concern levelled at both GPs, who were reported to show a lack of interest in why someone was drinking, and at the JCP, who seemed uninterested in why they were unemployed and whether there was anything else contributing to their lack of success in the job market. This could also go some

way to explain findings in other studies which showed that those in lower incomes were more likely to express an opinion that GPs should not routinely ask about alcohol use (O'Donnell et al., 2018). The authors recommend a more tailored and careful approach, and this appears to be supported by the strong retention in the tailored approach trialled in study 4.

GPs were criticised for not exploring the wider factors which may have led to an increase in alcohol use in study 3. This may be due to a number of reasons, such as high pressure on GPs to diagnose in a relatively short appointment (Royal College of General Practitioners, 2019), a fear of damaging the mutual trust between GP and patient (Coste et al., 2020), provider discomfort discussing these topics (McCormick et al., 2006), or that exploring attributing factors is out of the scope of the GP once someone has been referred to a specialist (McCambridge et al., 2004). However, the issue over mutual trust is already a problem in people who are unemployed (and potentially in lower SES groups in general) as demonstrated in study 3, whereby participants felt reluctant to speak their GP at all about their drinking, through fear that it would affect benefit payments and the chances of future employment via occupational health checks.

This lack of trust could go some way to explaining the increase in drinking in people who are unemployed, that people are choosing to self-medicate poor mental health (J. Robinson et al., 2009; Vijayasiri et al., 2012) (i.e. drinking to cope) as opposed to further risking the fragile position they are in. This would explain the increase in the drinking to cope motivation in study 2, and an increased willingness for undetected very high-risk drinkers to anonymously report their drinking, as seen in study 4. It is important to note that none of the participants in study 3 had been diagnosed with an alcohol use disorder, one did attend alcoholic anonymous on a voluntary basis. As a result, their opinion of alcohol treatment may be somewhat biased as they haven't experienced formal treatment. However, this lack of trust

does raise concerns that those with legitimate alcohol use disorders are being missed because they don't feel as if they can trust the GP. The high number of very high risk drinkers in study 4 lends support to this, that very high risk drinking in people who are unemployed is being missed. Based on the studies and on previous research it would appear that this is due to both a lack of trust in GPs from patients (as shown in study 3), and a possible lack of willingness to tackle a difficult topic from GPs due to discomfort (McCormick et al., 2006; Turner, 2009) or not wishing to damage the relationship (Coste et al., 2020).

Trust in health information amongst lower SES groups and lower educated groups has been found to be lower compared to other groups (Richardson et al., 2012). This research is related to trusting the advice given to them by doctors, but could also demonstrate a lack of faith in the confidentiality process (i.e. reporting higher alcohol consumption to future employers or JCP, who could then sanction them). Much of this mistrust appears to stem, not from the doctor themselves, but from the system and how the health service is run and financed (Calnan & Sanford, 2004). This presents a far bigger problem than most other studies have aimed to address (I.e. improving patient care via GPs for alcohol use (McCambridge et al., 2004), or by increasing GP confidence in addressing alcohol concerns (Banerjee & Sanyal, 2012)).

The findings of the three empirical studies (studies 2, 3, and 4) pose two paradoxes as to how best address the risk unemployment causes in terms of alcohol use and mental health. The first being that it is often described in DWP reports (Department for Work & Pensions, 2015), qualitative studies (Cheetham et al., 2019), and in the study 3 that the health service and the DWP need to work closer together to provide more support for those who may be struggling with either mental health or alcohol use. However, as already discussed, participants in study 3 made clear their concerns about speaking to GPs about their health and the lack of trust that this will not somehow damage their chances of finding work or would result in sanctions.

This is likely to impact on a person's willingness to engage with an intervention to reduce alcohol use. If the health service and the DWP do begin to work closer, it would need to be done with considerable caution so as not to further damage the trust in the health service that nothing bad will come of seeking help. There would need to be assurances to make sure that the participants knew that they were being supported and not "tripped up" (to quote participant 5, study 3) into further sanctions. This could lead to pushing the apparent very heavy drinkers further away from seeking help, creating a similar public health problem as the treatment of illicit drugs faces (fear of seeking help due to criminal retribution).

The second paradox comes from the impact to the claimants who appear to hold two incompatible beliefs, possibly through a form of cognitive dissonance (Steele et al., 1981). If it's true that those who are showing signs of problematic drinking begin to avoid seeking help through fear of the potential negative repercussions (sanctions and occupational health implications), it is likely that their drinking will continue to increase to very high levels as the risk hasn't been removed (Khlat et al., 2004; Mossakowski, 2008). This will ultimately lead to a likely increase in sanctions issued due to non-compliance (Department for Work & Pensions, 2015; Sutton et al., 2004), and more difficulty finding long term sustainable work (Bauld et al., 2013; Sutton et al., 2004). One potential solution to these paradoxes would be to remove the threat of sanctions, particularly where health is concerned. Studies have shown that the use of sanctions, whilst decreasing (Department for Work and Pensions, 2019), are still ineffective at reducing non-compliance (Welfare Conditionality Project, 2018). Based on these paradoxes and the evidence from the studies in this thesis, and studies on the impact of UC on mental health, it could be argued that benefit sanctions are indirectly causing public health issues and increasing public health inequalities by creating barriers to seeking health advice.

The second potential solution to these paradoxes and the problem in general would be to utilise something similar to what was piloted in study 4, an anonymous, online ABI. This will be discussed in the next section.

7.3 How do these findings link to DWP Publications?

Due to the concerns raised by the previous section, particularly at the DWP, this section will look at how the reports from the DWP (summarised in section 1.5.1) compare with our findings. The reports reflect different stages of Universal Credit (UC) being introduced, Sutton et al. (2004) was before UC, Bauld et al. (2010) during the initial testing, and Black et al. (Department for Work & Pensions, 2015) after the full roll-out. As a result, this section will review the key issues which arose from these reports along with the recommendations and consider how the results of this thesis compare with the recommendations of the reports, and whether this thesis is able to answer any of the problems the reports highlight. The most striking element of these reports is that across all three reports, they largely identify similar problems and recommend similar solutions. This shows that from 2004 to 2016, there has either been little progress in implementing the recommendations, an apathy toward fixing the problems, or unsuccessful attempts at implementing the recommendations.

Typically, the reports have highlighted alcohol and drug use as barriers to finding work, however the current research suggests that there is at least another part to this. Participants in study 3 reported feeling stressed and depressed partially due to the lack of support the DWP was providing, this was then impacting on their drinking and how they rationalised their drinking (i.e. drinking to cope). This idea is supported in research by Wright et al. (2018) who showed that participants often felt as if they were being challenged by the system instead of supported by it, which in turn led to anxiety. As already discussed, the increase in anxiety experienced by this lack of support, is likely to lead to an increase in alcohol use (B. F. Grant et al., 2004).

The report by Sutton et al. (2004) which sought to identify the main barriers to finding work for 'problematic' drinkers and drug users, raised a number of points beyond the scope of this PhD project (i.e. problems linked directly to drugs, addiction, or withdrawal). Some of the barriers identified however, would be directly be applicable to the scope of this project. These barriers include low education and vocational skills, gaps in employment history, hiding health problems from employers, a lack of trust, and poor mental health and self-confidence. All of these were raised in the current research across the studies. Participants highlighted the need for more training opportunities as the main action which DWP could do to help them out of their situation. This has also been raised in a qualitative study by Bauld et al. (2013) who highlighted that many people were attempting voluntary work as a proxy to training, however made no mention of the financial difficulties that voluntary work presented (i.e. no way to pay for commuting costs). This was a particularly important point as many of the interviewees in study 3 reported having very limited finances and would not have been able to afford any additional costs. Instead of volunteering, the participants felt that more training opportunities would be far more beneficial in helping them seek work, particularly in computer skills.

The Sutton report (2004) also discussed participants hiding health problems from potential employers and doctors. This was raised in study 3, where it was through fear of being sanctioned, as opposed to fear of not being employed (in Sutton et al., (2004)), that was the main concern for hiding health concerns. This was driven by a general mistrust of government departments, a separate barrier identified in the Sutton report. Our research suggests that these two barriers are far more linked than Sutton et al. (2004) suggest. Whilst hiding health problems from future employers appears to be more likely to be linked to the negative stigma they experience (Blau et al., 2013; Fielding-Singh et al., 2020; Krug et al., 2019), and the disadvantage and discrimination they face in the jobs market (Krug et al., 2019; Norlander et al., 2020). As a result, it could be argued that hiding health problems is

driven by two different motivations based on who the individual is hiding the health problem from; either mistrust that they'll somehow be punished for being ill by the DWP, or that it will add to the stigma and discrimination from perspective employers. A lack of trust in the system has also been highlighted by Cheetham and colleagues (2019), for a more in-depth discussion on this see "The System" section.

The review conducted by Bauld et al. (2010) set out to identify the experiences of the benefit system, of individuals who are heavy alcohol users. The review finds many similarities with the current research, particularly the views of the participants about the level of support they receive and how they see the current system. Bauld reports that the participants had a positive view of work and often had long careers, this matches the findings in study 3, however, it may represent a form of participant bias (i.e. those who held a negative view of employment may be unlikely to take part in the research). The review, however, found that heavy alcohol use was the primary cause of unemployment, however this was not the case in the current study. This is likely due to be slightly different framing of the research question. Whilst it was found that high alcohol use had led to some of the participants in study 3 to find themselves unemployed, the majority reported increased boredom after losing employment, which supports studies by Mossakowski (2008) and Ettner (1997). These studies suggest the impact of involuntarily (as opposed to taking voluntary redundancy or early retirement) losing work is influential in the increase in alcohol use. The findings of study 2 also support this direction of events, with people who are unemployed group showing higher drinking motive scores in coping and boredom than the employed.

Study 3 did show similar findings among participants who are unemployed as those outlined in the Bauld review (2010). Participants reported complex links between alcohol use and other issues, such as mental health or trauma, which supports findings in other literature (J. H. Barnett et al., 2007; Weaver et al., 2003; Zabkiewicz & Schmidt, 2007). However, the

participants who were interviewed did not appear to see their alcohol use as the main barrier to returning to work, as they did in the Bauld review, instead asserting a lack of support and apparent discrimination against them, with some even seeing it as a way of "keeping them in their place". The positive response, and general acceptability, of the trial in study 4 seems to support this. People, whilst still maintaining a certain level of mistrust about anything being compulsory, seemed generally supportive of this approach and seemed to accept the potential support the trial could provide. This finding suggests that at least one of the recommendations from the Bauld review (2010), additional support from JCP staff, has not been met. However, based on research from Cheetham et al. (2019), this would appear to be a more systematic failing as staff state that they wanted to provide additional support, but felt they were unable to due to targets and the increased complexity of the claims process resulting in less time to actual support the client.

The final report produced by the DWP which was reviewed in the introduction is the Black report (Department for Work & Pensions, 2015). This report had two aims; to identify barriers to finding work by those who showed problematic drugs and alcohol use, and to provide recommendations to the DWP to remove these barriers. The key findings from the report highlight problems with the "fractured" nature of the support offered to claimants, mainly due to the many different providers and options open to each region within JCP. There was also criticism that the DWP, JCP and government weren't doing enough to support claimants with their health problems, whether that be through providing health information, discussing health issues during the claim, or providing information on where to seek help should it be needed. There also seemed to be concern that JCP and DWP staff were unable to identify signs of addiction and so recommended better training.

Many of the points raised in the Black report (Department for Work & Pensions, 2015) were also mentioned in previous reports, as well as by participants in our studies, suggesting that

no real progress has been made on these issues since the report's publication in 2015. The report does concede, however, that developing an integrated service to address all of the recommendations would be difficult and could take significant time and resources. Nonetheless, the findings from both study 3 and study 4 suggest that very little progress, if any has been made. The studies by Cheetham et al. (2019), Wickham et al. (2020), and Wright et al. (2018) all suggest that there has been no progress made on improving the mental health of claimants across the DWP. As seen in studies 2 and 3, poor mental health appears to be a large driving force behind the increase in drinking seen in people who are unemployed.

The strongest evidence of a lack of progress appears to come from the report by Cheetham et al. (2019) who interviewed staff at the JCP as well as claimants. They reported that staff found themselves without the time to identify participants at risk, and that they themselves felt guilt over the lack of help they were able to provide. This is supported by the findings in study 3 which showed that participants felt as if they were not treated as a person, but more like a number to hit a target, which appears to have led to poorer mental health and higher alcohol use (see section 5.3.2).

Even if the overall aims of these three reports are fully enacted, they are likely to be seriously undermined by the presence of sanctions within the UC system. Sanctions are applied if the claimant is not able to meet the commitments they agreed to at the start of the benefit claim process (i.e. always attend work coach meetings, seek full time work etc). A report by the Welfare Conditionality project (2018) identified sanctions as a significant factor in poorer mental health amongst benefit claimants whilst delivering very little, if any, positive return or higher compliance. In fact, the report suggests that sanctions eroded any form of trust or positive relationship between claimant and JCP worker, or work coach. This, again is supported by studies showing that the mental health of claimants is very poor (Mahase,

2019; Walton, 2018; Wickham et al., 2020), and the system appears to damage this mental health further whilst providing very little support (Cheetham et al., 2019; Taulbut et al., 2018).

7.4 Is an ABI a solution to the issues facing people who are unemployed?

This thesis set out to explore the issues around unemployed drinking and to design and test a single session, online ABI. In this section the results of the pilot ABI will be discussed from different perspective to understand whether an online ABI of this nature is suitable to be used for people who are unemployed and within the JCP and UC setup.

There is strong evidence for the effectiveness of ABIs in either general populations (Kaner et al., 2007), or in specific populations such as the armed forces (e.g Leightley et al., 2018; Pemberton et al., 2011). Overall, ABIs show a small but consistent effect size (Kaner et al., 2017; Platt et al., 2016 and study 1), and online interventions show similar effects to those which are face-to-face (Kaner et al., 2017). Those who are unemployed are a unique population, whilst there is of course variation amongst them, they are typically lower SES , have lower education levels (Doku et al., 2018), and have a social network with limited ability to support or help with the job hunt (Rözer et al., 2020). These factors may make people who are unemployed more difficult to engage in research. As discussed in the previous section, there are a number of paradoxes an intervention such as the one trialled would address. The anonymity of the intervention would help circumvent the fear of negative repercussions from seeking help people who are unemployed reported feeling. However, this does not address the very heavy drinkers who were apparent in the trial of the ABI. ABIs are not designed to address this level of drinking and whilst they achieve the aim of identifying those at need of help, they are too basic to be effective at this level of drinking (World Health Organisation, 2003).

The trial of the ABI in study 4 showed positive findings, including a reduction in alcohol consumption amongst those who ABIs are designed for (low and increasing risk drinkers), by appearing to aid in avoiding the increase in drinking seen typically in people who are unemployed (and thus seen in the control group). This finding is similar to other studies into high risk groups such as adolescents (Maio et al., 2005), and university students (Neighbors et al., 2009) where the trial intervention aimed to limit, or prevent, an expected increase in drinking, as opposed to reduce the drinking levels among group members.

The pilot ABI study did not use any assistance or guidance from the DWP or JCP due to concerns of increased pressure on work coaches, and resistance to "overstepping" what was expected of them. As a result, the trial's success can only be compared to the concerns DWP had in taking part, and the content of reports which recommend the implementation of a trial similar to that in this thesis. The primary concerns about ABIs, besides being effective, is that they need to be pragmatic (Kaner et al., 2013). This means that it needs to cause as little disruption to the day-to-day work load of the staff implementing it as possible. Should the intervention be implemented with no further alterations, there would likely be very little increase in workload as the intervention would be independent of job-seeking and is self-explanatory. The original DYD intervention showed good levels of independent use by participants (Linke et al., 2004, 2005; Wallace et al., 2011) which suggests that there is little guidance required. However, there may be unforeseen increases in workload if there were problems with the intervention, concerns from clients about data use or the advice given, and relating to how the DWP chooses to implement the intervention. All of these could reasonably increase workload for DWP staff, by an amount which can't be known without an implementation trial. Workload may also be increased for the DWP staff, primarily due to elements of the "digital divide" (Yates et al., 2015) whereby more disadvantaged people are cut off from digital help due to the means being cost-prohibitive. This could also impact uptake of the intervention and exclude some people from being able to access the

intervention, requiring the DWP/JCP to provide either; a non-digital alternative, or the means to be able to access the content.

The Black review (Department for Work & Pensions, 2015) recommends that drug and alcohol services work far closer with the DWP including some form of identification and intervention for those who need assistance with both drugs and alcohol use. The ABI trialled in our study, whilst only focussing on alcohol, shows some evidence in being able to achieve this aim. The trial identified very high risk drinkers who have not received any form of treatment and appeared to null the risk of increasing drinking in those who were low and increasing risk drinkers. The review in 2015 (Department for Work & Pensions, 2015) also highlighted a recommendation by an earlier review by Black and Frost (2011) which called for an integrated early identification intervention which would help identify barriers to finding work such as health, organisational, and social barriers. The review suggests that in 2015 the intervention was in its infancy, however, our research suggests that either; no progress has been made in expanding this, it isn't yet targeting the correct clients, or it has been removed as none of our interviewees raised this as something they had experienced or been offered.

Suspicion and mistrust of the DWP may prove a significant barrier to fully integrating an ABI into the UC process (whether compulsory or voluntary), with participants (as outlined in section 5.3.2 and 7.2.5) raising concerns about their drinking habits being used against them when it comes to the risk of sanctions and how they are treated. To remedy this, the ABI would have to remain anonymous and provide the tools to allow the participants to seek help themselves (signposting). This has been used to good effect in mental health interventions (Schley et al., 2019), drug interventions (Winters et al., 2014), and other alcohol interventions (Saitz et al., 2007). However, this would contradict the recommendations set out by the Black review (Department for Work & Pensions, 2015) and

the Black and Frost review (2011) as the DWP and JCP would be unable to provide additional support based on the results from the ABI. The only work around would be to recommend to participants that they seek support from the JCP, however, the concerns about sanctions and discrimination would remain.

Lack of agency should also be considered when assessing whether an ABI would be a viable solution. Lack of agency is when choices are removed from people, disempowering them, this has a direct impact on their wellbeing, and thus their mental health (J. W. Moore, 2016). This would need to be carefully managed, particularly should the DWP and JCP decide to roll out their own, compulsory, ABI. By forcing participants to take part, it will remove agency and disempower the claimants, damaging wellbeing and mental health, and therefore will work against the core principal behind the ABI. ABIs in general are designed to empower the user to help them change their own behaviours, and components of the intervention trialled in Study 4 also aim to increase user agency (Implementation Intentions (Armitage, 2009; Webb et al., 2009)). It is therefore important to avoid any situation which may decrease agency, in a group who are likely to already feel disempowered.

In general, the concept of an ABI of this nature was seen as acceptable providing it was a voluntary tool which could be accessed. Acceptability dropped when the ABI was associated with the DWP, as opposed to the NHS, which is likely due to the mistrust of the DWP and fear of sanctions, as already mentioned. Nonetheless this is positive, as it shows that people who are unemployed would use a tool of this nature, and it appears that currently there is nothing specifically designed to help them based on the recommendations from DWP reports (Department for Work & Pensions, 2015). This suggests that even if the ABI was voluntary only, and completely separate from the DWP, it could still prove effective in reducing the risk of increased alcohol consumption and act in a similar way to trials such as

those used in University settings (Bersamin et al., 2007; Collins et al., 2014; Samson & Tanner-Smith, 2015; Witkiewitz et al., 2014).

The studies (study 2 and 3) reported above suggest that the association between unemployment and increased alcohol use is mediated in some way by mental health and boredom (as predicted based on work by Khlat et al., (2004) and Hämäläinen et al., (2005)). The intervention in study 4 attempted to tackle boredom via a form of II which would provide alternatives to try in specific scenarios which lead to boredom. However, there was no attempt to intervene on mental health. This would lead to a more complex intervention and further research before being attempted, however this is something which should be attempted in the future. Online interventions into mental health have shown mixed results, with some showing a positive impact (Catanzano et al., 2020; Schley et al., 2019) and some showing little evidence of any impact (Ivandic et al., 2017) . Whilst there is evidence that combining an alcohol intervention with a mental health intervention may be ineffective, or at the very least "mixed" (Boniface et al., 2018; Geisner et al., 2015; Grothues et al., 2008), more research within targeted populations may show efficacy if the mental health intervention is specific to the common problems associated with that group (i.e. the feeling of losing their identity in people who are unemployed). There would also be additional challenges related to the phenomenon of 'self-stigma' (Corrigan & Watson, 2002), whereby those seeking work begin agreeing with negative public stereotypes about themselves, further damaging their mental health (Cockshott et al., 2021) (which is likely to have a knock-on effect on the intervention's effectiveness in reducing alcohol consumption (Awaworyi Churchill & Farrell, 2017)). This is outside the scope of this thesis, however, including a mental health component in future research should be considered.

The ABI could also be adapted further in an attempt to tackle either the identity issues raised in study 3 and this discussion (see section 7.2.4), or the cognitive dissonance within the

population. The intervention in study 4 is unlikely to tackle either of these issues, other than responding to a specific need of people who are unemployed (reducing alcohol use). Increasing the personal element of the intervention is likely to increase workload for the DWP, which would make the intervention unworkable from their point of view, due to lack of staff time and concerns about interference in the case manager/client relationship. This is a difficult element to overcome, but by addressing the cognitive dissonance, it may also help in resolving the identity issues faced by the participants. Trials of cognitive dissonance interventions have shown some evidence in aiding those at risk of developing an eating disorder (Chithambo & Huey, 2017; Pennesi & Wade, 2018) by reducing self-dissatisfaction which appears to be part of the driving force between poor mental health and unemployment. This is a further option for future research and could increase the efficacy of the intervention by addressing the problems with identity and self-satisfaction the participants raised in study 3.

To summarise there is evidence that people who are unemployed would benefit from an intervention in the style of that trialled in study 4. To increase effectiveness, further research into components targeting mental health and identity issues (via cognitive dissonance) would need to be conducted. Challenges remain over meeting both the recommendations of the Black report (Department for Work & Pensions, 2015) for a closer integration between health and DWP, and the mistrust issues around the DWP reported by participants in study 3.

7.5 Covid-19

Covid-19 was not brought up during these studies, as they had all been completed prior to March 2020. However, the findings in this study are still important to discuss in the light of the ongoing (as of February 2021) coronavirus pandemic which has caused unemployment (Office for National Statistics, 2020), financial difficulties (Waters et al., 2020), restrictions in socialising, and the subsequent impacts on mental health (O'Connor et al., 2020) and

drinking (Garnett et al., 2021). There has been a rise in alcohol related deaths during the pandemic with an increase of 21% seen in the UK (Public Health England, 2020). The rise in unemployment has been linked to an increase in drinking (Rehm et al., 2020), a similar association was seen during the 2008 financial crisis (de Goeij et al., 2015). Both occasions of severe economic turmoil have also lead to increased mental health strain (Financial Crisis: B. Cooper, 2011 , Covid-19: O'Connor et al., 2020), and in the aftermath of the 2008 financial crisis, funding for mental health care (Mind UK, 2014) and drug and alcohol treatment (Iacobucci, 2016) were cut as part of government policy to reduce national debt. The IAS have raised concerns over the decline in people accessing addiction and treatment services, suggesting that this may be an indication that those with severe alcohol use problems may have become a hidden population (Kadiri, 2020). The British Psychological Society have suggested several key recommendations to help prevent further alcohol harm as a result of the pandemic, including: careful consideration of re-opening on-trade services to consider the impacts to public health, healthcare and other services such as policing; guides to help people follow the CMO's guidelines on alcohol consumption at home; and widely promoting the CMO's guidelines to help remind people of the dangers of heavy alcohol consumption (British Psychological Society, 2020)

In light of past events, and the findings of this thesis, it is clear that accessible, pragmatic intervention is needed for people who are unemployed as part of a full "wellness" package which addresses alcohol use, mental health, and help finding work. Nonetheless, whilst there are clear employment related repercussions from Covid-19, this remains out of the scope of this thesis and should be considered for future research as it is possible that those out of work due to Covid-19 may face different challenges to those out of work pre-Covid-19. The on-line nature of the tested intervention does make it post-pandemic ready and in tune with the growth in remote interventions.

7.6 Future Research

The research set out in this thesis sets the foundations for several other avenues of research to expand the knowledge of the effectiveness of unemployed drinking and potential interventions. There are three broad routes which should be explored in the future; a full integrated RCT of an ABI with similar content; trials of ABIs including alternate or new modules designed to address mental health, cognitive dissonance, or identity issues; comparisons of drinking behaviours of people who are unemployed in other countries with different cultures around drinking or welfare.

The first of these options would be to explore the current style and content of ABI in a pragmatic full RCT, fully or partially integrated within the DWP. The current research has shown that there is preliminary evidence for a decrease in alcohol use and user acceptability of a trial such as this. To achieve this, close collaboration with the research team at DWP would be needed from the start to ensure their needs were met, whilst ensuring that any increase in workload was manageable.

The second recommendation for future research would be to conduct further trials to attempt to improve the efficacy of the ABI before rolling the trial out to a full RCT. This would include attempting to tackle some of the issues raised in this discussion such as modules on targeted mental health improvement (specific to people who are unemployed), cognitive dissonance to reduce self-dissatisfaction with being unemployed, and a more interactive intervention to attempt to address some of the concerns over identity and being 'treated like a number' by DWP. These modules could be trialled as different arms in a single study, or as individual improvements in a stepped design. Further research could also be run into the efficacy of treating very high risk drinkers using an ABI. Some research has already been done, (Radtke et al., 2017), however this still goes against the World Health Organisation advice regarding ABIs (World Health Organisation, 2003) (although allowed under NICE guidance providing the participants were not already in formal treatment (National Institute

for Clinical Excellence, 2010, 2019)). Whilst there are ethical considerations to take here, it would provide some kind of treatment to those who are hidden from current treatment services (as seen in study 4), and may successfully help some participants reduce drinking in the long-term. All of these options, should aim to add in more follow-up stages and run over a longer period than one month, with more than two data points. This would allow for latent growth models to be conducted with the aim of further controlling for very high risk drinkers at baseline, and assessing change over time in alcohol consumption. There should also be a plan for secondary analysis, to split the sample by alcohol consumption and conduct sub-group analysis.

Finally, further research could be conducted in different countries either where the population has a different relationship with alcohol (i.e. India, where alcohol is banned in certain regions) or where the government has stronger regulation of alcohol, such as in Sweden. Sweden would be an interesting location to research due to its unique government-controlled monopoly on alcohol sales, where the off-licence sale of alcohol is restricted to a state monopoly with far fewer premised per capita than the UK. In 2018, there were 441 Systembolaget stores in Sweden: approximately 1 for every 16,447 adults in the country (based on statistics from Statistics Sweden, 2018). In the UK, there were 51,558 stores licenced for off trade of alcohol: the equivalent of 1 for approximately every 1016 adults in the country (based on statistics from UK Home Office, 2019). Sweden also has a higher level of alcohol duty than the UK (516.59SEK (approx. £46.39 (as of 11/12/2020)) per litre of pure alcohol vs £28.74 per litre of pure alcohol (European Commission, 2020; UK Government, 2020). This very different approach to alcohol sales, combined with a differently structured welfare state, would provide an interesting contrast in findings. Both Sweden and the UK are wealthy countries, yet their approaches to alcohol and unemployment are different. This research would start at study 2 of this thesis and assess the drinking motivations of people who are unemployed in other countries, before moving on to their experiences of

unemployment and alcohol use (study 3), and finally designing an ABI specific to those who are unemployed in Sweden. This would provide good contrast to the current research and could lead to a much larger body of work on an international scale.

7.7 Limitations

The research presented in this thesis has a number of limitations to consider when interpreting the results. First, whilst the research presented in this thesis aimed to create a representative sample, the people who volunteer are likely to represent a form of participant bias. Due to the inherent political nature of the research (welfare), and the controversial introduction of Universal Credit, it is possible that the participants will represent those who have strong negative feelings regarding the system. Whilst the introduction of UC has been criticised from other, more independent sources (i.e. The National Audit Office (2020)), participants in these studies (particularly study 3) are more likely to be motivated to take part if they have a negative experience to share, compared with those who have neutral or positive experiences. This negative bias is common across research into feedback and is likely to have occurred here.

There may also be a form of participant bias in the method of recruitment to the study. Whilst the research was initially planned to be conducted with the assistance of the DWP, the reluctance from the DWP meant participants were recruited via social media. This restricts the potential recruitment to those who have social media and are part of groups who were happy to host the advert. This could disqualify those who do not have regular access to the internet, those on the other side of the "digital divide" (Livingstone & Helsper, 2007). The digital divide refers to those who are struggling financially who cannot afford internet access or a smartphone. Whilst these are both becoming more affordable, it does still limit those below the poverty line from taking part as they will not have seen the adverts. As a result, the generalisability of the studies must be limited to those above the 'digital divide' line, who have access to, and use, social media.

Secondly, in study 4 there was good retention (86.67% participated in follow-up). This must be approached with caution due to the heavy weighting of the payment for the follow-up. Participants were given £25 of vouchers for taking part, however, £20 of that was only offered at the end of the study. This encouraged participants to remain in the trial to receive the majority of their compensation payment. To counter this, we included an "acceptability" measure to ensure that participants were actually happy with the trialled ABI and weren't staying in the study purely to claim the full compensation. The acceptability scores support the high study retention rates, and suggest that participants were invested in the trial, however, this remains a limitation on the interpretation of these results.

Some of the studies in this thesis were not pre-registered. Pre-registering studies adds a level of transparency to protect against practices such as supressing null results, 'p-hacking', or ad-hoc statistical tests being presented as a-priori.

7.8 Conclusions

From the current thesis findings, we can make several conclusions about alcohol consumption in people who are unemployed and the feasibility of a targeted online ABI. This research has found that people who are unemployed in the UK are at increased risk of consuming more alcohol compared to the employed, and this appears to be due to two motivations, drinking to cope with low mood and drinking because of boredom. The research has shown that these are all associated and appear to be linked to a systemic problem whereby clients feel as if they aren't being supported and are at constant risk of being sanctioned for, what they believe to be, autocratic reasons. This often leads to people not speaking to their GP or the work coaches for fear of this affecting their chances of finding work or creating new reasons for sanctions to be applied. There appears to be an identity crisis amongst people who are unemployed whereby they feel that they have simultaneously lost their identity via their job, but also by not being treated like an individual by the benefits

system. This appears to cause a form of cognitive dissonance which causes poor mental health, which then can lead to drinking to deal with it.

The introduction of a single session online ABI to tackle drinking in the unemployed appears to be acceptable to the participants who were unemployed and there was preliminary evidence that it may reduce the risk of increased drinking in the unemployed. The intervention also appeared to reinforce the evidence that people who were unemployed are wary of seeking help by identifying a large number of very high risk drinkers who have not been diagnosed with an alcohol use disorder. In terms of fulfilling the aims of DWP reports which recommend a close integration between health and the DWP, including through interventions, the initial results demonstrate that an ABI of this nature has some evidence that it could be effective. However, the high levels of mistrust towards the DWP, and to some extent GPs and the NHS around how data is shared, by people who are unemployed mean that challenges remain over whether the recommended approach would be effective. To be effective, any intervention would need to be accepted by those who are using it, and they would need to have full faith that the only purpose of the intervention is that it is there to help them. With the current levels of mistrust, this is currently unlikely and would need to be addressed before the DWP could attempt including an intervention in any part of the UC process, whether voluntary or compulsory. Nonetheless, the intervention shows preliminary evidence in its ability to reduce alcohol consumption in people who are unemployed, which will need to be explored further in future research.

Chapter 8

8. Recommendations

This chapter contains some recommendations based on the findings of the studies which, if implemented, could help reduce the risk of increased drinking within the population of people who are unemployed. The section will be split into different categories based on where the recommendation would be best implemented.

8.1 Future Research/ Full RCT

- Any researchers looking to further this research, or run a full RCT, should engage with Community groups, DWP and Health Service to improve pragmatism of ABIs for the unemployed population. However, any engagement with DWP must come with assurances to clients that this is a health focused intervention, and not something DWP can access.
- Anonymity has been shown as a key element in identifying a so-called “hidden” population. This suggests a weariness, due to mistrust, in seeking help in this population, and so confidentiality must be assured and adhered to.
- Approach Full RCT with a “ground-up” design of the intervention, including focus-groups, health partnerships, and increased public contribution. This will help improve the engagement with people who are unemployed and could help in increasing uptake.
- Include elements in an intervention which are more suitable to ‘very high risk’ drinkers. The proportion of participants in the final trial who were drinking to very high amounts was far higher than initially expected. The Full RCT intervention should be designed to address this.
- When running the Full RCT include a face-to-face sub-group to assist with comparisons. This could provide valuable findings in how important the anonymity

element of an online ABI is, and whether this could be a feasible alternative to limit the effect of the digital divide.

8.2 Department for Work and Pensions/ Job Centre Plus

- A lack of trust between claimant and JCP appears to contribute to poor mental health, and thus increased drinking. More effort should be made to improve client trust. One way this could be achieved would be to use a claimant advisory board, similar to the Patient and Public Involvement (PPI) used in healthcare settings where people with experience of unemployment are consulted on potential changes and implementation of changes within DWP to ensure that the changes actually do improve the experience for those who are currently accessing the system.
- Sanctions should be restricted to very severe cases of non-compliance. A fear of sanctions being applied for reporting health concerns to doctors or work coaches appears to be leading to a worsening of some health conditions, particularly mental health and alcohol use disorders.
- More understanding as to how a claimant has become unemployed would make the claimants feel more listened to, which would improve trust between claimant and JCP.
- Should a decision be made to introduce an ABI into the JCP/DWP setup, an ABI should not be included as a compulsory part of the sign up to Universal Credit, our findings indicate this would be received poorly and is unlikely to result in any positive outcome. Any ABI provided must be a voluntary, anonymous tool which claimants can be signposted towards.
- JCP staff should be made more aware of the links between boredom, mental health, and increased alcohol consumption amongst claimants and, where feasible, work with claimants to tackle these problems. Signposting to relevant support where

necessary. Mental Health First Aider training for all work coaches could be considered as a way of improving early detection of poor mental health in claimants.

- Reconsider the requirement to spend 37.5 hours a week job seeking, to reflect the speed at which job seeking can now take place. This appears to be causing increased boredom which is negatively affecting mental health and alcohol consumption. Should this be not possible, make suggestions on more activities which constitute "job seeking activity" in an attempt to assist claimants avoid monotony, such as a wider range of skill-building activities or self-guided learning at a local library (as an example). As such skills and knowledge can assist with finding work, this would suitably fit within the remit of "job seeking activity".

8.3 Primary Care

- Where GPs are made aware of a patient becoming unemployed, where feasible, efforts should be made to engage the patient with an alcohol intervention deemed suitable by the GP, if the patient reports consuming alcohol regularly. This could also be done should the GP feel that the patient would benefit from a small intervention as a precautionary, preventative measure. As becoming unemployed has been shown to be a significant risk factor in increased alcohol consumption and poorer mental health.
- Assurances regarding confidentiality when discussing alcohol consumption, particularly from JCP/DWP, would assist in identifying early signs of an alcohol use disorder. Fears of medical information being passed to JCP (and then potentially sanctioned) appears to cause reluctance in coming forward for help.
- More efforts, where feasible, in understanding how an alcohol use disorder has developed in a patient could improve trust and commitment to change amongst patients. Participants suggest that this is currently uncommon.

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Notes

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Appendices

Appendix 1: List of Studies included in Meta-Analysis and Meta-Regression (Chapter 3: Study 1)

Studies where correlations were obtained (as described in section 3.2.4) identified with †

Study name	*Year*	*'Parent' study(s)*	*Number of Participants*	*Number of Control Participants at Follow-up*	*Age of participants in control group*	*Country of Study*	*Outcome*	*Follow-up time (months)*	*Low-risk drinkers excluded?*	*Setting*	*Control Type*	*Number of BCTs present in Control method-ology*	*BCTs in control metho dology*
Aalto et al	2000	Platt et al. 2016; Jenkins et al. 2009	118	24	40.7	Finland	g per week	36	Yes	Health	Non-TAU	4	1.1, 2.3, 2.4, 7.1
Aalto et al	2001	Platt et al. 2016; Jenkins et al. 2009	296	49	40.6	Finland	g per week	36	Yes	Health	Non-TAU	4	1.1, 2.3 ,2.4, 7.1
Anderson & Scott	1992	Platt et al. 2016; Jenkins et al. 2009	154	45	43	UK	Quantity/ Frequency measure	12	Yes	Health	Screening	3	2.3, 2.4, 9.1
Antti-Poika et al	1988	Platt et al. 2016; Jenkins et al. 2009	120	40	39	Finland	g per week	6	Yes	Health	Screening	4	2.3, 2.4, 5.2, 9.1
Beich et al	2007	Platt et al. 2016	906	288	36.3	Denmark	Units per week	12	Yes	Health	Screening	3	2.3, 2.4, 7.1
Bersamin et al	2007	Black et al. 2016	312	79	18	USA	Quantity/ Frequency measure	3	Yes	University	Screening	2	2.4, 5.2
Bertholet et al	2015	Kaner et al. 2017	737	370	20.81	Switzerla nd	Units per week	6	Yes	Workplace	Screening	3	2.3, 2.4, 5.2
Bewick et al	2008	Black et al. 2016	506	179	21.29	UK	Units per week	12 weeks	No	University	Screening	2	2.3, 2.4
Bewick et al	2010	Black et al. 2016	1112	354	21.6	UK	Units per week	7 weeks	No	University	Screening	3	2.3, 2.4, 5.2

Bewick et al	2013	Black et al. 2016	1049	321	20.8	UK	Units per week	34 weeks	No	University	Screening	2	2.3, 2.4
Bischoff et al	2008	Riper et al. 2014	408	139	35.9	Germany	g per day	12	Yes	Health	Treatment as usual	2	2.3, 2.4
Blankers et al	2011	Kaner et al. 2017; Riper et al. 2014; Black et al. 2016	205	69	43.7	Netherlands	Units per day	6	Yes	Other	Non-TAU	3	2.3, 2.4, 5.2
Borsari & Carey †	2000	Jenkins et al. 2009	60	30	18.71	USA	Units per week	6 weeks	Yes	University	Screening	4	2.3, 2.4, 5.2, 6.2
Brendryen et al	2013	Kaner et al. 2017; Riper et al. 2014	244	119	37	Norway	Units per week	6	Yes	Other	Non-TAU	4	2.3, 2.4, 5.1, 5.2
Butler et al	2009	Kaner et al. 2017; Platt et al. 2016; Black et al. 2016	84	26	20.38	USA	Units per week	1	Yes	University	Screening	2	2.4, 5.2
Carey et al †	2006	Platt et al. 2016	509	81	19.2	USA	Units per week	12	Yes	University	Screening	2	2.4, 5.2
Cherpitel et al	2010	Platt et al. 2016	446	97	>30	Poland	Drinks per day	12	Yes	Health	Non-TAU	3	2.4, 5.2, 7.1
Chiauzzi et al	2005	Kaner et al. 2017	265	110	19.8	USA	Units per week	3	Yes	University	Non-TAU	4	2.3, 2.4, 5.1, 5.2
Chick et al	1985	Platt et al. 2016; Jenkins et al. 2009	156	69	18-65	UK	Units per week	12	Yes	Health	Screening	4	2.3, 2.4, 7.1, 9.1
Collins et a †$_I$	2014	Kaner et al. 2017; Black et al. 2016	724	173	20.78	USA	TLFB	12	Yes	University	Non-TAU	3	2.3, 2.4, 5.2
Cordoba et al	1998	Platt et al. 2016; Jenkins et al. 2009	229	125	37.4	Spain	Units per week	12	Yes	Health	Non-TAU	6	2.3, 2.4, 5.1, 5.2, 7.1, 9.1
Crawford et al	2004	Platt et al. 2016	599	195	43.4	UK	Drinks per day	6	Yes	Health	Treatment as usual	6	2.3, 2.4, 3.1,

												5.1, 7.1, 9.1
Croom et al	2009	Black et al. 2016	1906	970	17.9	USA	Units per week	4-6 weeks	No	University	Treatment as usual	5	2.3, 2.4, 5.3, 7.1 ,9.1
Cunningham et al	2009	Kaner et al. 2017; Riper et al. 2014; Black et al. 2016	185	93	40.8	Canada	Typical weekly units	6	Yes	Other	Non-TAU	2	2.3, 2.4
Curry et al	2003	Platt et al. 2016; Jenkins et al. 2009	307	122	45.56	USA	Units per week	12	Yes	Health	Screening	4	2.3, 2.4, 5.2, 7.1
Daeppen et al †	2007	Platt et al. 2016	271	125	19.9	Switzerland	Units per week	12	Yes	Health	Non-TAU	3	2.3, 2.4, 5.2
Daeppen et al †	2011	Platt et al. 2016	987	277	36.7	Switzerland	Units in last 7 days	6	No	Workplace	Screening	3	2.3, 2.4, 7.1
Delrahim-Howlett et al	2011	Kaner et al. 2017; Riper et al. 2014	150	75	25.75	USA	Units in last 14 days	2	Yes	Health	Screening	3	2.3, 2.4 ,5.2
Doumas et al	2010	Kaner et al. 2017	113	47	18.08	USA	Daily Drinking Questionnaire	3	No	University	Non-TAU	3	2.3, 2.4, 6.2
Doumas & Hannah	2008	Riper et al. 2014; Black et al. 2016	196	46	NR	USA	Daily Drinking Questionnaire	1	No	Workplace	Screening	2	2.3, 2.4
Doumas et al	2011	Kaner et al. 2017; Black et al. 2016	350	46	18	USA	Units per week	3	No	University	Screening	3	2.3, 2.4, 5.2
Drummond et al	2014	Platt et al. 2016	1204	406	34.1	UK	AUDIT-C	12	Yes	Health	Non-TAU	6	2.2, 2.3, 2.4, 6.3, 7.1, 9.1
Ekman et al	2011	Kaner et al. 2017	158	78	23.2	USA	Units per week	6	Yes	University	Non-TAU	3	2.3, 2.4, 2.7

Epton et al †	2014	Black et al. 2016	1445	547	19.04	UK	Average units over 7 days	6	No	University	Screening	2	2.3, 2.4
Fleming et al	1997	Jenkins et al. 2009	774	382	NR	USA	Units per week	6	Yes	Health	Non-TAU	5	2.3, 2.4, 5.1, 7.1, 9.1
Fleming et al	2010	Platt et al. 2016	986	493	20.8	USA	Average units in past month	12	Yes	University	Screening	4	2.3, 5.1, 5.2, 7.1
Freyer-Adam et al †	2008	Platt et al. 2016	595	155	40.4	Germany	g per day	12	Yes	Health	Screening	3	2.3, 7.1, 9.1
Gajecki et al †	2014	Kaner et al. 2017; Black et al. 2016	1932	489	24.6	Sweden	Daily Drinking Questionnaire	7 weeks	Yes	University	Screening	2	2.3, 2.4
Gaume et al †	2011	Platt et al. 2016	572	198	19.9	Switzerland	Units per week	6	No	Workplace	Screening	2	2.3, 2.4
Geisner et al	2015	Kaner et al. 2017	339	81	20.14	USA	Units per week	1	Yes	University	Non-TAU	5	2.3, 2.4, 5.1, 5.2, 6.2
Heather et al	1987	Platt et al. 2016; Jenkins et al. 2009	91	32	36.4	UK	Units in past month	6	Yes	Other	Screening	2	2.3, 2.4
Heather	1987	Jenkins et al. 2009	247	47	NR	UK	Units per week	12	Yes	Health	Treatment as usual	3	2.3, 2.4, 5.1
Heather et al	1990	Jenkins et al. 2009	107	27	45.4	Australia	Units per week	6	Yes	Other	Non-TAU	5	2.3, 2.4, 2.6, 7.1, 9.1
Heather	1996	Jenkins et al. 2009	174	33	34.4	Australia	Units per week	6	Yes	Health	Screening	4	2.3, 2.4, 5.2, 7.1
Hedman et al	2008	Kaner et al. 2017	136	35	19	USA	Quantity/ Frequency measure	6 weeks	Yes	University	Non-TAU	4	2.3, 2.4, 5.1, 5.2

Hester et al (S1)	2012	Kaner et al. 2017; Black et al. 2016	144	71	20.29	USA	Units per week	1	Yes	University	Screening	6	2.3, 2.4, 2.5, 3.1, 5.2, 7.1
Hester et al (S2)	2012	Kaner et al. 2017; Black et al. 2016	84	39	20.28	USA	Units per week	1	Yes	University	Screening	6	2.3, 2.4, 2.5, 3.1, 5.2, 7.1
Hester et al	1997	Kaner et al. 2017; Black et al. 2016	40	20	36.3	USA	Peak BAC	20 weeks	Yes	Other	Non-TAU	3	2.3, 2.4, 5.2
Hester et al	2005	Kaner et al. 2017; Riper et al. 2014	61	21	45.65	USA	Units per day	12 months	Yes	Other	Screening	3	2.3, 2.4, 5.2
Israel et al	1996	Jenkins et al. 2009	NR	38	NR	USA	Units over 4 weeks	12	Yes	Health	Screening	6	2.3, 2.4, 2.6, 4.1, 5.2, 7.1
Juarez et al	2006	Platt et al. 2016	122	21	19.43	USA	Units per day	2	Yes	University	Screening	3	2.3, 2.4, 5.2
Kramer et al †	2009	Black et al. 2016	181	91	48.5	Netherlands	TLFB	3	Yes	Other	Non-TAU	3	2.3, 2.4, 5.2
Kulesza et al	2010	Platt et al. 2016	114	40	20	USA	Daily Drinking Questionnaire	6 weeks	Yes	University	Screening	5	1.4, 2.3, 2.4, 5.2, 6.2
Kulesza et al	2013	Platt et al. 2016	278	90	20.3	USA	Daily Drinking Questionnaire	4 weeks	Yes	University	Screening	5	1.4, 2.3, 2.4, 5.2, 6.2
Labrie et al	2013	Kaner et al. 2017; Black et al. 2016	1663	133	19.92	USA	Units per week	6	Yes	University	Screening	4	2.3, 2.4, 5.2, 6.2,
Larimer et al	2001	Platt et al. 2016	159	60	18.8	USA	Quantity/ Frequency measure	12	No	University	Treatment as usual	6	2.3, 2.4, 5.1, 5.2, 7.1, 9.1

Lee et al	2014	Black et al. 2016	783	124	20.5	USA	Average units per day	1 week	Yes	University	Screening	4	2.3, 2.4, 5.2, 6.2
Lewis et al †	2014	Kaner et al. 2017; Black et al. 2016	480	57	20.08	USA	Units per week	6	Yes	University	Non-TAU	4	2.3, 2.4, 2.6, 5.2
Liu et al	2011	Platt et al. 2016	616	308	41.4	Taiwan	Units per week	4	Yes	Health	Screening	4	2.3, 2.4, 5.2, 7.1
Lock et al	2006	Platt et al. 2016	127	36	45.7	UK	Units per week	12	Yes	Health	Treatment as usual	6	2.3, 2.4, 5.1, 5.2 ,7.1, 9.1
Lovecchio et al	2010	Black et al. 2016	682	548	18	USA	Total units in 2 weeks	1	No	University	Treatment as usual	2	2.4, 5.2
Maisto et al	2001	Platt et al. 2016; Jenkins et al. 2009	301	85	45	USA	Average monthly units	12	Yes	Health	Screening	5	2.3, 2.4, 2.5, 5.2, 9.1
Moreira et al	2012	Black et al. 2016	2611	369	18	UK	AUDIT-C	6	No	University	Screening	4	2.3, 2.4, 5.2, 6.2
Murphy et al †	2010	Kaner et al. 2017; Black et al. 2016	133	39	18.6	USA	Units per week	1	Yes	University	Screening	3	2.3, 2.4, 6.2
Murphy et al	2001	Platt et al. 2016	84	24	19.6	USA	Units per week	9	Yes	University	Screening	3	2.3, 2.4, 5.2
Neighbours et al	2004	Kaner et al. 2017; Black et al. 2016	252	126	18.5	USA	Units per week	6	Yes	University	Screening	3	2.3, 5.2, 6.2
Neighbours et al	2006	Kaner et al. 2017; Black et al. 2016	214	106	19.67	USA	Units per week	2	Yes	University	Screening	4	2.3, 2.4, 5.2, 6.2
Neumann et al	2006	Kaner et al. 2017; Black et al. 2016	1136	352	31	Germany	g per day (weekly)	6	Yes	Health	Screening	3	2.3, 2.4, 9.1
Noknoy et al	2010	Platt et al. 2016	117	58	37.09	Thailand	Units per week	6	Yes	Health	Screening	4	2.3, 2.4, 5.2, 9.1
Ockene et al	1999	Jenkins et al. 2009	530	233	43.5	USA	Units per week	6	Yes	Health	Screening	3	2.3, 2.4, 7.1

Palfai et al	2014	Black et al. 2016	1336	249	18.23	USA	Units per week	5	No	University	Screening	3	2.3, 2.4, 5.2
Pemberton et al †	2011	Riper et al. 2014	3070	101	NR	USA	Peak BAC	6	No	Workplace	Screening	2	2.3, 2.4
Richmond et al	1995	Platt et al. 2016; Jenkins et al. 2009	378	66	33.9	Australia	Units per week	12	Yes	Health	Screening	4	2.3, 2.4, 5.2, 7.1
Richmond et al	1999	Jenkins et al. 2009	954	203	33.7	Australia	Units per week	6	No	Workplace	Screening	4	2.3, 2.4, 5.1, 5.3
Riper et al	2008	Kaner et al. 2017; Riper et al. 2014	261	131	46.2	Netherlands	Units per week	6	Yes	Other	Screening	4	2.3, 2.4, 5.1, 9.1
Rubio et al	2010	Platt et al. 2016	752	381	24	Spain	Units per week	12	Yes	Health	Treatment as usual	6	2.3, 2.4, 2.6, 5.1, 7.1, 9.1
Schaus et al	2009	Platt et al. 2016	363	182	20.6	USA	Units per week	9	Yes	University	Screening	6	2.3, 2.4, 5.1, 6.2, 7.1, 9.1
Schuckit et al LR	2015	Black et al. 2016	250	32	18.2	USA	Units per day	8 weeks	No	University	Screening	2	2.3, 5.5
Schuckit et al HR	2015	Black et al. 2016	250	32	18.1	USA	Units per day	8 weeks	No	University	Screening	2	2.3, 5.5
Scott & Anderson	1990	Jenkins et al. 2009	72	39	47.2	UK	Quantity/ Frequency measure	12	Yes	Health	Screening	3	2.3, 2.4, 9.1
Shiles et al	2013	Platt et al. 2016	154	75	52	UK	TLFB	12	Yes	Health	Screening	5	2.3, 2.4, 5.2, 7.1, 9.1
Sinadinovic et al	2014	Kaner et al. 2017	633	210	44.1	Sweden	AUDIT-C	6	Yes	Other	Screening	2	2.3, 2.4
Voogt, Kleinjan et al	2013	Kaner et al. 2017; Black et al. 2016	609	291	17.4	Netherlands	Units per week	6	Yes	University	Screening	1	2.3
Voogt, Poelen et al	2013	Kaner et al. 2017; Black et al. 2016	913	451	20.8	Netherlands	Units per week	6	Yes	University	Screening	2	2.3, 2.4

Wagener et al	2012	Kaner et al. 2017; Platt et al. 2016; Black et al. 2016	152	37	20	USA	Units per week	10 weeks	Yes	University	Treatment as usual	3	2.3, 2.4, 5.2
Wallace et al M	1988	Jenkins et al. 2009	641	322	41.8	UK	Units per week	12	Yes	Health	Screening	5	2.3, 2.4, 2.5, 5.1, 9.1
Wallace et al F	1988	Jenkins et al. 2009	268	137	44.6	UK	Units per week	12	Yes	Health	Screening	5	2.3, 2.4, 2.5, 5.1, 9.1
Wallace et al †	2011	Kaner et al. 2017; Riper et al. 2014	2652	448	38	UK	Units in last week	12	Yes	Other	Screening	4	2.3, 2.4, 5.2, 5.3
Walters et al	2007	Black et al. 2016	106	53	NR	USA	Units per week	16 weeks	Yes	University	Screening	3	2.3, 2.4, 5.2
Walters et al	2009	Kaner et al. 2017; Platt et al. 2016; Black et al. 2016	279	61	19.8	USA	Units per week	6	Yes	University	Screening	4	2.3, 2.4, 5.2, 6.2
Watson et al	1999	Jenkins et al. 2009	150	31	42.5	UK	Units per week	12	Yes	Health	Non-TAU	4	2.3, 2.4, 2.6, 7.1

Appendix 2: Table of Studies Excluded from Meta-Analysis and Meta-Regression (Chapter 3: Study 1)

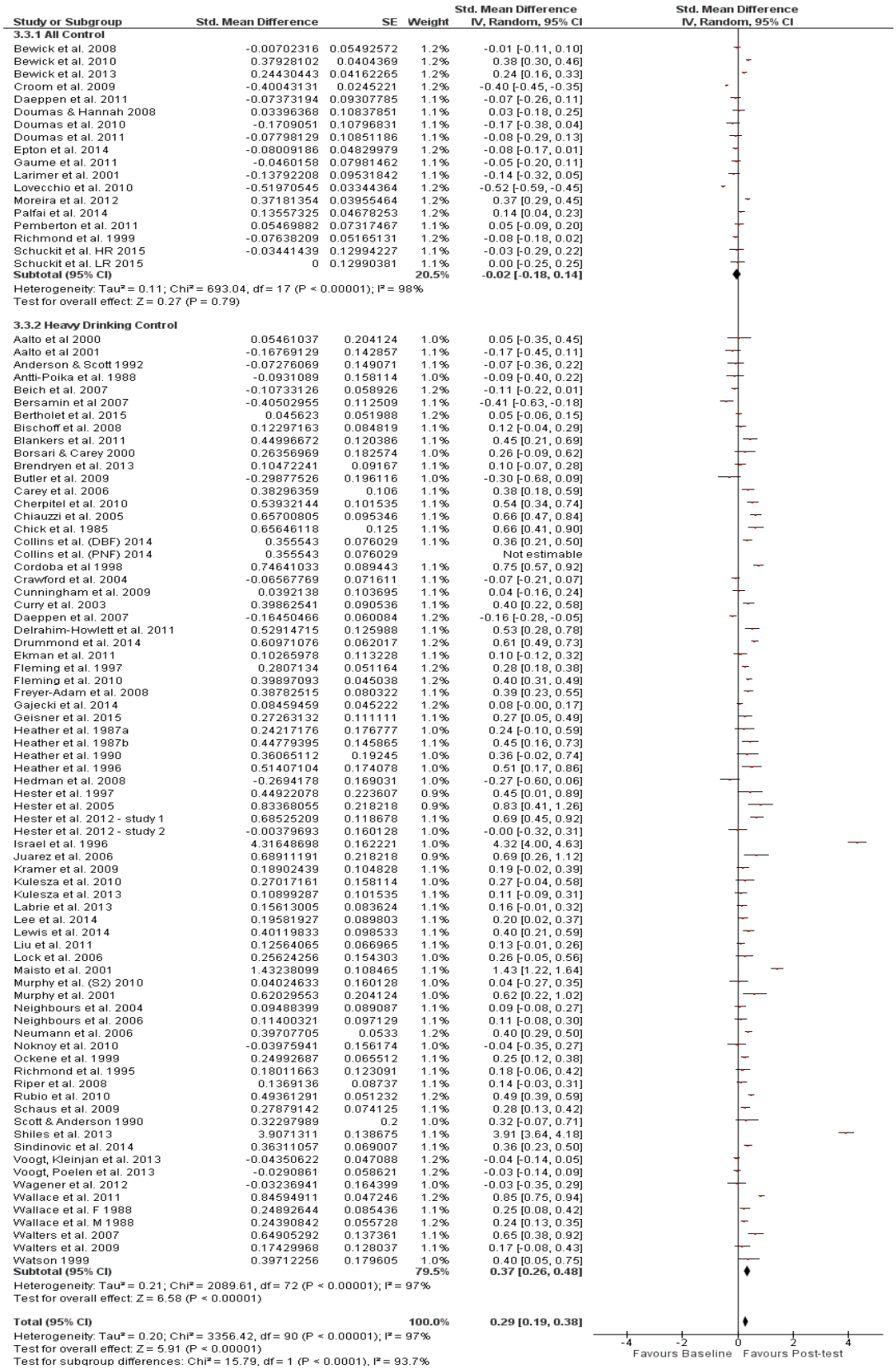
Study	Year	Primary Reason for Exclusion
An et al	2013	All required control group data not reported
Andersson et al	2015	All required control group data not reported
Araki et al	2006	All required control group data not reported
Baer et al	2001	All required control group data not reported
Bannick et al	2014	No Quantity Frequency Outcome Variable
Bendtsen et al	2012	All required control group data not reported
Bendtsen et al	2015	All required control group data not reported
Bernstein et al	2010	All required control group data not reported
Bingham et al.	2010	All required control group data not reported
Boon & Huiberts.	2006	Paper Unavailable
Boon et al	2011	No Quantity Frequency Outcome Variable
Brief et al	2013	No Quantity Frequency Outcome Variable
Burge et al	1997	All required control group data not reported
Butler et al	2003	No Quantity Frequency Outcome Variable
Carey et al	2011	All required control group data not reported
Chafetz et al	1962	Paper Unavailable
Chang et al	1999	Too specific target group (Pregnancy)
Crawford et al	2014	All required control group data not reported
Croom et al	2015	All required control group data not reported
Cucciare et al	2013	Paper Unavailable
Cunningham et al	2012	All required control group data not reported
Cunningham et al	2015	All required control group data not reported
Dimeff & McNeely.	2000	All required control group data not reported
Elvy et al	1988	No Quantity Frequency Outcome Variable
Field et al	2010	All required control group data not reported
Fleming et al	1999	All required control group data not reported
Forsberg et al	2000	All required control group data not reported
Gaume et al	2014	No Quantity Frequency Outcome Variable
Gentilello et al	1999	No Quantity Frequency Outcome Variable
Hagger et al	2012	All required control group data not reported
Hansen et al	2012	All required control group data not reported
Hendershot et al	2010	No Quantity Frequency Outcome Variable
Holloway et al	2007	All required control group data not reported
Hunt et al	2005	All required control group data not reported
Hustad et al	2010	All required control group data not reported
Ingersoll et al	2013	No Quantity Frequency Outcome Variable
Khadjesari et al	2014	All required control group data not reported
Kristenson et al	1983	No Quantity Frequency Outcome Variable
Kuchipudi et al	1990	No Quantity Frequency Outcome Variable

Kypri & McAnally	2005	No Quantity Frequency Outcome Variable
Kypri et al	2008	All required control group data not reported
Kypri et al	2009	All required control group data not reported
Kypri et al	2013	All required control group data not reported
Kypri et al	2014	All required control group data not reported
Lewis & Neighbours	2007	All required control group data not reported
Lewis et al	2007	All required control group data not reported
Logsdon et al	1989	No Quantity Frequency Outcome Variable
Maheswaran et al	1992	All required control group data not reported
Maio et al	2005	All required control group data not reported
Marlatt et al	1998	All required control group data not reported
McCambridge et al	2013	All required control group data not reported
McIntosh et al	1997	All required control group data not reported
Montag et al	2015	Too specific target group (Pregnancy)
Monti et al	1999	No Quantity Frequency Outcome Variable
Murphy et al (S1)	2010	Control methodology unclear
Neighbours et al	2009	Too specific target group (21st Birthday)
Neighbours et al	2010	All required control group data not reported
Neighbours et al	2011	All required control group data not reported
Neighbours et al	2012	All required control group data not reported
Nilson et al	1991	All required control group data not reported
Palfai et al	2011	All required control group data not reported
Paschall et al	2011	All required control group data not reported
Patrick et al	2014	Paper Unavailable
Persson & Magnusson	1989	No Quantity Frequency Outcome Variable
Postel et al	2010	All required control group data not reported
Ridout & Campbell	2014	No Quantity Frequency Outcome Variable
Romelsjo et al	1989	All required control group data not reported
Rowland & Maynard 1993	1993	All required control group data not reported
Saitz et al	2007	All required control group data not reported
Schulz et al	2013	All required control group data not reported
Schwinn et al	2010	All required control group data not reported
Senft et al	1997	All required control group data not reported
Seppa et al	1992	No Quantity Frequency Outcome Variable
Smith et al	2003	No Quantity Frequency Outcome Variable
Spijkerman et al	2010	All required control group data not reported
Strohman et al	2015	No Quantity Frequency Outcome Variable
Suffoletto et al	2012	All required control group data not reported
Suffoletto et al	2014	All required control group data not reported
Sugarman et al	2009	Paper Unavailable
Tomson et al.	1998	All required control group data not reported
Vinson & Devra-Sales	2000	All required control group data not reported
Watt et al	2008	All required control group data not reported
Weaver et al	2014	No Quantity Frequency Outcome Variable

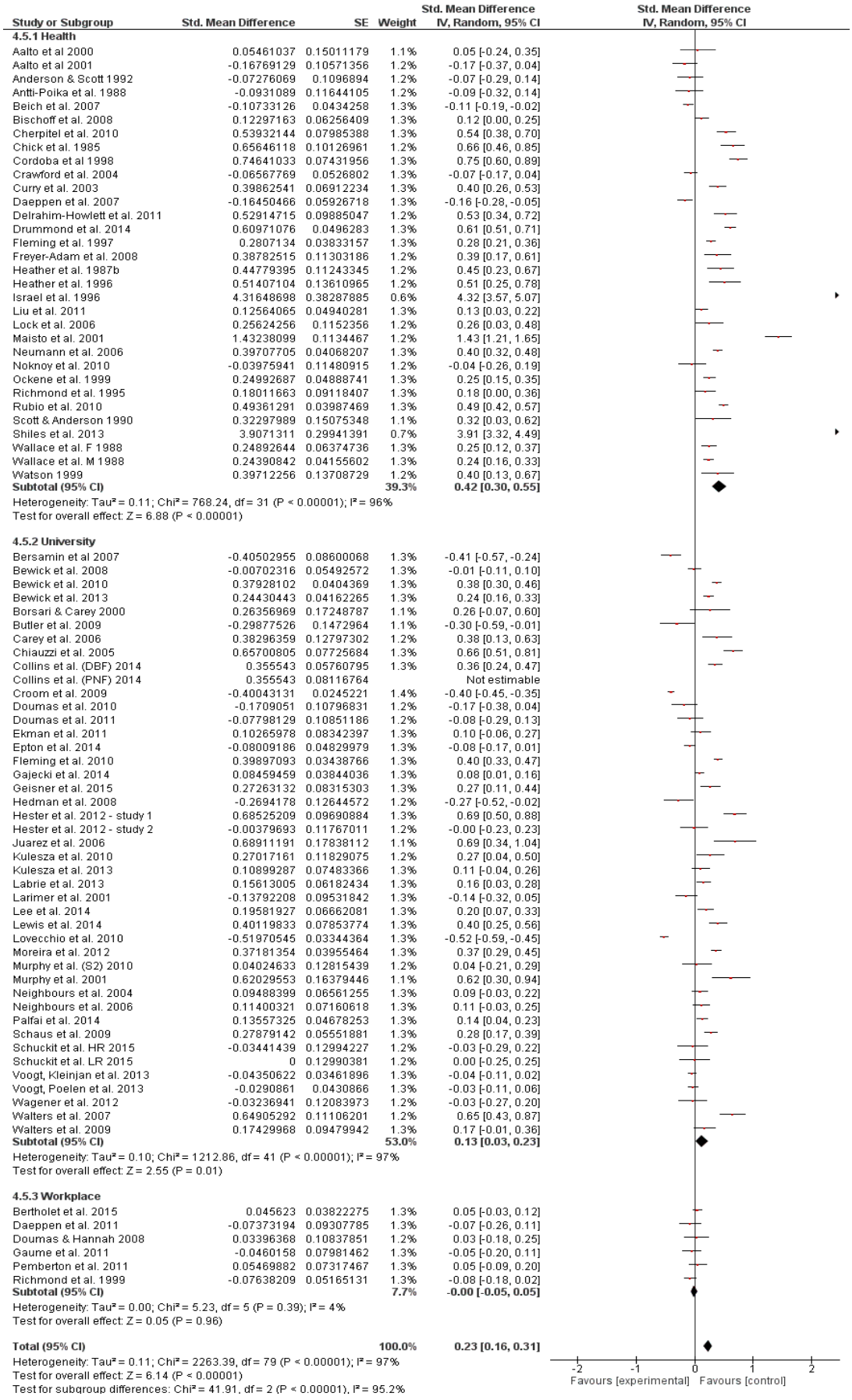
Welte et al.	1998	No Quantity Frequency Outcome Variable
Babor (WHO)	1996	All required control group data not reported
Witkiewitz et al	2014	No Quantity Frequency Outcome Variable

Appendix 3: Meta-Analysis Sub-Group Analysis Forest Plots

App3.1: Including or Screening out low-risk drinkers (within groups, control groups)

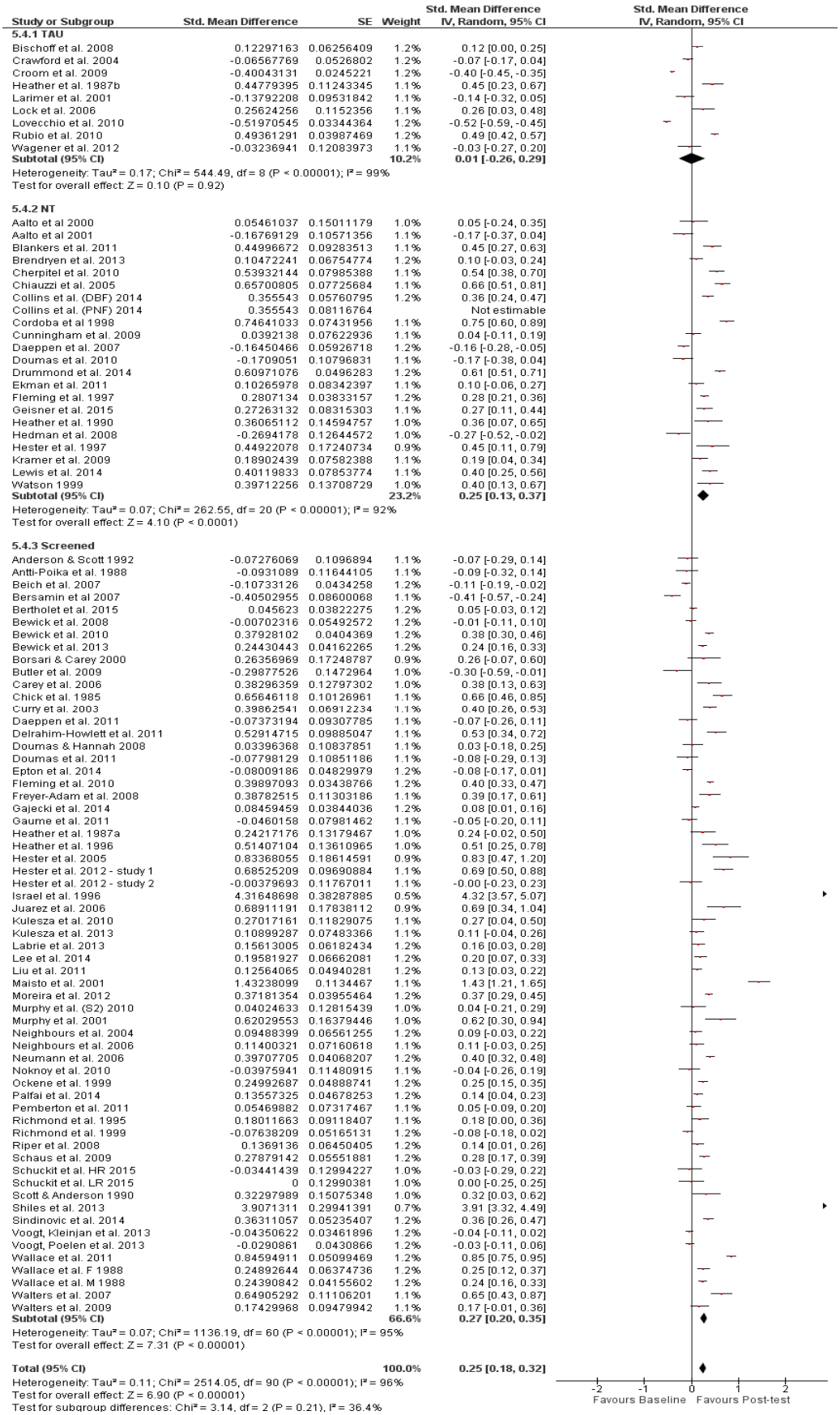


App3.2: Effect of Setting of Trial (within groups, control groups)



Study or Subgroup	Std. Mean Difference	SE	Weight	Std. Mean Difference IV, Random, 95% CI
4.5.1 Health				
Aalto et al 2000	0.05461037	0.15011179	1.1%	0.05 [-0.24, 0.35]
Aalto et al 2001	-0.16769129	0.10571356	1.2%	-0.17 [-0.37, 0.04]
Anderson & Scott 1992	-0.07276069	0.1096894	1.2%	-0.07 [-0.29, 0.14]
Antti-Poika et al. 1988	-0.0931089	0.11644105	1.2%	-0.09 [-0.32, 0.14]
Beich et al. 2007	-0.10733126	0.0434258	1.3%	-0.11 [-0.19, -0.02]
Bischoff et al. 2008	0.12297163	0.06256409	1.3%	0.12 [0.00, 0.25]
Cherpitel et al. 2010	0.53932144	0.07985388	1.3%	0.54 [0.38, 0.70]
Chick et al. 1985	0.65646118	0.10126961	1.2%	0.66 [0.46, 0.85]
Cordoba et al 1998	0.74641033	0.07431956	1.3%	0.75 [0.60, 0.89]
Crawford et al. 2004	-0.06567769	0.0526802	1.3%	-0.07 [-0.17, 0.04]
Curry et al. 2003	0.39862541	0.06912234	1.3%	0.40 [0.26, 0.53]
Daeppen et al. 2007	-0.16450466	0.05926718	1.3%	-0.16 [-0.28, -0.05]
Delrahim-Howlett et al. 2011	0.52914715	0.09885047	1.2%	0.53 [0.34, 0.72]
Drummond et al. 2014	0.60971076	0.0496283	1.3%	0.61 [0.51, 0.71]
Fleming et al. 1997	0.2807134	0.03833157	1.3%	0.28 [0.21, 0.36]
Freyer-Adam et al. 2008	0.38782515	0.11303186	1.2%	0.39 [0.17, 0.61]
Heather et al. 1987b	0.44779395	0.11243345	1.2%	0.45 [0.23, 0.67]
Heather et al. 1996	0.51407104	0.13610965	1.2%	0.51 [0.25, 0.78]
Israel et al. 1996	4.31648698	0.38287885	0.6%	4.32 [3.57, 5.07]
Liu et al. 2011	0.12564065	0.04940281	1.3%	0.13 [0.03, 0.22]
Lock et al. 2006	0.25624256	0.1152356	1.2%	0.26 [0.03, 0.48]
Maisto et al. 2001	1.43238099	0.1134467	1.2%	1.43 [1.21, 1.65]
Neumann et al. 2006	0.39707705	0.04068207	1.3%	0.40 [0.32, 0.48]
Noknoy et al. 2010	-0.03975941	0.11480915	1.2%	-0.04 [-0.26, 0.19]
Ockene et al. 1999	0.24992687	0.04888741	1.3%	0.25 [0.15, 0.35]
Richmond et al. 1995	0.18011663	0.09118407	1.3%	0.18 [0.00, 0.36]
Rubio et al. 2010	0.49361291	0.03987469	1.3%	0.49 [0.42, 0.57]
Scott & Anderson 1990	0.32297989	0.15075348	1.1%	0.32 [0.03, 0.62]
Shiles et al. 2013	3.9071311	0.29941391	0.7%	3.91 [3.32, 4.49]
Wallace et al. F 1988	0.24892644	0.06374736	1.3%	0.25 [0.12, 0.37]
Wallace et al. M 1988	0.24390842	0.04155602	1.3%	0.24 [0.16, 0.33]
Watson 1999	0.39712256	0.13708729	1.2%	0.40 [0.13, 0.67]
Subtotal (95% CI)			**39.3%**	**0.42 [0.30, 0.55]**
Heterogeneity: Tau² = 0.11; Chi² = 768.24, df = 31 (P < 0.00001); I² = 96%				
Test for overall effect: Z = 6.88 (P < 0.00001)				
4.5.2 University				
Bersamin et al 2007	-0.40502955	0.08600068	1.3%	-0.41 [-0.57, -0.24]
Bewick et al. 2008	-0.00702316	0.05492572	1.3%	-0.01 [-0.11, 0.10]
Bewick et al. 2010	0.37928102	0.0404369	1.3%	0.38 [0.30, 0.46]
Bewick et al. 2013	0.24430443	0.04162265	1.3%	0.24 [0.16, 0.33]
Borsari & Carey 2000	0.26356969	0.17248787	1.1%	0.26 [-0.07, 0.60]
Butler et al. 2009	-0.29877526	0.1472964	1.1%	-0.30 [-0.59, -0.01]
Carey et al. 2006	0.38296359	0.12797302	1.2%	0.38 [0.13, 0.63]
Chiauzzi et al. 2005	0.65700805	0.07725684	1.3%	0.66 [0.51, 0.81]
Collins et al. (DBF) 2014	0.355543	0.05760795	1.3%	0.36 [0.24, 0.47]
Collins et al. (PNF) 2014	0.355543	0.08116764		Not estimable
Croom et al. 2009	-0.40043131	0.0245221	1.4%	-0.40 [-0.45, -0.35]
Doumas et al. 2010	-0.1709051	0.10796831	1.2%	-0.17 [-0.38, 0.04]
Doumas et al. 2011	-0.07798129	0.10851186	1.2%	-0.08 [-0.29, 0.13]
Ekman et al. 2011	0.10265978	0.08342397	1.3%	0.10 [-0.06, 0.27]
Epton et al. 2014	-0.08009186	0.04829979	1.3%	-0.08 [-0.17, 0.01]
Fleming et al. 2010	0.39897093	0.03438766	1.3%	0.40 [0.33, 0.47]
Gajecki et al. 2014	0.08459459	0.03844036	1.3%	0.08 [0.01, 0.16]
Geisner et al. 2015	0.27263132	0.08315303	1.3%	0.27 [0.11, 0.44]
Hedman et al. 2008	-0.2694178	0.12644572	1.2%	-0.27 [-0.52, -0.02]
Hester et al. 2012 - study 1	0.68525209	0.09690884	1.3%	0.69 [0.50, 0.88]
Hester et al. 2012 - study 2	-0.00379693	0.11767011	1.2%	-0.00 [-0.23, 0.23]
Juarez et al. 2006	0.68911191	0.17838112	1.1%	0.69 [0.34, 1.04]
Kulesza et al. 2010	0.27017161	0.11829075	1.2%	0.27 [0.04, 0.50]
Kulesza et al. 2013	0.10899287	0.07483366	1.3%	0.11 [-0.04, 0.26]
Labrie et al. 2013	0.15613005	0.06182434	1.3%	0.16 [0.03, 0.28]
Larimer et al. 2001	-0.13792208	0.09531842	1.3%	-0.14 [-0.32, 0.05]
Lee et al. 2014	0.19581927	0.06662081	1.3%	0.20 [0.07, 0.33]
Lewis et al. 2014	0.40119833	0.07853774	1.3%	0.40 [0.25, 0.56]
Lovecchio et al. 2010	-0.51970545	0.03344364	1.3%	-0.52 [-0.59, -0.45]
Moreira et al. 2012	0.37181354	0.03955464	1.3%	0.37 [0.29, 0.45]
Murphy et al. (S2) 2010	0.04024633	0.12815439	1.2%	0.04 [-0.21, 0.29]
Murphy et al. 2001	0.62029553	0.16379446	1.1%	0.62 [0.30, 0.94]
Neighbours et al. 2004	0.09488399	0.06561255	1.3%	0.09 [-0.03, 0.22]
Neighbours et al. 2006	0.11400321	0.07160618	1.3%	0.11 [-0.03, 0.25]
Palfai et al. 2014	0.13557325	0.04678253	1.3%	0.14 [0.04, 0.23]
Schaus et al. 2009	0.27879142	0.05551881	1.3%	0.28 [0.17, 0.39]
Schuckit et al. HR 2015	-0.03441439	0.12994227	1.2%	-0.03 [-0.29, 0.22]
Schuckit et al. LR 2015	0	0.12990381	1.2%	0.00 [-0.25, 0.25]
Voogt, Kleinjan et al. 2013	-0.04350622	0.03461896	1.3%	-0.04 [-0.11, 0.02]
Voogt, Poelen et al. 2013	-0.0290861	0.0430866	1.3%	-0.03 [-0.11, 0.06]
Wagener et al. 2012	-0.03236941	0.12083973	1.2%	-0.03 [-0.27, 0.20]
Walters et al. 2007	0.64905292	0.11106201	1.2%	0.65 [0.43, 0.87]
Walters et al. 2009	0.17429968	0.09479942	1.3%	0.17 [-0.01, 0.36]
Subtotal (95% CI)			**53.0%**	**0.13 [0.03, 0.23]**
Heterogeneity: Tau² = 0.10; Chi² = 1212.86, df = 41 (P < 0.00001); I² = 97%				
Test for overall effect: Z = 2.55 (P = 0.01)				
4.5.3 Workplace				
Bertholet et al. 2015	0.045623	0.03822275	1.3%	0.05 [-0.03, 0.12]
Daeppen et al. 2011	-0.07373194	0.09307785	1.3%	-0.07 [-0.26, 0.11]
Doumas & Hannah 2008	0.03396368	0.10837851	1.2%	0.03 [-0.18, 0.25]
Gaume et al. 2011	-0.0460158	0.07981462	1.3%	-0.05 [-0.20, 0.11]
Pemberton et al. 2011	0.05469882	0.07317467	1.3%	0.05 [-0.09, 0.20]
Richmond et al. 1999	-0.07638209	0.05165131	1.3%	-0.08 [-0.18, 0.02]
Subtotal (95% CI)			**7.7%**	**-0.00 [-0.05, 0.05]**
Heterogeneity: Tau² = 0.00; Chi² = 5.23, df = 5 (P = 0.39); I² = 4%				
Test for overall effect: Z = 0.05 (P = 0.96)				
Total (95% CI)			**100.0%**	**0.23 [0.16, 0.31]**
Heterogeneity: Tau² = 0.11; Chi² = 2263.39, df = 79 (P < 0.00001); I² = 97%				
Test for overall effect: Z = 6.14 (P < 0.00001)				
Test for subgroup differences: Chi² = 41.91, df = 2 (P < 0.00001), I² = 95.2%				

App3.3: Type of Control Group (Treatment As Usual, Treatment As Usual with Screening, Novel Treatment)



Appendix 4: Scales and Items Shown to Participants for the Cross-sectional study (Chapter 4; Study 2)

Drinking Motives Questionnaire (Modified)

This Questionnaire is composed of 25 statements regarding possible reasons why people drink alcohol. Thinking of all the times you consume alcohol, how often would you say that you drink for each of the following reasons. If you are currently unemployed, please focus on drinking occasions since you became unemployed. Please circle one answer only.

1) To forget your worries

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

2) Because your friends pressure you to drink

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

3) To stop time from dragging *

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

4) Because it helps you enjoy a party

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

5) Because it helps you when you feel depressed or nervous

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

6) To be sociable

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

7) To cheer you up when you are in a bad mood

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

8) To give me something to focus my attention on *

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

9) Because you like the feeling

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

10) So others won't kid you about not drinking

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

11) To pass the time *

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

12) Because it's exciting

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

13) To get high

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

14) Because it makes social gatherings more fun

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

15) To fit in with a group you like

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

16) Because it gives you a pleasant feeling

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

17) Because it improves parties and celebrations

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

18) Because you feel more self-confident and sure of yourself

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

19) To make something happen *

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

20) To celebrate special occasions with friends

Never/Almost Never Sometimes Half of the Time Mostly Almost Always/Always

21) To forget about your problems

Never/Almost Never Always/Always Sometimes Half of the Time Mostly Almost

22) Because it's fun

Never/Almost Never Always/Always Sometimes Half of the Time Mostly Almost

23) To be liked

Never/Almost Never Always/Always Sometimes Half of the Time Mostly Almost

24) So you won't feel left out

Never/Almost Never Always/Always Sometimes Half of the Time Mostly Almost

25) To stop me losing attention so easily *

Never/Almost Never Always/Always Sometimes Half of the Time Mostly Almost

Alcohol Use Disorder Identification Test (AUDIT)

Please select one answer for each question

1) How often do you have a drink containing alcohol?

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

2) How many drinking containing alcohol do you have on a typical day when you are drinking?

1 or 2	3 or 4	5 or 6	7,8, or 9	10 or more

3) How often do you have 6 or more drinks on one occasion?

Never	Less than Monthly	Monthly	Weekly	Daily or almost daily

4) How often during the last year have you found that you were not able to stop drinking once you had started?

Never	Less than Monthly	Monthly	Weekly	Daily or almost daily

5) How often during the last year have you failed to do what was normally expected from you because of drinking?

Never	Less than Monthly	Monthly	Weekly	Daily or almost daily

6) How often during the last year 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

7) How often during the last year have you needed and alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?

Never	Less than Monthly	Monthly	Weekly	Daily or almost daily

8) How often during the last year have you had a feeling of guilt or remorse after drinking?

Never	Less than Monthly	Monthly	Weekly	Daily or almost daily

9) Have you or someone else been injured as a result of your drinking?

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

10) Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested you cut down?

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

Multidimensional State Boredom Scale (MSBS-15)

Please respond to each question indicating how you feel right now about yourself and your life. Please consider how you've felt, on average, over the past week, even if is different from how you usually feel.

Use the following choices: 1=Strongly Disagree, 2=Disagree, 3=Somewhat Disagree, 4=Neutral, 5=Somewhat Agree, 6=Agree, 7=Strongly Agree

1) I am lonely
2) Everything seems to be irritating me right now
3) I feel down
4) Time is dragging on
5) I am more moody than usual
6) I feel agitated
7) I feel empty
8) It is difficult for me to focus my attention
9) Time is moving very slowly
10) My attention span is shorter than usual
11) I want something to happen but I'm not sure what
12) I feel cut off from the rest of the world
13) Right now it seems like time is passing slowly
14) I feel like I'm sitting around waiting for something to happen
15) It seems like there's no one around for me to talk to.

Patient Health Questionnaire (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems
Use the following choices: 0=Not at all, 1=Several days, 2=More than half the days, 3=Nearly everyday.

1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling or staying asleep, or sleeping too much
4. Feeling tired or having little energy
5. Poor appetite or overeating
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down.
7. Trouble concentrating on things, such as reading the newspaper or watching television
8. Moving or speaking so slowly that other people could have noticed? Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual
9. Thought that you would be better off dead or of hurting yourself in someway

Demographic Questions

Please answer the following questions, the answers you provide here cannot be used to identify you, but will be used to analyse the data as a whole.

Age in years (Free Text)

Gender

Male, Female, Other

Ethnicity (Same as used in the Health Survey for England)

- White - British
- White - Irish
- White - Any Other, please write in.
- Mixed - White and Black Caribbean
- Mixed - White and Black African
- Mixed - White and Asian
- Mixed - Any Other, please write in.
- Asian or Asian British - Indian
- Asian or Asian British - Pakistani
- Asian or Asian British - Bangladeshi
- Asian or Asian British - Any Other, please write in.
- Black or Black British - Caribbean
- Black or Black British - African
- Black or Black British - Any Other, please write in.
- Chinese

- Any Other Ethnic Group - please write in

Marriage Status

Single, Living with Partner, Married, Civil Partnership, Divorced, Widowed

Education level (Please select the highest level you have achieved or the closest equivalent)

Equivalents were displayed in a separate, clickable tooltip option next to each choice

- GCSE – Grade D,E,F,G
- GCSE – Grade A*,A,B,C
- A-Level (or equivalent)
- Apprenticeship (or equivalent)
- Bachelors Degree (or equivalent)
- Masters level degree (or equivalent)
- Doctorate (or equivalent)

Living location

Urban (city area), Suburban (outside city), Rural (countryside).

Unemployment Status

Full time Employed, Unemployed and in receipt of Universal Credit, Other

(The following 3 questions will only be asked if response to previous question is 'Unemployed')

Length of time Unemployed.

Less than 1 month, 1-2 months …. 11-12 months, Over 1 year.

Was Alcohol linked to the reason you are currently unemployed, no matter how small a role it might have played? *(Optional Free Text)*

Yes, No, Rather not say

Appendix 5: Interview Schedule (Chapter 6; Study 3)

**NB – This was a guide for the interview, based on the participants' answers, the order may have changed, questions about clarifications or for further information may have been added, or some items may have been skipped.*

Purpose

To engage with the public and targeted groups in order to discover their thoughts and ideas on the current research. The questions will be asked in telephone interviews. Using this approach will give participants the freedom and safe environment to elaborate on their views and be honest and open with their opinions and thoughts.

Participants

Participants will be recruited through email addresses of participants who took part in the first part of the study. This will only use unemployed people who are actively seeking work.

Research Aims and Questions

- To gain deeper understanding of what causes unemployed people to drink and their experiences of unemployment, boredom, and alcohol use.
    - How drinking may change in relation to unemployment.
    - To gain an insight into experiences of boredom during unemployment.
    - How boredom and unemployment interact, and how they influence drinking levels.

Introduction

- Initial phone call to arrange best time to conduct the interview, advice on location to conduct the interview (somewhere safe and somewhere they feel they can speak freely and openly).
    - This will help build rapport with participant, meaning the second phone call (the interview) is likely to be more open.
- Researcher to confirm their name and where they are calling from i.e. Hello, this is Mike Jecks calling from the University of Liverpool.
- Researcher to confirm the name of the participant that they are speaking to i.e. could you please confirm your name?
- Thank them for taking part in the study and for making time to talk about their experience using the app.
- Ask if the participant has any questions about the interview before we start.
- State that the interview will take up to 45 minutes (but will probably last less) and check that this will be ok.
- Ask if this time is still convenient for the participant.
- Explain that the interview will be recorded with a Dictaphone/Smartphone app to ensure we capture all what you say correctly and that their responses will remain anonymous, and the recordings will be deleted once the conversation has been transcribed. Ensure them that any indefinable information will never be passed to DWP/ Job Centres or any organisation associated with benefits or housing. Ask if this is ok with them.

General Questions

1. Are you currently unemployed, actively seeking work, and claiming Universal Credit?
    a. **If yes:**
        i. How long have you been unemployed?
    b. **If no:**
        i. When was the last time you were unemployed and how long was it for?
2. How are you finding/ did you find unemployment and seeking work?
3. How does unemployed life compare to employed life?
    a. Any differences in mood, habits, eating, drinking etc.?
4. Do you feel being unemployed and seeking work has affected your health (mental or physical)?

Boredom Questions

I'm going to ask you some questions about boredom, by boredom I mean any feeling where you don't know what to do with yourself. Boredom can come in many different forms, so I want you to consider all of them when answering these questions.

5. Do you find yourself with more free time now, or does job hunting take up all the time?
    a. **If they experience more time**: How do you fill that free time?
6. Is there much variety in your day to day activities?
7. Since becoming unemployed, can you tell me how bored you get (if at all), and has this changed since being employed?
    a. **If yes:** How do you cope with this boredom?
    b. **If no:** How do you avoid getting bored?
8. Can you describe the type of boredom you experience while unemployed?
    a. **[Prompt]** Do you feel time goes slowly, are you fidgety, are you miserable, lack of focus etc?
9. **(If yes to 7)** Do you find that this boredom is different to boredom you have experienced when employed?
    a. **(If yes)** How so?
10. Has this boredom affected your mental health?
11. What would you find/have found helpful to alleviate the boredom?

Alcohol Questions

12. Do you drink alcohol?
13. How much do you drink a week, approximately?
    a. How do you think this compares with other people?
        i. Who are you thinking about, specifically, when you're comparing your drinking?
14. How do you plan your when you are going to have a drink?
    a. How does the routine compare to when you were employed?
    b. Has the amount of unplanned drinking changed since you were employed?
        i. **[Prompt]** By unplanned drinking, I mean drinking spur of the moment, as opposed to thinking "I'm going out on Friday, I'll be drinking"

15. Has the amount you drink changed compared to when you were employed?
    a. Did the way you drink (alone/with friends/small amounts every night/"binges" etc.) change when you became unemployed? If so, how?
16. Tell me about how your drinking relates with your mental health
    a. **[Prompt]** Does it affect your mental health? Is it caused by your mental health?
17. In what way, if any, does boredom affect your drinking?
18. What might motivate you to decrease your drinking?
    a. **[Prompt]** Such as calorie content, money spent, weight gained, equivalent value of non-alcohol items, health information, alternate activities, etc.
19. Do you know what the NHS guidelines about alcohol are?
    a. Can you tell me them?

Combined Issue Questions

20. Based on yours, and others, experiences, can you tell me about how you think drinking could differ in those seeking work compared to those working?
    a. **[Prompt]** Is there anything you think could cause a change? What and how does that change drinking?
21. What are your thoughts over boredom's role in alcohol consumption?
    a. **[Prompt]** Does it increase? Does it decrease? Does it change without increasing or decreasing?
22. What would you find/have found helpful to provide a better coping mechanism than drinking whilst seeking employment?

Open ended finishing question

23. Is there anything you'd like to add to what has already been asked, which you feel would be relevant to this interview? This can be about unemployment, boredom, alcohol use, or any combination of the 3.

End

- Thank participant for their time, and end the recording.
- Request address to send shopping vouchers.
- Provide debrief, explain the purpose of this study and remind participants of confidentiality and anonymity.
- Check participants are happy with the interview, and allow them to voice any potential concerns.
- Notify them that the full debrief sheet will be sent out with the vouchers in the post, but to contact researcher if they have any concerns in the meantime.

Appendix 6: Codebook for Thematic Analysis

Name	Description
Alternatives or Deterrents	
To Boredom	Participant talks about something which would be an alternative, or would deter them or others from being bored.
To drinking	Participant talks about something which would be an alternative, or would deter them or others from drinking
Authorities	How [authority] is perceived by the participant in relation to drinking/unemployment
Doctors	
DWP	
Government	
Police	
Awareness of NHS guidelines	Any response to question specifically about this, or any reference during interview to guidelines
Boredom	Participant mentions boredom
Linked to drinking	Any link between boredom and drinking
Linked to mental health	Participant links boredom to mental health
Repetitive	Participant makes reference to repetitive nature of boredom

Name	Description
Type of boredom	Participant describes their boredom (e.g. Time passing slowly, disinterest, low mood, fidgety etc.)
Other Causes	Participant has mentioned other causes of boredom which are not directly due to unemployment
Moods/Emotions	How mood and emotions relate to boredom – does not include comments regarding mental health.
Physical health	Relationship between boredom and physical health
Coping	
Coping with boredom	Participant makes reference on coping with boredom
Coping with unemployment	Participant makes reference on coping with unemployment
Drinking	
Amount	Participant talks about how much they drink/used to drink
Comparison	Participant compares their drinking to others
Drinking habits	Participant talks about their drinking habits
Other Causes	Participant mentions other causes which has led to a change in drinking
Finance	Participant mentions alcohol impacting finances
Linked to mental health	Any link between mental health and drinking.
Planning	How the participant plans to drink/ amount of unplanned drinking

Name	Description
Family	Impact on family, or family's thoughts on participant's drinking
Moods/emotions	How mood and emotions relate to drinking– does not include comments regarding mental health.
Physical health	Relationship between drinking and physical health
Personality…	Participant makes reference to their personality …
…in relation to drinking	
…in relation to unemployment	
Unemployment	
Difficulty finding suitable work	Participant mentions lack of work in their field, or work which is unsuitable
Identity	Participant makes reference to job being their identity/lack of identity in unemployment
Link to mental health	Participant linking change in mental health to unemployment
Linked to boredom	Any link between boredom and unemployment
Linked to drinking	Any link between drinking and unemployment (includes Drinking effects on job seeking)
Structure	Participant makes comments regarding lack of structure in life, or a change in structure in their life.
More Time	Participant mentions having more time due to unemployment – may or may not ref Boredom
Other impacts	Participant mentions other impacts to their lives as a result of unemployment (Not Boredom, or drinking)

Name	Description
Family	Impact on family, or family's thoughts on participant's unemployment
Moods/Emotion	How mood and emotions relate to unemployment– does not include comments regarding mental health.
Physical health	Relationship between unemployment and physical health

**Changelog

- "More Time" subcategory moved to Unemployment category. As more time does not necessarily mean an increase in boredom. Poor assumption.
- Misc Category and all subcategories removed. Notes to be made when wider determinants and important opinions are raised in text instead.
- Positive and Negative sub categories removed from Unemployment, Boredom, and Drinking
- "Physical effects" subcategory removed from Drinking. Now Physical health is its own category with Unemployment and Drinking sub-categories
- Added better descriptions of codes to codebook
- "Other causes" added to Boredom and Drinking, "Other Impacts" added to Unemployment to catch important wider determinants and opinions.

Appendix 7: Baseline items for Pilot RCT (Chapter 6; Study 4)

Demographic information

- How do you identify?
  - Male
  - Female
  - Other
- What is your highest level of educational qualification?
  - GCSE (or equivalent)
  - A-Level (or equivalent)
  - Apprenticeship (or equivalent)
  - Bachelors Degree (or equivalent)
  - Masters level degree (or equivalent)
  - Doctorate (or equivalent)
- What is your age? (Free text)
- Ethnicity
  - White - British
  - White - Irish
  - White - Any Other, please write in.
  - Mixed - White and Black Caribbean
  - Mixed - White and Black African
  - Mixed - White and Asian
  - Mixed - Any Other, please write in.
  - Asian or Asian British - Indian
  - Asian or Asian British - Pakistani
  - Asian or Asian British - Bangladeshi
  - Asian or Asian British - Any Other, please write in.
  - Black or Black British - Caribbean
  - Black or Black British - African
  - Black or Black British - Any Other, please write in.
  - Chinese
  - Any Other Ethnic Group - please write in
- Marriage Status
  - Single
  - Living with partner
  - Married
  - Separated
  - Divorced
  - Widowed
  - Rather not say

Employment questions

- How long have you been unemployed?
  - Less than 1 month
  - 1-3 months
  - 3-6 months

    - 6-9 months
    - 9-12 months
    - 12-18 months
    - 18-24 months
    - Over 2 years
- Which of these best matches your most recent long term employment?
    - Managers
    - Professional
    - Technicians and associate professionals
    - Clerical support workers
    - Service and sales workers
    - Skilled agricultural, forestry and fishery workers
    - Craft and related trades workers
    - Plant and machine operators, and assemblers
    - Elementary occupations
    - Armed forces occupations

Baseline and Post-Intervention/Control (1-month follow up) (Key outcome variables)

Alcohol Use Disorder Identification Test (AUDIT)

- How often do you have a drink containing alcohol?
    - Never
    - Monthly or less
    - 2 to 4 times a month
    - 2 to 3 times a week
    - 4 or more times a week
- How many drinks containing alcohol do you have on a typical day when you are drinking?
    - 1 or 2
    - 3 or 4
    - 5 or 6
    - 7,8 or 9
    - 10 or more
- How often do you have 6 or more drinks on one occasion
    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- How often during the last year have you found that your 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 year have you failed to do what was normally expected of you because of drinking?

    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- How often during the last year 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
- How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?
    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- How often during the last year have you had a feeling of guilt or remorse after drinking?
    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- Have your or someone else been injured as a result of your drinking
    - No
    - Yes, but not in the last year
    - Yes, during the last year
- Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested that your cut down?
    - No
    - Yes, but not in the last year
    - Yes, during the last year

Timeline Follow-back (TLFB)

Participants are asked to provide information on past drinking over the previous two weeks in units. A unit guide is provided to help them calculate.

Drinking motivations questionnaire (Boredom and coping only)

Based on previous research, boredom and coping drinking motivations were the only ones to differ between employed and unemployed participants. As a result, this intervention is aimed at reducing these motivations, so only these will be measured to ensure brevity of the study.

5-point likert scale from 1-Never/Almost Never to 5-Always/Almost Always

Coping items to be included:

- To forget your worries
- Because it helps when you feel depressed or nervous
- To cheer up when you are in a bad mood
- To forget about your problems

Boredom items to be included

- To stop time from dragging
- To give you something to focus your attention on
- To pass the time

Readiness to change

This will consist of 3 VAS scales ranging from 0 (negative response) to 10 (positive response).

1. Using the ruler shown below, indicate how important it is to you to change your drinking right now. If you think it's not at all important, you would circle 0. If you think it's very important, you would circle 10.

    a. 0 –Not at all – 10-Extrememly important
2. Using the ruler shown below, indicate how confident you are about making a change to your drinking. If you are not at all confident about making the change, you would circle 0. If you are very confident about making the change, you would circle 10.
    a. 0-None – 10-Complete confidence
3. Using the ruler below, indicate how ready you are to make a change to your drinking. If you are not at all ready, you would circle 0 and if you are already trying hard to make the change, you would circle 10.
    a. 0-Not at all – 10- Completely ready

***Participant then automatically redirected to Down Your Drink site, where they would be randomised.*

Appendix 8: NHS Text Shown to Control Group Participants. Correct as of: 11/07/2019 (Chapter 6: Study 4)

Taken from https://www.nhs.uk/conditions/alcohol-misuse/ on 11/7/19

Low-risk drinking advice

To keep your risk of alcohol-related harm low:

- Men and women are advised not to drink more than 14 units of alcohol a week on a regular basis
- If you drink as much as 14 units a week, it's best to spread this evenly over 3 or more days
- If you're trying to reduce the amount of alcohol you drink, it's a good idea to have several alcohol-free days each week
- If you're pregnant or trying to become pregnant, the safest approach is not to drink alcohol at all to keep risks to your baby to a minimum

The risk to your health is increased by drinking any amount of alcohol on a regular basis.

Am I drinking too much alcohol?

You could be misusing alcohol if:

- You feel you should cut down on your drinking
- Other people have been criticising your drinking
- You feel guilty or bad about your drinking
- You need a drink first thing in the morning to steady your nerves or get rid of a hangover

Someone you know may be misusing alcohol if:

- They regularly drink more than 14 units of alcohol a week
- They're sometimes unable to remember what happened the night before because of their drinking
- They fail to do what was expected of them as a result of their drinking (for example, missing an appointment or work because they're drunk or hungover)”

Appendix 9: Follow-up Assessment Items for Pilot RCT (Chapter 6; Study 4).

Questions match those Appendix 8, without demographic questions.

Alcohol Use Disorder Identification Test (AUDIT)

- How often do you have a drink containing alcohol?
    - Never
    - Monthly or less
    - 2 to 4 times a month
    - 2 to 3 times a week
    - 4 or more times a week
- How many drinks containing alcohol do you have on a typical day when you are drinking?
    - 1 or 2
    - 3 or 4
    - 5 or 6
    - 7,8 or 9
    - 10 or more
- How often do you have 6 or more drinks on one occasion
    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- How often during the last year have you found that your 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 year have you failed to do what was normally expected of you because of drinking?
    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- How often during the last year 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

- How often during the last year have you needed an alcoholic drink first thing in the morning to get yourself going after a night of heavy drinking?
    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- How often during the last year have you had a feeling of guilt or remorse after drinking?
    - Never
    - Less than monthly
    - Monthly
    - Weekly
    - Daily or almost daily
- Have your or someone else been injured as a result of your drinking
    - No
    - Yes, but not in the last year
    - Yes, during the last year
- Has a relative, friend, doctor, or another health professional expressed concern about your drinking or suggested that your cut down?
    - No
    - Yes, but not in the last year
    - Yes, during the last year

<u>Timeline Follow-back (TLFB)</u>

Participants are asked to provide information on past drinking over the previous two weeks in units. A unit guide is provided to help them calculate.

Drinking motivations questionnaire (Boredom and coping only)

Based on previous research, boredom and coping drinking motivations were the only ones to differ between employed and unemployed participants. As a result, this intervention is aimed at reducing these motivations, so only these will be measured to ensure brevity of the study.

5-point likert scale from 1-Never/Almost Never to 5-Always/Almost Always

Coping items to be included:

- To forget your worries
- Because it helps when you feel depressed or nervous
- To cheer up when you are in a bad mood
- To forget about your problems

Boredom items to be included

- To stop time from dragging
- To give you something to focus your attention on
- To pass the time

Readiness to change

This will consist of 3 VAS scales ranging from 0 (negative response) to 10 (positive response).

4. Using the ruler shown below, indicate how important it is to you to change your drinking right now. If you think it's not at all important, you would circle 0. If you think it's very important, you would circle 10.
    a. 0 –Not at all – 10-Extrememly important
5. Using the ruler shown below, indicate how confident you are about making a change to your drinking. If you are not at all confident about making the change, you would circle 0. If you are very confident about making the change, you would circle 10.
    a. 0-None – 10-Complete confidence
6. Using the ruler below, indicate how ready you are to make a change to your drinking. If you are not at all ready, you would circle 0 and if you are already trying hard to make the change, you would circle 10.
    a. 0-Not at all – 10- Completely ready

Employment

Single, yes/no question to see if there is a difference in employment rate between intervention and control group

Are you currently employed?

Acceptability – **Only available to Experimental group**

VAS scales for a variety of scenarios where the participant is asked if this alcohol brief intervention would be acceptable. A free text box underneath each scale will give participants the chance to very briefly explain their answer.

- Scenarios
    - An optional Alcohol Brief Intervention provided on the NHS website, available for anyone
    - An NHS app for smartphones which contains an alcohol brief intervention
    - A compulsory alcohol brief intervention to be completed whilst applying for universal credit
    - An optional alcohol brief intervention which can be completed at any point whilst claiming universal credit
    - Alcohol Brief Interventions as a compulsory part of a job application
    - Alcohol Brief Interventions as part of a new job induction
    - Alcohol Brief Interventions as part of regular performance management meetings in jobs

Appendix 10: Demographic Data for Pilot RCT (Chapter 6; Study 4).

Ethnicity	*Overall n (%)*	Intervention n(%)	Control n(%)
White-British	*55 (84.62%)*	27 (84.38%)	28 (84.85%)
White-Irish	*1 (1.54%*	1 (3.13%)	0 (0%)
White-Other	*3 (4.62%)*	2 (6.25%)	1 (3.03%)
Black or Black British - Caribbean	*2 (3.08%)*	0 (0.00%)	2 (6.06%
Mixed - White and Black Caribbean	*1 (1.54%)*	1 (3.13%)	0 (0.00%)
Mixed - Other	*2 (3.08%)*	1 (3.13%)	1 (3.03%)
Any Other Ethnic Group	*1 (1.54%)*	0 (0.00%)	1 (3.03%)

Marital Status	*Overall n (%)*	Intervention n(%)	Control n(%)
Single	*34 (52.31%)*	19 (29.38%)	15 (45.45%)
Living with Partner	*11 (16.92%)*	2 (6.25%)	9 (27.27%)
Married	*12 (18.46%)*	8 (25.00%)	4 (12.12%)
Divorced	*6 (9.23%)*	2 (6.25%)	4 (12.12%)
Widowed	*1 (1.54%)*	0 (0.00%)	1 (3.03%)
Civil Partnership	*1 (1.54%)*	1 (3.13%)	0 (0.00%)

Education Level (inc equivalent)	*Overall n (%)*	Intervention n(%)	Control n(%)
GCSE (Grade D-G)	*12 (18.46%)*	6 (18.75%)	6 (18.18%)
GCSE (Grade A*-C)	*17 (26.15%)*	10 (31.25%)	7 (21.21%)
A-Level	*15 (23.05%)*	6 (18.75%)	9 (27.27%)
Apprenticeship	*6 (9.23%)*	0 (0.00%)	6 (18.18%)
Bachelors degree	*9 (13.85%)*	7 (21.88%)	2 (6.06%)
Masters level Degree	*6 (9.23%)*	3 (9.38%)	3 (9.09%)

Gender	*Overall n (%)*	Intervention n(%)	Control n(%)
Male	*28 (43.08%)*	14 (43.75%)	14 (42.42%)
Female	*37 (56.92%)*	18 (56.25%)	19 (57.58%)

Previous Job Type	*Overall n (%)*	Intervention n(%)	Control n(%)
Manager	*10 (15.38%)*	5 (15.63%)	5 (15.15%)
Professional	*9 (13.85%)*	5 (15.63%)	4 (12.12%)
Clerical Support Worker	*14 (21.54%)*	8 (25.00%)	6 (18.18%)
Service and Sales Worker	*15 (23.08%)*	7 (21.88%)	8 (24.24%)
Skilled Agricultural, forestry, and fishing	*1 (1.54%)*	1 (3.13%)	0 (0.00%)
Craft and Related Trade	*7 (10.77%)*	3 (9.38%)	4 (12.12%)
Plant and Machine Operators	*5 (7.69%)*	2 (6.25%)	3 (9.09%)

Elementary Occupations	*1 (1.54%)*	1 (3.13%)	0 (0.00%)
Other/ None Applicable	*3 (4.62%)*	0 (0.00%)	3 (9.09%)

Appendix 11: PRISMA Checklist

Section and Topic	Item #	Checklist item	Section where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	3.1.4
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	N/A
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3.1.1 & 3.1.2
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3.1.4
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	3.2.2
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	N/A
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	N/A
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	3.2.2
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	3.2.2 & 3.2.3
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	3.2.2
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	3.2.1 & 3.2.2
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	N/A
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	N/A

Section and Topic	Item #	Checklist item	Section where item is reported
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	N/A
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	3.2.2
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	N/A
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	3.2.4
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	3.2.4
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	N/A
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	N/A
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	N/A
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	App 2
Study characteristics	17	Cite each included study and present its characteristics.	App 1
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	N/A
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	App 1
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	N/A
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	3.3.2, 3.3.3 & 3.3.4
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	3.3.3
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A

Section and Topic	Item #	Checklist item	Section where item is reported
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	N/A
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	N/A
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	3.4
	23b	Discuss any limitations of the evidence included in the review.	3.4.4
	23c	Discuss any limitations of the review processes used.	3.4.4
	23d	Discuss implications of the results for practice, policy, and future research.	3.4.2, 3.4.3 & 3.4.5
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	N/A
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	3.4.4
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	N/A
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Notes
Competing interests	26	Declare any competing interests of review authors.	N/A
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	N/A

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

Appendix 12: COREQ Checklist

COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

A checklist of items that should be included in reports of qualitative research. You must report the page number in your manuscript where you consider each of the items listed in this checklist. If you have not included this information, either revise your manuscript accordingly before submitting or note N/A.

Topic	Item No.	Guide Questions/Description	Reported on Page No.
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	5.2.1
Credentials	2	What were the researcher's credentials? E.g. PhD, MD	2.2.5.6
Occupation	3	What was their occupation at the time of the study?	2.2.5.6
Gender	4	Was the researcher male or female?	2.2.5.6
Experience and training	5	What experience or training did the researcher have?	N/A
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	5.2.2
Participant knowledge of the interviewer	7	What did the participants know about the researcher? e.g. personal goals, reasons for doing the research	5.2.2
Interviewer characteristics	8	What characteristics were reported about the inter viewer/facilitator? e.g. Bias, assumptions, reasons and interests in the research topic	2.2.5.6
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? e.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	5.2.3
Participant selection			
Sampling	10	How were participants selected? e.g. purposive, convenience, consecutive, snowball	5.2.1
Method of approach	11	How were participants approached? e.g. face-to-face, telephone, mail, email	5.2.1
Sample size	12	How many participants were in the study?	5.2.1
Non-participation	13	How many people refused to participate or dropped out? Reasons?	5.2.1
Setting			
Setting of data collection	14	Where was the data collected? e.g. home, clinic, workplace	5.2.2
Presence of non-participants	15	Was anyone else present besides the participants and researchers?	N/A
Description of sample	16	What are the important characteristics of the sample? e.g. demographic data, date	5.2.1
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	5.2.2 & App 5
Repeat interviews	18	Were repeat inter views carried out? If yes, how many?	N/A
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	5.2.2
Field notes	20	Were field notes made during and/or after the inter view or focus group?	5.2.2
Duration	21	What was the duration of the inter views or focus group?	5.2.3
Data saturation	22	Was data saturation discussed?	5.2.2
Transcripts returned	23	Were transcripts returned to participants for comment and/or	N/A

Topic	Item No.	Guide Questions/Description	Reported on Page No.
		correction?	
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	5.2.3
Description of the coding tree	25	Did authors provide a description of the coding tree?	App 6
Derivation of themes	26	Were themes identified in advance or derived from the data?	5.2.3
Software	27	What software, if applicable, was used to manage the data?	5.2.3
Participant checking	28	Did participants provide feedback on the findings?	N/A
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g. participant number	5.3
Data and findings consistent	30	Was there consistency between the data presented and the findings?	5.4
Clarity of major themes	31	Were major themes clearly presented in the findings?	5.3.1
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	5.3.6

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

Once you have completed this checklist, please save a copy and upload it as part of your submission. DO NOT include this checklist as part of the main manuscript document. It must be uploaded as a separate file.

Appendix 13: CONSORT Pilot Checklist

CONSORT 2010 checklist of information to include when reporting a pilot or feasibility trial*

Section/Topic	Item No	Checklist item	Reported in Section
Title and abstract			
	1a	Identification as a pilot or feasibility randomised trial in the title	6.2.1
	1b	Structured summary of pilot trial design, methods, results, and conclusions (for specific guidance see CONSORT abstract extension for pilot trials)	N/A
Introduction			
Background and objectives	2a	Scientific background and explanation of rationale for future definitive trial, and reasons for randomised pilot trial	6.1
	2b	Specific objectives or research questions for pilot trial	6.1.1
Methods			
Trial design	3a	Description of pilot trial design (such as parallel, factorial) including allocation ratio	6.2.1
	3b	Important changes to methods after pilot trial commencement (such as eligibility criteria), with reasons	None
Participants	4a	Eligibility criteria for participants	6.2.2
	4b	Settings and locations where the data were collected	6.2.1 & 6.2.4
	4c	How participants were identified and consented	6.2.2 & 6.2.4
Interventions	5	The interventions for each group with sufficient details to allow replication, including how and when they were actually administered	6.2.4, 6.2.5 & 6.2.6
Outcomes	6a	Completely defined prespecified assessments or measurements to address each pilot trial objective specified in 2b, including how and when they were assessed	6.2.8

	6b	Any changes to pilot trial assessments or measurements after the pilot trial commenced, with reasons	6.2.7
	6c	If applicable, prespecified criteria used to judge whether, or how, to proceed with future definitive trial	N/A
Sample size	7a	Rationale for numbers in the pilot trial	N/A
	7b	When applicable, explanation of any interim analyses and stopping guidelines	N/A
Randomisation:			
Sequence generation	8a	Method used to generate the random allocation sequence	6.2.4
	8b	Type of randomisation(s); details of any restriction (such as blocking and block size)	6.2.1
Allocation concealment mechanism	9	Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned	6.2.1
Implementation	10	Who generated the random allocation sequence, who enrolled participants, and who assigned participants to interventions	N/A
Blinding	11a	If done, who was blinded after assignment to interventions (for example, participants, care providers, those assessing outcomes) and how	N/A
	11b	If relevant, description of the similarity of interventions	N/A
Statistical methods	12	Methods used to address each pilot trial objective whether qualitative or quantitative	6.2.8
Results			
Participant flow (a diagram is strongly recommended)	13a	For each group, the numbers of participants who were approached and/or assessed for eligibility, randomly assigned, received intended treatment, and were assessed for each objective	6.2.2 (Fig 8)
	13b	For each group, losses and exclusions after randomisation, together with reasons	6.2.2 (Fig 8)
Recruitment	14a	Dates defining the periods of recruitment and follow-up	N/A
	14b	Why the pilot trial ended or was stopped	N/A

Baseline data	15	A table showing baseline demographic and clinical characteristics for each group	6.3.1
Numbers analysed	16	For each objective, number of participants (denominator) included in each analysis. If relevant, these numbers should be by randomised group	6.3.1
Outcomes and estimation	17	For each objective, results including expressions of uncertainty (such as 95% confidence interval) for any estimates. If relevant, these results should be by randomised group	6.3.2, 6.3.3
Ancillary analyses	18	Results of any other analyses performed that could be used to inform the future definitive trial	6.3.4, 6.3.5
Harms	19	All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)	N/A
	19a	If relevant, other important unintended consequences	N/A
Discussion			
Limitations	20	Pilot trial limitations, addressing sources of potential bias and remaining uncertainty about feasibility	6.4.4
Generalisability	21	Generalisability (applicability) of pilot trial methods and findings to future definitive trial and other studies	6.4.4
Interpretation	22	Interpretation consistent with pilot trial objectives and findings, balancing potential benefits and harms, and considering other relevant evidence	6.4.4
	22a	Implications for progression from pilot to future definitive trial, including any proposed amendments	6.4.4
Other information			
Registration	23	Registration number for pilot trial and name of trial registry	N/A
Protocol	24	Where the pilot trial protocol can be accessed, if available	N/A
Funding	25	Sources of funding and other support (such as supply of drugs), role of funders	Notes
	26	Ethical approval or approval by research review committee, confirmed with reference number	6.2.9

Citation: Eldridge SM, Chan CL, Campbell MJ, Bond CM, Hopewell S, Thabane L, et al. CONSORT 2010 statement: extension to randomised pilot and feasibility trials. BMJ. 2016;355.

*We strongly recommend reading this statement in conjunction with the CONSORT 2010, extension to randomised pilot and feasibility trials, Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmacological treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming: for those and for up to date references relevant to this checklist, see www.consort-statement.org.