

The Social Norms Approach to Alcohol Misuse Prevention: Studies of
Intervention and Methodology Among Scottish Secondary School Pupils and
University Students

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Author's Declaration

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Previously published work

Parts of Chapter 4 (Study Two) have been published as –

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My role as first author involved study conceptualisation, analysis and writing up. The second author, as my first supervisor, was involved in consultation regarding study conceptualisation and manuscript preparation. The third author, as a non-academic supervisor, was involved in discussion regarding study conceptualisation and manuscript preparation. A copy of the article can be found in Appendix I.

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The first author, as my non-academic supervisor, was involved in study conceptualization, project management and writing up. My role, as second author, involved consultation regarding study conceptualisation, analysis and manuscript preparation. The third author, as my first supervisor, was involved in consultation regarding study conceptualisation, advice regarding analysis and manuscript preparation. The fourth author was involved in discussion regarding study conceptualisation and manuscript preparation. A copy of the article can be found in Appendix J.

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ABSTRACT

Early intervention in schools to tackle alcohol problems is a widespread practice, despite patchy evidence of effectiveness. The ‘Social norms’ approach emerges from studies showing overestimation of ‘others’ consumption/approval of alcohol use amongst students. To correct such *misperceptions* of drinking norms, ‘true’ norms are fed-back in order to modify perceptions, thus relieving possible social pressure to conform to the misperceived norms. This thesis comprises five studies addressing outstanding concerns with the social norms approach. *Study One* evaluated a two-year social norms intervention in two Scottish secondary schools and reported little effect of the intervention on pupils’ alcohol-related perceptions, but several positive behavioural outcomes relative to controls. The failure to modify perceptions means positive behavioural outcomes could not be attributed to distinctive elements of a social norms intervention. However methodological and design limitations mean this may indicate absence of good evidence rather than good evidence of ineffectiveness. Studies Two through Five examined a central tenet of social norms theory – the overestimation of peer norms. Thus, in *Study Two*, secondary pupils reported more extreme alcohol-related perceptions amongst peers when questioned *conjointly* on their own *and* peers’ behaviour and attitudes, versus the peer target in isolation. *Study Three* sought to replicate existing research and found that University of Strathclyde students reported a range of other target groups as drinking more heavily than themselves, paving the way for two further, more focussed, studies. In *Study Four*, heavier consumption among students recruited in a bar environment was found compared to students in a setting remote from this environment, challenging the usual self-other discrepancy effect. In *Study Five*, university students’ responses were also found to be sensitive to questionnaire structure and differed between the two contexts. These findings demonstrate the importance of the ‘where’ (environmental context and setting) and the ‘how’ (questionnaire structure) of data collection within social norms paradigms with each shown to

play an important role in the nature of the data obtained. These findings ask important questions of social norms theory and interventions.

CHAPTER 1: ALCOHOL USE, RELATED HARMS AND PREVENTION

1.1 Alcohol use and misuse in Britain

Alcohol use is widespread among the British population. Data collected through the General Lifestyle Survey (GLF) found that almost nine in every ten men and women aged 16 years and over consumed alcohol during 2009 (S. Robinson & Harris, 2011). In the same year two thirds of men and half of women reported consuming alcohol during the week preceding the survey, with average weekly consumption standing at just over 16 units for men and 8 units for women.

The World Health Organisation describes alcohol misuse as the use of alcohol for a purpose not consistent with legal or medical guidelines (Babor, 1994). 'Sensible' drinking guidelines have suggested that men should not regularly exceed 3-4 units per day or 21 units per week, and women 2-3 units per day or 14 units per week (Scottish Government, 2009). The Prime Minister's Strategy Unit and several more recent reports from Britain's routine population surveys have defined patterns of consumption such as 'binge' or 'heavy' drinking as more than twice the recommended daily levels, requiring consumption to exceed 8 units for men and 6 units for women on a single occasion (Corbett et al., 2010; PMSU, 2004; S. Robinson & Harris, 2011).

Per head of the known drinking population, the total volume of alcohol reported in population surveys such as the GLF remains within current guidance not to exceed 21 units per week for men and 14 units per week for women. However, alcohol intake averaged across all members of a drinking population conceals heavier and potentially more harmful patterns of alcohol consumption that may constitute misuse. The 2009 wave of the GLF found more than a quarter of male drinkers exceeded 21 units on an average week in the year preceding the survey, with the proportion doing so increasing with age up to 65 years (S. Robinson & Harris, 2011). Women were less likely than men to exceed weekly

guidelines with roughly a fifth exceeding 14 units during an average week; however, unlike men, younger women were more likely to exceed the upper limits than older women.

When queried on their heaviest drinking day during the preceding week it was common for male and female GLF respondents to exceed recommended daily drinking guidelines and to drink heavily (S. Robinson & Harris, 2011). Although there was a trend for women to exceed recommended daily drinking guidelines at younger ages, 16-24-year-old men were more likely to drink within recommended guidelines than older men, and were also less likely to drink heavily than 25-44 year olds, but not 45-64 year olds.

Alcohol use is also commonplace among younger members of the population. The results of the 2008 Scottish Student Adolescent and Lifestyle Survey (SALSUS; Black, MacLardie, Mailhot, Murray, & Sewel, 2009) found half of 13-year olds and eight out of ten 15-year-old school pupils in Scotland had consumed alcohol to some degree during their life, and one in ten 13-year-olds, and one in three 15-year-old pupils had done so the week preceding the survey

There currently exist no sensible drinking guidelines for those under 18 years of age (e.g., National Institute for Health and Clinical Excellence, 2007). However, subjective reports of intoxication provide a crude measure of misuse among young people. The 2007 wave of the European School Survey Project on Alcohol and Other Drugs (ESPAD; Hibell et al., 2009) found half of 13-year-old pupils who had ever consumed alcohol 'had never felt really drunk', a fifth had 'felt really drunk once', and that these frequencies increased among 15-year-olds. Using a subjective rating scale 15-16 year-old pupils from the U.K also provided some of the highest self-estimated levels of intoxication of 32 participating countries.

Although subjective measures of intoxication can serve as proxies for alcohol misuse, they are likely to be influenced by various contextual factors including

cultural acceptability and perceived approval of alcohol use and drunkenness. Aside from subjective measures of intoxication, other indicants of misuse include 15-year-old SALSUS respondents reporting weekly consumption at levels equivalent to the upper weekly limit for adults (Black et al., 2009). Just under half of 13-year olds and three quarters of 15-year olds reported consuming alcohol at a level defined as a 'binge'¹ by America's National Institute on Alcohol Abuse and Alcoholism (2004a).

The Health Behaviour in School-Aged Children survey (HBSC; Currie et al., 2011) provides information on trends in alcohol misuse among youth. Administered on a quadrennial basis between 1990 and 2010, results indicate an increasing trend for 15-year-old Scottish girls to misuse alcohol. While, in 1990, boys were more likely than girls to report having been drunk at least twice, by 2010 boys were less likely to have been drunk than in 1990, and were also less likely than girls to have been drunk.

1.1.1 The Scottish context

The report of the 2009 wave of the GLF states there were no differences in average weekly consumption among Britain's constituent countries (S. Robinson & Harris, 2011). Some support for this conclusion can be found in data obtained from the 2009 Scottish Health Survey (SHeS; Corbett et al., 2010), where comparable levels of intake were found among *all* drinkers aged 16 years and over as to the GLF (i.e., the 17.5 and 7.8 units reported by men and women in the Scottish survey are broadly comparable to the 16.3 and 8 units reported by the broader British sample of the GLF). When specific subgroups are compared, however, a heavier pattern of consumption emerges from the SHeS

¹According to the National Institute of Alcohol Abuse and Alcoholism a 'binge' is 'a pattern of drinking alcohol that brings blood alcohol concentration (BAC) to 0.08g per cent or above. For adults, this corresponds to a pattern of five or more drinks (male), or four or more drinks (female) in about 2 hours' (NIAAA, 2004a, p. 3). The 2008 wave of the SALSUS and 2007 wave of the ESPAD use criteria of five or more drinks in a row. A lack of information on the duration of each episode makes it unclear whether ESPAD or SALSUS respondents reached the 0.08g threshold, but the ESPAD authors (Hibell et al., 2009) argue 15-16-year old pupils consuming five or more drinks in a row would be likely to experience intoxication.

than the GLF. For example, the 15.9 and 5.4 units reported by 16-24-year-old men and women during the 2009 wave of the GLF are much lower than the 22.6 and 13.9 units reported by men and women of the same age during the 2008/2009² waves of the SHeS. The proportion of 16-24 year old men and women exceeding recommended daily drinking guidelines or drinking heavily in the Scottish survey is also roughly 10% higher than the British average obtained via the GLF.

Although these data suggest differences in the drinking patterns of young British and Scottish drinkers, population survey estimates are sensitive to variation in methodology and caution should be exercised when comparing across surveys (McAlaney & McMahon, 2006). In 2006, for example, the GLF updated factors used to convert survey responses to standard units of alcohol to reflect contemporary alcoholic drink strengths and volumes described by the Office For National Statistics (ONS; Goddard, 2007). From 2008 the SHeS did likewise but deviated from ONS guidance in the range of options available for reporting consumption of alcopops. Specifically, ONS guidance states “Alcopops do not currently vary greatly in strength (mainly because the ABV is capped at 5.5%), and a conversion factor of 1.5 units per bottle or can is valid.” (Goddard, 2007, p. 11). However, SHeS respondents specified smaller on-sale (275ml) or larger off-sale (700ml) volumes of alcopop, carrying conversion factors of 1.5 and 3.5 units, “to reflect the fact they are now commonly available in this volume’ (Corbett et al., 2009, p. 61). Alcopops are popular among younger drinkers (Hibell et al., 2009), thus different conversion factors may affect estimates for these groups in particular.

Data from samples of on- and off-trade outlets provide support for elevated levels of drinking in Scotland. These figures estimated sales of 21.8 units of alcohol per head of the British drinking population (aged 16 years and over) and 25.9 units per head in Scotland (M. Robinson, Catto, & Beeston, 2010).

²Due to small samples sizes 2008 and 2009 data were pooled for subgroup comparisons by age.

Alcohol sales thus support a heavier pattern of consumption in Scotland per head of the drinking population but, as with all sales data, whether higher sales are accounted for at the whole- or sub-population level is unknown.

1.2 Costs of alcohol

1.2.1 Health

Alcohol is a substantial burden to health. The World Health Organisation (WHO, 2004) identified alcohol as the third largest risk factor to health in developed countries. Rehm and colleagues (Rehm et al., 2010; Rehm et al., 2003) report that the average volume of alcohol consumed plays a role in the development of a range of chronic health conditions including liver cirrhosis, coronary heart disease, tuberculosis, diabetes, stroke and various cancers. In most cases increasing levels of consumption were found to predict increased risk, though, in some cases (e.g., coronary heart disease), light to moderate consumption was associated with decreased risk.

Linkage of 1995, 1998 and 2003 SHeS responses to NHS event records indicates an increased risk of alcohol-related hospital admission for Scottish males consuming at least one unit in a normal week and eight units on a single occasion in the past week. Female alcohol consumers regularly drinking at least seven units a week are also at an increased risk for hospitalisation (McDonald et al., 2009). Further analysis (Lawder et al., 2011) using 1998 SHeS linked responses also found an increased risk of hospitalisation for moderate, heavy, and excessive relative to light drinkers.

Using International Classification of Disease -9 and -10 criteria, the Office for National Statistics reported 8,664 (5690 male) alcohol-related deaths in the U.K during 2009. Based on these figures the incidence of alcohol-related mortality is 12.8 per 100,000 of the population, but is far greater among older men and women (55-74 years) where the figures are 41.8 and 20.8 per 100,000

members of the population (ONS, 2011).

Mortality attributable to cirrhosis of the liver is an important indicator of alcohol-related harm. Between 1955 and 2001 mortalities attributable to cirrhosis of the liver increased fivefold among men in England and Wales, sixfold among males in Scotland and fourfold among women. The rapid increase in cirrhosis mortality places Scottish men among the top 3 of 12 European comparison countries and Scottish women above English males at a time (i.e., 1997-2001) when cirrhosis mortalities in most European countries are declining (Leon & McCambridge, 2006).

Certain patterns of consumption among younger members of the population have also been identified as risk factors for the development of later more problematic patterns of alcohol use. Bonomo and colleagues (2004) collected information on the drinking patterns of 2000 Australian youths aged 14-15 years and followed them up on seven occasions until 20-21 years of age. After controlling for relevant demographic characteristics, 20-21-year-old 'current frequent drinkers' (defined as consumption of alcohol >3 times during the preceding week) with a history of frequent drinking, were 2-3 times as likely to meet DSM IV dependency criteria as 'current frequent drinkers' without a history of frequent use. In contrast, patterns of binge drinking did not predict later dependency. While Bonomo et al's findings provide valuable information on the drinking trajectories of young people, the criteria used to assess dependency status (DSM IV criteria included in the Composite International Diagnostic Interview) resulted in a classification of dependence for more than half of those drinking three times a week at age 20-21 years. Such a high prevalence of young drinkers classified as dependent may suggest conceptual limitations of the 'dependence' disorder or problems with its operationalisation in this sample of young people.

Other research by Hingson and colleagues (2006) examined age at drinking onset and its relationship with DSM IV alcohol dependency criteria in a large

American dataset (n = 43,093). After controlling for demographic and historical factors the authors found that those delaying drinking onset until 21 years of age reduced their likelihood of lifetime dependence compared to those who drank by 14 years of age. Grant and Dawson (1997) also examined the role of age at onset in the development of later alcohol use problems in another large American sample. The authors report that, from 12 years (or younger) up until 25 years (or older), the odds of meeting DSM IV lifetime alcohol dependence or abuse criteria decreased by 14% and 8% with each year of delayed onset.

In light of these findings, focusing efforts to delay the age at which people start to consume alcohol would seem a logical step in harm prevention. However, it should be borne in mind that the causal factors involved in age at onset and later problems are not well defined at this time, and delaying age of onset of alcohol use may not necessarily deter physical or psychological harm. Grant et al (1997) acknowledge that there is a need to more closely examine whether deterring age of alcohol use onset leads to iatrogenic effects such as increased use of illicit substances. Moreover, both Hingson et al (2006) and Grant et al (1997) used cross-sectional survey methodologies, requiring participants to recall their first use of alcohol. However, it is not clear that this information is readily accessible to individuals who have not experienced alcohol-related problems. For these individuals age of onset may be of little personal interest whereas among those who have encountered significant problems due to their drinking, age of onset may be a key life event and the subject of extensive personal reflection. There is therefore a risk that such data may be prone to errors in recall (Greenfield & Kerr, 2008).

The health-related outcomes described so far are typically a result of long-term misuse of alcohol by a minority of individuals. In comparison, acute harms are usually specific to a period of intoxication and may include those harms resulting from accidental or intentional injury. Harms of this form are likely to be experienced by a wider range of drinkers and are particularly relevant when discussing the risk of alcohol to younger individuals, where prior exposure to

alcohol has been more limited and onset of chronic alcohol-related illness less likely. Examples of acute harms include an increased risk of physical injury (Gill, 2002; Wechsler, Davenport, Dowdall, & Moeykens, 1994), engaging in risky sex (Gill, 2002) and death (Paljärvi, Mäkelä, & Poikolainen, 2005). Intoxicated individuals are also more often the victim or perpetrator of violent acts (Wells, Graham, & Speechley, 2005) and property damage (Gill, 2002).

Although not directly related to health, other harms identified by researchers that bear directly to younger member of the population have focused on school pupils and university and college students. Harms of this type may be of limited relevance to populations outside of education. U.S college system research cites students as being at increased risk of poor academic performance if they drink heavily (Perkins, 2002b), while one in ten U.K survey respondents reported poor academic performance in school during the past year because of their alcohol use (Hibell et al., 2009). Reviewing U.K university student drinking, Gill (2002) cautioned that retrospective self-reports of the negative effects of heavy drinking on academic performance may be motivated by self-interest among poorly performing students. Other consequences of alcohol use reported by school children include accidents, injuries, friendship problems and problems to do with sex or delinquency (Black et al., 2009; Hibell et al., 2009). University students in New Zealand have also reported experiencing second-hand effects from others' drinking with an elevated risk among heavy drinkers (Langley, Kypri, & Stephenson, 2003).

1.2.2 Societal

In addition to the significant risks posed to the individual by alcohol misuse, the societal burden is substantial. Population attributable fractions estimate the proportion of cases of a wide range of health conditions for which alcohol is known to be a wholly or partly underlying cause. This method of calculating the burden of alcohol to the healthcare system leads to higher estimates of alcohol-related hospitalisations than routinely collected hospital

discharge data. This is because there is no requirement for health professionals to record alcohol as an underlying cause at diagnosis. The most recent figures based on population attributable fractions are from 2003 and show that 1 in 20 hospitalisations in Scotland involved alcohol as a wholly or partly underlying cause (ISD, 2009).

Alcohol is also a significant factor in child and family social work (York Health Economics Consortium, 2010), and substantial numbers of children are affected by the alcohol misuse of others in the home (PMSU, 2004). Data taken from the 2006 Scottish Crime and Victimisation Survey (Brown & Bolling, 2007) found just under half of survey respondents believed the perpetrator to be under the influence of alcohol, which rose to almost two thirds of victims of domestic abuse.

An analysis of the societal costs of alcohol misuse in Scotland during 2007 by the University of York's Health Economics Consortium (2010) considered the economic burden of misuse with respect to some of the different aspects of society already described. Direct and indirect costs associated with each were calculated according to the most conservative and least conservative models available. These produced estimated costs to health care services of between £143.6 million and £392.8 million; social care services, £114.2 - £346.8 million; crime, £462.5 - £991.7 million; lost productive capacity to the Scottish economy, £725.2 - £1,006.1 million; and the wider societal costs of alcohol misuse (i.e., loss of contribution to the economy by non-workers, retirees and the social and human costs), £1,031.1 - £1,898 million. In sum, the financial burden of alcohol misuse to Scottish society was estimated to lie between £2.48 billion and £4.68 billion. Differences in methodology and the year for which financial burdens were estimated mean figures available for England are not directly comparable, however, those figures which are available demonstrate a substantial alcohol-attributable cost to society of between £18.52 billion and £20 billion during 2001 (PMSU, 2003).

1.2.3 Benefits

A balanced picture of alcohol's role in modern society requires consideration of the positive contribution that alcohol can make at individual and societal levels.

Alcohol makes a substantial contribution to the U.K economy. The Prime Minister's Strategy Unit reports the drinks industry to be worth up to £30 billion annually (PMSU, 2004), while recent data on consumer trends indicates that U.K households spend £15 billion on alcohol or roughly a fifth of all household food and drink expenditure (ONS, 2010). Duties paid on alcohol during 2009-10 also generated £9 billion worth of revenue for the U.K government, equivalent to 2% of all tax revenue (Collis, Grayson, & Johal, 2010). A report prepared for the British Beer and Pub Association (Oxford Economics, 2009) found that at least 668,000 people were directly employed in the production and retail of on- and off-trade alcohol markets in 2007, rising to 1.8 million people when wider supply chains are considered.

There is substantial evidence highlighting the positive expectancies held by drinkers about their own alcohol use (Young, Connor, Ricciardelli, & Saunders, 2006). For instance, a majority of U.K school children anticipate positive consequence from drinking alcohol, far more than anticipate negative consequences (Hibell et al., 2009). After separately summing five positive and five negative expectancy items, and comparing these across ESPAD countries, the proportion of U.K pupils expecting positive consequences exceeded the average in all cases while their ratings of negative expectations exceed none (Hibell et al., 2009). Moreover, notwithstanding *expected* positive outcomes from alcohol use, U.S college students reportedly *do* experience a wide range of positive outcomes. These positive experiences were reported to occur more frequently and more intensely than negative experiences and were more strongly linked to future drinking intentions (Park, 2004).

1.3 Alcohol-misuse prevention

Although moderate alcohol use can make a positive contribution to people's lives and society, the increased risks to mind and body associated with patterns of heavier consumption make a case for attempting to reduce or prevent misuse and related harms. Staulcup and colleagues (1979) note three levels of prevention within the public health model, Primary: "projects that have services directed toward reducing the incidence or prevalence of alcohol misuse and related problems or influencing knowledge, attitudes, and behaviours related to drinking"; Secondary: "projects involved in the early identification of, referral and treatment of persons with alcohol problems", and; Tertiary: "treatment of problem drinkers and/or alcoholics" (cited in: Foxcroft, Ireland, Lister-Sharp, Lowe, & Breen, 2002, p. 3). As the majority of alcohol-related harm and cost is not incurred through the consumption of a minority of drinkers with significant alcohol-related problems (Kreitman, 1986; Skog, 1999), but through the normalised misuse of alcohol by substantial proportions of the wider population, preventive efforts frequently take place at the primary level 'universally' targeting entire populations to intervene before the onset of harm.

According to Schaps and colleagues (1981) "the clients of primary prevention are typically total populations within schools, age levels, neighbourhood etc." (cited in: Foxcroft et al., 2002, p. 4). Interventions are therefore frequently delivered in schools through drug education or, in some cases, to communities and larger populations through public health campaigns. Schools in particular have been a popular focus given the ability to reach a large population of young people in an environment conducive to learning. This is reflected in the fact that, in the U.K at least, drug education comprises part of the curriculum in Personal and Social Education (PSE)/Personal and Social Health Education (PSHE) and sciences classes. The Advisory Council on the Misuse of Drugs (ACMD; 2006) notes that the vast majority of primary and secondary schools in the U.K provide some form of drug education and in Scotland this is mandatory.

It seems likely that efforts to prevent alcohol misuse in U.K schools will continue for the foreseeable future. Current Scottish Government (2009) policy outlined in *Changing Scotland's Relationship With Alcohol: A Framework for Action* includes an 'action' to continue to work with partners at local and national level to improve substance misuse education. The National Institute for Health and Clinical Excellence (2007) also recommends providing drug education within the secondary school curriculum.

The ACMD (2006) note the publication of 1000 evaluations of initiatives to prevent substance misuse, suggesting a wide variety of approaches. Foxcroft and colleagues' (2002) narrative Cochrane review of 56 of the more rigorously conducted interventions to prevent alcohol misuse in young people found the wide variety of interventions prevented pooling studies for meta-analysis. At a broad level of abstraction, however, prevention efforts have often been grouped according to their underlying theoretical approach or mode of delivery. The following sections are intended to provide an overview of some of the most widely used of these preventive approaches with a particular focus on school-based prevention, together with any basic theoretical distinctions and a selective review of evidence³. The quantity of published research available prevents a comprehensive review of this literature and, where possible; reviews, reviews of reviews, and meta-analytic findings provide a context for summarising and quantifying available evidence and are used as key sources of evidence. Specific prevention programmes of particular note are also discussed.

³ Some approaches target more than a single substance and the effects of an intervention are evaluated through composite outcomes. Wherever possible, alcohol-specific outcomes are reported. However, if they are absent from published research reports then general drug-use outcomes are reported provided they remain relevant to the prevention of alcohol misuse.

1.3.1 Information-based preventive approaches

Early attempts to prevent alcohol misuse focused on the provision of factual information in order to increase awareness of any risks to users. Information-based approaches have been delivered through various media and settings including classroom programmes, mass media and product health label warnings. Generally speaking, information-based approaches are characterised by rationalist assumptions that, upon being made aware of the potential risks or consequences of alcohol use, people will alter their own alcohol-related behaviours and attitudes to avoid exposing themselves to those risks (Davies & Coggans, 1992).

Available evidence is generally not supportive of information-based approaches as an effective method of preventing alcohol misuse. Anderson's (2007) review of the literature noted that, although information-based approaches in schools are often able to increase knowledge and produce changes in self-reported attitudes, behavioural change is typically elusive. Mistral's (2009) review reached similar conclusions and Coggans, Henderson and Davies (1991) found this was specifically the case in the Scottish secondary education system. Aside from having little positive impact on drug using behaviours, Paglia and Room (1999) note that well-meaning and intuitively appealing programmes with a focus on factual content have, in a select number of cases, aroused curiosity leading to increased experimentation.

Large-scale public information and marketing campaigns are also limited in impact. The Prime Minister's Strategy Unit (2004) note there is scant evidence that warning labels detailing the unit content of alcoholic beverages have made any difference to alcohol intake in England, while Mackinnon and colleagues (2000) found no effect of warning labels on U.S adolescents' alcohol use five years after their introduction. A study by Austin and colleagues (1999) also found that frequent drinkers in a U.S college sample perceived that alcohol-related public service announcements were less effective than did less frequent

drinkers. If the perceptions of Austin et al's heavy drinkers are taken at face value this would seem to suggest that information campaigns have lacked credibility with a key population group.

Although available evidence is generally not supportive of information-based approaches as effective methods of changing health behaviours, their popularity has led notable experts to comment: "Education and public information: popular but ineffective. The first recourse in case of public concern about rates of alcohol problems in a society is usually to enhance school-based education and public information campaigns." (Room, Babor, & Rehm, 2005, p. 525).

Davies and Coggans (1992) suggest information-based approaches hold intuitive appeal due to a generally poor understanding of the causal factors involved in alcohol misuse, combined with a degree of moral judgment about 'good' and 'bad' behaviour. These authors argue the belief that individuals misuse alcohol because they lack important information on the associated risks and consequences is misguided, and such approaches are only (intuitively) persuasive when a moral evaluation of alcohol as socially-disapproved-of-behaviour is held. Were individuals to act in a manner which entails some limited degree of risk but, importantly, their behaviour is deemed culturally valuable there would be little expectation of behavioural change following exposure to information on harms. In the absence of a moral evaluation of what constitutes 'good' and 'bad' behaviour the appeal of information-based approaches is greatly reduced.

While information-based approaches are unlikely to produce meaningful behavioural effects that lower rates of alcohol misuse, provided that unrealistic expectations are not held with respect to their impact, there remains a case for providing accurate and credible information that will lead to a more informed and risk-aware drinking population (Advisory Council on the Misuse of Drugs, 2006). Room and colleagues note, however, the substantial gap in commitment

and funds available to health marketers in comparison to the substantial resources at the disposal of the alcohol industry:

unless governments are willing to proceed with intensive counter-advertising campaigns, which the alcohol industry will interpret as a frontal attack, the most promising path forward for public information campaigns in the alcohol field is rather in terms of building support for implementing proven prevention strategies. (Room et al., 2005, p. 526).

1.3.2 Social influence preventive approaches

Alternative strategies to the intuitively appealing, yet largely ineffective, information-based approaches include those focussing on social influence and life skills. Preventive efforts focusing on social influences are based around Bandura's (1977) social learning theory and maintain that drug use is a result of various drug-related cognitions, attitudes and beliefs, involving: modelling, imitation and reinforcement of drug-related behaviour. As a result social influence approaches seek to raise awareness and develop skills to attenuate the social pressures to use drugs and are often delivered in the school environment.

Botvin (2000) described the three major components of social influence approaches: 'psychological inoculation' is analogous to infectious disease inoculation and involves initial exposure to weak pro-drug social influences to encourage and develop tolerance or immunity to later more potent real-world social influences; 'normative education' aims to correct the frequently held misconception that drug use among peers is widespread and accepted in order to relieve perceived social pressure to conform to those exaggerated perceptions; 'resistance skills' training proceeds on the basis that adolescents lack both the confidence and skills to resist pro-drug social influences. In addition, 'life skills' approaches retain the focus on social influence but target a

broader range of generic personal and social skills including assertiveness, self-esteem, social efficacy, social anxiety, influenceability and locus of control (Coggans, Cheyne, & McKellar, 2003).

1.3.2.1 Empirical evidence

Contrary to the atheoretical information-based approaches, social influence approaches are theory driven approaches to prevention. Moreover, several reviews have concluded that social influence approaches produce demonstrably greater impact than those providing information. Hansen (1992) reviewed substance use prevention programmes evaluated between 1980 and 1990, finding social influence approaches to have a positive behavioural effect in 63% of reported outcomes and those including life skills to have a positive effect in 74%. More recent meta-analyses and reviews of reviews have also found social influence approaches to perform favourably relative to information-only approaches (Cuijpers, 2002; Tobler et al., 2000)⁴.

Although social influence approaches tend to outperform those based on providing information, careful and rigorous evaluations carried out into the quality and effectiveness of several prominent social influence prevention programmes have produced mixed results.

Drug Abuse Resistance Education (DARE) is a high-profile social influence programme developed by the Los Angeles Police Department in the 1980s for delivery in the classroom. The DARE programme was delivered by uniformed police officers trained to teach young people the skills they need to recognise and resist pro-drug social influences. Although DARE provided information on drugs and sought to enhance decision-making skills and bolster self-esteem, the primary focus was on teaching resistance skills and the programme became synonymous with the 'just say no' approach. While DARE was heavily promoted

⁴ The robustness of these meta-analytic and review findings will be returned to later in this chapter.

and widely used across schools in the U.S there is little evidence of a positive impact on drug use. One meta-analysis of eight DARE evaluations found the programme tended to produce short-term effects on knowledge and social skills, small effects on self-esteem and attitudes towards police and drugs, but little substantive impact on actual drug or alcohol use (Ennett, Tobler, Ringwalt, & Flewelling, 1994). A version of DARE developed for the U.K and delivered by Nottingham police was limited to implementation among 10-11-year-old primary school pupils. Bean (1998) noted that many of the materials used in the U.K programme contained moral undertones of the U.S 'war on drugs', including attempts to scare and propaganda which criminalised drug use. The programme was also poorly evaluated, lacking a comparison group and robust outcome measures.

A Cochrane systematic review of 56 alcohol misuse prevention programmes (Foxcroft et al., 2002; Foxcroft, Ireland, Lister-Sharp, Lowe, & Breen, 2003), and update for the World Health Organisation (Foxcroft, 2006), concluded there was little positive effect of DARE on drinking outcomes at 18 month (Perry et al., 2003), 5-year (Clayton, Cattarello, & Johnstone, 1996) or 10-year (Lynam et al., 1999) follow-ups. That DARE has consistently shown little positive impact on alcohol misuse when evaluated using robust methodologies led several authors to conclude there is sufficient evidence to suggest that DARE is ineffective for the purpose of preventing alcohol misuse (Foxcroft, 2006; Foxcroft et al., 2002; Jones et al., 2007).

A recent cluster-randomised trial (Morgenstern, Wiborg, Isensee, & Hanewinkel, 2009), involving 7th grade pupils of 30 schools in Northern Germany, tested a classroom social influences programme and information booklet. One-year follow-up results of the intervention programme were mixed. While the pupils' alcohol-related knowledge benefited from the intervention, and they were less likely to report lifetime binge drinking, the programme had little impact on other outcomes and several methodological issues limit the generalisability of any positive effects of the intervention.

Botvin's Life Skills Training (LST) programme provides an extensively evaluated example of a school-based social influence approach that also includes generic social and personal competency skills. One study utilised a randomised control design of 56 New York State schools to evaluate the long-term impact of a LST programme delivered over 30 lessons in 7th, 8th and 9th grades (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995). Results provided mixed support for the programme, with a limited number of positive effects reported on key drinking outcomes compared to controls at the six-year follow-up point.

In addition to an analysis based on the full sample of participants available at six-year follow-up, Botvin et al (1995) carried out a supplementary analysis on a high-fidelity subsample present for at least 60% of the full LST programme which excluded more than a quarter of pupils available to follow-up. Findings from the high-fidelity sample were more convincing and suggested that under favourable conditions LST was efficacious over several alcohol outcomes. Given that the 'high fidelity' conditions are unlikely in real-world settings, the real-world effectiveness of the programme is questionable (Dusenbury, Brannigan, Falco, & Hansen, 2003). Moreover, the inclusion criterion of 60% attendance at LST programme lessons would omit those pupils absent from school for reasons such as truancy, suspension or some other known correlate of drug use. As the high-fidelity LST subsample was compared to an unadjusted sample of control pupils (i.e., 100% available to follow-up) there is a significant risk that the evaluation was biased towards LST.

A review of evidence for LST was commissioned by the Scottish Executive Effective Interventions Unit (Coggans et al., 2003). The review draws attention to promotional material describing LST programmes as 'highly effective', yet evidence for this claim is unconvincing. For example, at three- (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990) and six-year (Botvin et al., 1990) follow-up points, schools receiving the LST programme only differed from controls on the frequency of drunkenness outcome, with no evidence of impact on basic

frequency of use or quantity measures. LST programme effects have also been expressed in ways that appear to maximise the programme's impact but which hold potential to mislead unless scrutinised. One report (Botvin et al., 1995) states LST schools were 66% less likely than controls to report weekly polydrug use at six-year follow-up, yet the low base rate of weekly polydrug use at each school meant the reduction was just 4% expressed in absolute terms.

Other criticisms of the LST programme evaluations include lax evaluative procedures involving mismatched units of randomisation (56 schools) and analysis (5954 pupils). Treating the pupil as the unit of analysis instead of the school in a cluster-randomised design of 56 schools may lead to spuriously high programme effects due to clustering among pupils within each of the 56 schools. Effects of limited practical importance may also reach statistical significance due to the substantial statistical power afforded by 5000+ pupils. Foxcroft and colleagues (2002) have also commented on the limited size of programme effects and question their public health importance although, in a subsequent review (Foxcroft & Tsertsvadze, 2011b), it is argued they may hold value in economic cost-benefit models.

The European Drug Addiction Prevention Trial examined the effectiveness of a social influence and skills based programme among 7000+ 12-14-year-old pupils attending 170 schools in seven European countries. The intervention programme included 12 lessons lasting an hour each with a focus on increasing pupils' knowledge, fostering healthy attitudes towards drug use and intrapersonal skills and correcting exaggerated normative beliefs (Kreeft et al., 2009). Compared to controls, at 18 month follow-up, there was no difference in the age of onset of regular-drinking, but intervention pupils were less likely to have been drunk in the past 30 days; infrequent baseline drinkers reported fewer alcohol-related problems; baseline abstainers were more likely to remain abstinent at follow-up, and; those drunk infrequently (<3 times a month) were less likely to progress to frequent drunkenness (>3 times a month) and more likely to revert to non-use (Caria, Faggiano, Bellocco, & Galanti, 2011; Faggiano

et al., 2010). However, as with the LST programme, behavioural effects for pupils were modest and it would be necessary to expose 40 pupils to the intervention programme in order to prevent a single occurrence of drunkenness for one pupil (Faggiano et al., 2010). Ashton (2010) also draws attention to one report (Vigna-Taglianti et al., 2009) highlighting that positive effects were mainly confined to boys, with potentially harmful effects found for female pupils with lower levels of self-esteem. The potential for Type 1 error was also noted given that a substantial number of comparisons were made with few significant results.

1.3.2.2 Effective elements of the social influence approach

Although there is modest evidence that social influence approaches can positively impact alcohol misuse, empirical evidence from well-designed and rigorously evaluated interventions is not universally supportive. In some cases programme effects also appear inconsistent across outcomes or of limited practical importance.

Social influence approaches have also been criticised on the basis that they presuppose young people are basically opposed to drug use, but are nonetheless drawn into drug-using behaviour because they lack the basic personal and social competencies to resist (Davies & Coggans, 1992; Midford, 2010). This assumption underlies social influence programmes that train young people in refusal skills to combat overt offers of drugs and offer generic life skills in assertiveness, self-esteem, social efficacy, social anxiety, influencability and locus of control. However, programmes such as DARE with a strong emphasis on refusal skills have little impact on behaviour (Ennett et al., 1994; Foxcroft, 2006; Foxcroft et al., 2002; Jones et al., 2007) while LST rarely exerts its modest positive behavioural effects through life skills variables (Coggans et al., 2003).

Several authors argue that it is unsurprising that social influence programmes have had mixed results as evidence that peers cause drug use is unconvincing,

and there is little reason to suggest those engaging in recreational drug-use lack life skills. For instance, Coggans and McKellar (1994) describe how cross-sectional findings have been interpreted inappropriately as supporting the causal role of peers in drug use, yet the nature of cross-sectional designs means the same body of evidence may demonstrate young people's preference for associating with likeminded peers and assimilation towards shared norms.

A picture of socially deficient and incompetent young people is also at odds with data collected recently from Northern Irish secondary school pupils (McKay, Sumnall, Cole, & Percy, 2011). In this study alcohol involvement was associated with lower academic and emotional self-efficacy, but higher social self-efficacy. These data only demonstrate an association between alcohol and specific domains of self-efficacy, but are important insofar as they draw attention to the dangers of presuming deficits in social and personal functioning. On the basis of this set of results, the case for *reducing* social self-efficacy is similar to that for *increasing* academic and emotional self-efficacy. However, it is likely that attempting to reduce functioning in a desirable trait such as social self-efficacy would be an uncomfortable proposition for many.

A shortcoming of the social influence approach may also be the failure to account for the functional and symbolic importance attached to drug use by young people, and its role as a means of asserting group solidarity, cohesiveness, and as a vehicle for making the much sought after and desirable claim to adult status (Paglia & Room, 1999). Thus, teaching young people the skills necessary to resist drugs on the basis that that they are socially or personally incompetent may be of limited impact because young people can be instrumental in their own drug use.

Designed and evaluated to examine the independent contribution of popular social influence programme components, the U.S Adolescent Alcohol Prevention Trial (AAPT) randomised 11,995 pupils, by school (n=130), to one of four treatment conditions: (i) information on the health and social harms of alcohol;

(ii) resistance skills training to teach pupils the skills necessary to resist offers of alcohol (plus health and social harms information); (iii) normative education to combat misconceptions that alcohol use is prevalent and widely accepted (plus health and social harms information), and; (iv) resistance training *and* normative education (plus health and social harms information).

In a series of publications the AAPT research team found that, compared to pupils allocated to the information-only condition, normative education prevented the onset of alcohol (and other drug) use one year after the intervention was delivered (Hansen, Graham, Wolkenstein, & Rohrbach, 1991), and also lowered rates of recent alcohol use and drunkenness up to five-years post-intervention (Taylor, Graham, Cumsille, & Hansen, 2000). In contrast, straightforward training in resistance skills had no positive effect. Further research (Donaldson, Graham, Piccinin, & Hansen, 1995) suggested pupils' attitudes towards alcohol mediated the effects of resistance skills training. Specifically, if pupils held conservative attitudes towards alcohol then resistance skills training resulted in lower rates of alcohol use at follow-up, whereas for pupils holding more permissive alcohol-related attitudes there was no effect of resistance skills training. A potentially important iatrogenic effect was also identified, where standalone resistance skills training led to exaggerated beliefs of the prevalence of alcohol and drug-use offers. Pupils were thus exposed to a theoretical risk of increased social pressure to use drugs. Importantly, the potentially harmful effects of resistance skills training on prevalence beliefs were absent when resistance skills were combined with normative education.

A lack of empirical support and philosophical objections have led several authors to suggest that one of the central components of social influence programmes, resistance skills training, may only be effective for specific subgroups of the target population. This limits the appeal of social influence approaches as a universally targeted preventive approach (McBride, 2003). Other authors have suggested that greater understanding of the effective

components of social influence based prevention programmes is necessary to make progress (Cuijpers, 2002; Foxcroft & Tsertsvadze, 2011b; Midford, 2010). In this regard, a potentially promising avenue for research on social influence preventive approaches involves reframing pupils' exaggerated beliefs regarding the acceptability and prevalence of alcohol use among peers.

1.3.3 Mode of delivery

A number of reviews have investigated whether mode of delivery plays an important role in classroom drug education (McBride, 2003; Tobler et al., 2000; Tobler & Stratton, 1997). Tobler and colleagues' (2000) meta-analysis of 207 school-based programmes found those with a focus on social influences and life skills tended to produce the most positive effects on drug-use behaviour. Social influences and life skills approaches frequently make use of interactive methods of programme delivery, where pupils are encouraged to interact with peers through discussion and role play and the teacher's role is limited to facilitating programme objectives.

In contrast, programmes that rely on informing young people of the health and social harms of drug use are often non-interactive. Instead, delivery takes place through didactic lectures or presentations where the focus is on teachers or external contributors as 'experts'. The role of such experts is typically to provide information rather than facilitating discussion or encouraging the shared exploration of ideas in an unthreatening peer-to-peer environment. The narrow focus of non-interactive methods on didactic teaching of risks, harms and consequences may be perceived as judgmental and lacking in credibility by pupils who have their own direct or indirect experiences to the contrary. Unsurprisingly, Tobler and colleagues (2000) found that programmes classified as non-interactive had limited effects on drug-use outcomes, with similar conclusions reached in Cuijpers' (2002) review of reviews, and Ludbrook and colleagues' (2001) review undertaken specifically for the Scottish context.

More recently the robustness of evidence supporting interactive over non-interactive approaches has been questioned. McCambridge (2007) reports on a personal correspondence with a member of the Tobler et al research team. In a reanalysis of the dataset used in Tobler et al (2000), more robust contemporary statistical procedures showed no advantage of interactive over non-interactive programmes. McCambridge draws attention to the substantial impact of Tobler et al's meta-analytic publications on the direction of prevention research, noting several hundred citation counts and an influential role in U.K and international policy. It is therefore a concern that publication of the revised meta-analytic findings was not sought outside two brief summary statements found on the funding body's website⁵ (Caulkins, 2008; Foxcroft & Smith, 2008; McCambridge, 2007, 2008; Room, 2008; Roona, 2008; Rossow & Pape, 2008).

Despite doubt over the robustness of an influential meta-analysis (Tobler et al., 2000), some authors maintain that interactive approaches to school-based drug education remain superior to non-interactive approaches. Skager (2008) argues from a developmental perspective that interactive methods are more appropriate to the capabilities of young people, allowing them the opportunity to explore and engage with drug-relevant information at a level appropriate to their developmental stage. Skager suggests the sample of 'interactive' programmes included in the Tobler et al reanalysis may have lacked sufficient interactive potency to demonstrate an advantage over non-interactive programmes.

It has also been argued that multi-component programmes can bolster the impact of efforts made in the classroom (Cuijpers, 2002; Midford, 2010; Midford, Munro, McBride, Snow, & Ladzinski, 2002; Paglia & Room, 1999; Slater et al., 2006). Midford (2010) suggests the benefits of multi-component approaches are clear given that positive effects of school programmes found in the short term are unlikely to endure in the absence of external reinforcement

⁵ The lead author of the research team, Nancy Tobler, died around the time of the reanalysis and it is suggested this played a role in the decision not to publish widely.

in the home and community. Therefore, programmes including community and family or parenting elements can provide a context where content delivered in the classroom benefits from broader external reinforcement (Midford et al., 2002). However, extensions to school-based prevention can be expensive and evidence supporting their efficacy over and above classroom components is not entirely convincing. A recent Cochrane review (Foxcroft & Tsertsvadze, 2011a) of 20 multi-component universal alcohol misuse prevention programmes produced only mixed support; while 12 demonstrated some evidence of effectiveness, just 1 out of 7 provided robust evidence that multiple components were more effective than a single component. Moreover, uptake of parenting and family skills services tends to be poor and is more common among those who already hold better parenting skills (Paglia & Room, 1999).

1.3.4 School-based prevention in practice

Research and theory in the prevention field has progressed over the past 30 years, driven by single studies and evaluations, reviews and meta-analyses. This progression has shifted the focus of research away from simplistic approaches characterised by provision of information in classrooms and through public health communications, to more theoretically oriented social influence approaches delivered interactively in schools. However, while a degree of progress has been made in the field there is evidence this is not always reflected in practice.

Hansen and McNeal (1999) observed 146 school drug education lessons in 12 North American middle schools with the aim of understanding the real-world application of drug prevention. The study findings demonstrate a generally poor appreciation among teachers of the nature of key concepts used in drug prevention. While two observers were able to report high levels of agreement when classifying the specific drug education approach observed during lessons, teachers were much poorer at judging the content of their own lessons. Further findings indicate a focus on the facts and consequences of drug-use was most

common in classrooms, followed by resistance skills approaches. Given that teachers were frequently unclear on the specific content of their lessons it is perhaps unsurprising their lessons did not consistently reflect best practice.

Similar research carried out by Ennett and colleagues (2003) surveyed schools across 1998-99 on the content and delivery of their drug education lessons. While two out of every three respondents reported some combination of social influences and life skills approaches, information on the risks and consequences of drug-use remained the primary emphasis, and social influence approaches were used much less often. Moreover, while content was usually delivered through a mix of interactive and non-interactive methods, two thirds of providers used non-interactive methods more frequently than interactive. Although a majority of providers used some effective content in their lessons, failing to deliver this content using interactive methods means the potency is likely to be reduced.

The studies of Hansen and McNeal (1999) and Ennett and colleagues' (2003) offer insight into the nature of school-based prevention in the U.S middle school system, but the generalisability of their findings to other cultural contexts is not clear. More recent research commissioned by the Scottish Government (Stead, MacKintosh, et al., 2007) surveyed a representative sample of Scottish primary, secondary and special schools. The research team also observed 41 drug education lessons in Scottish secondary schools during 2004-05. While a variety of techniques were reported in school survey responses, observers found provision of drug information was the dominant approach while other social influence approaches were again used much less frequently. Survey responses documented a wide range of interactive and non-interactive methods for delivering drug education, as well as external contributions from police, drama groups and health professionals. Observations verified these mixed methods, with roughly half of lessons making use of both didactic and interactive methods, one third making use of entirely interactive methods and less than a fifth relying solely on didactic non-interactive methods of teaching.

A limited number of schools were also able to facilitate observations across primary and secondary school year groups (i.e., within the same institution), enabling an examination of programme development and progression across several year groups. Of the ten schools able to accommodate observations across primary and secondary school years, four showed a low level of progression of content and evidence of repetition across three separate year groups; three schools showed evidence of limited progression, and; in only two schools was there evidence that drug education consistently built upon and extended lessons delivered in previous years.

Recent qualitative research (Fletcher, Bonell, & Sorhaindo, 2010) examined pupils' and teachers' accounts of school drug education, and teachers perceptions on school drug policy in four English secondary schools. A theme emerging from interviews was that pupils showed little awareness of receiving drug education during secondary school, with many claiming they could not remember receiving any drug education at all and the remainder demonstrating knowledge at best. The authors of the report stated that, in the absence of memorable drug education in school, many pupils relied on alternative sources of information including family, peers and media. Interviewed teachers reported that while they considered drug education to be important and within the remit of secondary school education in general, its presence and quality was limited by external pressure to focus on performance in more traditional subjects.

The limited number of pupils and schools involved in this qualitative research means the generalisability of the findings are unclear. Moreover, Fletcher and colleagues (2010) refer to 'drug education' throughout but fail to define the term. Although alcohol may be included within a general 'drug' category (Advisory Council on the Misuse of Drugs, 2006), this practice is by no means universal and it is unclear whether the research team or interviewees consider the term as applying to certain classes of substance rather than others. Indeed, some evidence suggests secondary school pupils conceptualise the drug

category very narrowly, as referring specifically to illicit drugs, and that difficulties may be faced when trying to broaden this concept (Stradling, MacNeil, Cheyne, Scott, & Minty, 2007).

1.3.5 Goals of school-based prevention

Most research discussed so far has been carried out in the U.S. This is part of a general trend for well-funded and rigorously evaluated research to be undertaken there. Of the 56 studies sufficiently well designed and evaluated to warrant inclusion in Foxcroft et al's (2002) Cochrane review, 47 came from the U.S and just 2 from Britain. A number of researchers have commented on the need to consider the appropriateness of interventions cross-culturally given that the desired aims and outcomes of drug prevention programmes may vary according to the cultural context of prevention efforts. For instance, in the U.S, abstinence is the traditionally stated end goal, whereas moderate or delayed use and harm reduction are viewed as more realistic outcomes in some cultural contexts (Midford, 2010).

Arguments favouring abstinence as a desired end-point are rooted in cultural, political and legal concerns. Midford (2010) notes that following political pressure from parents during the 1970's and early 1980's, U.S federal guidelines emphasising a harm reduction approach to drug prevention were changed to a mandate for abstinence and zero tolerance. Researchers in these cultural settings may also wish to avoid appearing to condone underage drinking given that the legal age of consumption is 21 years.

There is a good case for adopting a harm reduction approach to drug education, particularly where age of first use may occur relatively early, as is often true of licit substances like alcohol. In many societies individuals begin drinking prior to the legal age of purchase (S. Robinson & Harris, 2011), in which case abstinence-based approaches are likely to be of little relevance (Paglia & Room, 1999). Moreover, as some approaches to drug prevention assume drug users

are personally- or socially-incompetent there is a need to consider the appropriateness of promoting abstinence where use of the drug is both normalised and culturally acceptable among members of the adult population (Midford, 2010).

In Australia, harm reduction is the official position of government and more than 90% of surveyed drug education teachers support such an approach (Midford et al., 2002). In the U.K, National Institute for Health and Clinical Excellence guidelines (2007) note there exists no formal operationalisation of sensible drinking among children and young people. In lieu of any medically endorsed position it is recommended that school-based drug education should encourage children not to drink, where possible delay the age at which young people start drinking and reduce the harm it can cause among those who do drink. U.K guidelines therefore endorse abstention among children, delaying the age at which they start to drink, as well as the more realistic goal of reducing harm among those who do drink.

1.3.6 U.K context

The multi-component Blueprint drug education programme was designed to address the relative lack of evidence-based drug prevention in the U.K, and combined life skills and social influence classroom content with the Midwestern Prevention Project (Pentz, Mihalic, & Grotmeter, 1997); a multi-component programme involving mobilisation at school, parent and community levels.

Pupils aged 11-13 years attending Derbyshire secondary schools were assigned to receive either the Blueprint programme of 15 one-hour lessons delivered over two years by 200 specially trained PSE/PSHE classroom teachers, or continue with their standard drug education delivered in PSE/PSHE classes. Consistent with LST and social influence programmes the Blueprint curriculum taught drug information including risks, consequences, and laws associated with drug use, normative education and media influence, as well as generic

assertiveness and decision making skills. Consistent with meta-analytic and review findings of the time, Blueprint was interactive and made use of presentations, group work, games, and peer-to-peer discussion throughout. Attempts were also made to raise awareness of the Blueprint curriculum among parents and encourage parent-child communication on drug issues through homework exercises and parenting skills workshops. Media components sought to raise awareness and understanding in the community of key aspects of Blueprint and encourage participation, while community policy initiatives sought to restrict sale of alcohol and cigarettes to under-age youth through retailer education, police enforcement, trading standards and proof-of-age schemes (Baker, 2006; Stead, Stradling, MacNeil, & MacKintosh, 2007).

Despite being relatively well organised and funded for a study out-with the U.S, the rationale underpinning the Blueprint study design and subsequent evaluation is not entirely clear. Both Baker (2006) and the Blueprint Evaluation Team (2008) state that a lack of statistical power meant the 30 schools at their disposal would be insufficient to reliably detect differences between the Blueprint and comparison schools on key drug-use outcomes⁶. Instead Blueprint was presented as a feasibility study of a multi-component drug prevention programme in the U.K:

...Blueprint is not a definitive trial, it is designed to provide a broad assessment of process, impact and outcome measures, and the cost and time involved in such programmes may also drive decisions about what level of evidence is good enough to change policy and practice. (Baker, 2006, p. 28)

With a sample of 30 participating schools the research team opted to assign 24 schools to receive the Blueprint programme, with the remaining 6 acting as comparison sites. It was decided latterly, however, that it would be potentially

⁶ Though not specified, it is presumed the power analysis was based on schools/communities as the unit of analysis rather than pupils.

misleading to make any form of comparison between Blueprint and comparison schools given that the study was underpowered and unbalanced. Therefore, issues to do with process and the reactions of parents and pupils were considered in some depth, yet the more pressing matter of whether Blueprint had any positive effect on drug-use was not addressed in the official evaluation (Blueprint Evaluation Team, 2008).

In the absence of any formal evaluation of outcome, Ashton (2009) made exploratory comparisons using available data on two key alcohol outcomes where Blueprint and comparison schools were well matched at baseline and statistical power seemed adequate to draw some preliminary conclusions. Baseline self-report data collected just before the programme began found 8% of Blueprint and 7% of comparison pupils consumed alcohol during the past seven days, increasing to 37% in Blueprint and 33% in comparison schools at one-year follow-up. Similarly, 6% of Blueprint and 5% of comparison pupils reported drinking weekly at baseline, rising to 30% and 26% at one-year follow-up. On the basis of this crude, but useful, analysis the Blueprint programme ostensibly had little positive impact on alcohol use and, if anything, pupils attending the Blueprint schools were slightly more likely to have drunk alcohol in the past seven days and to have drunk regularly.

Ashton's (2003) analysis provides preliminary evidence that Blueprint had little positive effect on alcohol use. The poor performance of Blueprint may be due in part to the classroom programme's similarity to Botvin's LST programme, several limitations of which have already been described (e.g., Coggans et al., 2003). In addition the multi-component features of Blueprint were modelled on those of the Midwestern Prevention Project (Pentz et al., 1997) which has produced some positive effects on drug-use outcomes in general (Chou et al., 1998; Johnson et al., 1990; Pentz et al., 1989; Pentz et al., 1990) but inconsistently for alcohol (Ashton, 2003). Ashton has also voiced concern over the reporting of randomisation procedures in the Midwestern Prevention Project, the selective reporting of results across evaluation papers and the

further possibility that highly motivated and organised schools self-selected to receive the intervention. Given these problems there is a risk that the Blueprint programme may have been developed using an unconvincing evidence base⁷.

Irrespective of the lack of robust outcome assessments, extensive process evaluation of Blueprint indicated that time pressures and a poor appreciation of key concepts might have resulted in a variable quality of teacher-led implementation. Two reports based on observed lessons have discussed whether the Blueprint classroom content was delivered as intended (Stead, Stradling, et al., 2007; Stradling et al., 2007). Although Blueprint teachers were generally quite faithful to the programme content, in some instances they appeared to show poor understanding of the underlying concepts. At times assertiveness and resistance skills training was reduced to overly simplistic and potentially counter-productive 'don't drink alcohol, don't smoke and don't take drugs!' (Stead, Stradling, et al., 2007, p. 660) messages.

Aspects of the classroom curriculum dealing with normative education were also poorly understood. In some cases when pupils were asked to reconcile their exaggerated perceptions of the prevalence of drug use among peers with normative data taken from baseline surveys, teachers failed to explore the likely underlying causes of the exaggerated beliefs. Some pupils also challenged the survey findings, arguing that the data were inaccurate due to underreporting of substance use or, in some cases, that normative data were unrepresentative of their local norms (Stradling et al., 2007). Pupils were particularly likely to question the survey data on alcohol, tobacco and volatile substances, leading Stradling and colleagues to argue that normative education may require more

⁷ A response to Ashton's (2003) suggestion that the Blueprint programme was derived from a questionable evidence base was issued by Paul Baker of the Blueprint Research team. In the response it was stated that Blueprint was not an attempt to directly transfer the two U.S programmes (LST and the Midwestern Prevention Project) to an English context, but that development was based on a distillation of key principles of effective drug education adapted to an English context. Nevertheless, the Blueprint programme appears sufficiently similar to Life Skills Training and the Midwestern Prevention Project to suggest they were highly influential in its development.

than the two hour-long lessons allocated in the Blueprint programme if pupils are to accept normative feedback.

1.3.7 Conclusion

Universal primary prevention of alcohol misuse targets the behaviour of whole populations prior to the onset of harm and is a common feature of secondary school PSE/PSHE classes. An early reliance on providing factual information relating to negative harms and consequences of alcohol use in non-interactive dyadic teaching styles has remained popular with some providers, despite very little evidence that it is effective in changing behaviour. Later social influence approaches have a stronger theoretical basis, but positive effects on behaviour have tended to be small or inconsistent across outcomes and therefore not entirely convincing. Some evidence suggests that major components of social influence programmes, such as resistance skills training, are of limited benefit when the goal is universal prevention. However, elements of social influence classroom programmes that seek to instil more realistic and moderate perceptions of the prevalence and acceptability of alcohol use and misuse among peers may hold a modest degree of promise.

CHAPTER 2: THE 'SOCIAL NORMS' APPROACH TO ALCOHOL MISUSE PREVENTION

2.1 Introduction

Chapter 1 noted several limitations of the social influence approach to classroom drug education. While certain components of this broad approach lacked empirical support (e.g., Cuijpers, 2002), or seemed philosophically misguided (Davies & Coggans, 1992; Midford, 2010), correcting exaggerated perceptions of peer drug use appeared to offer a more promising approach to the prevention of alcohol misuse.

Correcting erroneous normative beliefs around peer drug use features prominently in several of classroom social influence programmes discussed so far (Baker, 2006; Botvin et al., 1995; Botvin et al., 1990; Botvin, Schinke, & Orlandi, 1989; Faggiano et al., 2010; Hansen & Graham, 1991; Stead, MacKintosh, et al., 2007). In this context, normative beliefs most typically refer to young people's perceptions of the prevalence and acceptability of substance-using behaviours and attitudes among peers. Importantly, evidence suggests that young people often perceive that others are more approving and permissive of alcohol use than is in fact the case (Baer, Stacy, & Larimer, 1991; Hansen & Graham, 1991). A known tendency for people to conform to group patterns and expectations (Asch, 1951) means young people overestimating the approval and extent of alcohol use around them may experience perceived social pressure to conform to an inflated perception of the norm (Perkins, Haines, & Rice, 2005). In an attempt to prevent the migration of behaviour and attitudes towards a more permissive and distorted perception of reality, normative education components of social influence programmes draw young people's attention to exaggerated drinking beliefs and aim to encourage a more realistic and healthy perception of the norm.

In contrast to broader social influence classroom programmes, where normative education is one of several different prevention components, an increasingly popular approach focuses solely on correcting exaggerated perceptions. What has popularly come to be known as the 'Social norms' approach to alcohol misuse prevention seeks to identify exaggerated perceptions of peer norms around alcohol, before then attempting to reframe perception by communicating accurate normative information (Perkins, 2002a).

The majority of research relating to the social norms approach originates from the U.S college system where concerns over binge-drinking during the 1990s led to a re-evaluation of approaches to campus prevention and an increase in interventions seeking to correct exaggerated perceptions of alcohol norms, with some reported success (e.g., Haines & Spear, 1996). The popularity of social norms approaches on U.S college and university campuses make it one of the dominant approaches to prevention of substance misuse in those contexts (Wechsler et al., 2003). Several promising findings led America's National Institute for Alcohol Abuse and Alcoholism to state:

Initial results from programs adopting an intensive social norms approach are promising. Several institutions that persistently communicated accurate norms have experienced reductions of up to twenty percent in high-risk drinking over a relatively short period. (NIAAA, 2002, p. 12)

In light of initial success stories emerging from the U.S college system, international interest has also arisen. In Scotland, the Scottish Association of Alcohol and Drug Action Teams (SAADAT), a voluntary body acting in an advisory and communication role for local Alcohol and Drug Action Teams and central government, were one organisation to become interested in the social norms approach. By this point, Dr Wesley Perkins, a key figure in the evolution and development of the social norms approach, had also lectured to Scottish stakeholders on social norms theory and research and its potential for use in

Scotland (Perkins, 2007a). Based on this and other expert presentations, a working paper produced by Scotland's Futures Forum (2008) suggested that social norms relating to alcohol and drug use should be given greater prominence in family, community and education settings as a means to reduce the damage caused to Scotland's population by alcohol and drugs. Further developments included cross-party support for a motion raised in the Scottish Parliament (Wilson, 2007), which recommended the implementation of pilot studies based on social norms approaches in Scottish education contexts.

Despite attention from various Scottish stakeholders interested in the application of social norms to reduce alcohol and drug misuse in Scotland, evidence supporting the use of norms in this capacity was almost entirely derived from the U.S college and university system, and important questions remained about its suitability for a Scottish context. Subsequently, an opportunity arose to carry out a programme of Ph.D research, co-funded through SAADAT and an Economic and Social Research Council Collaborative Award in Science and Engineering (CASE), to evaluate a social norms marketing intervention set in a Scottish secondary school context, and carry out a series of studies examining methodological features of the social norms theory and intervention model.

2.2 Social norms and perceived norms

Social norms are properties of group or social networks and provide implicit or explicit codes of conduct for network or group members (Rimal & Real, 2003). In this regard they impose structure on the world by constraining the range of available options to individuals and groups according to the values, beliefs and morals of the population. Over the past 60 years social norms have featured within influential models of behaviour (e.g., Fishbein & Ajzen, 1975) and research suggests they play an important role in shaping action and thought (Asch, 1951).

Cialdini, Reno, and Kallgren (1990) argue that social norms can, and should, be differentiated according to certain characteristics. To the extent that a norm is representative of what group members actually do and how they behave it is *descriptive*, whereas norms representing the beliefs or moral standards of acceptable behaviour are *injunctive*. Descriptive norms provide information on the behavioural conduct of group members and serve as important guides in times of uncertainty or ambiguity where a common behavioural standard is not explicitly defined. Injunctive norms, on the other hand, refer to the private attitudes and beliefs of group members and provide information on what ought or should be done from a moral or acceptability standpoint. As beliefs about what should be done may influence what is done and vice-versa, descriptive and injunctive norms can lead to similar courses of action; however, because they represent distinct motivational bases of action they may be interpreted and responded to differently in certain circumstances and should be delineated accordingly (Jacobson, Mortensen, & Cialdini, 2011). For instance, in a series of field studies demonstrating high ecological validity, the salience of descriptive and injunctive norms around public littering was manipulated, leading to participants taking distinct courses of action which were consistent with the type of norm the experimenter chose to make salient (Cialdini et al., 1990).

Although normative perceptions are often accurate reflections of the 'actual' or 'true' population norm, mistakes may occur that lead to a divergence in the actual norm operating in a given population and an individual's perception of that norm. Thus while social norms can exert their influence on thoughts and action directly, an additional source of normative influence can occur through an individual's perception or cognitive interpretation of the norm. For instance, the common behavioural standard when using public lifts in the U.K is to avoid excessive eye contact with strangers. For the majority of people who have used lifts before and observed the behaviour of others in lifts, this social norm will influence their conduct directly and lead the user of the lift to pick a spot on the wall and fixate their gaze on it for the duration of any journey. However, if a newcomer to the world of lift etiquette believed that the norm was to make and hold eye contact with fellow passengers, it is this perceived norm that will be influential (at least for a time) and the actual norm less so. In short, social norms are influential in shaping behaviour and thought, but our perception of such norms may act as additional sources of influence.

2.3 Misperceptions of drinking norms

Current interest in social norms and normative perceptions finds its origins in research carried out on a small private U.S college campus by Perkins and Berkowitz (1986). On the basis of students' self-report questionnaire responses, these researchers concluded that students attending the college tended to overestimate the amount of alcohol consumed by the 'typical student' on the campus as well as the extent of approval for heavy drinking. Students in Perkins and Berkowitz's study therefore 'misperceived' descriptive and injunctive norms in the direction of overestimation.

Findings such as those recorded by Perkins and Berkowitz are now a consistent feature in the literature (Baer et al., 1991; Borsari & Carey, 2001, 2003) and in some cases the extent of overestimation is substantial. In a nationwide sample of 130 U.S colleges, involving 76,000 students, Perkins and colleagues (Perkins et al., 2005) found 70% of students overestimated the normative quantity of drinks consumed by the average student when they 'partied'⁸, while just 14% estimated accurately and 15% underestimated.

Although research demonstrating misperceptions of drinking norms has tended to originate from the U.S college system, a growing body of international evidence using similar methods suggests their existence in other cultural contexts including Scotland (McAlaney & McMahon, 2007), Canada (Perkins, 2007b), Finland (Lintonen & Konu, 2004), New Zealand (Kypri & Langley, 2003), Eastern Europe (Page, Ihasz, Hantiu, Simonek, & Klarova, 2008), Switzerland (Bertholet, Gaume, Faouzi, Daepfen, & Gmel, 2011) and Germany (Haug, Ulbricht, Hanke, Meyer, & John, 2011).

Given the well-documented tendency for people to conform to group patterns and expectations, holding inflated perceptions of drinking norms would predict

⁸ This is a colloquial term that overlaps 'going out' or 'a night out' in the U.K.

movement of population members' own behaviour upwards towards those inflated perceptions. Studies have demonstrated significant positive associations between perceived norms and the actual norm, such that higher perceptions of the norm are associated with higher rates of personal consumption (Kypri & Langley, 2003; McAlaney & McMahon, 2007). In their nationwide study of U.S college campuses Perkins and colleagues (Perkins et al., 2005) were able to show that an increase of one full drink in the perceived campus norms predicted a half drink increase in personal consumption. Importantly, the national sample of a large number of college campuses allowed the authors to examine the relative importance of the perceived and actual campus norms in predicting drinking behaviour – leading to the conclusion that perceived norms were the more influential of the two.

Size of the misperception, operationalised as the difference between personal use and the perceived norm, is also positively associated with personal consumption as larger misperceptions are associated with higher levels of personal use (McAlaney & McMahon, 2007) and increases in levels of personal use over time (Carey, Borsari, Carey, & Maisto, 2006). Some research suggests the relationship between perception and behaviour may be reciprocal for some drinking practices, with baseline perceptions of the quantity of drinks consumed predicting subsequent drinking, and baseline drinking also predicting later perceptions (Neighbors, Dillard, Lewis, Bergstrom, & Neil, 2006).

2.3.1 Causes and consequences of misperceived norms

Following the consistent body of research demonstrating the overestimation of drinking norms, Perkins (Perkins, 1997, 2002a) has outlined a theory of the causes and consequences of drinking-norm misperception; drawing on psychological, social and cultural factors.

For the majority of individuals who use alcohol moderately and also hold moderate attitudes towards alcohol, direct observations of others immoderate behaviour can lead to the phenomenon of *pluralistic ignorance*. Pluralistic ignorance refers to the belief that others feel or think differently from oneself, yet the beliefs or attitudes held in the population may actually be reasonably similar. After bearing witness to others' alcohol-related behaviour or conversation, pluralistic ignorance can lead young people to conclude that their private attitudes and beliefs are more conservative than those held by others. This process is thought to be related to cognitive biases such as the fundamental attribution error (L. Ross, 1977), where a lack of contextual information or failure to attend to the situational determinants of action can lead to a biased perception that observed behaviour is characteristic of the actor or group. From the position of an observer, unrepresentative bouts of heavy drinking can therefore be misconstrued as representative of the actor or group in question.

Unless a particularly narrow drinking norm is of interest, in which case the drinking practices of all members of that group may actually be known, perceptions of peer norms must be estimated to some degree. Normative perceptions are therefore dependent on information accessible to memory and other cognitive faculty, and are likely to be biased towards the most salient and communicable events that revolve around entertaining stories of 'nights out' rather than more mundane yet representative topics of conversation. Thus a disproportionate focus on permissive alcohol-related behaviour can produce and reinforce distorted perceptions of peer drinking practices. Similarly, media influences are also likely to reinforce and perpetuate these biases through a tendency to focus on 'newsworthy' events that trend towards the extremes of alcohol misuse.

For the majority of individuals who hold fairly moderate attitudes towards drinking, phenomena such as pluralistic ignorance may lead them to adjust their own position to reflect the inflated perception of the norm or internalise their concerns. Evidence supporting movement towards the misperceived norm has

already been noted, but Prentice and Miller (1993) have also shown through natural experimentation that some U.S. college students whom mistakenly believed other students to be more comfortable with the campus drinking culture than they were, become psychologically withdrawn from college life.

For the minority of individuals who drink at elevated levels and hold more permissive attitudes towards drinking, an important cause of norm misperception may be *false consensus*. Counter to pluralistic ignorance, false consensus describes those individuals who mistakenly believe that others are more similar to themselves than is in fact true. A minority of individuals drinking above the norm may therefore believe their behavioural and attitudinal position is consistent with the majority. A consequence of false consensus among these individuals may be to justify and reinforce current elevated levels of alcohol use. According to Berkowitz (2005) these individuals may have a vested interest in their misperception. However, Berkowitz's argument implies some awareness on the part of the heavier drinker that their behaviour and attitudes are not the norm, which would appear to be inconsistent with the underlying theory that misperceptions are a result of mistaken beliefs rather than self-serving motivations. Despite a divergence in the explanations offered by pluralistic ignorance and false consensus on the underlying causes of misperceived norms, the summation of these processes is an overall tendency to overestimate alcohol-related norms.

Explanations of misperceptions based on the limited information available to contextualise the drinking practices of others, and psychological biases such as the fundamental attribution error, have also led to a specific hypothesis concerning misperceptions: where individuals know less about the drinking behaviours (i.e., descriptive norms) and attitudes (i.e., injunctive norms) of others they will be increasingly prone to error given the reliance on estimation and guesswork to reach their answer. Some support exists for this hypothesis with the difference between self- and peer-estimates increasing for distal targets where the range and breadth of information necessary to accurately

estimate norms is considerable, while decreasing for more proximal targets for whom more information may be known (Borsari & Carey, 2003). Therefore perceptions of friends' behaviour tends to be inflated relative to one's own, but lower than other more abstract targets such as the typical student or member of the wider population (Baer et al., 1991; Borsari & Carey, 2001; Campo et al., 2003; Kypri & Langley, 2003). Related to this issue, closer and more salient reference groups or targets tend to be more influential, thus perceptions of close friends' behaviour or attitudes are more strongly associated with personal drinking practices than are those of the typical student or member of the general population (Baer et al., 1991; Campo et al., 2003; Carey et al., 2006; Cho, 2006; McAlaney & McMahon, 2007).

2.4 Social norms marketing interventions to correct misperceptions

Following findings that U.S college students overestimated approval and extent of alcohol use on campus, Perkins and Berkowitz (1986) suggested a potential intervention strategy should involve bringing normative perceptions into line with the 'true' population norms which are typically more moderate and healthy. If achieved, then holding more accurate and healthy perceptions would prevent increases in personal use based on a distorted perception of reality. Over the past 20 years researchers have adopted this approach with reported success. Although almost all such efforts focus on communicating accurate normative information to promote and reinforce the more moderate and healthy norm, social norms interventions may differ in the scope or specificity of the normative information as well as the mode of delivery.

The original and arguably most widespread approach to correcting misperceptions uses social marketing principles to communicate accurate normative information, en masse, to the target population. As the majority of social norms marketing (SNM) interventions have been carried out in the U.S college and university system, the focus has often been on conveying accurate normative information relating to the 'typical student'. As most research shows that smaller more proximal reference groups tend to hold more influence over personal behaviour, some have focused instead on increasing the specificity and relevance of normative feedback by tailoring information to each subject in a 'personalised' approach. Personalised feedback is often delivered via computer or email given the scope this offers for instant feedback of personal standing relative to actual population norms generated from database stores. Despite some evidence that normative feedback delivered electronically can be effective in reducing student alcohol misuse (e.g., Moreira, Smith, & Foxcroft, 2009), personalised feedback requires that members of the target population actively seek out the normative information by accessing websites or computer programmes, limiting the universal scope of the approach and its appropriateness for a Scottish educational context. Although personalised

feedback may also be delivered in one-on-one sessions with counsellors or other health experts, similar limitations apply as with the electronic feedback model. SNM intervention approaches, however, are likely to reach a wider cross-section of the target population and are also heavily featured in popular handbooks and guides on implementing social norms interventions (Haines, Perkins, Rice, & Barker, 2005; Perkins, 2003).

2.4.1 Selected case studies of social norms marketing interventions

Although numerous SNM interventions have been carried out, this section considers several SNM interventions featured in *The Social Norms Approach to Preventing School and College Age Substance Abuse: A Handbook for Educators, Counsellors and Clinicians* (Perkins, 2003); an edited handbook setting out the theoretical rationale for attempting to correct misperceived drinking norms and several case studies in the design, implementation and evaluation of SNM interventions for educational settings. Inclusion here is not intended to suggest the featured SNM interventions are representative of the current state of the research literature, only that they feature as examples of successful SNM interventions in this handbook and are therefore likely to be accessible and influential for those working in applied prevention settings.

In what is credited as one of the first SNM interventions, Haines and colleagues (2003; 1996) used print media such as posters, flyers, and newspapers, as well as competitions and various promotional activities to feed-back accurate normative information describing the typical student at the University of Northern Illinois. Between 1988 and 1998 students attending the institution completed an annual survey including questions about their own drinking behaviour and questions about their perceptions of the normative drinking behaviour for other students at the University. Initially the proportion of students who reported drinking heavily when they 'partied' (defined in this study as ≥ 6 drinks on a single occasion) was 43%, yet far more (70%) reported that the typical student consumed heavily when they partied. On the basis that

more than two thirds of the student population misperceived that the typical student on campus drank heavily when they partied, a SNM intervention was introduced to promote the accurate and healthier student population norm (≤ 5 drinks on a single occasion). One year later the authors reported a statistically significant decrease in perceptions that heavy drinking was the norm, from 69% to 61%, a trend that continued across subsequent years. By 1998, the proportion of students misperceiving the heavy drinking norm had more than halved. Over the same period the proportion of students who reported drinking heavily declined from 43% to 25%, and the proportion experiencing alcohol-related injuries to themselves or others halved from 33% to 16%. Although the study lacked a control group the authors report little change in heavy drinking at the University the two years preceding the introduction of the SNM intervention, and little change in heavy drinking among students nationally. McAlaney (2007) has noted the intervention design would become a blueprint for several subsequent SNM campaigns seeking to reduce rates of alcohol misuse at their institution.

After survey data documented that substantial numbers of students misperceived the normal frequency of alcohol use at Western Washington University, Fabiano and colleagues (2003; 1999) targeted a print and promotional media marketing campaign at the undergraduate population of the University. Again, a successful outcome was reported following the introduction of the SNM intervention, with the percentage of students misperceiving that the typical Western Washington University student drank once a week or more declining from 89% to 49.5%. At the same time the proportion of students drinking heavily (defined in this study as ≥ 5 drinks on a single occasion) on a typical weekend also fell (from 34.1% to 27.3%), as did the proportion of students experiencing any alcohol-attributable negative consequences. Whereas earlier rounds of data collection were reliant on cross-sectional surveys, 1998 and 1999 questionnaire responses were linked allowing the authors to assert with greater confidence that the reductions in misperceived norms and

increases in moderate behaviour were not a result of sampling variance across different years.

Another SNM campaign (Johannessen & Glider, 2003) featuring as a case study made use of print media to disseminate accurate normative information at the University of Arizona. As with the other intervention campaigns reported on so far, the percentage of undergraduates misperceiving the heavy drinking norm (defined in this study as ≥ 5 drinks on a single occasion) fell, from 54.2% in 1995 to 36.8% in 1998. Over the same period there were increases in healthy attitudes towards alcohol (i.e., the injunctive norm), reductions in heavy drinking rates (from 43.2% to 30.6%) and decreases in the incidence of several alcohol-related negative consequences. In addition to completing a questionnaire developed specifically for collecting normative information, students also completed the Core Alcohol and Drug Survey (Presley, Meilman, & Lyerla, 1994), allowing comparisons in drinking trends between the University of Arizona and a nationally representative college sample. Comparisons between University of Arizona responses and the rest of the U.S indicated little change in national college drinking trends during this period, providing some useful contextual information in the absence of a control group.

2.4.2 Concerns about social norms marketing interventions

2.4.2.1 A mixed evidence base

The preceding section offered a selective overview of several SNM interventions which successfully reduced rates of alcohol misuse and related harms among U.S college and university students. However, the three exemplar studies were selected due to their inclusion in a handbook (Perkins, 2003) written for educators, counsellors and clinicians rather than their overall quality and representativeness of this field of research.

Research carried out by Wechsler and colleagues (2003) provides some indication that SNM interventions are not always effective. In a national survey of U.S college administrators there was no evidence that implementing a SNM intervention reduced rates of alcohol misuse over time and, in some cases, there was evidence of unfavourable outcomes compared to institutions that did not implement a SNM intervention. Wechsler et al's study has, however, been heavily criticised for failing to examine whether each campus prevention initiative successfully reduced misperceptions, as the social norms model makes no specific predictions for outcome unless the intervention successfully shifts perception in the desired direction (Perkins & Linkenbach, 2003). It has also been argued that Wechsler et al's assessment of the type of prevention programme used at each institution was overly simplistic, and took no account of the quality of any intervention or whether respondents were suitably qualified to make a judgment regarding their institutions approach to prevention.

While impressive outcomes were reported from the SNM interventions at Northern Illinois, West Washington, and Arizona universities (Fabiano et al., 1999; Haines & Barker, 2003; Haines & Spear, 1996) none of these studies included suitable comparison institutions to rule out competing explanations for the positive outcomes. In a quasi-experimental design, Clapp and colleagues (2003) sought to reduce heavy drinking among first year college students using a SNM intervention, improving upon existing designs through the inclusion of a suitable comparison group. Consistent with the social norms model, following exposure to the normative material, students reportedly perceived that other students consumed fewer drinks when partying compared to the comparison students. However, the quantity of drinks and number of heavy drinking episodes reported by students increased regardless of condition. Of somewhat greater concern than null effects, however, the number of drinking days reported by students in the SNM intervention condition rose while falling among comparison students.

Other research by Werch and colleagues (2000) also employed an experimental design, randomising first-year residence hall students to receive a standard alcohol education programme or a SNM intervention consisting of greeting cards and follow-up telephone calls. Results also proved disappointing with the SNM intervention failing to reduce misperceptions of descriptive drinking norms or change behaviour relative to students in the comparison condition.

While the controlled aspects of Clapp et al (2003) and Werch et al (2000) mark improvements in the methodological rigour of studies testing SNM interventions, ecological validity suffered as a result of the increased experimental control. For instance, both studies have been criticised on the grounds that the SNM activities were limited in duration and intensity, with the Clapp et al intervention running for a period of only six weeks, and the efforts of Werch et al were limited to a few greeting cards and follow-up telephone calls. This limited SNM activity and intensity may be contrasted with uncontrolled SNM campaigns running over several years and employing various marketing strategies to maintain interest (DeJong et al., 2006; Perkins, 2006; Perkins et al., 2005). Additionally, Perkins (2006) points out that the increasing frequency of consumption reported by students allocated to the SNM intervention condition in Clapp et al's study provides no empirical test of the social norms theory or related intervention model because none of the normative feedback related to the average frequency of alcohol use.

So far, promising findings from uncontrolled SNM interventions may be contrasted with less positive outcomes of several controlled trials, which themselves may be criticised for a lacklustre approach to marketing activity duration and intensity. In contrast, DeJong and colleagues (2006) carried out one of the most methodologically rigorous and carefully evaluated SNM interventions to date. In the two-year study, 18 U.S colleges were randomized to receive a SNM intervention or continue with the standard alcohol prevention programme at their institution. In a pretest-posttest cross-sectional design, the SNM intervention was associated with positive effects on perceived drinking

norms, drinking behaviours, and the number of adverse consequences experienced by students when compared to standard prevention efforts. The researchers were also able to conclude that the positive treatment effects were partly due to lower post-intervention normative perceptions in the intervention colleges, and there was also evidence of a dose-response relationship between intervention intensity and positive outcome.

While the study by DeJong and colleagues published in 2006 suggested that SNM interventions demonstrate efficacy over other college alcohol prevention approaches in high quality research studies, the findings failed to generalise when an identical protocol was followed at a different set of U.S colleges (DeJong et al., 2009). In contrast to the earlier study, after controlling for key background variables, the study published in 2009 found no evidence of a positive effect of the SNM interventions on perceptions of drinking norms, personal consumption or adverse consequences of alcohol use. The researchers note that a heavier pattern of consumption was reported in the second study, which also involved a larger proportion of North East and North Central U.S institutions – regions where heavier rates of college alcohol use have previously been documented. A subsequent analysis (Scribner et al., 2011) revealed that alcohol-outlet density, defined as the number of on-sale outlets within three miles of each of the campuses used in the two trials, acted as a moderator of SNM intervention effects and may explain the outcome discrepancy of these otherwise identical studies. Specifically, Scribner and colleagues found that a greater proportion of sample institutions used in the second study fell into ‘high density environments’, which predicted less impact of the SNM intervention on key outcomes.

Scribner et al’s (2011) findings highlight that contextual factors are likely to play an important role in determining the effectiveness of SNM interventions and raise important questions of the appropriateness of SNM interventions for less moderate populations. Other research also supports the contention that SNM interventions may not be suitable for all target populations. Carey and

colleagues (2006) found perceptions that others consume more than oneself is not a ubiquitous phenomenon and shouldn't be expected for all groups. These authors identified that increasing levels of personal consumption moderated the tendency to perceive other targets as drinking more, with larger quantities of personal consumption eroding the positive self-other discrepancy for the average student at the University and in the U.S more generally. Work carried out in the U.S college and university system indicates that 'Greek' (e.g., fraternity and sorority) organisation members consistently report the heaviest consumption among student groupings, yet perceive (correctly) that the average student drinks less than they do (Borsari & Carey, 2001; Larimer et al., 2011). Research by Carter and Kahnweiler (2000) found fraternity members' consumption to be more heavily influenced by other fraternity group members than the average campus student, and that there exists no healthy drinking norm among this student population which may be fed back in place of the campus norm. Thus where norms are immoderate the effectiveness of a SNM intervention approach may be reduced.

Other evidence suggesting that SNM interventions may not be appropriate for all population groups can be seen in the findings of a study carried out by Campo and Cameron (2006). As predicted, most students overestimated the normative drinking behaviour and attitudinal position of fellow students. Following brief exposure to a descriptive or injunctive normative message the majority of participants either shifted their perceptions and attitudes towards the more moderate norm advocated in the message or maintained their pre-exposure position. However, among a small number of participants, the majority of who underestimated the norm and were heavier drinkers themselves, feeding back the injunctive norm produced a shift in their own attitudes in the unintended and less healthy direction. Campo and Cameron explain their findings through 'psychological reactance', where those perceiving a threat to personal freedoms react through non-compliance to produce a 'boomerang' effect. Campo and Cameron's findings are somewhat limited by the small number of underestimators present in the sample with which to examine

differential reactance to normative messages between over- and under-estimators. Moreover, given the brevity of exposure to the normative messages it is unclear how generalisable the study findings are to SNM interventions running over months or years. Nevertheless, the study questions the broadcast approach of SNM interventions to whole populations, providing tentative evidence that normative feedback may not have a uniformly positive impact across potentially diverse target populations.

In other cases where SNM interventions have failed to have the intended impact, post-hoc investigations have indicated that the intentions of the intervention were not clearly understood or the normative information was not perceived credible. For instance, using a discriminant function analysis, Thombs and colleagues (2004) found no difference between separate pretest and posttest samples on measures of perception and behaviour following a four-year SNM intervention at a large U.S college. Exploratory analyses undertaken with a subsample receiving sufficient exposure to the normative feedback found a minority thought the statistics used in the campaign were credible. Moreover, beliefs about campaign credibility were predicted by increasing alcohol consumption, so that heavier drinkers perceived the credibility of the campaign to be poorer. A lack of clarity over the intended purposes of the campaign was also evident, with a minority of students correctly attributing the campaign's intent: 'to document that most students drink in moderation or not at all'. In another instance Russell and colleagues (2005) asked marketing students to provide a formative assessment of the intervention materials used in an unsuccessful SNM intervention, finding that the key normative information lacked salience and was not memorable. Both studies suggest that despite the compelling simplicity of social norms theory, and elegance of its intervention model, difficulties may be faced when attempting to implement SNM interventions.

2.4.2.2 Appropriateness of social norms marketing interventions for Scottish educational contexts

Although a growing body of evidence documents the existence of misperceptions of drinking norms in a variety of cultural contexts (Bertholet et al., 2011; Haug et al., 2011; Kypri & Langley, 2003; Lintonen & Konu, 2004; McAlaney & McMahon, 2007; Page et al., 2008; Perkins, 2007b), research on the effectiveness of SNM interventions outside the U.S college and university system is less developed.

In a recent review commissioned by the Alcohol Education Research Council, John and Alwyn (2010) found little evidence of on-going research into the effectiveness of interventions feeding back normative information in U.K colleges and universities. Although some work suggests that providing personalised normative feedback can result in positive effects among U.K university (Bewick, Trusler, Mulhern, Barkham, & Hill, 2008; Bewick et al., 2010) and sixth form students (Bewick, Mulhern, & Hill, 2009), self-selection biases and the use of a personalised approach limit the generalisability of this work to an understanding of how SNM interventions may operate in a Scottish educational context with a universal target population.

While normative feedback is used in several prominent classroom social influence programmes it has typically comprised just one of several features of a more comprehensive approach (e.g., Botvin et al., 1995; Faggiano et al., 2010; Hansen & Graham, 1991), and it is unclear how this work relates to standalone SNM interventions. One case study (Haines, Barker, & Rice, 2003) described in Perkins' handbook made use of a SNM intervention in two U.S high schools and found the percentage of 13-year-old pupils misperceiving past 30-day prevalence of drunkenness declined over a period of two years, as did the actual frequency of alcohol use, drunkenness, and consumption of five or more drinks on a single occasion. However, no comparison schools or classes were included to rule out alternative explanations for the reductions in misperceptions and

behaviour change. Moreover, while the SNM intervention targeted all pupils attending the high school, the effects of the intervention were only examined for 13-year-old pupils and generalisability of the findings to pupils of different ages is unclear.

An obvious drawback of the focus on U.S college and university research is a limited understanding of how SNM interventions are likely to operate where cultural drinking norms differ from those found in the U.S. This is a pertinent concern given that the social norms model assumes the existence of a moderate norm that can be used to reframe perception. However, a variety of evidence indicates that U.S and U.K cultural drinking norms are likely to differ. For instance, 63% of adults in the U.S can be classed as current drinkers (NIAAA, 2004b), substantially lower than the 85% of the U.K population aged 16 years and over (S. Robinson & Harris, 2011). Likewise, ESPAD data (Hibell et al., 2009) indicate that 15-year-old school pupils from the U.K are much more likely than their U.S counterparts to have consumed alcohol during their lifetime (92% vs. 62%), in the past 30 days (70% vs. 33%) and to have been drunk (65% vs. 41%). Comparative research carried out between U.S and Scottish higher education students also suggests Scottish students drink more frequently and intensely than those from the U.S (Delk & Meilman, 1996).

The legal context of young person's drinking also differs between the U.S and U.K. For instance, a majority of U.S students attending college or university are not in a position to legally purchase or consume alcohol for a substantial proportion of an undergraduate degree and, in some cases, may face punitive action for infringing college alcohol policy. In contrast, the legal age of purchase for alcohol in the U.K is 18 years and a majority of students attending university will be in this position from commencement or within the first year of undertaking their degree. John and Alwyn (2010) also report anecdotal evidence from university staff that a degree of apathy exists among some senior U.K university staff, where heavy alcohol use among university students may be seen as a rite-of-passage. In contrast, drinking on U.S college campuses is seen

as a substantial concern and dedicated prevention programmes are in place in a majority of colleges and universities (Nelson, Toomey, Lenk, Erickson, & Winters, 2010; Perkins, 2002b).

To the extent that a more normalised culture of alcohol use exists in the U.K compared to the U.S, the outcome of interventions based on the social norms model may also differ. One implication of the ostensibly greater normalisation of alcohol use in the U.K compared to the U.S is the greater alcohol-related experience this is likely to afford. If, as is hypothesised to be the case, misperceptions of drinking norms are a consequence of the limited availability of information about the drinking practices and attitudes of others, then greater exposure to alcohol use may lead to less distorted perceptions of drinking norms. While this seems unlikely given increasing evidence that young people misperceive drinking norms in the U.K and internationally, a lack of research means it is unclear how SNM interventions would fare in a U.K context.

2.4.2.3 A reliance on questionnaire data in social norms research and interventions

Research relating to social norms theory and interventions to correct overestimated drinking norms is often reliant on responses made to self-report questionnaires. Typically, normative data are collected from a sample of the population of interest using a simple self-report questionnaire containing a question-set to address young people's own alcohol-related behaviours and attitudes (i.e., self-referent), and a similar set intended to record their perceptions of peers' alcohol-related behaviours and attitudes (i.e., peer-referent). Self-referent responses are used to identify the actual drinking norms within the population while peer-referent responses specify perceived peer drinking norms. It is the consistent overestimation of drinking norms, as determined by the discrepancy between self- and peer-referent responses, which is a central tenet of social norms theory and provides the rationale for the intervention model which seek to correct exaggerated perceptions. In the

absence of a discrepancy between self- and peer-referent responses the basic assumption of the social norms model, that young people overestimate drinking norms, would be unsupported.

For those working in applied contexts that may wish to implement a SNM intervention, there is a similarly heavy reliance on self-report questionnaires. Handbooks and guides (Haines et al., 2005; Perkins, 2003) in the field advocate a relatively straightforward method where normative data are collected at baseline using the approach described above. Where the actual drinking norm is moderate and healthy, yet perceptions of peer drinking norms are more extreme, actual normative drinking information extracted from questionnaire responses may be fed back to the population in an attempt to correct those misperceived norms. Subsequent waves of questionnaire data can also be used to monitor and evaluate the impact of the intervention on perception, behaviour and attitudes. As the process is cyclical, with interventions potentially running for several years, this information may constitute up-to-date normative feedback to be used in subsequent waves of the intervention. Given the heavy reliance on self-report questionnaire responses throughout social norms research and interventions, it is of some importance that young people's responses to those questionnaires provide an accurate and meaningful assessment of their alcohol-related actions, thoughts and beliefs.

2.4.2.3.1 Self-reports of substance use

It is commonplace for researchers in the social norms field to note the heavy reliance they place on alcohol-related information extracted from self-report questionnaires (e.g., Broadwater, Curtin, Martz, & Zrull, 2006; Carey et al., 2006; Lewis & Neighbors, 2004). However, it is also frequently implied that this reliance on a single method of recording alcohol-related information is unlikely to affect the robustness of their findings (e.g., DeJong et al., 2006; LaBrie, Cail, Hummer, Lac, & Neighbors, 2009; Martens et al., 2006; Neighbors et al., 2006; Perkins et al., 2005; Schultz & Neighbors, 2007; Wechsler et al., 2003).

Findings from the wider epidemiological alcohol field are offered in support of this position, where it has been argued that self-report responses provide a reliable, valid, and economical means of investigating alcohol use provided that factors relating to cognition, context, and anonymity are attended to (e.g., Babor, Steinberg, Anton, & Del Boca, 2000; Del Boca & Darkes, 2003; Midanik, 1988). Broadly similar arguments are advanced by the National Social Norms Institute (2011) based at the University of Virginia which hosts a webpage on the matter.

A limited number of studies have sought to validate responses to social norms questionnaires more directly. Baer and colleagues (1991) examined college students' drinking reports collected via self-report questionnaires and interviews. The two methods produced reports of number of drinking days and drinks per occasion that correlated well with one another ($r = .56$; $r = .48$) despite using different metrics. Other research (Foss, Deikman, Goodman, & Bartley, 2003) collected college students' self-reported alcohol-use before, during, and after a SNM intervention. Breathalyser samples were then used to estimate students' blood alcohol content, which validated the trend for declining levels of alcohol consumption following the SNM intervention.

In contrast, a more limited number of investigations suggest that the reliability and validity of substance use reports should not be an a priori assumption for social norms research. Routinely identified as evidence that underreporting of alcohol consumption is commonplace and substantial, sales data typically exceed the volume of alcohol reported in surveys of the general population. In some cases it has been suggested that commonly used quantity-frequency questionnaire measures fail to capture up to 50% of purchased alcohol (Stockwell et al., 2004). It should be borne in mind, however, that sampling procedures used in population surveys are often unsuited to estimating the consumption of several subpopulations known to drink heavily given their focus on those living in private dwellings.

In other research (Northcote & Livingston, 2011) young Australian adults' self-reported drinking quantities were covertly assessed via *in-situ* field observations. While self-reported quantities differed little from observer reports provided that the drinking episode involved fewer than eight drinks, above this criterion self-reports increasingly undercut those of the observer. In another case (Davis, Thake, & Vilhena, 2010) self-presentation biases and, in particular, the desire to present oneself in a positive light led to lower levels of self-reported consumption. Canadian college students scoring high on impression management reported drinking less often, less intensely, and also reported experiencing fewer harms than lower scorers

Percy and colleagues (2005) have also drawn attention to the problem of recanting among young people. In the context of their research recanting describes a longitudinal response pattern where a "yes" response to lifetime drug use is contradicted by a "no" response at a later date. Using two separate waves of data from the Belfast Youth Development Survey, Percy and colleagues report that 7% of youths who reported ever having used alcohol in 2001 reversed their position in 2002, claiming that they had never used alcohol. A more convincing demonstration of this effect, however, is the 19% of youths who previously reported intoxication and then subsequently recanted the following year. If Percy and colleague's findings related to a shift in attitudinal position or a change in values or beliefs over time, then cognitive dissonance (Festinger, 1957) may account for pupils' recanting patterns. However, as lifetime alcohol use and intoxication represent behavioural events, it is difficult to see how cognitive dissonance can account for these findings.

McCambridge and Strang (2006) also report on data collected in the classroom as part of a failed trial of a preventive intervention for 14-15-year-old pupils. Follow-up investigation revealed widespread mistrust of the anonymity of responses and substantial underreporting of substance use among pupils. This was the case despite pupils being provided with assurances that they could not be identified from their responses. It should be noted that McCambridge and

Strang's findings relate to the reporting of illicit substances and the extent to which their findings generalise to alcohol use is unclear. Nevertheless, these data collected among school age populations raise important questions about the presumed reliability and validity of self-reported substance use that would appear to be widely accepted in social norms research.

It is an implicit assumption of much research in the field that reports of substance-use and related mental processes are contextually independent and motive-free accounts; where an analysis of the semantic properties of any question- and answer-set is sufficient to understand the nature of the data in hand. However, this narrow focus cannot easily account for instances of biased responding such as would appear to be the case in several of the examples described. In contrast, findings of this type are compatible with and, to some extent, expected within alternative approaches to language that extend the usual interpretative framework to include the function or intended purpose of language. This alternative approach to language assumes at outset that reports of substance use are likely to vary in accordance with the perceived requirements and motivations of respondents (Davies, 1997a, 1997b), that language is performative and action-oriented (Edwards & Potter, 1992; Wittgenstein, Anscombe, & Wittgenstein, 1963), and therefore questions the a priori assumption that self-report responses constitute factual accounts of young people's alcohol-related behaviours and thoughts. This position is made clear by Wallace (2004) stating (of language):

it is an attempt to get things done, not primarily to be veridical. It is also situated: the response of subjects to questions (or for that matter, questionnaires) is system (or context) specific. One cannot assume that a statement made in one context will necessarily be given in another. Statements are not 'representations' of 'inner states. (Wallace, 2004, p. 197)

From this perspective, respondents are not treated as disinterested bodies, concerned solely with the passive transfer of truthful and accurate information to the researcher; rather, they are treated as motivated individuals who construct explanations and accounts in ways that fulfil current contextually relevant needs, and are highly skilled in doing so. Potter and Wetherell (1987) have also questioned the contextual independence of questionnaire responses:

...we need to ask, for instance, whether people filling in an attitude scale are performing a neutral act of describing or expressing an internal state, their attitude or whether they are engaged in producing a specific linguistic formulation tuned to the context at hand...given different purposes or a different context, a very different 'attitude' may be espoused. (Potter & Wetherell, 1987, p. 352)

In this instance the text refers to attitudinal research, though it is clear Potter and Wetherell's argument may be extended to other branches of health research where questionnaire-based methodologies remain the principal means of collecting information. It seems likely that their argument is particularly relevant where there is any risk that a certain line of responding may be construed as socially reprehensible or accountable⁹. By extension, drinking information provided by young people in response to social norms questionnaires may be influenced by contextually relevant motivational factors rather than constituting factual accounts of their alcohol-related behaviours, attitudes and perceptions.

⁹Whether the reporting of certain alcohol-related practices or beliefs should be considered socially reprehensible or accountable may be debated. However, it is useful to recall that much of the empirical research carried out in the social norms field is based on the responses of college and university students from the U.S where most entering students are not legally in a position to consume alcohol for several years.

2.4.2.3.2 Questionnaire structure

Given the basic premise of social norms theory and interventions, that young people hold inaccurate and unhealthy perceptions of peer drinking norms, common features of social norms questionnaires are items to measure respondents' drinking behaviour and attitudes and a range of similar questions to measure their perceptions of those behaviours and attitudes for relevant target groups. As a result, evidence that young people hold distorted perceptions of alcohol-related behaviour and attitudes is frequently based on responses made to questionnaires that ask young people about their own alcohol-related behaviours and attitudes *as well as* their perceptions of peers' alcohol-related behaviours and attitudes. In many cases the self- and peer-referent questionnaire item strings mirror one another, to the extent that certain studies (e.g., Werch et al., 2000) have been criticised for failing to use identical versions of self- and peer-referent questionnaire items. In other cases, studies which have incorporated self- and peer-referent measures that differ structurally from one another have been excluded from meta-analyses for this very reason (e.g., Carey et al., 2006). However, it is not clear that inclusion of self- and peer-referent measures in the context of a single questionnaire should be the default approach to collecting information of this kind.

Researchers (Perkins, 1997, 2002a) have explained the exaggerated nature of young people's perceptions through cognitive biases such as the fundamental attribution error (L. Ross, 1977). People are conceived of as information processing organisms, albeit occasionally inefficient ones prone to errors in reasoning and logic, where limited information regarding other people's alcohol-related behaviours and attitudes can lead to inaccuracies when making estimates about their behaviour or inferring their attitudes and beliefs. From this perspective, discrepancies between young people's alcohol-related behaviours and attitudes and perceived peer norms constitute genuine errors of judgment in young people's estimation of the prevalence and extent of peers' alcohol-related behaviours and attitudes.

In contrast to this account of unmotivated and disinterested responding, the preceding section argued that the function substance-use reports serve for respondents should be considered in order to fully understand the nature of self-report data. In several instances where consideration has been given to the function of responses these have been shown to vary in accordance with the perceived requirements, motivations and context of responses (Davies & Baker, 1987; Davis et al., 2010; Newham & Davies, 2007; A. J. Ross & Davies, 2009). Furthermore, general rather than specific-to-substance-use research has shown that categorisation into groups on arbitrary and seemingly trivial bases can induce acts of in-group favouritism and out-group discrimination (Tajfel, 1970). Participants in these classic studies of inter-group discrimination have displayed evidence of accentuation of perceived out-group differences and in-group similarities.

Social comparison research has also identified that individuals compare extensively with other individuals for a variety of reasons that may include self-enhancement:

While social comparison is often concerned with truly evaluating personal characteristics, sometimes self-serving motives come into play and lead people to think about similarity on related attributes in biased ways...in recent years social comparison theorists have emphasised the possibility that self-evaluation through social comparison can actually take place without any real social comparison information. Rather than dealing with actual comparison data, people might simply imagine or make up information about what others are like; about how they might perform and what they might think. Instead of dealing with the real thing, people might just construct social data about others' social actions...Goethals et al (1991) noted that constructive social comparison is often self-serving and it is typically engaged when people want to devise

esteem-maintaining views of social reality. (Goethals & Klein, 2000, pp. 31-32)

In one study Klein and Kunda (1993) found that, by comparison with controls given no information about the frequency of peer engagement in 'health-threatening' behaviours such as alcohol consumption, college students provided with the actual norms for their peer group during questionnaire completion adjusted their own self-reported frequencies downwards. Despite no explicit instruction to attend to the normative information, participants ostensibly reconstructed their own behaviours in order to maintain positive self-evaluations relative to the typical student.

Research carried out by Lombardi and Choplin (2010) used a similar manipulation to Klein and Kunda but tied their findings to SNM interventions directly. In one of three experiments, college students allocated to an experimental condition were exposed to SNM materials based on those used 'successfully' by Johannessen et al (2003) to reduce heavy drinking at the University of Arizona. Results indicated that participants exposed to the SNM advertisement during questionnaire completion were significantly less likely to report heavy drinking than students in the control group who were not exposed to the normative information.

Klein and Kunda and Lombardi et al's findings highlight the important point that responses provided to questionnaires within social norms paradigms do not act as 1:1 representations of reality or cognition, but are constructed in the there-and-then of questionnaire completion and are sensitive to external factors of the study environment. It would therefore seem sensible to question whether the tendency for young people to perceive heavier consumption among peers stems solely from errors when making judgments about them or whether this effect may also reflect a socially motivated pattern of responding. While use of a single instrument to record students drinking behaviour and perception may be economically appealing and statistically powerful, the salience of any

comparison between the self and the other targets on relevant alcohol-related variables is likely to be heightened. By implication, such a practice may encourage responses that enable respondents to maintain a positive social comparison with peers. Important questions remain therefore over the typical format of questionnaire used in this field and whether it may play an active role in producing the distortion between perception and 'reality'.

2.4.2.3.3 Context of questionnaire completion

Drinking contexts may refer to locations or settings in which drinking takes place and can include any number of public or private locations such as bars, restaurants, parties, the home or outdoors (Cahalan, Cisin, & Crossley, 1969; Jessor, 1982).

Research examining drinking practices across contexts has demonstrated variability in self-reported drinking behaviours and risks across them (Nyaronga, Greenfield, & McDaniel, 2009). Although drinking behaviours can vary by context, the social norms paradigm has often involved the collection of information on drinking behaviours, attitudes and perceptions in the college environment or via an online questionnaire in some unknown location. This is understandable given that the target population for social norms research has tended to be university and college students, and participants of this type are conveniently located or sourced from the college or university environment; moreover, large sample sizes are often desirable to bolster claims of sample representativeness, making lecture rooms and online surveys attractive for the purposes of data collection. This approach, however, does mean that social norms research has typically involved the completion of questionnaires in contexts that are detached from an environment in which drinking is likely to take place.

The context of questionnaire completion would seem an under-researched but important line of enquiry in social norms research for several reasons. Given the

work described in the preceding section, collecting drinking information in a context detached from the typical drinking environment may lead to a different set of social and psychological dynamics and thus a different pattern of responses. Here, social norms information collected in a detached setting may represent just one of several possible realities and an understanding of how responses vary across settings may offer important insight into the overall robustness of social norms questionnaire responses.

Some researchers of social cognition models have also argued the importance of collecting information in naturalistic drinking environments. It is suggested that different contexts are likely to moderate the salience or accessibility of previous experiences and knowledge, with the potential to alter operative relations within models. For instance, Wall, Hinson and McKee (2000) found female, but not male, undergraduate students perceived more positive alcohol-related outcome expectancies in a naturalistic bar setting than in a laboratory. The authors interpret their findings as an effect of the greater accessibility of alcohol-relevant cues in the naturalistic drinking environment.

Recent research by Cooke and French (2011) using the Theory of Planned Behaviour compared variance explained in intended alcohol consumption for students recruited in a Students' Union bar and those recruited in lecture halls. Although the proportion of variance explained in intention was similar in either context, when intentions to binge drink on specific occasions in the very near future were measured, the relative importance of subjective norms increased in the bar compared to the library context. Importantly, these findings altered the dynamics of the model, with subjective norms replacing attitudes as the most important predictor of intention. On a practical level, then, interventions informed by social cognition models may benefit if those behaviours, attitudes and perceptions germane to students in naturalistic drinking environments are better understood.

In a limited number of cases social norms research has also considered the role of context in young people's drinking. For instance, Thombs and colleagues (1997) administered a paper and pencil questionnaire to high school and college students. Among several issues of interest the questionnaire elicited information on the social context of students' drinking, including the physical setting where it took place. However, the 'location' items marked a subset designed to examine the broader issue of social context of drinking which included social facilitation, stress control, peer acceptance, family, and school-defiance. Although perceptions of drinking intensity and other risk behaviours were assessed for close friends and typical students, no context-specific information was sought for these perception items.

Local research carried out by McAlaney (2007) and McAlaney and colleagues (2007) asked students at the University of West of Scotland to provide information on the usual quantity of drinks consumed in a pub or a club and to provide identical information for close friends, the average student of similar age at the University, and the average person of similar age in the U.K. Their findings indicated that students perceived that all three targets consumed a greater quantity of drinks in a pub or a club than they themselves did. Similarly, Lewis and colleagues (2011) examined the typical amount of alcohol consumed across each of five drinking contexts (bar, home, non-fraternity/sorority party, fraternity/sorority party and sporting event) as well as students' perceptions of the amount consumed by the typical student at the University within each context. This study extended McAlaney and colleague's findings to the U.S college system where most social norms research has been undertaken, and indicated that college students overestimate the drinking norms for fellow students within each of these contexts, and that context-specific normative perceptions were associated with students' own behaviour in each.

Both McAlaney and Lewis and colleagues' findings demonstrate that the typical effect of overestimation holds for different drinking contexts; however, students in both studies were asked to report their use of alcohol and perceptions for the

typical student *as if* they were in the different locations – data were not collected *in situ* the context of interest. Thus there are outstanding questions over whether the tendency to overestimate peer-drinking norms holds when data are collected in alternative contexts.

2.5 Overview of proposed research

The aim of the thesis was to undertake a programme of research that will shed light on the appropriateness of the social norms theory and intervention model for use in Scottish educational settings. Two separate lines of research incorporating a total of five studies sought to address this overarching aim via the issues of concern raised in Chapter 2. These included:

- (i) an evaluation of a case study of a social norms marketing intervention in a Scottish secondary school context (Study One);
- (ii) a series of studies critically examining methodological features of social norms research among secondary school pupils (Study Two) and university student populations (Study Three to Five), with a focus on questionnaire structure and the context of questionnaire completion.

2.5.1 The Studies

Study One arose through an opportunity to work with SAADAT on a SNM intervention involving two Scottish secondary schools from the Forth Valley region. The project sought to determine whether or not pupils misperceived alcohol-related norms among their peers and, if so, whether a SNM intervention delivered in one of the schools over a period of two years could successfully reduce misperceptions and the extent of unhealthy alcohol-related behaviours and attitudes. The project was externally managed through SAADAT, and an on-site coordinator taking guidance from a manual for implementing SNM interventions facilitated intervention work. This author's contribution involved generating various data reports to assess on-going impact and provide up-to-date normative information for use in subsequent waves of a rolling SNM intervention. Study One of this thesis is concerned with the final stage of this project, an evaluation report examining the impact of the two-year SNM intervention on pupils' alcohol-related perceptions, behaviours and attitudes. It was anticipated that Study One would provide valuable insight into the likely

impact and suitability of SNM interventions in Scottish secondary school contexts.

Whereas Study One was concerned with examining the impact of a SNM intervention in a Scottish secondary school context, Studies Two to Five sought to better understand methodological issues surrounding social norms research. Specifically, a series of studies examining the role of context and questionnaire structure was devised to provide insight into the robustness of the central tenet of social norms theory and interventions – that young people misperceive peer alcohol-related norms in the direction of overestimation.

Study Two made use of the opportunity afforded by the collaborative work with SAADAT to examine the effects of various structures of social norms questionnaires on pupils' responses during the baseline data collection stage of the SNM intervention project. This involved splitting the traditional format of questionnaire used in social norms research to examine whether responses differed between those questionnaires which included self- and peer-referent items and those that included only self- or only peer-referent items. It was anticipated that using different questionnaire structures would affect the salience of social comparison information present in the questionnaires, and make clear whether secondary school pupils' questionnaire responses are to some extent socially motivated (Davies & Baker, 1987; Davies & Best, 1996; Davis et al., 2010; Klein & Kunda, 1993; Lombardi & Choplin, 2010; Newham & Davies, 2007; A. J. Ross & Davies, 2009; Tajfel, 1970).

Studies Three to Five continued the focus on methodological issues surrounding questionnaire responses in social norms research and interventions. However, whereas Study One and Two used large datasets involving secondary school pupils; Study Three, Four and Five shifted the focus to University students, the population for which the majority of social norms research and intervention work has been carried out.

Study Three acted as a pre-cursor to Studies Four and Five by attempting a partial replication of recent research carried out at the University of West of Scotland which documented overestimation of drinking norms among fellow students at the University (McAlaney & McMahon, 2007), and a positive self-other discrepancy effect for several other target groups (McAlaney, 2007). It was anticipated that, if a similar broadly similar pattern of self-other discrepancies were found at the University of Strathclyde as has been documented elsewhere, using a similar methodology and moderate sample size, this would justify a further two, more focused, studies using smaller samples of University of Strathclyde students to examine methodological issues around questionnaire completion.

Study Four examined the environmental context in which university students' responses to social norms questionnaires were obtained. Similar to the traditional locations and environments in which social norms research has been carried out, questionnaire responses were collected in locations detached from the typical drinking environment, including university computing labs, lecture halls and the library; however, identical data were also collected in the naturalistic drinking environment of the Students' Union bar. Study Four therefore sought to investigate whether students' responses to social norms questionnaire vary by context, and whether a similar pattern of positive self-other discrepancy is observed when social norms questionnaire responses are collected in a naturalistic drinking environment as when collected in a more conventional setting which is detached from a naturalistic drinking environment.

Similar to Study Two, *Study Five* examined responses provided to different structures of questionnaire, but with a university student population, a different set of questions and a wider range of referent target groups. Once again, responses were collected in contrasting environmental contexts, providing an opportunity to examine the pattern of responses between and within these different contexts.

CHAPTER 3: STUDY ONE – AN EVALUATION OF A SOCIAL NORMS MARKETING INTERVENTION IN TWO SCOTTISH SECONDARY SCHOOLS

3.1 Introduction

After commencing this Ph.D an opportunity arose to become involved with a study of a SNM intervention involving two Scottish secondary schools from the Forth Valley region. The project was thought to be the first of its kind to take place in a Scottish secondary school context. Given a lack of clear understanding over the generalisability of the predominantly North American literature, the project sought broad indications as to whether a SNM intervention, delivered in one of the two secondary schools over a period of two years, could successfully reduce misperceptions where they existed and lead to a reduction in unhealthy alcohol-related behaviours and attitudes relative to pupils in a comparison school.

The project was externally managed by SAADAT who assumed overall responsibility for the design and running of the project, including data collection and the employment of a project worker to coordinate the SNM activity in one of the schools on a fulltime basis. Over the duration of the two-year project, and consistent with the expectations of the collaboration-oriented ESRC CASE studentship, the current author generated several data reports and provided recommendations based on these. These included: (i) a baseline report identifying those areas where pupils in one of the secondary schools misperceived theoretically important alcohol-related descriptive and injunctive norms; (ii) several data reports including normative information to be used in the intervention activities; (iii) a preliminary one-year post-baseline report evaluating the first year of the SNM intervention, and; (iv) a two-year post-baseline final evaluation report examining the impact of the SNM intervention on pupils' alcohol-related descriptive and injunctive norms and perceptions of those norms. Study One is modelled on (iv), the final two-year post-baseline evaluation undertaken for SAADAT.

3.1.1 Overview

Participants: 12-18-year-old male and female schools pupils attending two state-funded secondary schools in the Forth Valley region of Scotland provided alcohol-related information over the course of two school years.

Design and methods and intervention: Two-year pretest-posttest design with a comparison group. Cross-sectional data were collected at three time points over a two-year period. Baseline (T1) information was collected concurrently in the school designated to receive the social norms marketing (SNM) intervention and the comparison school during April 2009 via self-report questionnaires. The questionnaire included a range of items to measure alcohol-related descriptive and injunctive norms and perceptions of those norms for the 'typical pupil' in the respondents' year. From baseline information, theoretically important misperceptions of alcohol-related descriptive and injunctive norms were identified among pupils attending the SNM school. An intervention then universally targeted the whole-of-school population using a variety of marketing and curriculum infusion techniques to feed-back accurate and healthy normative information over the course of the 2009-10 and 2010-11 school years. The comparison school agreed to proceed as usual with their existing alcohol education provided in PSE/PSHE lessons. The data collection process was repeated in both schools approximately one and two years post-baseline during April 2010 (T2) and March 2011 (T3). Pupil responses were not linked across successive rounds of data collection.

Evaluation: The impacts of the SNM intervention were determined through examination of pupils' alcohol-related injunctive and descriptive norms, their perceptions of those norms and experience of alcohol-related harms between T1, T2 and T3. Given the exploratory nature of the intervention formal hypothesis statements are inappropriate (e.g., Arain, Campbell, Cooper, & Lancaster, 2010). Evidence of a positive impact of the SNM intervention is broadly defined as a favourable change over time in alcohol-related perception,

attitude and behaviour variables relative to pupils attending a comparison school. Moreover, any changes over time in these variables should be consistent with the underlying social norms approach model on which the SNM intervention was based.

3.2 Methodology

3.2.1 Measures and data collection

T1 cross-sectional data were collected using anonymous self-report questionnaires administered in classroom settings during late April 2009. Although further data collection stages were scheduled to take place one and two years later, some differences exist. Due to examination commitments in May, and a saturated April holiday schedule, T3 data were collected at the end of March 2011 to avoid the absence of substantial numbers of pupils. Regardless of these year-to-year differences, pupils attending the SNM intervention and comparison schools completed questionnaires within the same working week.

Questionnaires used in this research comprised a range of items derived from sample questionnaires available in *A Guide to Marketing Social Norms for Health Promotion in Schools and Communities* (Haines et al., 2005), a U.S guide to the implementation of SNM interventions which is available to download from the National Social Norms Institute. 'Americanised' items were adapted for use in the Scottish context in an unrelated study by Ayrshire and Arran Alcohol and Drug Partnership and received further amendment for this project following a piloting phase undertaken in schools from the same geographical region to assess comprehension and usability.

Items included in the questionnaires were wide-ranging and only a subset of these was selected for use in the current evaluation. Those selected were relevant to descriptive and injunctive norms that baseline reports identified as being misperceived in the direction of overestimation and a target for

normative feedback. These included self- and peer-referent versions of: (i) the usual type of drink consumed when with friends, based on eight alcoholic and non-alcoholic drink response options; (ii) past 30-day frequencies of consumption, and; (iii) past 30-day frequencies of drunkenness, both using 7-point ordinal scales ranging from *zero occasions in the past 30 days* to *every day of the week*; (iv) four attitude items required pupils to state degree of agreement on a 4-point scale ranging from *strongly disagree* to *strongly agree*. In-line with existing guidance (e.g., Haines et al., 2005) self- and peer-referent item strings were identical, varying only in terms of the target-referent of the item (e.g., When *you* are with your friends, what do *you* usually drink? vs. When *they* are with friends, what do you think the *typical pupil* in your year usually drinks?). Other relevant items included (v) past-year adverse consequences resulting from alcohol use, which required pupils to indicate whether they had experienced each of twelve alcohol-related consequences in the past 12 months as a result of drinking alcohol.

3.2.2 Social norms marketing intervention

T1 analyses indicated that pupils attending the SNM intervention school exhibited theoretically important misperceptions of descriptive and injunctive norms. In those cases where, by comparison, the true norms for the population were moderate and healthy, a member of the project team based fulltime in the SNM school coordinated feedback of healthy alcohol-related normative information to pupils. Pupils attending the comparison school continued to receive their existing alcohol education in PSE/PSHE lessons which was based around existing guidance [i.e., curriculum for excellence (Scottish Executive, 2004)].

Channels used to promote the accurate norms were wide ranging and include: marketing activities such as poster- and print-advertising, loudspeaker messaging systems and competitions; additionally, normative feedback was infused across the educational curriculum through PSE/PSHE and Product- and

Graphic-design classes and workshops. Normative information fed back through marketing activity tended to be universally targeted and only norms appropriate for an entire school population were used. Key normative information promoted at the whole-of-school level can be seen in Table 3.1 and examples of print-media marketing materials can be seen in Figures 3.1 - 3.3.

In some cases it was necessary to stratify norms according to age and/or gender for delivery at class or year-group level. For instance, T1 data indicated a moderate degree of alcohol use among older pupils, making alcohol use in the past 30 days the statistical norm at an aggregate whole-of-school level. To avoid exposing younger pupils to normative feedback promoting a more permissive norm than was actually true for their age group, norms relating to past 30-day alcohol use and drunkenness were not fed back at a whole-of-school level. It should be noted that the extent of exposure to classroom-based normative feedback is unknown and impact of the intervention cannot be examined at that level. Therefore, classroom activities are considered within the broader framework of the whole-of-school marketing intervention.

Table 3.1 Whole-of-School Level Descriptive (Behavioural) and Injunctive (Attitudinal) Normative Feedback

| Key message included in normative feedback activity |
|--|
| <i>Descriptive normative messages</i> |
| Most (2009-10: 86%; 2010-11: 87%) pupils consume non-alcoholic drinks when with friends |
| <i>Injunctive normative messages</i> |
| Most (2009-10: 67%; 2010-11: 64%) pupils disagree that it is okay for U18s to drink frequently |
| Most (2009-10: 58%; 2010-11: 66%) pupils would prefer to go out with a non-drinker |
| Most (2009-10: 88%; 2010-11: 90%) pupils do not need a drink to have a good time |
| Most (2009-10: 94%; 2010-11: 93%) do not need to be drunk to have a good time |



Figure 3.2 Example Posters and Postcards Displaying an Accurate Normative Message

ALCOHOL SOCIAL NORMS

Do you really know what your friends are doing?

More and more pupils are choosing not to drink.

Over the last year the pupils have been finding out the truth around alcohol use and young people. After a year of promoting the truth more and more pupils are starting to choose soft drinks and are saying that they would rather go out with someone who doesn't drink.

- 85% of teenagers choose soft drinks when they are out with their friends
- Most pupils would rather go out with someone who doesn't drink (66%)
- 9 out of 10 pupils said they didn't need a drink to have a good time

Most young people don't think it's ok for under 18s to be drinking alcohol frequently (67%)

(From a survey of 956 Denny High School pupils aged 12 – 18 carried out by Strathclyde University 10/11).

Because people tend to want to fit in with their group, if pupils believe that most of their peer group drink alcohol regularly they can feel under pressure to have a drink too. Because of the negative press around young people and alcohol misuse and because we tend to see more of the small minority who do drink, rather than the majority who don't, it's not surprising that we start to think most young people are drinking alcohol. From our school survey we know that most pupils don't drink alcohol but they believe that most of their peers do. Telling pupils the truth removes some of the pressure they can feel to have an alcoholic drink.

What difference does the project make?

The project reached the finals of the UK Mentor Champ Awards. The pupils worked hard to produce a film outlining what they've been doing in the project and illustrating the difference the project makes to them. They received a certificate of distinction and a prize of £250 for their efforts.

Our focus at the start of this year has been with first years. Many of the first years believed that the older pupils would be drinking. Here are some of the things they had to say about learning that most pupils don't drink:

I feel... "safer, confident, relieved, better, happier and more relaxed, safer and more relaxed, happy because it doesn't set a bad example, I am in a nicer environment... knowing that most pupils don't drink.

Competition winners

Congratulations to:

Caitlyn McDonald from 1C1 who won £50 of vouchers donated by Northfield Quarries in our October quiz and Christopher Dunn (S3) and Robbie McKenna (S1) who designed the project Christmas Cards and received £15 of iTunes vouchers donated by Sainsbury's.

To find out more contact:
Shona Keenan
Alcohol Social Norms Project
01324 827444

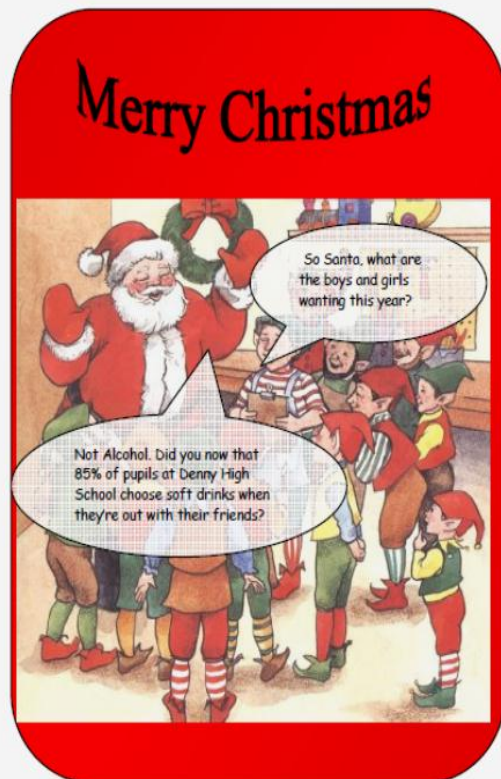


Figure 3.3 Excerpt of a School Newsletter

3.2.3. Sample information

3.2.3.1 Institution details

The schools were selected on the basis of local authority and head teacher support; were matched for age of school, socioeconomic status and were both non-denominational. Assignment to condition ('SNM' or 'comparison') was based primarily on the school rolls at baseline stage (N = 1206, N = 700) with the larger of the two institutions designated the SNM intervention school and the smaller serving as the comparison school. At T1 (baseline), similar proportions of pupils in the SNM intervention and comparison schools were eligible to receive free school meals (14.2%, 14.8%) and both schools slightly more deprived compared to local authority and national averages (12.2%, 12.9%). The majority of SNM (97.19%) and comparison (94.13%) school pupils identified themselves as White-British, also slightly above the national secondary school average of 93.84%.

3.2.3.2 Sample characteristics

At T1 686 SNM school pupils completed questionnaires while 388 did so in the comparison school; at T2 the figures were 961 and 337, and; at T3, 860 and 462. Figure 3.4 presents the samples of SNM and comparison school pupils as proportions of each school roll at baseline. While just over half of pupils attending each school completed questionnaires at T1, there was a substantial increase in the T2 and T3 response rates in the SNM school. The sizable increase in the SNM sample between T1 and T2 may be due to a number of factors. First, T1 data were collected approximately one week later in the month of April, which coincided with examination commitments for some S3 pupils; however, as T2 data were collected slightly earlier in the school year this examination period was avoided the following year. Additionally, it is conceivable that response rates may have been affected by the on-site presence of the coordinator in the SNM intervention school at T2 and T3 but who was absent at

T1. Following T1, staff and pupils in the SNM intervention school would also be increasingly aware of the purpose for the data collection exercise, whereas there was no on-site presence in the comparison school. As data collected in the comparison school were never fed back, staff and pupils may have felt less enthusiasm for the data collection exercise. Information relating to year-group was only available from T2 and is therefore not reported.

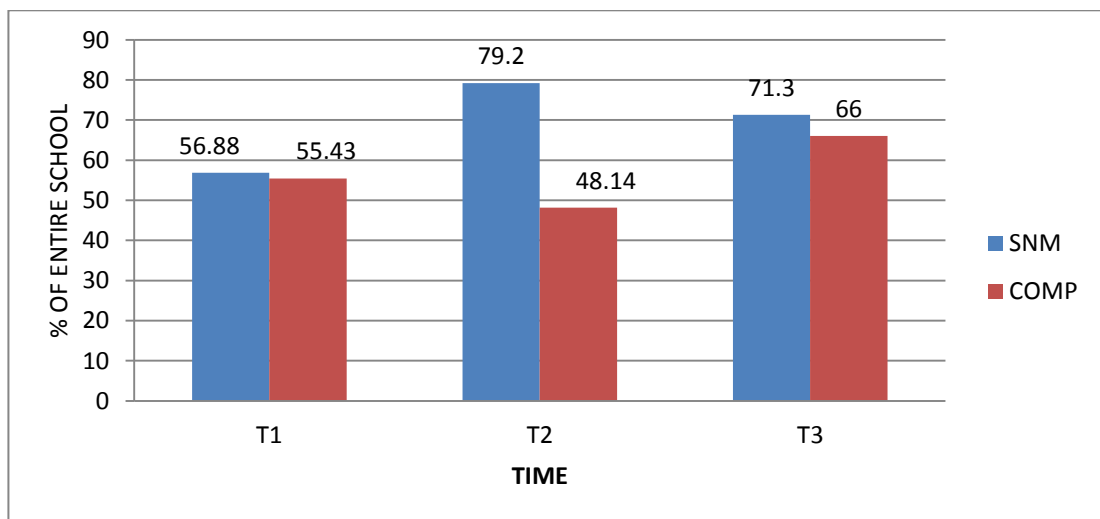


Figure 3.4 Samples Obtained at Each Stage as % of Baseline School Roll (SNM school roll =1206, Comparison school roll = 700)

Across all three stages of data collection the response rate among 17-18 year old comparison school pupils was low (T1 and T3) or non-existent (T2). To provide a more balanced evaluation of the impact of the intervention, pupils aged 17-18-years old were omitted from subsequent analysis. The two-year evaluation therefore focuses on pupils aged 12-16 years. The characteristics of this 12-16-year-old sample are detailed in Table 3.2.

From Table 3.2 sex composition was more evenly balanced in the comparison school condition than the SNM condition, although there were no significant differences between the two at T1, T2 or T3. The proportion of males present decreased over time in both conditions, but this relationship was statistically significant in the SNM condition only [$\chi^2 (2, 2284) = 11.71, p = .003$]. Table 3.2

also indicates that the average age of pupils declined over time within both conditions [SNM: $F(2, 2281) = 2.93, p = 0.54$; COMP: $F(2, 1086) = 21.85, p < .001$], though the difference was more marked for the comparison school and led to a significant between condition difference at T2 [$t(1218) = 3.28, p = .001$]. There was also considerable variation in the age profiles of the conditions at each time point. For instance, in the SNM condition the proportion of 12-year-old pupils comprising each sample increased in absolute terms by 8% from T1 to T3, while the proportion of 13-year olds decreased by a similar margin. In contrast, the proportion of 13-year-old pupils comprising the comparison sample increased by almost 20% between T1 and T3.

Table 3.2 Sample Characteristics by Stage and Condition

| | SNM | | | COMP | | |
|------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | T1: April 2009 | T2: April 2010 | T3: March 2011 | T1: April 2009 | T2: April 2010 | T3: March 2011 |
| <i>Sex</i> | | | | | | |
| Male | 338 (54.8%) | 482 (54.5%) | 368 (47.1%) | 177 (51.6%) | 167 (50%) | 197 (47.7%) |
| Female | 279 (45.2%) | 403 (45.5%) | 414 (52.9%) | 166 (48.4%) | 167 (50%) | 215 (52.3%) |
| <i>Age</i> | | | | | | |
| <i>M^a</i> (SD) | 14, 1 (1, 5) | 13, 11 (1, 4) | 13, 11 (1, 5) | 14, 3 (1, 3) | 13, 8 (1, 2) | 13, 10 (1, 2) |
| 12 yrs ^b | 88 (14.3%) | 159 (18%) | 172 (22%) | 39 (11.4%) | 59 (17.6%) | 48 (11.7%) |
| 13 yrs | 177 (28.7%) | 200 (22.6%) | 160 (20.5%) | 51 (14.9%) | 112 (33.4%) | 140 (34.1%) |
| 14 yrs | 80 (13%) | 190 (21.5%) | 140 (17.9%) | 106 (30.9%) | 68 (20.3%) | 111 (27%) |
| 15 yrs | 134 (21.7%) | 217 (24.5%) | 160 (20.5%) | 83 (24.2%) | 76 (22.7%) | 68 (16.5%) |
| 16 yrs | 138 (22.4%) | 119 (13.4%) | 150 (19.2%) | 64 (18.7%) | 20 (6%) | 44 (10.7%) |

^a Years, months. ^b One pupil reported their age as 11 years and was included in the 12-year-old age group

3.2.3.3 Baseline equivalence of the school samples on key measures

At T1 the SNM sample were more likely to report consumption of non-alcoholic drinks than the comparison sample [87.2% vs. 71.9%; $\chi^2(2, 618) = 22.24, p < .001$] and were also more likely to perceive that peers would consume non-alcoholic drinks [56.9% vs. 48.4%, $\chi^2(2, 599) = 4.02, p = .045$]. Those pupils in the SNM sample who had consumed alcohol to some degree in their lifetime also reported drinking less frequently in the past 30 days (*Median* = 1 occasions vs. *Median* = 2 occasions, $U = 28610, Z = 2.26, p = .024$) and getting drunk less frequently in the past 30 days (*Median* = 0 occasions vs. *Median* = 0 occasions, $U = 26588, Z = 1.98, p = .047$). The SNM sample also held more conservative attitudes than the comparison school to the extent that they were less likely to agree or strongly agree that there is nothing wrong with people under 18 drinking frequently if that is what they want to do [33.9% vs. 46.1%; $\chi^2(3, 647) = 10.82, p = .013$].

3.2.3.4 Questionnaire structure

Rather than using a single questionnaire to collect self- and peer-referent alcohol-related information, linked research (Study Two) necessitated use of three different questionnaires. Specifically, one questionnaire included a range of items suitable for recording pupils' own alcohol-related behaviours and attitudes in addition to their perceptions of those alcohol-related behaviours and attitudes for the typical pupil [i.e., a multiple-target (MT) version]. Two further questionnaires split this format and included items suitable for recording the alcohol-related behaviours and attitudes of a single target in each case [i.e., single-target (ST) 'self' or 'peer' versions].

Following questions on basic demography, the MT version of the questionnaire presented questions on pupils' own alcohol consumption. This section was then followed immediately by the 'peer' reciprocals of each alcohol consumption

item. Questions on injunctive norms were then presented followed by the peer reciprocal of each. The self-then-peer order of presentation within conceptually related measures is consistent with sample questionnaires available in existing guidebooks (e.g., Haines et al., 2005). Injunctive norm measures followed, rather than preceded, consumption items because injunctive norms correspond to what *ought* or *should* be done from a moral or social acceptability position. To present injunctive norm measures before descriptive norm measures would introduce a theoretical risk that respondents present their behaviour in a socially desirable way based on their earlier injunctive norms responses.

Other items of interest to the evaluation included those on any consequences experienced as a result of drinking alcohol. These were presented later in the questionnaire to retain consistency with example questionnaires (e.g., Haines et al., 2005) and to avoid earlier alcohol consumption and attitude responses influencing recollection or perceived desirability of adverse consequence responses. Process measures designed to identify suitable channels for receiving alcohol information and to gauge exposure rates were also presented later in the questionnaire. The two single target versions of the questionnaire followed an identical structure to the MT version except that all 'self' or all 'peer' reciprocal versions of items were removed as appropriate. In addition, process measures were only included in the MT version of the questionnaire because they referred to pupils' own exposure to the normative feedback and would risk contaminating the ST-peer version of the questionnaire if included. They were omitted from the ST-self version to retain consistency between the two single-target versions. The three versions of the questionnaire can be found in Appendix A-C.

Provided that completion rates of the three types of questionnaire were balanced across each stage of data collection any impact of the different questionnaires on pupils' responses would also be balanced and for the purpose of this evaluation ignored¹⁰. While this was the case at T1 and T2, an imbalance

¹⁰ Although Study One and Study Two are linked by a shared sample the research foci of the two studies are quite distinct and integration of the two was considered undesirable.

occurred at T3 such that the SNM school sample were more likely to complete a MT or ST-self version of the questionnaire than a ST-peer version [36.6% vs. 37.7% vs. 25.7%; $\chi^2(2, 1193) = 8.87, p = .012$]. The source of the imbalance was confined to a subgroup of pupils in the SNM school: of 140 questionnaires completed by 14-year-old SNM pupils, just 11 (7.9%) were the ST-peer version while 70 (50%) completed the ST-self version and 59 (42.1%) completed the MT version [$\chi^2(2, 140) = 42.19, p < .001$]. Reasons for the substantial imbalance are unclear as similar procedures were advised at all three stages of data collection. Nevertheless, the imbalance introduced a potential confound to the evaluation as Study Two describes a bias when completing a MT version of the questionnaire for pupils to report more extreme perceptions on some measures. Given an apparent change in perception between T1 or T2 and T3, it would be unclear whether the change was a specific effect of the SNM intervention or an artefact of the questionnaire imbalance.

3.2.4 Evaluative procedure

As the SNM intervention targeted the whole-of-school population, it was initially intended that evaluation of intervention impact would also take place at this level. However, differences between- and within-schools were identified in the sample characteristics, which, combined with the un-linked cross-sectional sampling strategy, rules out meaningful analyses at the whole-of-school level. As age and gender are likely to be associated with the alcohol-related variables of interest, it would be unclear whether changes over time in the dependent variables were due to specific effects of the SNM intervention or variance in the whole-of-school sample characteristics across the three rounds of data collection.

An alternative procedure involves focusing only on those pupils who (in principle) would have been present in either school for the two-year duration of the study and attempts to follow their progress across this period. In the absence of tracking information directly linking an individual pupil's response

from year to year, the impact of the SNM intervention can be examined by pairing cross-sectional samples obtained at T1, T2 and T3 within each school. For example, pupils aged 12 years at T1 can be paired with pupils aged 13 years at T2 and 14 years at T3. Within the 12-16-year-old range it is therefore possible to pair age- and time-specific cross-sectional data to mimic three separate cohorts of pupils within each school:

- (1) A '12-14-year-old cohort' aged 12 years old at T1, 13 years old at T2 and 14 years old at T3;
- (2) A '13-15-year-old cohort' aged 13 years old at T1, 14 years old at T2 and 15 years old at T3;
- (3) A '14-16-year-old cohort' aged 14 years old at T1, 15 years old at T2 and 16 years old at T3.

Whilst it should be noted that this procedure only mimics longitudinal cohort data and therefore lacks certain strengths of genuine longitudinal cohort designs, it permits an assessment of the impact of the SNM intervention for pupils who will have been present for the duration of the two-year study period, and also limits the impact of variance in the whole-of-school sample characteristics across time and schools that might otherwise bias interpretation.

This procedure would, however, be limited by systematic bias present in the sampling procedures, for instance, where 14- and 15-year-old pupils present at T1 and T2 subsequently leave school at 16 years prior to the final round of data collection¹¹. Moreover, although T1 and T2 data collection took place approximately 12 months apart, T3 data were collected almost one month earlier. In effect, this means that any pupils with a birthday overlapping the discrepancy in T2 and T3 data collection points may appear simultaneously at T2 and T3. This should have the effect of lowering variance in the dataset

¹¹In Scotland secondary school pupils are not usually permitted to leave school before 16 years of age. Furthermore, in many Scottish secondary schools, those who turn 16 within the current school year must wait until an appropriate point (e.g., Christmas or the end of the academic year) before leaving.

between T2 and T3, with the potential that intervention effects are more difficult to detect. However, any suppression of variance due to a small number of pupils appearing as duplicate data points would presumably affect comparison school data in a similar fashion. Other potential barriers to meaningful analyses of these paired data would be if the sex composition of the cohorts were unbalanced over time. However, the different T1, T2 and T3 samples used to compile each cohort were equivalent.

As 14-year-old SNM pupils completed a smaller proportion of ST-peer versions of the questionnaire at T3 than at T1 or T2, data collected using this type of questionnaire were excluded from any analysis involving 14-year old pupils at T3. This step is taken only where Study Two findings provided some evidence that responses to the MT and ST-peer instruments differ. While this is limiting in terms of cell numbers and statistical power, it is a necessary step to avoid misleading conclusions. In addition, carrying out analyses at age-specific subgroup level also prevented further analyses taking place, for instance, within sex, given prohibitively small cell sizes.

3.2.4.1 Statistical treatment of data

There are certain characteristics of the study which, combined, restrict the types of analyses that can be carried out; in turn, these restrictions have implications for how intervention effects are evaluated. For instance, the decision to treat the between-subjects cross-sectional data in a 'pseudo-longitudinal' fashion acknowledges the likelihood of a degree of non-random shared variance between the paired samples at T1, T2 and T3. For analyses based on 'tests of association', intervention effects would be confounded with variance attributable to interdependence between the T1, T2 and T3 samples. This would be the case for tests such as Pearson's Chi Square which assumes that observations comprising separate cells of a contingency table are independent. Given the dichotomous nature of several variables of interest in the evaluation, it was therefore necessary to adopt alternative methods. Where

'tests of differences' would appear to be an appropriate method of examining intervention impact, interdependence among samples comprising the paired cohorts is less problematic provided that a conservative approach is adopted - where it is preferable to commit a Type 2 rather than Type 1 error. For instance, where data on a relevant measure meet parametric assumptions, and factorial ANOVA would seem an appropriate test to use, the between-subjects model can be used despite likely interdependence among paired samples. This is because the unquantifiable variance due to interdependence would be partitioned into the error component of the ANOVA model leading to a larger denominator, smaller *F*-ratio, and more conservative test of the data.

In several cases the effects of the intervention on conceptually similar variables, with identical response scales, are examined using different statistical procedures. For instance, while the distribution of pupils' responses may be somewhat skewed on a given variable, responses on the reciprocal perception variable may be normally distributed. Under these circumstances it might be appropriate to examine intervention effects on pupils' perceptions by inspecting the interaction term of a parametric test such as factorial ANOVA. However, due to skewed data, analysis of pupils' own behaviour would need to take place in a more piecemeal fashion using various non-parametric tests for which interaction terms cannot be calculated. Given the variety of procedures required to examine pupils' responses across different measures, an overarching set of analyses cannot be specified in advance. Instead, analyses and related issues are considered on a case-by-case basis throughout the evaluation and specific limitations or advantages of each are noted. The reader is urged to take note of these different procedures given that some are likely more robust than others and may hold important implications for any conclusions made about the impact of the intervention.

In several cases small cell sizes mean the likelihood of detecting an effect at a statistically significant level is limited. In such cases relying too heavily on the results of statistical significance testing may be unhelpful unless measures of

effect size are also considered. Attention is drawn to these wherever appropriate and, in particular, where cell sizes are limited and statistical significance would appear unlikely for all but the largest effects.

3.3 Results

3.3.1 Injunctive norms

Questionnaires included eight self-referent and eight peer-referent attitudinal items to measure injunctive norms. As pupils were exposed to normative information relating to just four of these, analysis was restricted to those four: (i) 'There is nothing wrong with people under 18 years drinking alcohol frequently if that is what they want to do'; (ii) 'I would prefer to go out with a non-drinker'; (iii) 'I need to have a drink to have a good time'; (iv) 'I need to be drunk to have a good time'. Agreement ratings on three of the four attitude items were scored as *strongly disagree* (1), *disagree* (2), *agree* (3) and *strongly agree* (4). The remaining item was reverse scored before summing the four self- and peer-referent items separately to create two composite index scales with minimum and maximum scores of 4 and 16. Higher scores on the self-referent scale indicated more liberal or permissive injunctive norms or perceived injunctive norms, while a lower score indicated more conservative injunctive norms or perceived injunctive norms. Thus for any figures included in this section, higher scores on the y-axis indicate more permissive injunctive norms or perceived injunctive norms towards alcohol.

An earlier report prepared for SAADAT by this author provided a detailed consideration of baseline norms in the SNM condition. This will not be repeated here. Briefly, however, the T1 peer-referent scale scores of pupils attending the SNM school were more permissive than self-referent scale scores [$M = 10.33$, $SD = 2.43$ vs. $M = 7.6$, $SD = 2.37$; $t(231) = 14.22$, $p < .001$] and were positively correlated with one another ($r = .259$, $p < .001$)¹². Consistent with the social norms model, then, pupils overestimated the permissiveness of peers' attitudes

¹² These data are based on the responses of pupils aged 12-18 years in the SNM condition who completed a MT version of the questionnaire. ST-self and ST-peer versions of the questionnaire were excluded for the simple reason that they lacked reciprocal self- or peer-referent items.

towards alcohol and more permissive norms were associated with more permissive perceptions of those norms¹³.

3.3.1.1 Intervention effects on perceptions of injunctive norms

Table 3.3 presents mean peer-referent scale scores for each cohort at T1, T2 and T3¹⁴. Scores were analysed using 2 (condition: comparison or SNM) x 3 (time: T1, T2, T3) between-subjects ANOVA (Table 3.4). An impact of the SNM intervention would be seen through a statistically significant interaction of *condition* and *time*, indicating that perceptions of injunctive norms differed between schools at one or more time points relative to others. The interaction can be interpreted using Figures 3.5 - 3.7 which follow a textual description of the ANOVA results. Follow-up comparisons were carried out using Tukey's HSD.

Table 3.3 Descriptive Statistics [Mean (SD)] for Each Cohort at T1, T2 and T3

| Cohort | T1 | | T2 | | T3 | |
|------------------------------|----------------|----------------|----------------|-----------------|----------------|-----------------|
| | SNM | COMP | SNM | COMP | SNM | COMP |
| <i>12-14-year old cohort</i> | 8.54 (2.52) | 8.85 (3.6) | 8.61 (2.54) | 10.23 (2.78) | 9.74 (2.3) | 10.43 (2.87) |
| <i>13-15-year old cohort</i> | 9.28 (2.58) | 9.09 (2.19) | 9.76 (2.73) | 9.56 (2.57) | 9.85 (2.61) | 10.88 (2.37) |
| <i>14-16-year old cohort</i> | 10.2 (2.89) | 9.85 (2.64) | 9.61 (2.27) | 10.89 (2.39) | 9.88 (2.58) | 9.7 (2.07) |

The ANOVA results (Table 3.4) indicated main effects of condition for the 12-14-year-old cohort, where pupils in the SNM condition reported significantly lower scores on the perception scale than those in the comparison condition (SNM: *M*

¹³ These correlational data do not specify a causal relationship between perceived and actual norms. It is possible that pupils' own attitudes influence their perceptions of others' attitudes or vice versa. This issue is beyond the scope of this evaluation and study design. While these data are consistent with the social norms model they should not be taken to imply its validity.

¹⁴ Only data collected using the MT questionnaire are reported for the 12-14-year-old cohort. This step was taken to address the questionnaire imbalance reported for 14-year-old pupils in the SNM condition at T3, as Study Two reports evidence of a possible response bias on this variable resulting from a change in questionnaire format.

= 8.96, $SE = .23$; COMP: $M = 9.83$, $SE = .32$), and; main effects of time for the 12-14- and 13-15-year-old cohorts, where T3 scores were significantly higher than at T1 (12-14-year-old cohort: T3 $M = 10.08$, $SE = .28$; T1 $M = 8.69$, $SE = .44$; $p = .018$; 13-15-year-old-cohort: T3 $M = 10.37$, $SE = .24$; T1 $M = 9.18$, $SE = .25$; $p = .006$). Only the 14-16-year-old cohort's responses produced a significant condition by time interaction. Whereas there was little difference between the SNM and comparison conditions at T1 or T3 ($ps > .5$), SNM pupils reported lower T2 scores than pupils in the comparison condition (SNM: $M = 9.61$, $SE = .21$; COMP: $M = 10.89$, $SE = .37$; $p = .001$).

Table 3.4 2 x 3 Independent Analyses of Variance Examining Effect of Condition and Time on Peer-referent Scale Scores

| Source | <i>SS</i> | <i>df</i> | <i>MS</i> | <i>F</i> | <i>p</i> | η_p^2 |
|------------------------------|-----------|-----------|-----------|----------|----------|------------|
| <i>12-14-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | 33.28 | 1 | 33.28 | 4.93 | .027 | .022 |
| Time (T: between Ss) | 51.57 | 2 | 25.79 | 3.82 | .023 | .033 |
| C X T | 14.79 | 2 | 7.4 | 1.1 | .34 | .01 |
| Error | 1492.51 | 221 | 6.75 | | | |
| Total | 21796 | 227 | | | | |
| <i>13-15-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | 3.93 | 1 | 3.93 | .59 | .44 | .001 |
| Time (T: between Ss) | 81.48 | 2 | 40.74 | 6.13 | .002 | .027 |
| C X T | 29.68 | 2 | 14.84 | 2.23 | .108 | .01 |
| Error | 2970.74 | 447 | 6.65 | | | |
| Total | 45591 | 453 | | | | |
| <i>14-16-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | 5.13 | 1 | 5.13 | .83 | .36 | .002 |
| Time (T: between Ss) | 11.31 | 2 | 5.65 | .92 | .4 | .004 |
| C X T | 49.71 | 2 | 24.86 | 4.04 | .018 | .019 |
| Error | 2559.92 | 416 | | | | |
| Total | 44165 | 422 | | | | |

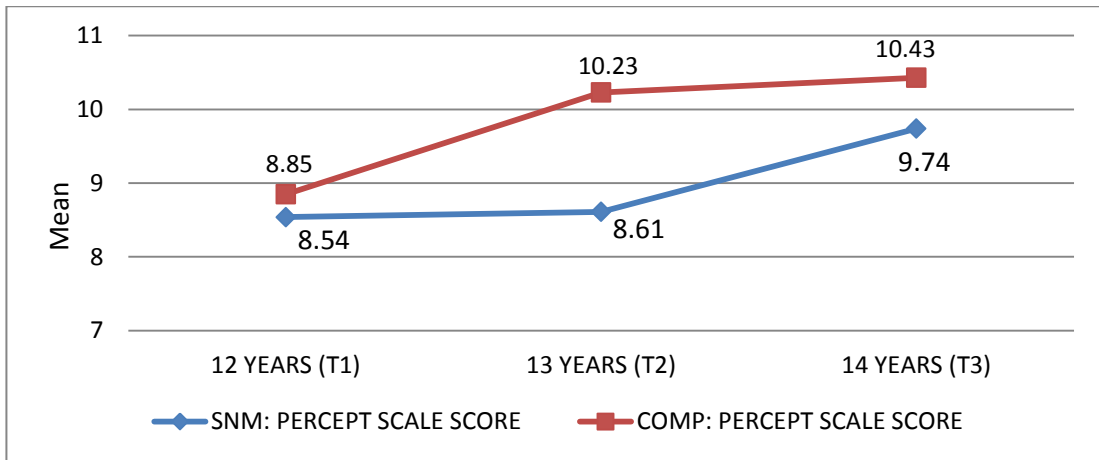


Figure 3.5 Mean Peer-referent Scale Score: 12-14-year-old cohorts¹⁵

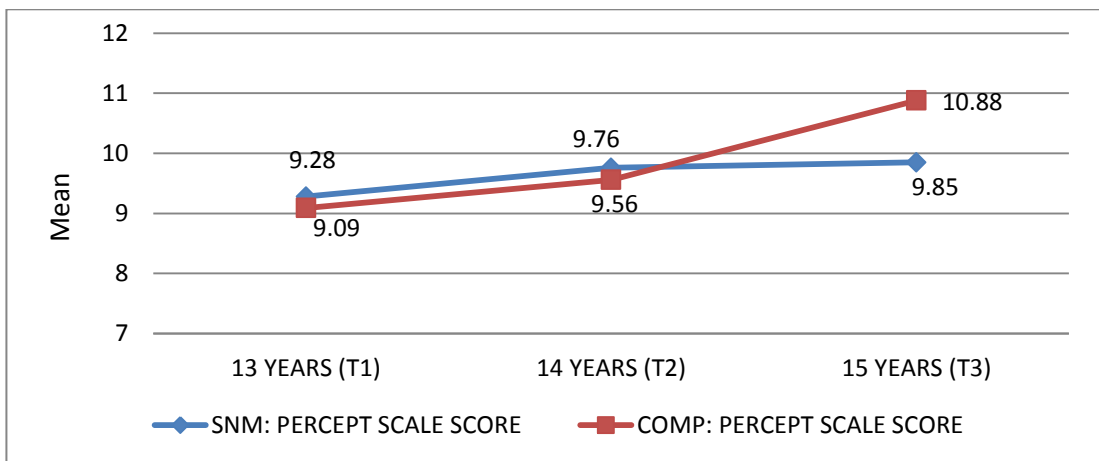


Figure 3.6 Mean Peer-referent Scale Score: 13-15-year-old cohorts

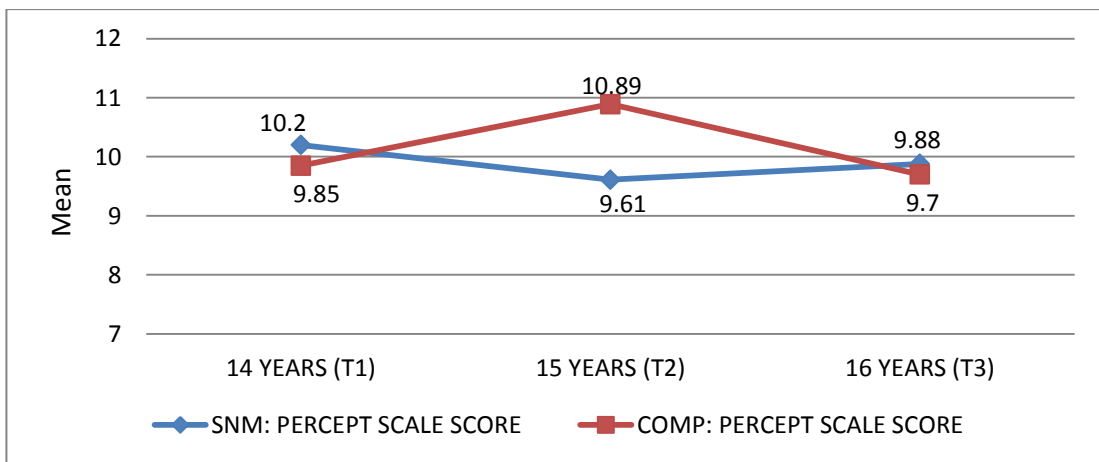


Figure 3.7 Mean Peer-referent Scale Score: 14-16-year-old cohorts

¹⁵ 'SNM' and diamond markers denote the SNM intervention condition; 'COMP' and square markers denote the comparison condition. This distinction is maintained throughout.

3.3.1.2 Intervention effects on pupils' injunctive norms

The analyses used to examine intervention effects on self-referent scale scores were similar to those undertaken for the peer-referent scale. However, due to positive skewing resulting from a clustering of responses at the lower end of the distribution, data were transformed onto a logarithmic scale using the algorithm:

$$\text{Log}_{10}(a + c), \text{ where 'a' is each pupils' scale score and 'c' a constant (1).}$$

This had the desired effect of normalising the distribution. Descriptive statistics based on the logarithmically transformed (LG10) means used in the analysis are presented in Table 3.5, while Table 3.6 houses the results of the 3 x 2 between-subjects ANOVAs used to examine them. Figures 3.8 - 3.10 present the untransformed means derived from the natural scale.

Table 3.5 Descriptive Statistics [LG10 Mean (SD)] for Each Cohort at T1, T2 and T3

| Cohort | T1 | | T2 | | T3 | |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | SNM | COMP | SNM | COMP | SNM | COMP |
| <i>12-14-year old cohort</i> | .87 (.13) | .87 (.14) | .89 (.11) | .91 (.12) | .93 (.13) | .95 (.12) |
| <i>13-15-year old cohort</i> | .89 (.12) | .9 (.13) | .94 (.13) | .92 (.12) | .95 (.12) | .94 (.12) |
| <i>14-16-year old cohort</i> | .94 (.14) | .94 (.13) | .94 (.12) | .95 (.14) | .97 (.11) | .97 (.1) |

The results of the ANOVAs (Table 3.6) included main effects of time for the 12-14- and 13-15-year-old cohorts, where the 12-14-year-old cohort reported significantly higher scores at T3 than at T2 and T1 (T3: $M = .94$, $SE = .01$; T2: $M = .9$, $SE = .01$; T1: $M = .87$, $SE = .02$; $ps <.02$) and the 13-15-year-old cohort reported higher scores at T3 and T2 than at T1 (T3: $M = .95$, $SE = .01$; T2: $M = .93$, $SE = .01$; T1: $M = .9$, $SE = .01$; $ps <.02$). There were no significant effects of time for 14-16-year old cohort and no significant effects of condition or interaction effects for any of the three cohorts.

Table 3.6 2 x 3 Independent Analyses of Variance Examining Effects of Condition and Time on Logarithmically Transformed Self-referent Scale Scores

| Source | SS | df | MS | F | p | η_p^2 |
|------------------------------|--------|-----|------|------|------|------------|
| <i>12-14-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .01 | 1 | .01 | .77 | .38 | .002 |
| Time (T: between Ss) | .25 | 2 | .12 | 7.81 | .000 | .032 |
| C X T | .01 | 2 | .01 | .35 | .71 | .001 |
| Error | 7.33 | 466 | .02 | | | |
| Total | 396.13 | 472 | | | | |
| <i>13-15-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .01 | 1 | .01 | .36 | .55 | .001 |
| Time (T: between Ss) | .15 | 2 | .08 | 4.99 | .007 | .02 |
| C X T | .01 | 2 | .01 | .31 | .73 | .001 |
| Error | 7.31 | 479 | .02 | | | |
| Total | 422.2 | 485 | | | | |
| <i>14-16-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .00 | 1 | .00 | .01 | .91 | .00 |
| Time (T: between Ss) | .06 | 2 | .03 | 1.87 | .16 | .009 |
| C X T | .00 | 2 | .002 | .13 | .88 | .001 |
| Error | 6.24 | 414 | .02 | | | |
| Total | 385.75 | 420 | | | | |

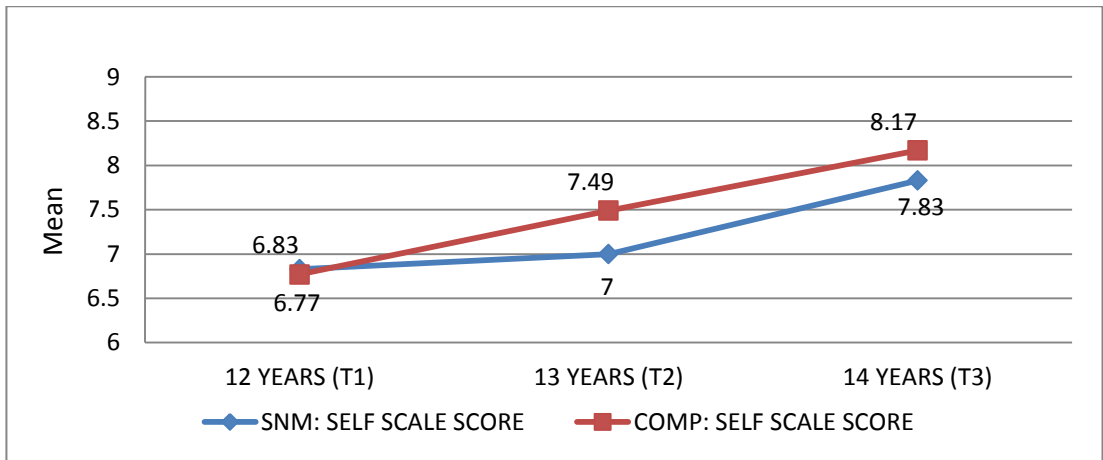


Figure 3.8 Mean Self-referent Scale Score: 12-14-year-old cohorts

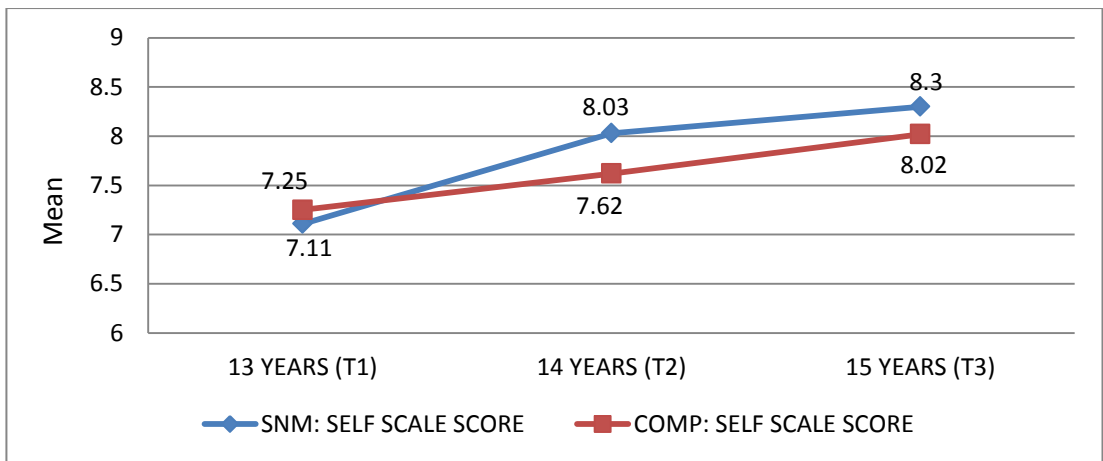


Figure 3.9 Mean Self-referent Scale Score: 13-15-year-old cohorts

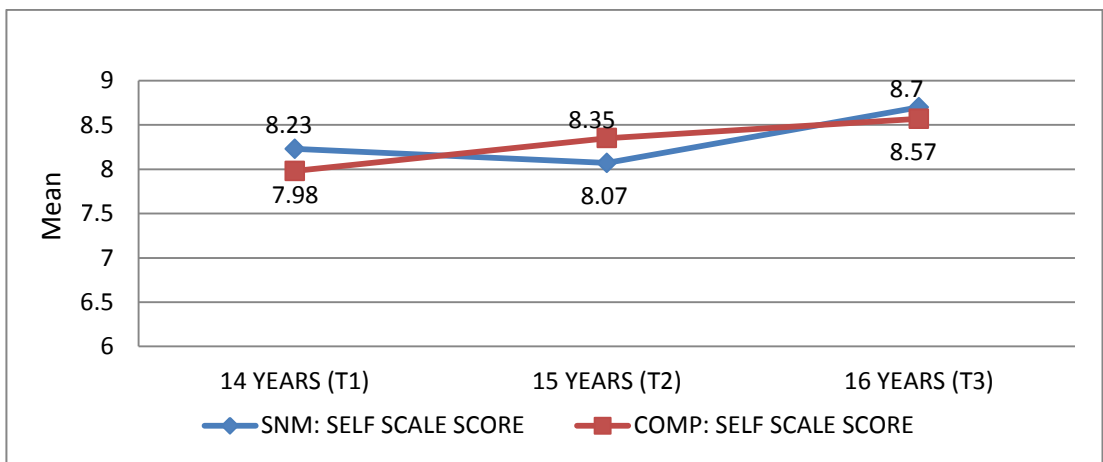


Figure 3.10 Mean Self-referent Scale Score: 14-16-year-old cohorts

3.3.1.3 Summary of intervention effects on injunctive norms

The 12-14- and 13-15-year-old cohorts' injunctive norms and perceived injunctive norms became increasingly permissive across the duration of the study. Specifically, for both cohorts, scores on the perception scale were significantly higher at T3 than at T1, and scores on the personal scale were significantly higher at T3 than at T2 or T1 (12-14-year old cohort) and at T3 and T2 than at T1 (13-15-year-old cohort). Although the SNM intervention was associated with less permissive perceptions for the 12-14-year-old cohort at T2, and for the 13-15-year-old cohort at T3, in neither case did the interaction come close to statistical significance. Due to a lower response rate and the exclusion of pupils who responded to the ST-peer version of the questionnaire, the number of 12-14-year-old pupils available for analysis was small and limited the likelihood of detecting a statistically significant interaction effect for perceived injunctive norms. For instance, at T1, just 26 pupils were available from the SNM school and 13 pupils from the comparison site. However, for this cohort, the relevant effect size was very small ($\eta_p^2 = .01$) and whether pupils attended the SNM intervention or comparison school accounted for just 1% of the variance in perceived injunctive norm scores.

While the SNM intervention was associated with significantly less permissive perceptions at T2 for the 14-16-year-old cohort, any beneficial effects of the SNM intervention at this point in time were no longer present at the final stage of data collection and failed to translate into more conservative personal attitudes.

3.3.2 Descriptive norms: Usual drink type

Pupils were asked to select from a range of options the type of drink they would normally consume when with friends and/or the type of drink they thought the typical pupil in their year would consume when with friends. Prior to analysis, drink type responses were collapsed into an alcoholic drink vs. non-alcoholic drink dichotomy. At T1, the norm (86.1%) in the SNM intervention school for pupils aged 12-18 years was to consume non-alcoholic drinks when with friends. However, pupils were less likely (46.8%) to report that the typical pupil would consume non-alcoholic drinks with peers ($n = 203, p < .001$) and the odds of reporting use of alcoholic drinks increased with perceptions that peers consume alcoholic drinks (OR = 17.2)¹⁶. Consistent with the social norms approach model this suggests a tendency among substantial numbers of pupils to perceive, incorrectly, that the norm among fellow pupils is to consume alcoholic drinks when with friends, and; that pupils who report use of alcoholic drinks are themselves more likely to perceive that peers consume alcoholic drinks.

3.3.2.1 Intervention effects on pupils' perceptions of usual type of drink

The dichotomous dependent variable on this measure (alcoholic vs. non-alcoholic), combined with the cross-sectional study design limits the range of suitable analyses that may be carried out. For instance, using Pearson's Chi Square tests to examine changes in perceptions over time would violate the independence of observations assumption made by this test. Carrying out a within-subjects variant on the Pearson's Chi Square (e.g., the McNemar Test) would require knowledge of pupils' standing across multiple points in time and is also unsuitable. Making a series of independent comparisons between the

¹⁶These data are based on the responses of pupils aged 12-18 years in the SNM condition who completed a MT version of the questionnaire.

schools at T1, T2 and T3 using Pearson's Chi Square would, however, provide a means of monitoring any changes taking place between the two conditions following the introduction of the SNM intervention. Table 3.7 therefore displays the results of a series of 2 x 2 Pearson's Chi Squares comparing usual drink type (alcoholic/non-alcoholic) across condition (SNM/comparison) for each separate cohort of pupils at T1, T2 and T3. Figures 3.11 - 3.13 present the percentage of pupils in each condition who perceived correctly that the typical pupil would consume non-alcoholic drinks at each time point.

Table 3.7 2 x 2 Chi Squares Examining Perceptions of Usual Drink Type (Alcoholic/Non-alcoholic) for the Typical Pupil By School (SNM/Comparison)

| Cohort and Time ¹⁷ | Pearson's χ^2 | ϕ |
|-------------------------------|------------------------------------|--------|
| <i>12-14-year-old cohort</i> | | |
| 12 yrs at T1 | $\chi^2 (1, 40) = 1.05, p = .31$ | .16 |
| 13 yrs at T2 | $\chi^2 (1, 96) = 4.54, p = .033$ | .22 |
| 14 yrs at T3 | $\chi^2 (1, 91) = 0.28, p = .59$ | .06 |
| <i>13-15-year-old cohort</i> | | |
| 13 yrs at T1 | $\chi^2 (1, 145) = 0.11, p = .737$ | .03 |
| 14 yrs at T2 | $\chi^2 (1, 147) = 0.14, p = .71$ | .03 |
| 15 yrs at T3 | $\chi^2 (1, 142) = 1.93, p = .165$ | .12 |
| <i>14-16-year-old cohort</i> | | |
| 14 yrs at T1 | $\chi^2 (1, 115) = 0.17, p = .68$ | .04 |
| 15 yrs at T2 | $\chi^2 (1, 159) = 5.94, p = .015$ | .19 |
| 16 yrs at T3 | $\chi^2 (1, 120) = 0.16, p = .686$ | .04 |

12-14-year-old cohort: Figure 3.11 displays the percentage of pupils in each condition who perceived correctly that the typical pupil consumes non-alcoholic drinks with friends at each time point. At baseline there was a non-significant

¹⁷ Only data collected using the MT questionnaire are reported for the 12-14-year-old cohort. This step was taken to address the questionnaire imbalance reported for 14-year-old pupils at in the SNM condition at T3, as Study Two reports evidence of a possible response bias on this variable resulting from a change in questionnaire format

difference across condition in the proportion of pupils who misperceived the norm. After one year, 13-year-old SNM pupils were less likely to misperceive the norm than they had been at T1 and were significantly less likely to do so than comparison pupils. By T3, when pupils were 14 years of age, a greater proportion in the SNM condition misperceived the norm than had been the case at T1 or T2, and the statistically significant difference between the two conditions at T2 was eroded. As the two conditions did not differ significantly at T1, but did at T2, this may indicate a pattern of responses consistent with a positive impact of the SNM intervention. However, due to the limited cell sizes at T1 (i.e., SNM: $n = 27$; comparison: $n = 13$) power to detect the difference already present at baseline at a statistically significant level was very low. The effect sizes housed in the final column of Table 3.7 show that the two cohorts already differed at T1 ($\varphi = .16$) and this difference increased at T2 ($\varphi = .22$) before declining at T3 ($\varphi = .06$).

13-15-year-old cohort: Figure 3.12 indicates a similar percentage of pupils in either condition perceived, correctly, that the typical pupil consumed non-alcoholic drinks at T1 and T2. Between T2 and T3, pupils in the comparison condition were increasingly less likely to misperceive this norm, while pupils in the SNM condition were increasingly more likely to. Table 3.7 confirms there were no statistically significant differences between the two cohorts at any stage, but effect sizes calculated for each comparison suggest slight differences between the two cohorts at T3 ($\varphi = .12$) relative to T2 ($\varphi = .03$) or T1 ($\varphi = .03$) which did not favour the SNM intervention.

14-16-year-old cohort: Figure 3.13 indicates that slightly fewer pupils in the SNM condition misperceived the norm at T2 than at T1, while the opposite was true of pupils in the comparison condition. A statistically significant difference between the two conditions at T2 was found and may indicate a pattern of responses consistent with a positive effect of the SNM intervention on pupils' perceptions. However, there was no difference between the two schools by T3, suggesting the erosion of any positive effect of the SNM intervention by T3.

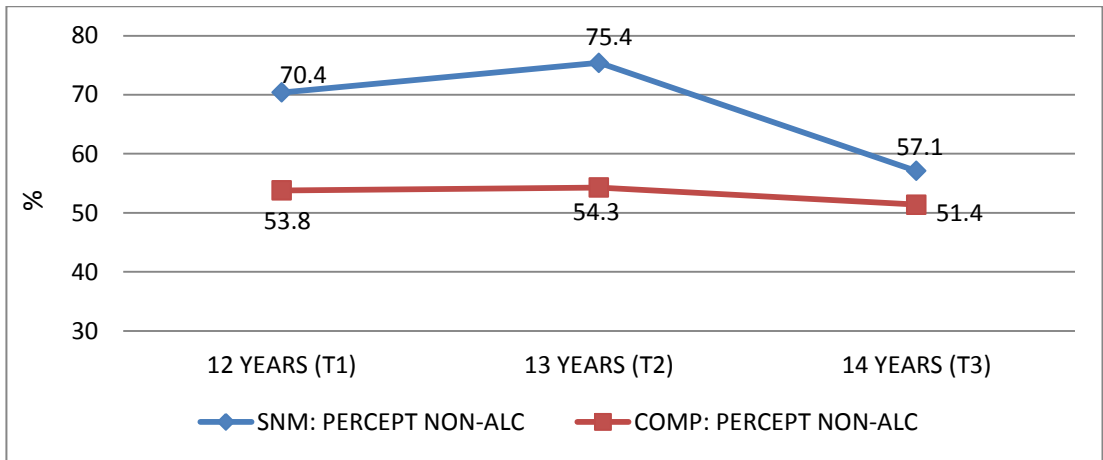


Figure 3.11 Percentage of Pupils Who Perceive The Typical Pupil Consumes Non-alcoholic Drinks: 12-14-year-old cohorts

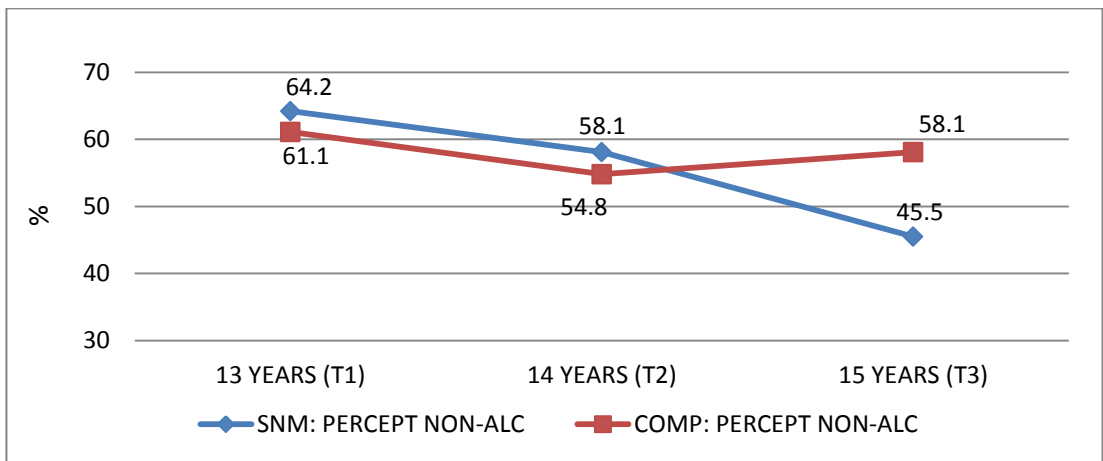


Figure 3.12 Percentage of Pupils Who Perceive The Typical Pupil Consumes Non-alcoholic Drinks: 13-15-year-old cohorts

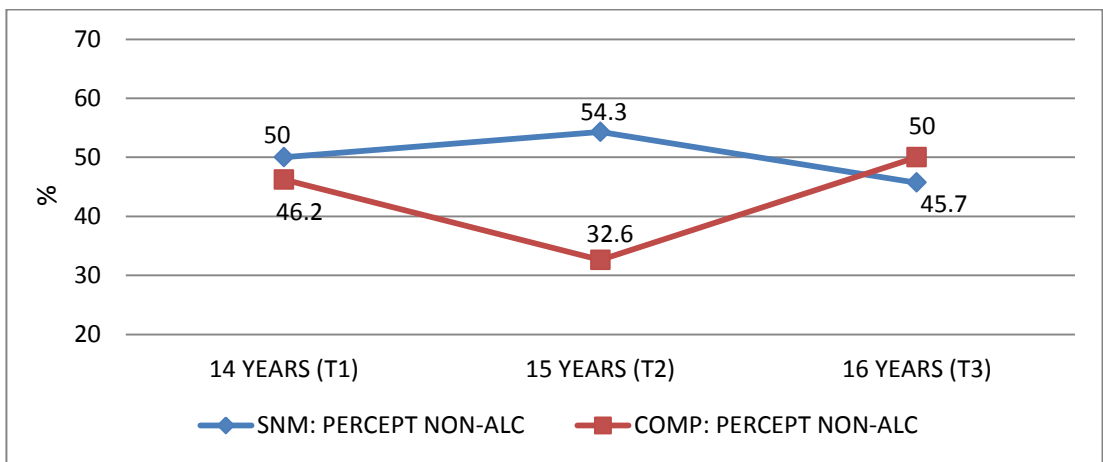


Figure 3.13 Percentage of Pupils Who Perceive The Typical Pupil Consumes Non-alcoholic Drinks: 14-16-year old cohorts

3.3.2.2 Intervention effects on pupils' usual type of drink

An identical analytic procedure was adopted for pupils' own choice of drinks as for perceptions of the typical pupil's choice of drinks. Therefore a series of 2 x 2 Chi Square compared the usual type of drink pupils consumed when with friends (alcoholic/non-alcoholic) across school condition (SNM/comparison), the results of which can be found in Table 3.8. Figures 3.14 - 3.16 provide a graphical presentation of the percentage of the pupils in each condition who reported use of non-alcoholic drinks across the three stages of data collection.

Table 3.8 2 x 2 Chi Squares Examining Pupils' Usual Drink Type (Alcoholic/Non-alcoholic) By School (SNM/Comparison)

| Cohort and Time | Pearson's Chi square | ϕ |
|------------------------------|------------------------------------|--------|
| <i>12-14-year-old cohort</i> | | |
| 12 yrs at T1 | $\chi^2 (1, 85) = 0.007, p = .932$ | .01 |
| 13 yrs at T2 | $\chi^2 (1, 175) = 3.34, p = .068$ | .14 |
| 14 yrs at T3 | $\chi^2 (1, 172) = 6.96, p = .008$ | .2 |
| <i>13-15-year-old cohort</i> | | |
| 13 yrs at T1 | $\chi^2 (1, 151) = 0.85, p = .355$ | .08 |
| 14 yrs at T2 | $\chi^2 (1, 154) = 0.13, p = .72$ | .03 |
| 15 yrs at T3 | $\chi^2 (1, 149) = 0.85, p = .36$ | .08 |
| <i>14-16-year-old cohort</i> | | |
| 14 yrs at T1 | $\chi^2 (1, 114) = 4.28, p = .039$ | .19 |
| 15 yrs at T2 | $\chi^2 (1, 181) = 2.86, p = .091$ | .13 |
| 16 yrs at T3 | $\chi^2 (1, 110) = 1.31, p = .252$ | .11 |

12-14-year-old cohort: Figure 3.14 indicates that at T1 the vast majority of pupils in both conditions consumed non-alcoholic drinks with friends. While a similarly high percentage of pupils in the SNM condition continued to report consumption of non-alcoholic drinks a year later at T2, this figure dropped slightly in the comparison condition. This trajectory continued until T3 when pupils were aged 14 years old, with pupils in the SNM condition significantly more likely to report that they consume non-alcoholic drinks when with friends than comparison pupils of the same age.

13-15-year-old cohort: Regardless of condition there was a decline in the proportion of pupils consuming non-alcoholic drinks between T1 and T2 (Figure 3.15). While this pattern continued in the comparison condition between T2 and T3, there was a slight increase in non-alcoholic drink-use among pupils in the SNM condition. Table 3.8, however, confirms that none of the differences between conditions were statistically significant and the effect sizes support a conclusion that the impact of the SNM intervention was limited.

14-16-year-old cohort: At T1 pupils in the SNM condition were significantly more likely to consume non-alcoholic drinks than the comparison group. Figure 3.16 indicates that while consumption of non-alcoholic drinks increased steadily in the comparison condition until T3, between T2 and T3 the reverse was true in the SNM condition. By T3 the SNM pupils were less likely to consume non-alcoholic drinks than the comparison group, but not significantly so.

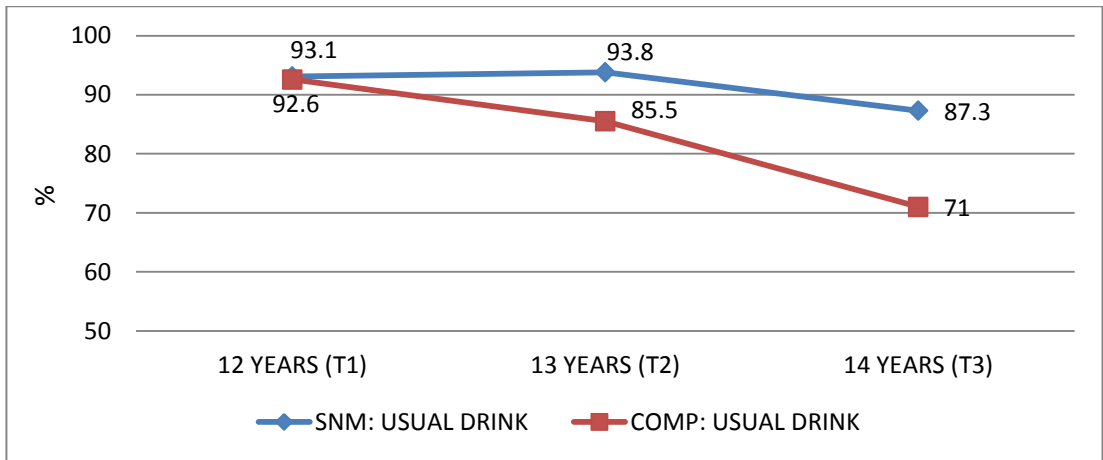


Figure 3.14 Percentage of Pupils Reporting Use of Non-alcoholic Drinks: 12-14-year-old Cohorts

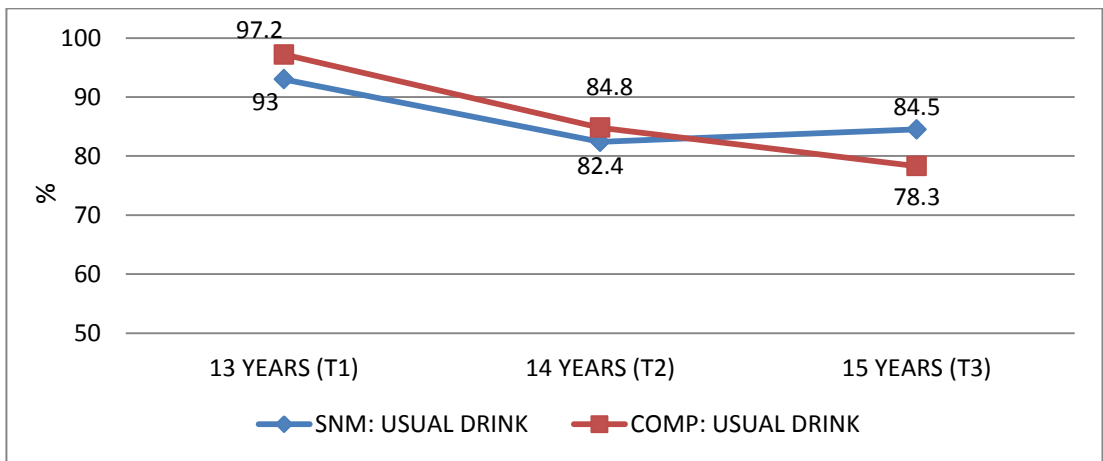


Figure 3.15 Percentage of Pupils Reporting Use of Non-alcoholic Drinks: 13-15-year-old Cohorts

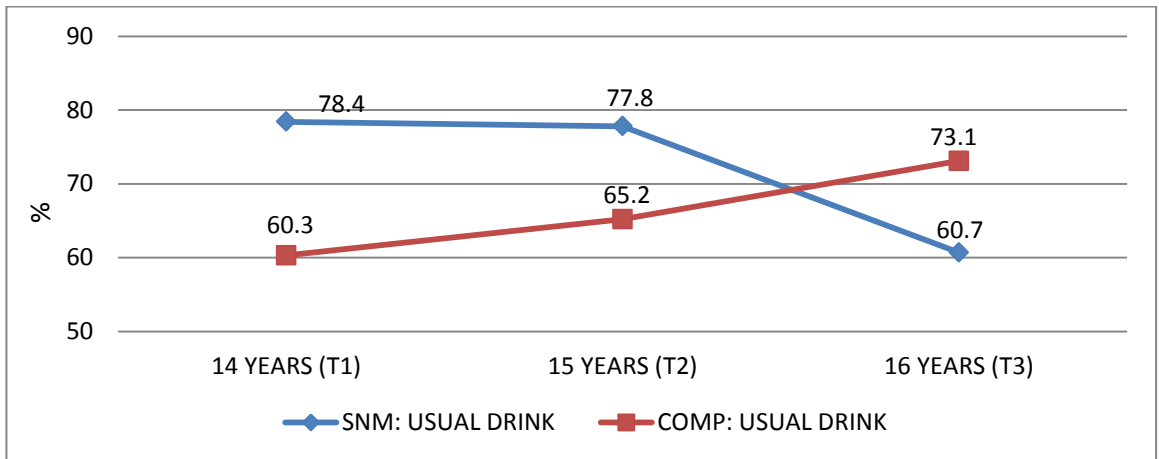


Figure 3.16 Percentage of Pupils Reporting Use of Non-alcoholic Drinks: 14-16-year-old Cohorts

3.3.2.3 Summary of intervention effects on usual type of drink and perceptions

For the 13-15-year-old cohort there was no evidence the SNM intervention had a positive impact on perceptions of non-alcoholic drink use or the number of pupils consuming non-alcoholic drinks themselves. There was some limited evidence the SNM intervention had a positive impact on rates of misperception at T2 for the 12-14- and 14-16-year-old cohorts. However, compared to the pupils in the comparison condition, any positive effects were temporary and had disappeared by T3. Moreover, the 12-14-year-old SNM and comparison participants already differed at T1 prior to the introduction of the SNM intervention, making it difficult to assess the role of the normative feedback in the lower rates of misperception recorded at T2. Pupils aged 12-14-years from the SNM condition were less likely to consume alcoholic drinks at T3, but there was no similar effect for the 14-16-year-old SNM cohort who decreased their use of non-alcoholic drinks over time, at the same time as non-alcoholic drink-use increased in the comparison condition.

3.3.3 Descriptive norms: Past 30-day frequencies of alcohol use and drunkenness

An earlier report prepared by this author for SAADAT found aggregate level whole-of-school norms included some degree of alcohol use. Due to the theoretical risk that pupils who consume less than the norm may increase or initiate use in line with the norm, pupils in the SNM condition were never exposed to feedback of the average frequency of consumption at the whole-of-school level. Given the exploratory nature of this research in Scottish secondary schools, feeding back whole-of-school norms for drunkenness was also avoided. Nevertheless, some exposure to frequency of alcohol use and drunkenness norms took place at class or year group level and the impact of the SNM intervention on these variables should be examined.

Pupils were asked how frequently they had consumed alcohol or been drunk in the past 30 days and how frequently they thought the typical pupil in their year had consumed alcohol or been drunk in the past 30 days. Responses were measured on a 7-point ordinal scale ranging from zero occasions in the past 30 days to every day of the week, which was subsequently converted to a 0-28 day frequency scale. At T1 pupils attending the SNM school reported that the typical pupil in their year consumed alcohol with greater frequency than they themselves did (*Median* = 1 occasion vs. *Median* = 4 occasions; $Z = 9.67, p < .001$) and got drunk with greater frequency than they themselves did (*Median* = 0 occasions vs. *Median* = 4 occasions; $Z = 10.16, p < .001$). Furthermore, perceptions of the frequency of alcohol use were positively correlated with the frequency of pupils' own alcohol use ($r_s = .24, p < .001$) and perceptions of the frequency of drunkenness were positively correlated with pupils' own frequency of drunkenness ($r_s = .29, p < .001$)¹⁸. Therefore pupils misperceived the normative frequencies of alcohol use and drunkenness in the direction of overestimation and, to some extent, pupils' own frequency of alcohol use and

¹⁸These data are based on the responses of pupils aged 12-18 years in the SNM condition who completed a MT version of the questionnaire.

drunkenness increased with perceptions of the typical pupil's frequency of alcohol use and drunkenness.

3.3.3.1 Intervention effects on pupils' perceptions of past 30-day frequencies of alcohol use and drunkenness

Given that the 7-point ordinal structure of the measurement scales was non-linear this presented a problem for parametric analyses such as ANOVA due to the assumption of linearity made by this family of tests. However, by converting the 0-28 day frequency of alcohol use and drunkenness perception responses onto a logarithmic scale, this served to approximate a measurement scale with a linear structure¹⁹. Figures 3.17 and 3.18 plot the relationship between each response scale marker and the corresponding 28-day frequency, before and after transformation of the scale.

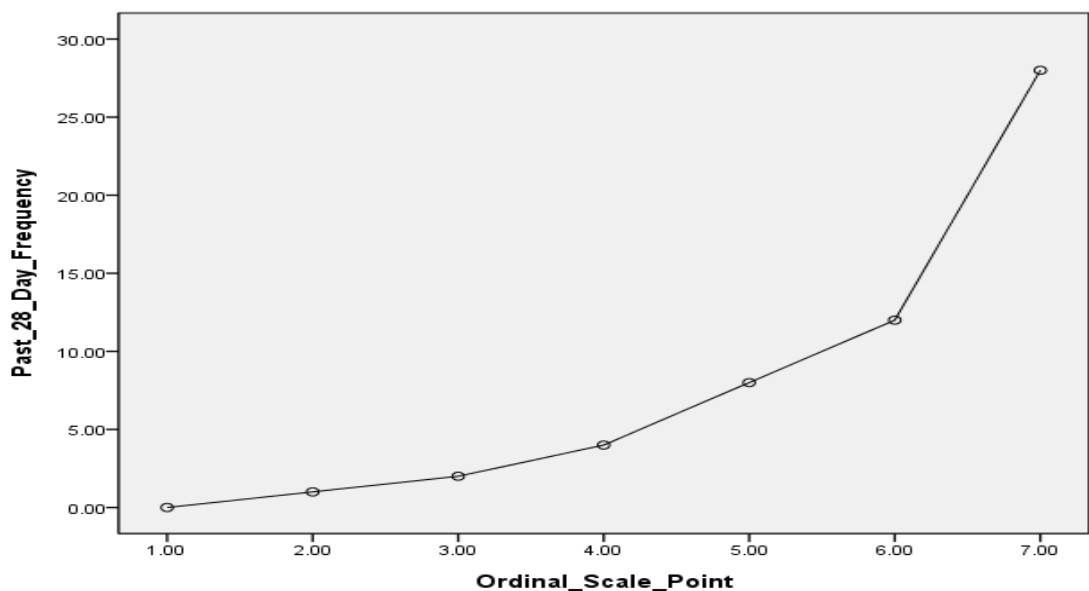


Figure 3.17 Plot of the Nonlinear Relationship Between Each Scale Point on the Untransformed 28-Day Frequency Response Scale

¹⁹ The algorithm used to convert 28-day frequency of use and drunkenness perceptions was $\text{Log}_{10}(a + c)$, where 'a' is the monthly frequency indicated by each participant's response and 'c' a constant (1).

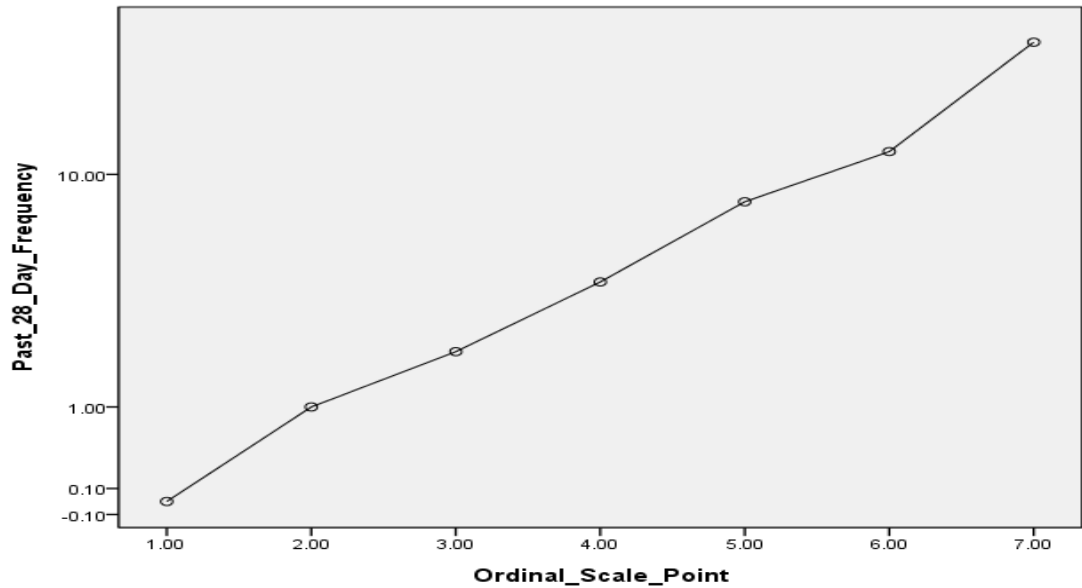


Figure 3.18 Plot of the Approximately Linear Relationship Between Each Scale Point on the Logarithmically Transformed 28-Day Frequency Response Scale

Where pupils' perceptions of the past 30-day frequency of alcohol use and drunkenness were normally distributed they were analysed using 2 (school) x 3 (time) independent ANOVAs, with the interaction between condition and time of interest in examining intervention effects. In such cases, follow-up comparisons were carried out using Tukey's HSD procedure. However, the 12-14-year-old cohorts' perceptions of the frequency of drunkenness responses were heavily skewed, and a combination of Mann Whitney U and Kruskal Wallis tests were used to make inferences as to whether the pattern of responses was consistent with a positive impact of the SNM intervention. Specifically, Kruskal Wallis tests examined simple effects of time within each school to describe the trajectory of perception over time, while Mann Whitney U tests were used to make a series of independent comparisons across schools at each time point. Given the multi-factorial design of the study, the use of non-parametric statistics is an inefficient approach, leading to an increased number of tests being applied to the data and an increase in the family-wise error rate. However, due to the exploratory nature of this research, and the already restrictive cell sizes in some cases, it was decided that making adjustments to the family-wise error rate

would result in an overly conservative test of the SNM intervention. Therefore where non-parametric statistics are used no adjustments are made to control for an increased risk of Type 1 error.

Perceptions of the frequency of alcohol use

Descriptive statistics for perceptions of the frequency of alcohol use are presented in Table 3.9. Logarithmically transformed mean responses are included in these tables rather than the raw untransformed means. This decision was taken under consideration of the goal of the transformation which, first and foremost, was a strategy to alter the structure of the measurement scale rather than the distribution of data itself. To present the raw means on the original scale in these specific circumstances may be misleading.

Table 3.9 Descriptive Statistics [LG10 Mean (SD)] for Each Cohort of Pupils at T1, T2 and T3 for Pupils' Perceptions of the Past-30 Day Frequencies of Alcohol Use

| Cohort | T1 | | T2 | | T3 | |
|------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | SNM | COMP | SNM | COMP | SNM | COMP |
| <i>12-14-year-old Cohort</i> | .51 (.32) | .62 (.37) | .59 (.34) | .65 (.29) | .65 (.35) | .66 (.32) |
| <i>13-15-year-old cohort</i> | .65 (.32) | .58 (.29) | .74 (.35) | .61 (.29) | .77 (.29) | .72 (.25) |
| <i>14-16-year-old cohort</i> | .75 (.32) | .79 (.3) | .76 (.29) | .72 (.22) | .68 (.27) | .65 (.27) |

2 x 3 between-subjects ANOVAs were carried out on pupils' perceptions of their peers' frequency of alcohol use in the past 30 days. The results of these (Table 3.10) indicate there were no significant effects for the 12-14-year-old cohort. In contrast there was a main effect of condition for the 13-15-year-old cohort, where pupils in the SNM condition perceived less frequent alcohol use than the comparison pupils (SNM: $M = .72$, $SE = .02$; COMP: $M = .64$, $SE = .03$), and main effects of time for the 13-15- and 14-16-year-old cohorts. Here, the 13-15-year-old cohorts perceived significantly more frequent alcohol use at T3 than at T1

(T3: $M = .75$, $SE = .03$; T1: $M = .62$, $SE = .03$; $p = .002$), while the reverse was true for the 14-16-year-old cohort (T3: $M = .67$, $SE = .03$; T1: $M = .77$, $SE = .03$; $p = .02$). There were no significant interaction effects for any of the three cohorts. Figures 3.19 - 3.21 present these data graphically.

Table 3.10 2 x 3 Independent Analyses of Variance Examining Effect of Condition and Time on Logarithmically Transformed Perceptions of Past-30 Day Frequencies of Alcohol Use

| Source | SS | df | MS | F | p | η_p^2 |
|------------------------------|--------|-----|-----|------|------|------------|
| <i>12-14-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .26 | 1 | .26 | 2.36 | .13 | .006 |
| Time (T: between Ss) | .31 | 1 | .16 | 1.44 | .24 | .008 |
| C X T | .11 | 2 | .05 | .49 | .62 | .003 |
| Error | 39.21 | 360 | .11 | | | |
| Total | 179.11 | 366 | | | | |
| <i>13-15-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .6 | 1 | .6 | 6.24 | .013 | .014 |
| Time (T: between Ss) | .96 | 2 | .48 | 5.03 | .007 | .022 |
| C X T | .09 | 2 | .05 | .48 | .62 | .002 |
| Error | 41.83 | 437 | .1 | | | |
| Total | 258.38 | 443 | | | | |
| <i>14-16-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .01 | 1 | .01 | .11 | .74 | .000 |
| Time (T: between Ss) | .57 | 2 | .28 | 3.54 | .03 | .017 |
| C X T | .1 | 2 | .05 | .59 | .55 | .003 |
| Error | 33.02 | 411 | .08 | | | |
| Total | 257.28 | 417 | | | | |

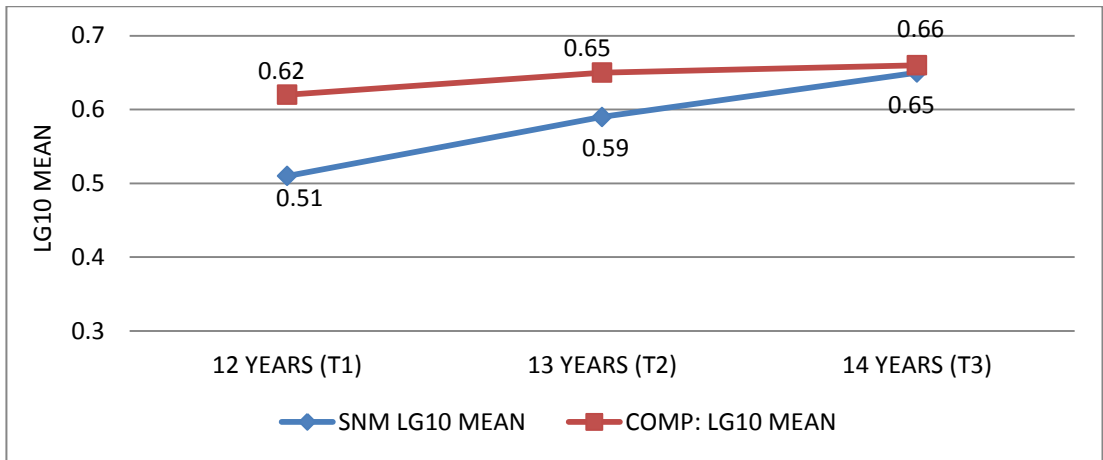


Figure 3.19 Perceptions of the Frequency of Alcohol Use (LG10): 12-14-year-old Cohorts

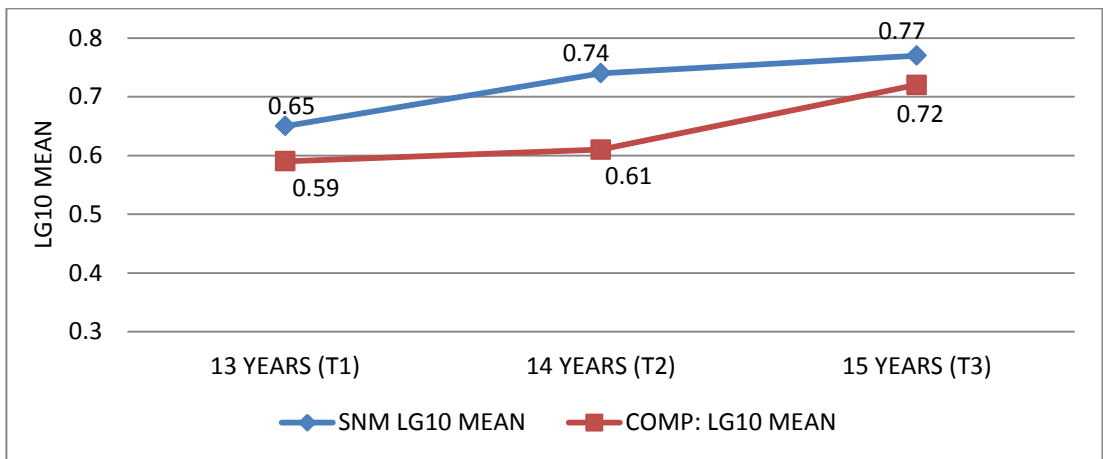


Figure 3.20 Perceptions of the Frequency of Alcohol Use (LG10): 13-15-year-old Cohorts

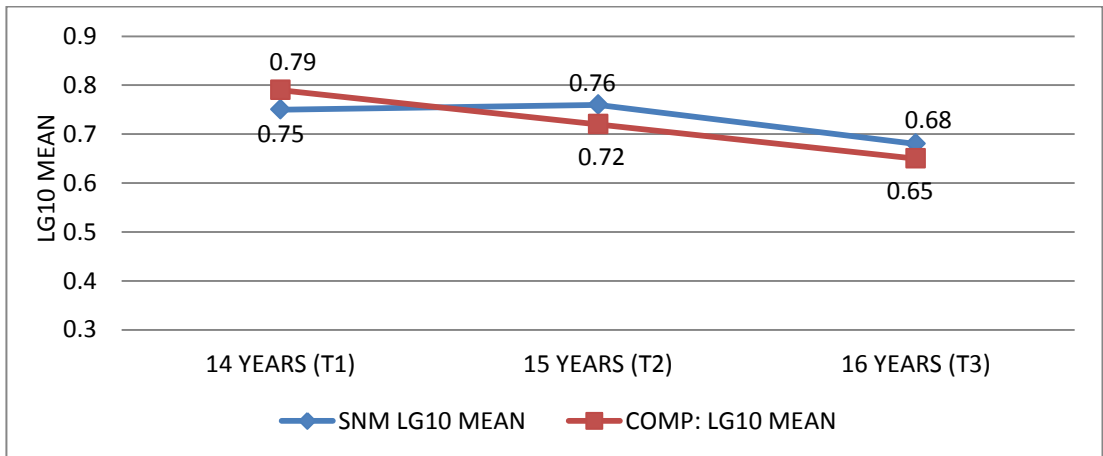


Figure 3.21 Perceptions of the Frequency of Alcohol Use (LG10): 14-16-year-old Cohorts

Perceptions of the frequency of drunkenness

Table 3.11 presents descriptive statistics for pupils' perceptions of the typical pupil's frequency of drunkenness in the past 30 days. Due to positive skew for 12-14-year-old cohorts' responses, the median is presented whereas logarithmically transformed mean responses are included otherwise.

Table 3.11 Descriptive Statistics [LG10 Mean (SD)/Median] for Each Cohort of Pupils at T1, T2 and T3 for Pupils' Perceptions of Past-30 Day Frequencies of Drunkenness

| Cohort | T1 | | T2 | | T3 | |
|--|--------------|--------------|--------------|--------------|--------------|--------------|
| | SNM | COMP | SNM | COMP | SNM | COMP |
| <i>12-14-year-old cohort (Med.)</i> | 1 | 2 | 2 | 4 | 2 | 4 |
| <i>13-15-year-old cohort (LG10 Mean)</i> | .51 (.38) | .5 (.28) | .64 (.37) | .53 (.29) | .66 (.31) | .71 (.23) |
| <i>14-16-year-old cohort (LG10 Mean)</i> | .66 (.35) | .71 (.35) | .67 (.3) | .66 (.27) | .58 (.29) | .62 (.28) |

12-14-year-old cohort: Mann-Whitney U and Kruskal Wallis tests indicated a significant main effect of condition ($U = 11041.5$, $Z = 3.15$, $p = .002$), but no simple effects of time within each condition [SNM: χ^2 (df , 2) = 0.85, $p = .65$; COMP: χ^2 (df , 2) = 4.79, $p = .09$]. Comparisons made across condition independently for each round of data collection found no significant difference between the two conditions at T1 ($U = 256.5$, $Z = 1.14$, $p = .26$; $r = 0.16$) or T3 ($U = 1605.5$, $Z = 1.03$, $p = .3$; $r = 0.1$), but that pupils in the SNM condition perceived less frequent drunkenness at T2 than comparison pupils ($U = 2445$, $Z = 2.35$, $p = .019$; $r = 0.18$). These data are not presented graphically.

As the two conditions did not differ significantly at T1, but did at T2, with SNM pupils perceiving less frequent drunkenness than those in the comparison condition, this pattern of results may be consistent with a positive effect of the SNM intervention. However, effect sizes associated with each comparison suggest pupils in the two conditions already differed at T1 ($r = 0.16$) and this

difference increased very slightly at T2 ($r = .18$) before declining at T3 ($r = 0.1$). Variance between schools in T2 responses may therefore be accounted for through pre-existing baseline differences which, due to the small number of pupils present in the T1 sample (i.e., SNM: $n = 27$; COMP: $n = 13$), failed to reach statistical significance.

13-15- and 14-16-year-old cohorts: Table 3.12 contains the results of the 2 x 3 between-subjects ANOVAs carried out for the 13-15- and 14-16-year-old cohorts. There was a significant main effect of time for the 13-15-year old cohort, due to pupils perceiving more frequent drunkenness at T3 and T2 than at T1 (T3: $M = .68$, $SE = .03$; T2: $M = .58$, $SE = .03$; T1: $M = .51$; $ps < .04$). There were no further significant main effects for the 13-15- or 14-16-year-old cohorts, and no interactions of condition and time. Figures 3.22 and 3.23 depict these data graphically.

Table 3.12 2 x 3 Independent Analyses of Variance Examining Effects of Condition and Time on Logarithmically Transformed Perceptions of the Past-30 Day Frequencies of Drunkenness

| Source | SS | df | MS | F | p | η_p^2 |
|------------------------------|--------|-----|-----|------|------|------------|
| <i>13-15-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .05 | 1 | .05 | .44 | .51 | .001 |
| Time (T: between Ss) | 1.7 | 2 | .85 | 7.72 | .001 | .04 |
| C X T | .37 | 2 | .18 | 1.67 | .19 | .01 |
| Error | 46.01 | 417 | .11 | | | |
| Total | 198.31 | 423 | | | | |
| <i>14-16-year-old cohort</i> | | | | | | |
| Condition (C: between Ss) | .06 | 1 | .06 | .59 | .44 | .002 |
| Time (T: between Ss) | .36 | 2 | .18 | 1.86 | .16 | .01 |
| C X T | .03 | 2 | .02 | .16 | .86 | .001 |
| Error | 36.47 | 381 | .1 | | | |
| Total | 198.6 | 387 | | | | |

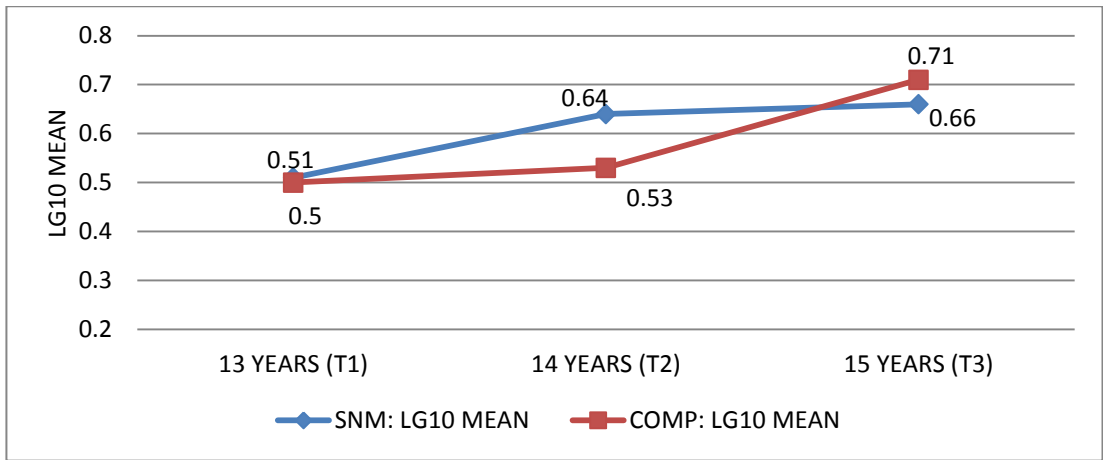


Figure 3.22 Perceptions of the Frequency of Drunkenness (LG10): 13-15-year-old Cohorts

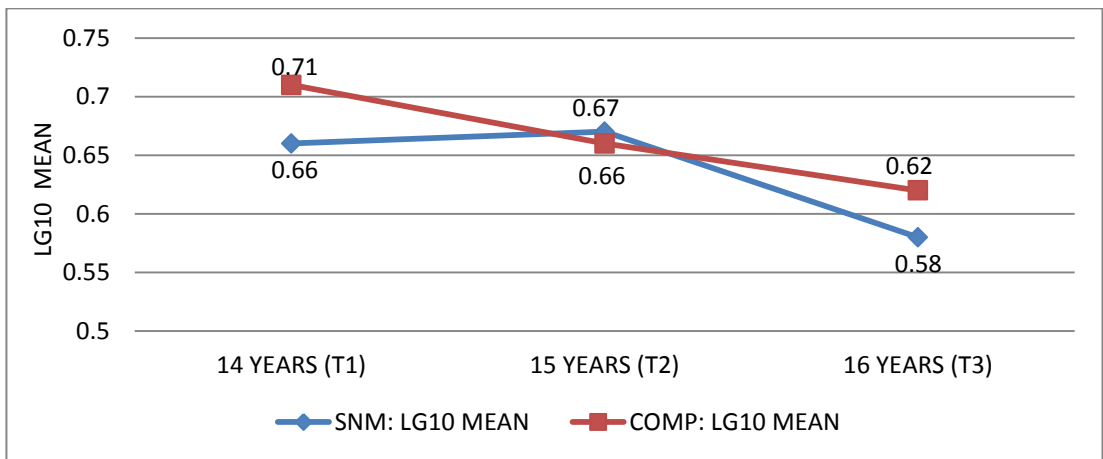


Figure 3.23 Perceptions of the Frequency of Drunkenness (LG10): 14-16-year-old Cohorts

3.3.3.2 Intervention effects on pupils' past 30-day frequency of alcohol use and drunkenness

Tables 3.13 and 3.15 presents descriptive statistics for pupils' own frequencies of alcohol use and drunkenness. In all cases pupils' responses were positively skewed so a combination of Mann Whitney U and Kruskal Wallis tests were used to make inferences as to whether the pattern of responses was consistent with a positive impact of the SNM intervention. The results of these inferential tests can be found in Tables 3.14 and 3.16. Again, given the inefficient nature of non-parametric tests for examining these data, no adjustments were made to control the family-wise error rate. These data are not presented graphically.

Pupils' own frequency of alcohol use

Table 3.13 displays descriptive statistics for pupils' own past 30-day frequencies of alcohol use. Table 3.14 presents the results of the inferential analyses.

Table 3.13 Median Occasions of Alcohol Use in Past 30 Days for Each Cohort at T1, T2 and T3

| Cohort | T1 | | T2 | | T3 | |
|------------------------------|-----|------|-----|------|-----|------|
| | SNM | COMP | SNM | COMP | SNM | COMP |
| <i>12-14-year-old cohort</i> | 0 | 0 | 0 | 0 | 1 | 2 |
| <i>13-15-year-old cohort</i> | 0 | 0 | 1 | 0.5 | 1 | 2 |
| <i>14-16-year-old cohort</i> | 1 | 2 | 1 | 2 | 2 | 1.5 |

From Table 3.14 there were significant effects of time on frequency of alcohol use for 12-14- and 13-15-year-old cohorts in both conditions, but only for SNM condition pupils in the 14-16-year-old cohort. The time effects were due to 12-14-year-old pupils in the SNM condition reporting more frequent use of alcohol at T3 than at T1, and those in the comparison condition reporting more frequent use of alcohol across all three stages ($ps <.05$). Due to a significant increase between T1 and T2, the 13-15-year-old pupils in the SNM condition reported more frequent use of alcohol over time, which subsequently declined between T2 and T3 ($ps <.05$). 13-15-year-old pupils in the comparison condition also increased their frequency of use but only between T1 and T3 ($p <.01$), as did 14-16-year-old pupils in the SNM condition between T1 and T3 ($p <.05$).

A series of comparisons across condition at T1, T2 and T3 revealed a trend for 12-14-year-old pupils in the SNM condition to report less frequent use of alcohol than comparison pupils at T3, which approached statistical significance. However, the effect size (r) associated with each comparison suggests differences across conditions at T1 and T3 were of comparable magnitude. 13-15-year-old pupils in the SNM condition also reported significantly less frequent alcohol use than those in the comparison condition at T3 but, in this case, the magnitude of any difference between the two conditions was greater at T3 than at T2 or T1. For the 14-16-year-old cohort there were no significant effects across condition.

Table 3.14 Mann Whitney and Kruskal Wallis Tests Examining Effects of Condition and Time on Frequency of Alcohol Use in Past 30 Days

| Source | Statistic |
|------------------------------|---|
| <i>12-14-year-old cohort</i> | |
| Condition | $U = 12593, Z = 1.58, p = .11$ |
| Time: SNM | $\chi^2 (df, 2) = 5.99, p = .05$ |
| Time: COMP | $\chi^2 (df, 2) = 12.81, p < .001$ |
| T1 | $U = 235, Z = 1.1, p = .271; r = .15$ |
| T2 | $U = 2227.5, Z = 0.32, p = .75; r = .03$ |
| T3 | $U = 2318, Z = 1.91, p = .056; r = .15$ |
| <i>13-15-year-old cohort</i> | |
| Condition | $U = 16442, Z = 0.55, p = .59$ |
| Time: SNM | $\chi^2 (df, 2) = 15.07, p = .001$ |
| Time: COMP | $\chi^2 (df, 2) = 7.09, p = .029$ |
| T1 | $U = 1272, Z = .34, p = .733; r = .03$ |
| T2 | $U = 1988.5, Z = 1.25, p = .21; r = .1$ |
| T3 | $U = 1618.5, Z = 2.27, p = .023; r = .19$ |
| <i>14-16-year-old cohort</i> | |
| Condition | $U = 16855, Z = 0.53, p = .599$ |
| Time: SNM | $\chi^2 (df, 2) = 6.37, p = .04$ |
| Time: COMP | $\chi^2 (df, 2) = .96, p = .62$ |
| T1 | $U = 1083.5, Z = 1.81, p = .07; r = .18$ |
| T2 | $U = 2947, Z = .71, p = .48; r = .05$ |
| T3 | $U = 1002, Z = 1.29, p = .197; r = .12$ |

Pupils' own frequency of drunkenness

Table 3.15 presents descriptive statistics for pupils' own past 30-day frequencies of drunkenness, while Table 3.16 presents the results of the inferential analyses.

Table 3.15 Median Occasions of Drunkenness in Past 30 Days for Each Cohort at T1, T2 and T3

| Cohort | T1 | | T2 | | T3 | |
|------------------------------|-----|------|-----|------|-----|------|
| | SNM | COMP | SNM | COMP | SNM | COMP |
| <i>12-14-year-old cohort</i> | 0 | 0 | 0 | 0 | 0 | 1 |
| <i>13-15-year-old cohort</i> | 0 | 0 | 0 | 0 | 0 | 1 |
| <i>14-16-year-old cohort</i> | 0 | 1 | 0 | 1 | 1 | 1 |

From Table 3.16, there was a significant main effect of condition for the 12-14-year-old cohort. Although the median occasions of drunkenness was zero in both conditions, 12-14-year-old pupils in the SNM condition reported significantly less frequent drunkenness than pupils in the comparison condition. A similar effect across condition approached significance for the 14-16-year-old cohort. In addition, there were also significant simple effects of time for the 12-14- and 13-15-year-old cohorts. These were a result of 12-14-year old pupils in the SNM condition reporting more frequent drunkenness at T3 and T2 than at T1, while similar aged pupils in the comparison condition reported more frequent drunkenness at T3 than at T2 ($ps < .05$). For the 13-15-year-old cohort, pupils in the SNM and comparison condition reported more frequent drunkenness at T2 than they did at T1, while the comparison pupils also reported more frequent drunkenness at T3 than T1 ($ps < .05$).

For 12-14- and 13-15-year-old cohorts, comparisons made across condition at T1, T2 and T3 found no significant differences at T1 or T2 but significantly more frequent drunkenness was reported by comparison pupils at T3. As with the frequency of alcohol use measure the effect sizes associated with each

comparison (r) indicate the presence of baseline differences for the 12-14-year-old cohort which may account for the significant effects found at T3. There was no such concern for the 13-15-year-old cohort where the effect size doubled between T1 and T3.

Table 3.16 Mann Whitney and Kruskal Wallis Tests Examining Effects of Condition and Time on Frequency of Drunkenness in Past 30 Days

| Source | Statistic |
|------------------------------|--|
| <i>12-14-year-old cohort</i> | |
| Condition | $U = 10522.5, Z = 3.48, p < .001$ |
| Time: SNM | $\chi^2 (df, 2) = 7.96, p = .019$ |
| Time: COMP | $\chi^2 (df, 2) = 6.76, p = .034$ |
| T1 | $U = 195, Z = 1.33, p = .19; r = .19$ |
| T2 | $U = 1951.5, Z = 1.14, p = .256; r = .1$ |
| T3 | $U = 2025.5, Z = 2.85, p = .004; r = .23$ |
| <i>13-15-year-old cohort</i> | |
| Condition | $U = 14638, Z = 1.02, p = .306$ |
| Time: SNM | $\chi^2 (df, 2) = 6.21, p = .045$ |
| Time: COMP | $\chi^2 (df, 2) = 13.81, p = .001$ |
| T1 | $U = 1081.5, Z = 1.17, p = .242; r = .11$ |
| T2 | $U = 1862.5, Z = .42, p = .674; r = .04$ |
| T3 | $U = 1552, Z = 2.57, p = .01; r = .22$ |
| <i>14-16-year-old cohort</i> | |
| Condition | $U = 14632, Z = 1.86, p = .062$ |
| Time: SNM | $\chi^2 (df, 2) = 1.58, p = .454$ |
| Time: COMP | $\chi^2 (df, 2) = .12, p = .94$ |
| T1 | $U = 1001.5, Z = 1.52, p = .130; r = 0.15$ |
| T2 | $U = 2769, Z = 1.15, p = .249; r = 0.09$ |
| T3 | $U = 1089.5, Z = 0.56, p = .575; r = 0.05$ |

3.3.3.3 Summary of intervention effects on past 30-day frequencies of alcohol use, drunkenness, and perceptions

Across the duration of the study, as expected, 12-14- and 13-15-year old cohorts increased their use of alcohol and drunkenness and perceived more frequent use of alcohol and drunkenness among peers, although this trend did not always reach statistical significance. In contrast, pupils aged 14-16-years old perceived less frequent alcohol use and drunkenness over time, but this was only significant for the frequency of alcohol use perception measure. At the same time, the 14-16-year-old SNM cohort increased their frequency of alcohol use, but not drunkenness, and there was no change in the comparison cohort's behaviour. Generally speaking, the results offer little evidence the SNM intervention reduced the frequency with which pupils perceived their peers consume alcohol or get drunk relative to pupils in the comparison condition. However, pupils aged 15 years at T3 consumed alcohol and got drunk less frequently than pupils in the comparison condition. The fact that the T3 reductions reported by the 15-year-old SNM cohort were consistent across the frequency of alcohol use and frequency of drunkenness measures increases confidence in the robustness of those particular findings.

The decline in the 14-16-year-old cohorts' perceptions of the frequency of alcohol use at T3 may represent maturation effects as pupils approach an important stage in secondary education. Alternatively, some pupils present in the 14-16-year-old cohort at T1 and T2 may have left school by T3, altering the cohort profile. However from Figure 3.21 it can be seen that, between T1 and T2, when pupils were too young to have left school, there was a trend for perceptions to have levelled off or to have begun to decline. The school-leaver explanation therefore seems unlikely.

It is also important to bear in mind that the methods used to evaluate the impact of the SNM intervention differed across the perception and behaviour

measures. Given that the tests used to compare pupils' own frequencies of use and drunkenness could not (i) test for interactive effects of time and condition, or (ii) incorporate all relevant comparisons into a single model, the analysis of pupils' perceptions must be considered a more conservative and rigorous test of the impact of the SNM intervention.

3.3.4 Adverse consequences

Underlying attempts to prevent alcohol misuse is the goal of reducing alcohol-related harm. A useful marker of the impact of the SNM intervention, therefore, is whether there was any change in the occurrence of past-year adverse consequences due to drinking alcohol following the introduction of the SNM intervention.

Pupils were asked to report whether they had experienced each of 11 adverse consequences in the past year as a result of drinking alcohol, covering domains such as relationships, physical harm to self, petty crime and punitive action. Each different adverse consequence experienced by pupils was then summed to create a single index (range 0-11) of the number of different adverse consequences experienced the year preceding each stage of data collection. The number of different adverse consequences reported at T1 correlated strongly with pupil's self-reported frequency of alcohol use ($r_s = .653, p < .001$) and drunkenness ($r_s = .637, p < .001$)²⁰, indicating that increasing frequencies of alcohol use and drunkenness are accompanied by increasing numbers of past-year adverse consequences or vice versa.

²⁰ These data are based on the responses of pupils aged 12-18 years attending the intervention school who completed a MT version of the questionnaire.

3.3.4.1 Intervention effects on the number of different adverse consequence experienced by pupils in the past year

In both schools most pupils reported few adverse consequences and index scores ranging from 0-11 were dichotomised using a median split of the T1 scores. The analysis therefore focused on pupils who reported any (i.e., 1-11) adverse consequences and pupils who reported zero adverse consequences in the past year.

Figures 3.24 - 3.26 present the percentage of each cohort who reported experiencing any adverse consequences at T1, T2 and T3. Again, the combination of a dichotomous dependent variable and the study design restricts the range of appropriate statistical tests available to examine these data. Consistent with the method of analysis used for the usual type of drink measures, the impact of the SNM intervention is therefore based on a series of 2 x 2 Chi Square tests examining the statistical significance of any difference between the two schools at each point in time (Table 3.17). From the outcome of the separate comparisons it is then inferred whether or not the results are consistent with some impact of the SNM intervention on the number of different adverse consequences experienced during the past year.

12-14-year-old cohort: Figure 3.24 presents the percentage of pupils in each condition that reported experiencing any adverse consequences at T1, T2 and T3 as a result of their drinking. Pupils in the SNM intervention condition were less likely to report any adverse consequences across all three stages of data collection and both conditions were less likely to report adverse consequences at T2 than they were at T1 and T3. According to the results of Chi Square tests (Table 3.17), only the T3 difference approached statistical significance, despite the difference of greatest absolute magnitude being found at T1. This may be explained by the limited number of drinkers in this cohort at T1 for which complete data were available (SNM: n = 18; COMP: n = 10), meaning that statistical power to detect the significance of any effect was extremely limited.

Given that the two cohorts already differed at baseline there is little evidence that pupils experienced fewer adverse consequences as a result of the SNM intervention.

13-15-year-old cohort: In contrast to the younger 12-14-year-old cohort, 13-15-year-old pupils in the SNM condition were more likely to report experiencing adverse consequences at baseline (Figure 3.25). However, between T1 and T2, this difference eroded and pupils in the comparison condition were equally likely as SNM condition pupils to report adverse consequences. By T3 the proportion of pupils in the SNM intervention condition reporting adverse consequences had declined but increased substantially among those in the comparison condition. Table 3.17 confirms that this T3 difference across condition was statistically significant. Taken together, this pattern of results is consistent with a positive impact of the SNM intervention on the number of pupils experiencing adverse consequences by T3.

14-16-year-old cohort: Figure 3.26 displays the percentage of 14-16-year-old pupils in each condition who reported experiencing any adverse consequences as a result of their drinking. Across each round of data collection SNM pupils were less likely to report any adverse consequences than comparison pupils, although only slightly so at T2. Although the trend across time was broadly similar for both conditions, the increase in the proportion of pupils reporting adverse consequences between T2 and T3 was more moderate in the SNM intervention than comparison condition. However, Table 3.17 indicates that none of the differences across the two school conditions reached statistical significance and the relevant effect sizes suggest the T3 difference was not markedly greater than that already present at T1.

Table 3.17 2 x 2 Chi Squares Examining Adverse Consequences in the Past Year (Zero Consequences/Any Consequences) By School (SNM/Comparison)

| Cohort and Time | Pearson's χ^2 | ϕ |
|------------------------------|------------------------------------|--------|
| <i>12-14-year-old cohort</i> | | |
| 12 yrs at T1 | $\chi^2 (1, 28) = 1.87, p = .172$ | .26 |
| 13 yrs at T2 | $\chi^2 (1, 97) = 1.19, p = .28$ | .11 |
| 14 yrs at T3 | $\chi^2 (1, 112) = 3.08, p = .079$ | .17 |
| <i>13-15-year-old cohort</i> | | |
| 13 yrs at T1 | $\chi^2 (1, 81) = .64, p = .42$ | .09 |
| 14 yrs at T2 | $\chi^2 (1, 118) = .04, p = .85$ | .02 |
| 15 yrs at T3 | $\chi^2 (1, 109) = 7.89, p = .005$ | .27 |
| <i>14-16-year-old cohort</i> | | |
| 14 yrs at T1 | $\chi^2 (1, 73) = .67, p = .41$ | .1 |
| 15 yrs at T2 | $\chi^2 (1, 133) = .01, p = .92$ | .01 |
| 16 yrs at T3 | $\chi^2 (1, 94) = 1.52, p = .22$ | .13 |

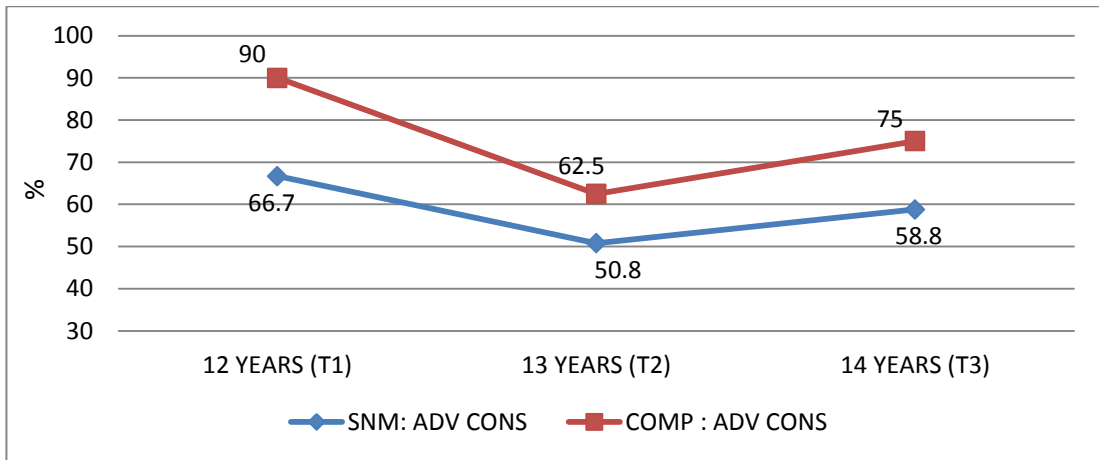


Figure 3.24 Percent of Pupils Reporting Any Past-year Adverse Consequences as a Result of Drinking Alcohol: 12-14-year-old Cohorts

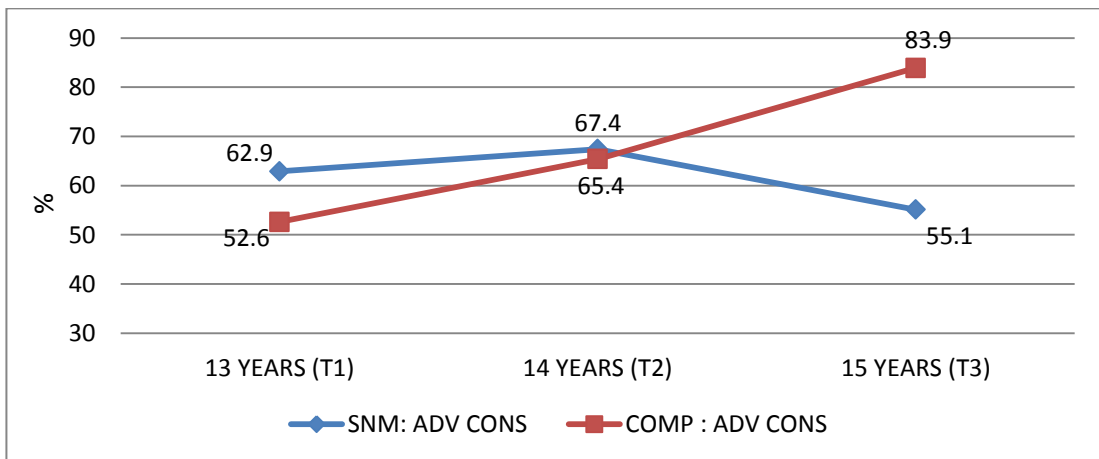


Figure 3.25 Percent of Pupils Reporting Any Past-year Adverse Consequences as a Result of Drinking Alcohol: 13-15-year-old cohorts

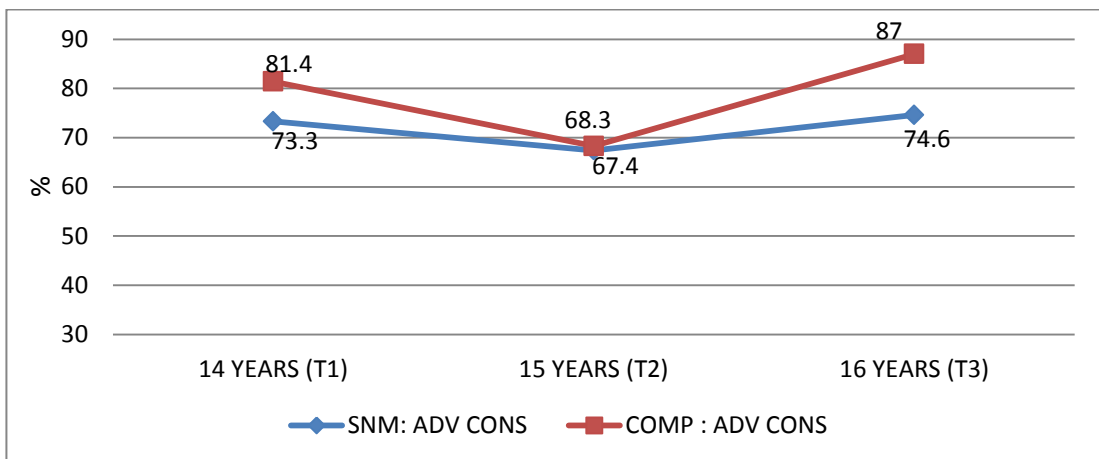


Figure 3.26 Percent of Pupils Reporting Any Past-year Adverse Consequences as a Result of Drinking Alcohol: 14-16-year-old cohorts

3.3.4.2 Summary of intervention effects on the number of different adverse consequences in the past year

The basic trends were similar across condition for the 12-14- and 14-16-year-old cohorts. Given the presence of baseline differences for these groups there was little evidence of a convincing nature that the SNM intervention had a positive impact on the number of pupils experiencing adverse consequences. In contrast, the proportion of 13-15-year-old pupils in the comparison condition who reported experiencing any adverse consequences increased substantially whilst declining in the SNM intervention condition. This latter finding is intuitively appealing given the lower frequencies of alcohol use and drunkenness reported by pupils aged 15-years in the SNM condition at T3.

3.4 Process evaluation

The SNM intervention was targeted at the whole-of-school population with additional feedback provided in PSE/PSHE lessons and other activities embedded in the day-to-day running of the school. Given an absence of convincing evidence that this approach was successful in aligning pupils' perceptions with a more moderate perception of the norm, it is useful to know whether pupils received suitable exposure to the SNM intervention activity and, where possible, consider their reactions to it.

3.4.1 Exposure to the intervention activity

One of the three types of questionnaire included two questions useful for examining exposure to normative feedback²¹. The first of these asked pupils whether they had seen or heard information about the number of pupils in their school who do not consume alcohol. Before the SNM intervention had been introduced, 24.3% of pupils reported that they had received information on the number of pupils in their school who do not consume alcohol; following one and two years of the SNM activity, this figure increased to 47.8% and then 77%.

A further item asked pupils to report whether they had seen or heard information on alcohol from each of 17 sources. Teachers, school newsletters, and school posters were all used to channel normative feedback over the two-year period of the intervention and are useful for examining exposure. Figures 3.27 - 3.29 present the percentage of pupils in the SNM condition who reported 'frequently', 'occasionally' or 'never' having seen or heard information on alcohol from each source. The number of pupils who reported having seen or heard information on alcohol from teachers and school posters on a frequent basis

²¹Process measures were only included in the MT version of the questionnaire because they referred to pupils' own exposure to the normative feedback and including them in the ST-peer version would risk contamination of key 'peer' items. They were omitted from the ST-self version to retain consistency between the two single-target versions. The data in this section are therefore based on the responses of pupils aged 12-18 years attending the SNM intervention school who completed a MT version of the questionnaire.

increased across the duration of the project. While seeing or hearing about alcohol information frequently from the school newsletter was less common, it seems likely this is due to the less frequent production of the school newsletter. This is supported by an increase in pupils who reported seeing alcohol information in the school newsletter 'occasionally' and a decrease in pupils who reported 'never' seeing alcohol information in the school newsletter.

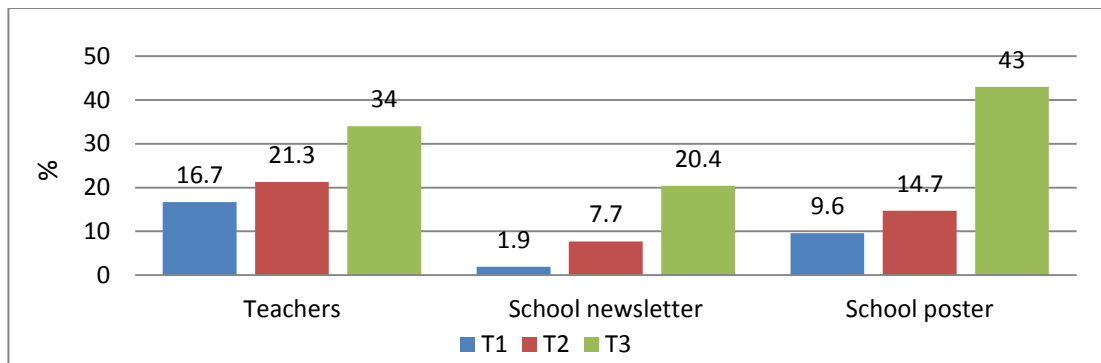


Figure 3.27 Percent of Pupils Who Reported 'Frequent' Exposure to Information on Alcohol for Three Channels of Normative Feedback

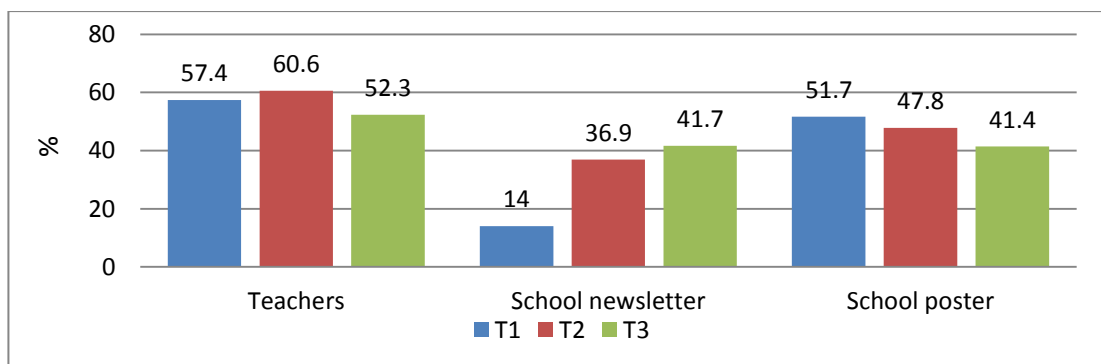


Figure 3.28 Percent of Pupils Who Reported 'Occasional' Exposure to Information on Alcohol For Three Channels of Normative Feedback

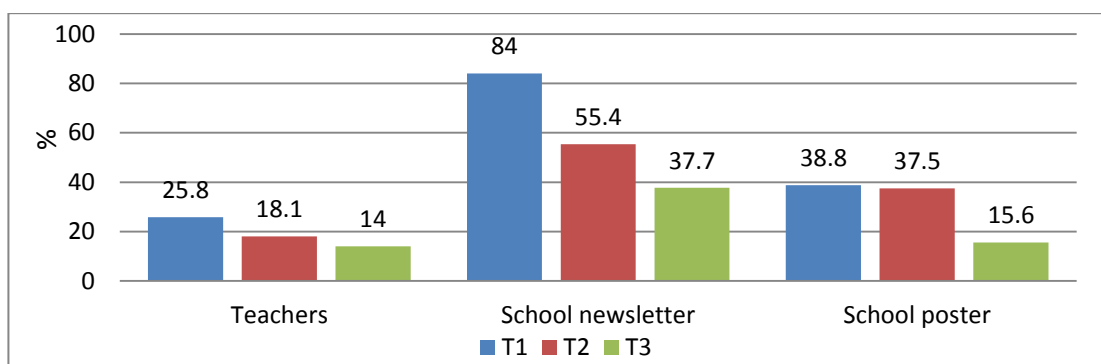


Figure 3.29 Percent of Pupils Who Reported 'Never' Having Been Exposed to Information on Alcohol For Three Channels of Normative Feedback

3.4.2 Pupils' reactions to the SNM intervention

While two basic indicators provide evidence consistent with an increasing awareness of SNM activity across the two-year period of the study, little can be said from such data beyond the fact that pupils were aware of the normative feedback. Quantitative data offering insight into pupils' understanding of the content and purpose of the SNM intervention activity, and perceived credibility of the feedback, is lacking here. Focus groups carried out by the on-site project coordinator, anecdotal reports, and unsolicited feedback provide some valuable contextual information however.

Focus groups and anecdotal reports

Following the final round of data collection a focus group was convened to explore SNM pupils' perceptions of the SNM activity. It should be noted that the focus group was arranged, facilitated and analysed by the on-site project coordinator during school time and the present author had no input into this aspect of the project; it is therefore unknown if a question schedule or specific theoretical orientation to conducting or analysing focus group data was followed. General issues arising from the focus group are noted below but need to be considered in light of uncertainties which exist around theory, methodology and interpretation.

The focus group convened was large (n=16) and included both male and female pupils, though the actual sex composition of the group is not known. Pupils from each year group took part: S1 (n=2), S2 (n=2), S3 (n=2), S4 (n=1), S5 (n=2), S6 (n=7). Feedback from the focus group indicated some uncertainty had arisen when normative feedback based on two different rounds of data collection briefly co-existed within the school environment. As the normative statistics contained within these messages differed this was reported to have caused some confusion. In addition, older focus group participants raised concerns that pupils had grown weary of the SNM intervention activity, whereas younger

pupils' remained enthusiastic and interested in the intervention activity. Further feedback from participants indicated that pupils perceived that the normative feedback was credible. However, this final issue contrasts with the comments reported by the on-site coordinator from an unrelated focus group carried out earlier in the year in which some pupils had questioned the credibility of the normative feedback²².

Unsolicited pupil comments

A selection of unsolicited pupil comments returned with completed questionnaires during the final round of data collection can be found below and over the page. These comments are included to provide some context to the issues described above, and it is not implied that they are representative of the wider school population. It is worth noting that four comments are from pupils of the same age and year group (i.e., 14-year old pupils in S3), raising questions as to whether these views represent a cluster of negative reactions or a more widely held view of the SNM intervention. Comments are produced verbatim.

Please stop this, no one listens to this, there is a loss of interest, no one cares about his project anymore!

(Unsolicited comment included on the back of a completed questionnaire by a 14-year-old-male pupil, S3)

The tannoy that tells us the same thing over and over again that we're all sick of hearing.

[Comment left on a completed questionnaire when asked to select from a list of available options 'sources of information on alcohol' (15-year-old-female pupil, S4)]

²² Within the SNM school the on-site coordinator held additional responsibilities which were unrelated to the SNM intervention. Details on this 'unrelated' focus group are not known.

Please stop giving pupils surveys like this because we have had so many we have started to unbelieve them.

(Unsolicited comment included on the back of a completed questionnaire by a 14-year-old-female pupil, S3)

Dear Alcohol Social Norms Project...I Think you should stop this project or carry it out differently because no-one takes it seriously. It is a good idea but when the phrase 'do you know what you're friends are doing' comes on the tannoy, everyone sighs.

(Unsolicited comment included on the back of a completed questionnaire by a 14-year-old-female pupil, S3).

3.5 Discussion

Baseline reports prepared by the current author identified that pupils attending the SNM intervention school exhibited theoretically important misperceptions of normative peer drinking behaviours and attitudes. In those cases where, by comparison, the true norms for the population were moderate and healthy, consistent with the social norms approach model, a range of more moderate alcohol-related norms was fed back through various marketing and class activities. Unlike many other interventions based on a social norms marketing approach in educational settings, the current work included a comparison school to more carefully evaluate the impact of the intervention over an extended period.

3.5.1 Main findings

Although pupils attending the SNM school were exposed to normative feedback aimed at correcting exaggerated perceptions of peers' alcohol-related behaviours and attitudes for a period of two years, there was little convincing evidence that this basic aim was achieved. Compared to similar-aged pupils attending the comparison school, a mix of statistically significant and non-significant trends for 13- and 15-year-old SNM pupils to report more conservative perceptions of attitudes and more accurate perceptions of non-alcoholic drink use at T2 were found. However, any impact of the SNM intervention appeared to be limited to the medium term (T2) and no longer present by T3, or could be accounted for through pre-existing differences at baseline. There was also a non-significant trend for 15-year-old pupils attending the SNM school to report more conservative perceptions of peers' attitudes at T3, yet at the same time they were more likely to misperceive that peers would consume alcoholic-drinks when with friends. There was no evidence the SNM intervention decreased perceptions of the frequency of alcohol use and drunkenness relative to comparison pupils for any of the pupil cohorts examined.

Although evidence that the SNM intervention instilled more moderate and accurate perceptions was limited, several positive behavioural outcomes were reported. Relative to the comparison school, fewer 14-year-old pupils attending the SNM school reported consuming alcoholic drinks by the final stage of data collection at T3, and 14- and 15-year-old pupils also reported less frequent alcohol use and drunkenness at T3. There was some evidence, however, that baseline difference between the two schools may account for the lower frequencies of alcohol use and drunkenness reported by the 14-year-old SNM pupils. During the final round of data collection 15-year-old pupils attending the SNM school were also less likely to report having experienced any adverse consequences in the past year as a result of drinking alcohol.

Evidence of positive behavioural outcomes across conceptually related measures can increase confidence that findings represent substantive differences in the behaviour of pupils attending the two schools following implementation of the SNM intervention. *However, in the absence of convincing evidence that the SNM intervention produced and maintained more moderate or conservative perceptions of peer norms among pupils, the mechanisms of behaviour change postulated by the social norms model cannot logically account for these outcomes. Under these circumstances the theory makes no predictions for behavioural outcome and there is a degree of risk in claiming that specific aspects of the SNM intervention were responsible.*

As the SNM intervention failed to correct pupils' perceptions it may be the case that the positive behavioural outcomes reported were a result of certain generic aspects of the SNM intervention which are not specific to a social norms approach, but are nonetheless considered good practice in school-based alcohol education. For instance, ensuring that pupils were involved in the development and production of marketing materials, and infusing SNM feedback into activities across the broader curriculum is consistent with the interactive approach recommended from systematic reviews and expert opinion (Cuijpers, 2002; Midford, 2010; Skager, 2008; Tobler et al., 2000).

Lower frequencies of alcohol use and drunkenness, and fewer different adverse consequences reported by 15-year-old SNM pupils at T3 may point towards reducing frequencies of alcohol use and drunkenness in order to reduce alcohol-related harm. However, it should be borne in mind that the cross-sectional study design cannot shed light on causal pathways between consumption behaviour and harms. For instance, it cannot be ruled out that pupils who wished to avoid adverse consequences adjusted their alcohol use and drunkenness accordingly to downgrade the risk of experiencing any consequences. If this were the case then an appropriate target for behaviour change would be variables associated with adverse consequences rather than frequency of alcohol use and drunkenness. Again, the nature of the study design is limiting here in the conclusions that may be drawn.

3.5.2 Why did the SNM intervention fail to correct perceptions?

Where social norms marketing interventions have previously failed to correct misperceptions, it has often been the case that a change in perception occurred in the absence of a corresponding change in behaviour (Prentice, 2008). The findings reported here differ from this pattern as there was little convincing evidence the SNM intervention changed perceptions despite a prolonged period of intervention activity. The following sections consider a number of explanations for the failure of the SNM intervention to correct perceptions compared to the standard alcohol education received by comparison pupils in PSE/PSHE classes. In some cases these explanations are necessarily speculative and the extent to which they directly apply to the intervention reported here is not clear.

3.5.2.1 Explanation 1: A mixed evidence base

It is important to note the majority of evidence supporting use of a SNM intervention is derived from U.S college and university settings. While several campaigns have reported favourable outcomes in these contexts (Fabiano et al., 1999; Gomberg, Schneider, & DeJong, 2001; Haines & Barker, 2003; Haines & Spear, 1996; Perkins & Craig, 2003), findings have at times been more mixed where a suitable comparison group is included (Clapp et al., 2003; DeJong et al., 2006; DeJong et al., 2009; Werch et al., 2000). In one example, positive findings from one of the most methodologically rigorous and carefully evaluated social norms marketing interventions to be carried out to date (DeJong et al., 2006) were not replicated using an identical protocol (DeJong et al., 2009). A follow-up analysis identified that the student populations in the second study consumed alcohol more heavily, and were surrounded by a higher-density of outlets selling alcohol than the first. Findings such as these suggest that SNM interventions may not be effective across all populations.

Social norms marketing intervention studies carried out in school settings have lacked suitable comparison groups to rule out historical factors as an explanation for change (e.g., Haines et al., 2003), have focused on younger pupils in shorter classroom-based activities (e.g., Balvig & Holmberg, 2011), or have used more comprehensive social influences intervention packages involving a wider range of tools than those used here (e.g., Botvin et al., 1995; Faggiano et al., 2010). Therefore, in addition to the different cultural factors that may limit the generalisability of social norms marketing interventions to a Scottish context generally, it should be noted that high quality evidence is also lacking on the specific type of approach adopted here in secondary school contexts.

3.5.2.2 Explanation 2: Issues surrounding the normative feedback

The intervention approach adopted in this study incorporated normative feedback delivered via a mix of marketing channels and classroom activities. Where SNM campaigns have failed to correct misperceptions, post-hoc investigations have criticised the short periods of exposure to feedback and limited intensity of intervention activity (e.g., Perkins, 2006; Werch et al., 2000). A continuous two-year period of intervention activity, a fulltime project worker based in the intervention school, and pupils' increased awareness of normative feedback activity makes it seem unlikely the SNM failed to correct perceptions due to a basic lack of exposure.

Elsewhere, SNM interventions have failed to provide a clear and consistent normative message that was well understood by participants (e.g., Russell et al., 2005). For the most part normative feedback messages used in this SNM intervention were clear and consistent with the approaches advocated in handbooks and guides originating from the U.S. In addition pupils attending the SNM intervention school were involved in the design and production of materials used to market normative feedback, which ensured at least some engagement with the normative feedback. Exceptions may exist however, and anecdotal reports from the on-site coordinator indicated that a pupil-designed Christmas card used to market normative feedback was poorly received by peers. In addition, other qualitative research indicated a degree of uncertainty surrounding 'new' and 'old' normative feedback messages, which briefly existed in parallel within the school environment.

In some cases normative feedback has lacked credibility with U.S college students and U.K secondary school pupils (Stead, Stradling, et al., 2007; Thombs et al., 2004). Observations of classroom lessons from the disappointing Blueprint drug education programme found some pupils experienced difficulty reconciling their (exaggerated) perceptions with more moderate norms from

earlier survey findings (Stead, Stradling, et al., 2007). In some cases pupils challenged the feedback, arguing the data were inaccurate due to underreporting or lacked relevance to their proximate social networks. There was some qualitative evidence from the current study that a minority of pupils doubted the credibility of the normative feedback. Anecdotal evidence from the on-site project coordinator, however, suggests issues over credibility were usually successfully addressed in more focussed class and group-work activities where pupils' concerns could be explored and challenged. In a Scottish secondary school context, provision of normative feedback via marketing channels may therefore require additional workshops or class sessions to work through barriers to acceptance of the normative feedback. Unfortunately, the broader focus of this intervention project on a marketing approach meant class and group sessions were not received by all classes or pupils in the school, and the extent to which more focused classroom level discussion may mediate any positive effects of normative feedback is unclear.

3.5.2.3 Explanation 3: A stringent test of the SNM intervention

Several factors related to the study methodology and procedures used to evaluate the SNM intervention may have presented a stringent test of the SNM intervention to demonstrate effectiveness over the comparison school.

Although both schools were a good socioeconomic and geographic match, the infrastructures in place to deliver core alcohol education differed. For instance, the comparison school employed a specialist PSE/PSHE staff to teach lessons whereas PSE/PSHE lessons in the SNM school were taught by form teachers whose primary expertise lay in other areas of the curriculum. Pupils attending the comparison school also received alcohol education throughout secondary school whereas SNM pupils received core alcohol education in their 3rd year. It is conceivable that these institutional-level differences may result in a stringent test of the SNM intervention. For instance, the expertise of PSE/PSHE staff in the comparison school and the spread of alcohol education throughout S1 - S6 may

provide greater opportunity to focus on generic aspects of drug education thought to be effective, such as peer discussion and interaction (Cuijpers, 2002; Skager, 2008; Tobler et al., 2000).

Although the comparison school's core alcohol education programme did not specify elements of a social norms approach, the format of PSE/PSHE classes in the school and expertise of staff may provide greater flexibility for lessons to deviate from this core programme. Rumours also surfaced that the staff in the comparison school fed-back normative information during the two-year period of intervention activity. Unfortunately, staff turnover in the comparison school prevents a comprehensive account of material covered during PSE/PSHE lessons for the two-year period of the study, and it cannot be ruled out that pupils received some form of normative feedback within the broader structure of their basic alcohol education. Although it seems unlikely that any normative feedback included in the comparison school lessons would be comparable in duration and intensity to that implemented in the SNM intervention school, this would present a more stringent test of the SNM intervention to demonstrate an impact on perception.

In the SNM school intervention activity was provided in addition to, rather than instead of, standard alcohol education delivered in PSE/PSHE classes. Depending on the content and style of delivery, other types of classroom alcohol education may, in theory, counteract the effects of normative feedback. As exaggerated perceptions are thought to arise through psychological, social and media influences that reinforce negative alcohol-related events (Perkins, 1997), alcohol education giving disproportionate focus to these issues may work against the normative feedback. Although there has been a move away from approaches that adopt fear arousing principles, evidence exists that school drug education need not resort to scare tactics in order to produce exaggerated perceptions (Donaldson et al., 1995). Where other alcohol education activities are on-going there is also a risk that pupils' fail to distinguish SNM activity from alternative classroom-based alcohol education efforts that present a less

balanced picture. To provide a more focused examination of the effects of a SNM intervention it would be necessary to withdraw core alcohol education for the duration of the intervention period within that school. However, in the context of Scottish secondary school education, SNM interventions should be considered exploratory in nature and this course of action would be unrealistic and possibly unethical.

A combination of factors including the cross-sectional study design, variance in the samples across time and condition, and the nature of the measurement scales used to record pupils' responses (and the resulting distribution of responses) meant a pragmatic approach was necessary when evaluating the impact of the SNM intervention. It is possible some of the evaluative procedures and statistical tests used may have resulted in a more stringent test of the SNM intervention.

Pairing cross-sectional age groups across three consecutive rounds of data collection risked some pupils being represented in parallel at T2 and T3 within each cohort. It is likely that this would have the effect of lowering variance in the dataset between T2 and T3, making any impact of the SNM intervention more difficult to detect among pupils attending the SNM school. However, it is also the case that any suppression of variance due to a small number of pupils appearing as duplicate data points would presumably affect comparison school data to a similar degree. Thus, the risk posed to the evaluation findings by any suppression of variance in the SNM school is mitigated by the inclusion of a comparison school.

The need to examine the effects of the intervention using (pseudo) cohorts rather than at the whole-of-school level resulted in small cell sizes throughout the evaluation. The number of pupils in the 12-14-year-old cohort was further depleted given action necessary to address the possible confounding effects of the questionnaire imbalance. Where possible, however, allowances were made for the limited statistical power afforded by low numbers of pupils, and due

consideration was given to effect sizes as well as statistical significance testing. However, even established and well-polished school programmes typically produce small effects, the importance of which may only become clear in economic cost-benefit models (Foxcroft & Tsertsvadze, 2011b). Thus the limited statistical power of several analyses mean there is a risk that favourable or unfavourable effects of the intervention were missed.

Limited cell sizes also prevented subgroup analyses which might have taken place separately for male and female pupils or perhaps for pupils consuming alcohol at different levels. Given recent trends showing differences in the trajectory of male and female adolescent drinking patterns (Currie et al., 2011), a differential impact of the SNM intervention for male and female pupils would be of interest. Moreover, subgroup analyses during evaluation of a recent randomised controlled trial of a multi-component social influence programme which included normative feedback, found that positive effects were mainly confined to boys, and potentially harmful effects were identified for subset of girls with low levels of self-esteem (Caria et al., 2011). Unfortunately, in the present evaluation, due to the already small number of pupils in certain cases, subgroup analyses of male and female pupils would be unreliable and risk misleading.

In some cases more conservative evaluative procedures were used to examine the effects of the SNM intervention on perception variables, while somewhat less rigorous procedures were used to assess variables related to students' own behaviour. Due to the relative inefficiency of some of these procedures a greater number of tests were used without making adjustments to the acceptable risk of Type 1 error. To ensure the discrepancy in testing procedures couldn't account for the finding that the SNM intervention failed to modify perceptions, additional analyses were carried out using the less rigorous non-parametric methods applied to the behavioural measures. Although several significant effects were found as a result of using the different procedures (data not

shown), only in a single case²³ did the direction of these favour the SNM intervention over the comparison school. Therefore, the different methods and analyses used to evaluate the intervention effects do little to alter the general sense that the intervention failed to produce desirable changes in perception.

3.6 Conclusions

These findings do not demonstrate the effectiveness of a social norms marketing intervention for correcting Scottish secondary school pupils' alcohol-related misperceptions. Following two years of normative feedback, relative to similar-aged pupils from a comparison school, attendance at the SNM school was associated with several favourable behavioural outcomes for a cohort of pupils aged 15 years old. However, the failure to instil more moderate perceptions means these outcomes cannot be attributed to specific aspects of the SNM intervention. The case for a straightforward transference of the approach advocated in handbooks and guides originating from the U.S college system to a Scottish secondary school context is therefore unconvincing. These conclusions are weakened somewhat by methodological issues surrounding the study design, a non-equivalent comparison school, heterogeneous samples and inconsistent evaluative procedures. Given these caveats, the possibility should be considered that there is an absence of good quality evidence rather than convincing evidence that this type of intervention is ineffective with this population.

²³ At T3 the 13-15-year old cohort of SNM pupils reported less permissive perceptions than those in the comparison school, $t(143) = 2.21, p = .029$.

CHAPTER 4: STUDY TWO – AN INVESTIGATION OF QUESTIONNAIRE STRUCTURE USING A SCOTTISH SECONDARY SCHOOL SAMPLE

4.1 Introduction

The exaggerated nature of young people's perceptions has been explained through cognitive biases such as the fundamental attribution error (L. Ross, 1977). This information processing perspective suggests that discrepancies between young people's alcohol-related behaviours and attitudes and perceived peer norms constitute genuine errors of judgment in young people's estimation of peers' alcohol-related behaviours and attitudes. However, alternative lines of research suggest social motivations may also play an important role in substance-use reports (Davies & Baker, 1987; Davies & Best, 1996; Davis et al., 2010; Klein & Kunda, 1993; Lombardi & Choplin, 2010; Newham & Davies, 2007; A. J. Ross & Davies, 2009; Tajfel, 1970).

An argument was set forth in Chapter 2 that the use of a single questionnaire to record young people's behaviours and attitudes, as well as their perceptions of peers' behaviours and attitudes, may increase the saliency of any comparison between self and peers on relevant alcohol-related variables. By implication, this practice may encourage a pattern of responding that enable respondents to maintain positive social comparisons with peers. Given that evidence showing young people misperceive drinking norms is frequently based on questionnaire responses indicating a discrepancy between young people's self-reported behaviours and attitudes, and their perceptions of peers' behaviours and attitudes, Study Two sought to investigate whether the paradigmatic format of questionnaire used in this field plays an active role in producing the mismatch between perception and reality. It was hypothesised that if young people's responses to social norms questionnaires are to some degree socially motivated, then self-reported and perceived behaviours and attitudes will differ across questionnaires varying the degree to which social comparison information is a salient feature. It was therefore anticipated that responses to a conventional

questionnaire incorporating self- and peer-referent items would differ from responses to questionnaires which include self- or peer-referent items only. Study Two made use of the baseline stage of the intervention study reported on in Study One to test this hypothesis among secondary school pupils.

4.2 Methodology

4.2.1 Sample information

Details of the two schools used in this study have already been described in Study One (sections 3.2.3.1 and 3.2.3.2).

4.2.2 Design and measures

The standard social norms paradigm involves collection of self- and peer-referent data using a single questionnaire – a within-subjects design. To investigate whether this format of questionnaire has an impact on pupils' responses, three different versions of a social norms questionnaire were developed for use in a between-subjects experimental design. One questionnaire, similar in structure to that advocated in handbooks and guides for schools, communities and practitioners (Haines et al., 2005; Perkins, 2003), included both self- and peer-referent items to record pupils' own alcohol-related behaviours and attitudes in addition to their perceptions of those alcohol-related behaviours and attitudes for the 'typical pupil' in their year [i.e., a multiple-target (MT) version]. Two further questionnaires split this format and included items to record the alcohol-related behaviours and attitudes of a single target in each case [i.e., single-target (ST) 'self' or 'peer' versions]. The three questionnaires can be found in Appendix A-C.

The battery of social norms items used in this research was based on those found in sample questionnaires available in *A Guide to Marketing Social Norms for Health Promotion in Schools and Communities* (Haines et al., 2005). An

assumption was made that included items would be representative of those used in applied social norms interventions used in schools and communities. Although the questionnaires contained various alcohol-related measures, only those likely to be used as part of a social norms intervention to correct pupil misperceptions were of interest. Descriptive items of interest were: (i) the usual type of drink consumed when with friends based on eight alcoholic and non-alcoholic drink response options. Pupils who had ever consumed more than a few sips of alcohol also provided: (ii) past 30-day frequencies of consumption, and; (iii) past 30-day frequencies of drunkenness information, both using 7-point ordinal scales ranging from *never in the past 30 days* to *every day of the week*. Eight attitudinal items required pupils to state degree of agreement on a 4-point scale ranging from *strongly disagree* to *strongly agree* with statements such as 'There is nothing wrong with people under 18 years drinking alcohol every now and then' and 'I need to have a drink of alcohol in order to have a good time'. In all cases self and peer-referent item strings were identical, varying only the target-referent (e.g., 'When *you* are with your friends, what do *you* usually drink?' vs. 'When *they* are with friends, what do you think the *typical pupil* in your year usually drinks?').

4.2.3 Procedure

Questionnaires were completed in classroom settings of medium size (approximately 21 pupils) under exam conditions in April 2009. Classroom teachers who were blind to the experimental manipulation received equal numbers of the three types of questionnaire, the order of which had been hand-randomised by a member of the SNM intervention project prior to enclosing each in an unmarked envelope. Teachers and questionnaire headers stressed the anonymous nature of responses and that pupils were under no obligation to complete questionnaires. Pupils sealed completed questionnaires inside envelopes before returning them.

4.3 Results

Notwithstanding exam commitments, absences, and opting out, data were available for 56.88% and 55.43% of each school roll. Data from either school were pooled to give a sample size of 1074 pupils, just over half (52.5%) of which was male. Questionnaires were completed by pupils of all ages (12-18 years), the average was 14 years and 5 months ($SD = 1$ year and 7 months). Of the three types of questionnaire, 371 pupils (34.5%) responded to the MT version, 358 (33.3%) to the ST-self version and 345 (32.8%) to the ST-peer version. Composition of the three groups did not differ significantly by age [$F(2, 1052) = 0.08, p = 0.93$] or sex [$\chi^2(2, 1073) = 4.33, p = 0.12$], though male responses were more heavily represented in ST-self (55% male) and ST-peer (54.5% male) versions than the MT (48.1% male) version²⁴.

4.3.1 Descriptive norms: Usual drink type

After collapsing into an alcoholic drink versus non-alcoholic drink dichotomy, self- and peer-referent responses to the usual type of drink measure were compared across questionnaire type. Table 4.1 includes the percentage of pupils reporting use of alcoholic drinks according to target (i.e., self or peer) and questionnaire type [i.e., Multiple-target (MT) or Single-target (ST)], the results of 2 x 2 Pearson's Chi Squares comparing these data, and the associated odds of reporting use of alcoholic drinks for the MT questionnaire relative to those who responded to the ST versions of the questionnaire. It can be seen that there was virtually no difference in the proportion of MT or ST-self version respondents who reported use of alcoholic drinks themselves. In contrast, MT version respondents were significantly more likely to report that peers would consume alcoholic drinks when with friends, with the odds of doing so approximately

²⁴ Differences in 'n' between sex and age analyses of questionnaire equivalence are a result of a limited number of pupils failing to report their age. These pupils were not excluded from the main analysis because they were known to be aged 12-18 years and their inclusion did not differentially affect the outcome of the main analyses.

twice those of pupils who responded to the ST-peer version of the questionnaire.

Table 4.1 Pupils (Percent) Reporting Consumption of Alcoholic drinks With Friends According to Target and Questionnaire Version

| Target | MT | ST | Pearson's χ^2 | OR |
|---------------|------|------|-------------------------------------|------|
| Self-referent | 19.1 | 20.5 | $\chi^2 (1, 687) = 0.23, p = .63$ | 0.91 |
| Peer-referent | 56.5 | 37.5 | $\chi^2 (1, 674) = 24.32, p < .001$ | 2.16 |

4.3.2 Descriptive norms: Past 30-day frequencies of consumption and drunkenness

Table 4.2 presents the results of comparisons made across questionnaire type for self-reported and perceived past 30-day frequencies of consumption and drunkenness. As frequency of consumption and drunkenness responses were positively skewed the Median was the appropriate measure of central tendency and Mann Whitney tests examined responses across questionnaire type. Transformation of the response scale (as in Study One) was not attempted given little advantage to using parametric over non-parametric statistics in this particular analysis.

Although pupils who responded to the ST-self version (*Median* = 1 occasion) reported less frequent consumption during the past 30-days compared to MT respondents (*Median* = 2 occasions), this difference was not significant. There was also no difference between MT and ST questionnaire responses in pupils' perceptions of the typical pupil's frequency of consumption (*Medians* = 4 occasions), self-reported past 30-day frequency of drunkenness (*Medians* = 0 occasions), or perceptions of the typical pupil's past 30-day frequency of drunkenness (*Medians* = 4 occasions). In other words, self-reported frequencies

of drinking and drunkenness, and perceived frequencies of drinking and drunkenness were similar regardless of whether single or multiple-target versions of the questionnaire were used.

Table 4.2 Frequency (Median occasions) of Alcohol Use and Drunkenness According to Target and Questionnaire Version

| Target | MT | ST | Mann Whitney U | <i>r</i> |
|---------------------------------|----|----|--------------------------------|----------|
| <i>Frequency of consumption</i> | | | | |
| Self-referent | 2 | 1 | $U = 43069, Z = 1.22, p = .22$ | 0.05 |
| Peer-referent | 4 | 4 | $U = 52779, Z = 0.46, p = .64$ | 0.02 |
| <i>Frequency of drunkenness</i> | | | | |
| Self-referent | 0 | 0 | $U = 40899, Z = 0.63, p = .53$ | 0.03 |
| Peer-referent | 4 | 4 | $U = 52776, Z = 0.76, p = .47$ | 0.03 |

4.3.3 Injunctive norms

Self-reported and perceived attitudinal responses to the single- and multiple-target versions of the questionnaire were examined using two composite index scores. On six of the eight attitude items agreement ratings were scored as *strongly disagree* (1), *disagree* (2), *agree* (3) and *strongly agree* (4). Remaining items were reverse scored. Self- and peer-referent item scores were then summed separately with a higher score on the index indicating more liberal or permissive attitudes or perceived attitudes towards alcohol, and lower scores indicating more moderate or conservative attitudes or perceived attitudes towards alcohol.

Consistent with preceding analyses, Table 4.3 indicates that self-referent scores were similar across MT and ST versions of the questionnaire. However, peer-referent scale scores derived from responses to the MT version were significantly higher than those taken from the ST-peer version. In short, whether multiple- or single-target versions of the questionnaire were used to

collect information on pupils' own attitudes made little difference to the type of response given. In contrast, completing a multiple-target questionnaire resulted in pupils reporting a more permissive set of perceived attitudes for the typical pupil.

Table 4.3 Attitude Scale Score [Mean (SD)] According to Target and Questionnaire Version

| Target | MT | ST | <i>t</i> | <i>d</i> |
|---------------|----------------|-----------------|---------------------------|------------|
| Self-referent | 17.8 (4.22) | 17.47 (4.18) | $t(697) = 1.04, p = .29$ | $d = 0.08$ |
| Peer-referent | 21.2 (4.14) | 19.7 (4.59) | $t(697) = 4.46, p < .001$ | $d = 0.35$ |

4.4 Discussion

Although pupils' self-referent (i.e., own) descriptive and injunctive norms were robust across multiple- and single-target versions of a questionnaire, in comparison to a version which only includes questions about peer-behaviour and attitudes, use of a multiple-target version resulted in a more extreme set of perceptions over several key items. In the context of a social norms questionnaire comprising self and peer-referent alcohol-related items, social comparison information is a more salient feature of the questionnaire which may foster an environment where management of contextually relevant needs and motivations is encouraged. This position appears to have been overlooked in the social norms field to date.

Evidence that young people misperceive peer-drinking norms is often derived from research utilising multiple-target questionnaires, yet the current results question the extent to which multiple-target drinking questionnaires should be considered, on an a priori basis, suitable tools for measuring perceived drinking norms among secondary school populations. Although speculation over which type of questionnaire produces the more 'real' or 'meaningful' set of data remains tempting, at this point it may only be stated that two methods of collecting normative drinking information, which cannot be distinguished in wording or content of relevant items, produced marked differences over several normative perception items.

In contrast to perceptions of peer attitudes and the usual type of drink consumed by peers, pupils' own behaviours and attitudes were similar across questionnaires, and this was also true of perceptions of peer consumption and drunkenness. In general, self-referent responses may be more robust than perception responses because pupils are more knowledgeable about their own alcohol-related behaviours and attitudes than they are about their peers'. It is also likely to be the case that pupils are more knowledgeable about certain aspects of their peers' alcohol-related worlds than others. Thus perceptions of

past 30-day frequencies of consumption and drunkenness, can, be based to some extent, on observations of the relevant behaviour. In contrast, accurately judging peer attitudes towards drinking is a more difficult process requiring young people to identify the cognitive structures underlying peer behaviour. Therefore, where respondents are less knowledgeable about peers' alcohol-related practices and thoughts, responses may be more malleable and sensitive to social motivations because 'the facts' do not get in the way so much.

The current methodological approach runs counter to that typically endorsed in the social norms field where it is argued that measures used to evaluate programme impact should resemble or mirror those used to collect baseline data (Perkins, 2003; Perkins et al., 2005). Standardising measurement procedures within study designs increases the reliability of responses across time, but it should be borne in mind that in the absence of corroborating information it will also enable methodological artefacts to remain undetected.

4.4.1 Implications for social norms interventions

Prevention programmes making use of normative feedback to correct overestimated drinking norms are an increasingly popular method of attempting to reduce alcohol-related harm among young people. Unfortunately, limited resources may require that feedback of normative information be targeted selectively at overestimated norms where the magnitude of overestimation appears most severe. The current results indicate that over several items a more extreme set of perceptions were reported by those who responded to a multiple-target questionnaire, thereby increasing the magnitude and apparent severity of pupils' overestimation of the norm. Use of multiple-target questionnaires may therefore pose a risk if specific alcohol-related behaviours or attitudes are targeted to receive normative feedback over others because the degree of overestimation *appears* to be more severe. Few researchers would argue the allocation and direction of valuable resources

should be a matter solely for prevention experts and any risk of methodological bias influencing this process should be avoided.

Although pupils' frequencies of consumption and drunkenness reports were robust to the experimental manipulation, this finding may be of limited benefit to those working in applied prevention settings. Particularly among school-aged children, ethical concerns may prevent use of normative feedback considered to be unhealthy or undesirable. Even where a moderate degree of alcohol use is the norm, those working in applied settings may be reluctant to feed norms of this category back to young people given the theoretical risk that some may increase or initiate use to match the norm. As a result, injunctive norms may be preferred in settings such as secondary schools where a degree of alcohol use may in fact be normal.

These findings which highlight the extent to which perceptions of injunctive norms are robust to changes in questionnaire structure may be considered timely given increasing interest in norms of this type as a means of reducing alcohol consumption and related harm among college students in the U.S. (e.g., LaBrie, Hummer, Neighbors, & Larimer, 2010; Lewis et al., 2010; Prince & Carey, 2010). Although statistically significant, the mean difference of 1.5 scale points in peer-referent scale scores may appear limited in terms of practical importance. Here it is instructive to note that self- and peer-referent scores collected using the conventional multiple-target instrument differed only by 3.4 scale points. Therefore, the difference across questionnaire type of 1.5 scale points reported in the present study clearly erodes the degree of overestimation and would appear to represent a substantive effect.

It has been stated elsewhere that the data collection stages of social norms interventions offer a valuable opportunity for young people to reflect on their own alcohol-related behaviours and attitudes relative to those of their peers, making the process a worthy endeavour in its own right (Perkins, 1997). Paradoxically, given the basic premise of social norms research, that situations

perceived to be real are real in their consequences, repeated use of multiple-target questionnaires may in fact contribute toward the problems which social norms programmes try to address by creating an environment where a more extreme set of perceptions are included in young people's reflections on their alcohol-related behaviour and attitudes.

4.4.2 Limitations

Possible limitations to this research include the uniform self-then-peer order of presentation of target-referents in the multiple-target version of the questionnaire, which fails to control for possible ordering effects. While research conducted by Baer and colleagues (1991) found no effect of presentation order on college students' responses to drinking norms items, differences between the samples and normative measures used by Baer et al and this study mean their findings may not be entirely generalisable to those reported here. Nevertheless, the self-then-peer order of presentation used in this research was consistent with exemplar questionnaires contained in a social norms programming handbook and would therefore seem an appropriate format upon which to base this research.

Most published social norms research has also been carried out in the U.S, where the cultural context of young people's alcohol use may differ from that found in Scotland. Therefore, the possibility remains that motivations surrounding young people's responses to social norms questionnaires might also differ.

4.4.3 Conclusions

To conclude, social norms research and related interventions often make use of drinking questionnaires that ask young people to respond to questions about their own alcohol-related behaviours and attitudes as well as their perceptions of peers' behaviours and attitudes. Use of this format of

questionnaire with a Scottish secondary school population has been shown to result in a more extreme or exaggerated set of perception responses over several key alcohol-related items when compared to an alternative format which includes questions about peers only.

CHAPTER 5: STUDY THREE - REPLICATING THE SELF-OTHER DISCREPANCY EFFECT AT THE UNIVERSITY OF STRATHCLYDE

5.1 Introduction

Before work began on the programme of research described in this thesis, McAlaney and McMahon (2007) reported findings from an online survey of 500 students attending the University of West of Scotland. This research indicated that students misperceived (in the direction of overestimation) the normative amount of alcohol consumed and the frequency of alcohol use and drunkenness at their University. In addition, students also estimated that other targets such as close friends and persons of a similar age consumed more alcohol, drank and got drunk with greater frequency than they themselves did²⁵. McAlaney and McMahon's work was important in that they showed that a similar effect of overestimation operated among the student body at their institution as had been consistently documented in the U.S college system and, that, a positive self-other discrepancy is evident for several other targets aside from the average student.

In preparation for a series of smaller, more focused, studies examining the self-other discrepancy effect among university students, Study Three sought to ensure that the same basic effect of 'overestimation' of university drinking norms was present among students attending the University of Strathclyde. Given the paucity of social norms research in the U.K at this time and the similar geographical locations of the University of West of Scotland and University of Strathclyde, it seemed sensible to model the proposed replication on the research carried out there. Therefore in addition to examining whether drinking norms at the University were overestimated, the positive self-other discrepancy

²⁵In McAlaney and McMahon (2007) whether or not these estimates for non-student targets were significantly different from students' own behaviour was unreported. However, additional findings reported in McAlaney's (2007) Ph.D thesis indicate that they were.

effect observed in McAlaney (2007) for other targets was also investigated in Study Three.

On the basis of a substantial body of U.S research, and local data from the University of West of Scotland, it was anticipated that University of Strathclyde students would overestimate a range of normative drinking practices at the University, and would perceive a positive self-other discrepancy for several other target groups.

5.2 Methodology

5.2.1 Institutions details

The main University of Strathclyde campus is located in Glasgow city centre. The Study took place in February 2009, at which time there was a student role of 21,740. As is the case with most higher education institutions in the U.K, females (55.4%) were more heavily represented than males. Study inclusion criteria specified that participants were over 18 years of age, excluding 4.7% of the University population.

5.2.2 Measures

A short online questionnaire modelled on McAlaney and McMahon (2007) was used. Aside from basic demographic information, questionnaires included items covering three different dimensions of drinking. Unlike the questionnaires used in Study One and Two, items measuring injunctive norms or perceptions of injunctive norms were not included. The focus on descriptive rather than injunctive norms was representative of the bulk of published research on university or college student populations at this time; with interest in injunctive norms a more recent occurrence for this population (e.g., LaBrie et al., 2010; Lewis et al., 2010).

Initially, students were asked how many days in a month they would normally drink alcohol using a 9-point ordinal scale of *Never or very rarely/ Less than once a month/ Once a month/ 2-3 days a month/ Once a week/ Twice a week/ 3-4 days a week/ 5-6 days a week/ Every day*. The question was then repeated for each of three targets: close friends, the average student the respondent's age at the University of Strathclyde, and the average person the respondent's age in the U.K. Response options were identical across targets. A second measure of drinking behaviour covered the number of drinks normally consumed on a 'night out' in a pub or a club using a 9-point ordinal scale of *0 drinks/ 1-2 drinks/ 3-4./ 5-6./ 7-8./ 9-10./ 11-12./ 13-14./ 15 or more drinks*. Identical versions of this item recorded students' perceptions for each of the other targets. The final drinking measure required students to state the number of days in a month on which they drink enough alcohol to become drunk using an identical 9-point ordinal scale to that used to record the number of drinking days in a month. Again, identical items followed asking students to state how often they perceived that each target drank enough alcohol to become drunk. A copy of the questionnaire used can be found in Appendix D.

5.2.3 Procedure

Ethical approval for this research was given by the University of Strathclyde Psychology Department's Ethics Committee. Students attending the University of Strathclyde were invited to complete a 'Strathclyde Student Alcohol Survey' by following an electronic URL link embedded in an advert posted on the University's intranet system. In exchange, participants were offered the opportunity to enter a prize draw to win £50. Participants who followed the link provided informed consent and were assured of their anonymity and right to withdraw participation. Data collection was open for a period of two weeks by which point 987 responses had been recorded.

5.3 Results

5.3.1 Participants

Of the 987 responses recorded in the online survey, 843 (85.41%) students provided complete and unduplicated responses²⁶; 309 males (36.7%) and 534 females (63.3%) representing just less than 4% of the University of Strathclyde student body. The mean age of participants was 21 years and 8 months. ($SD = 4$ years, 11 months) Although 32% of the Strathclyde population were aged 18-20 years at this time, 59.4% of the study sample were within this age band; 21.6% of the Strathclyde population were aged 21-24 years old but comprised 29.2% of the study sample; conversely, students over the age of 25 years accounted for 41.58% of the Strathclyde population, yet 11.3% of the sample were categorised as such. In summary, the sample is unlikely to be representative of the University student body given that female and younger students were overrepresented while males and older students were underrepresented.

5.3.2 Data transformation

Response options available to participants across each of the three drinking measures formed 9-point ordinal measurement scales. Consistent with McAlaney and McMahon (2007), a pseudo-interval measurement scale was constructed using the midpoint of each response option comprising the response scale. Therefore, where a student indicated that they consume alcohol 5-6 times a month, the midpoint (5.5) of this category was used to estimate their monthly frequency of consumption. However, as with the past 30-day

²⁶ In a small number of cases the online survey software recorded more than a single entry from the same student (identified by way of 'IP' (internet protocol) and email addresses). Where the earliest entry was incomplete, but a single later entry was complete, this was taken to indicate the survey was exited prior to completion and the student returned to complete it. In contrast, more than one complete entry may be indicative of students attempting to increase their chances of winning the £50 prize draw incentive. Where there was clear evidence that multiple entries fell into the latter category these data were discarded.

frequency of alcohol use and drunkenness scales used in the secondary school research in Study One and Two, the relationship between scale points was nonlinear on both the number of drinking days and days of drunkenness variables. For the purposes of this and several later studies in this thesis, use of parametric statistics was desirable and the lack of linearity posed a problem. Therefore, the next step in data transformation involved logarithmically transforming the frequency of consumption and frequency of drunkenness response scales using the algorithm:

$\text{Log}_{10}(a + c)$, where 'a' is the midpoint of each participant's response and 'c' a constant (1).

Overall, this procedure had the desired effect, transforming a nonlinear ordinal measurement scale into a linear pseudo-interval scale, and in the process, enabling use of parametric tests provided that other assumptions were met. Figures 5.1 and 5.2 plot relationships between the midpoint of each response option and corresponding monthly frequency on the natural measurement scale, followed by the logarithmic version. In contrast to the number of drinking days and drunkenness measures, the scale used to record the number of drinks consumed on a night out approximated a linear one and there was little to be gained through a logarithmic transformation.

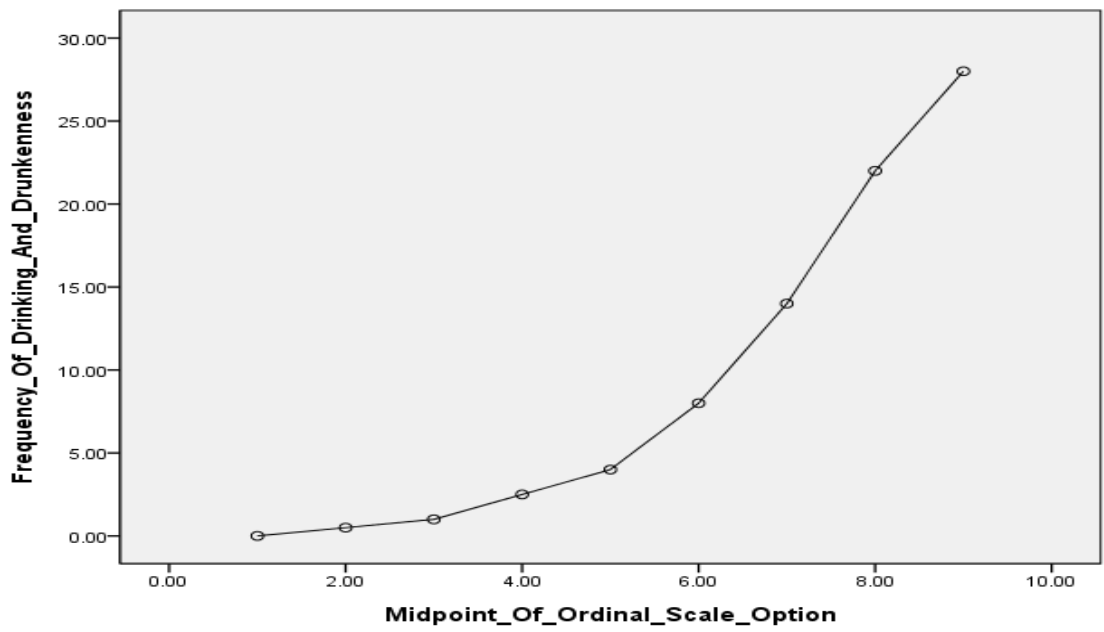


Figure 5.1 Plot of The Nonlinear Relationship Between The Midpoint of Each Scale Point on the Untransformed Monthly Frequency Response Scale

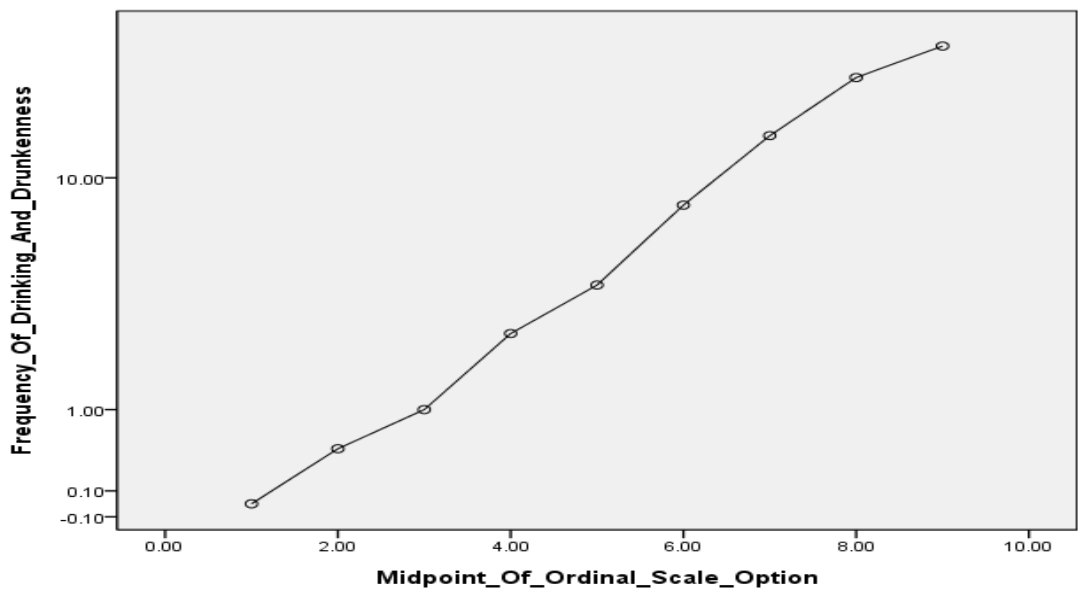


Figure 5.2 Plot of The Approximately Linear Relationship Between The Midpoint of Each Scale Point on the Logarithmically Transformed Frequency Scale

5.3.3 Strathclyde students' self-reported drinking behaviour and perceptions of other targets' drinking behaviour

Table 5.1 presents untransformed means and standard deviations based on the natural measurement scale for students' self-reported behaviour and their perceptions of peer behaviour for each of three drinking measures. In each case students' self-reported behaviours were less than that which was perceived for each of the other targets, with perceptions of the average students' behaviour highest.

Table 5.1 Descriptive Statistics [Raw Mean (SD)] for Self-reported Behaviour and Perceived Behaviour of Three Targets for Each Drinking Measure

| Drinking measure | Target | | | |
|--------------------------------------|-------------|--------------|---------------|-------------|
| | Self | Close friend | Average stud. | U.K |
| <i>Number of drinking days</i> | 6.37 (5.20) | 8.53 (4.91) | 10.83 (4.48) | 9.60 (4.86) |
| <i>Number of drinks</i> | 7.23 (3.90) | 8.43 (3.46) | 8.89 (3.18) | 8.30 (2.95) |
| <i>Number of days of drunkenness</i> | 3.22 (3.34) | 5.06 (3.84) | 6.68 (4.16) | 5.69 (3.89) |

A series of repeated measures one-way ANOVAs were used to examine the statistical significance of these differences of *target* for each drinking behaviour. In each case there was a significant main effect: number of logarithmically transformed drinking days each month [$F(2.15, 1807.23) = 278.47, p < .001, \eta_p^2 = .25$]; number of drinks consumed on a night out in a pub or a club [$F(2.33, 1963.98) = 104.32, p < .001, \eta_p^2 = .11$]; number of logarithmically transformed days of drunkenness each month [$F(2.28, 1917.02) = 391.28, p < .001, \eta_p^2 = .32$]. Across all three drinking behaviours follow up comparisons using Tukey's HSD procedure indicated that students' self-reported behaviour was significantly lower than that perceived of each of the targets (all $ps < .001$).

5.3.4 Perceptions of University drinking norms

The 'true' drinking norms for close friends and similar aged U.K person targets cannot be determined from the available dataset. However, notwithstanding concerns over the representativeness of the obtained sample to the wider student body, given that all respondents were University of Strathclyde students the aggregate of students' own responses can be used to approximate actual drinking norms for this population. Figures 5.3 – 5.5 display students' drinking behaviour and perceptions of other students' drinking behaviour using percentage frequencies.

For each drinking measure students' perceptions of the average student's behaviour follows a pattern of overestimation. For instance, while 52.7% of students reported consuming alcohol weekly or less, just 10.8% accurately perceived this was the case; thus, almost nine out of ten responses were inflated relative to the actual number of drinking days reported. When questioned on the usual number of drinks consumed by students on a night out in a pub or a club, the majority (64.1%) reported consuming 7-8 drinks or less, yet more than half (54.2%) overestimated that the average student at the University consumes 9-10 drinks or more. Finally, most students (60%) drink to drunkenness on 2-3 occasions each month or less, yet three times as many (51.5%) overestimate than are accurate (17.7%).

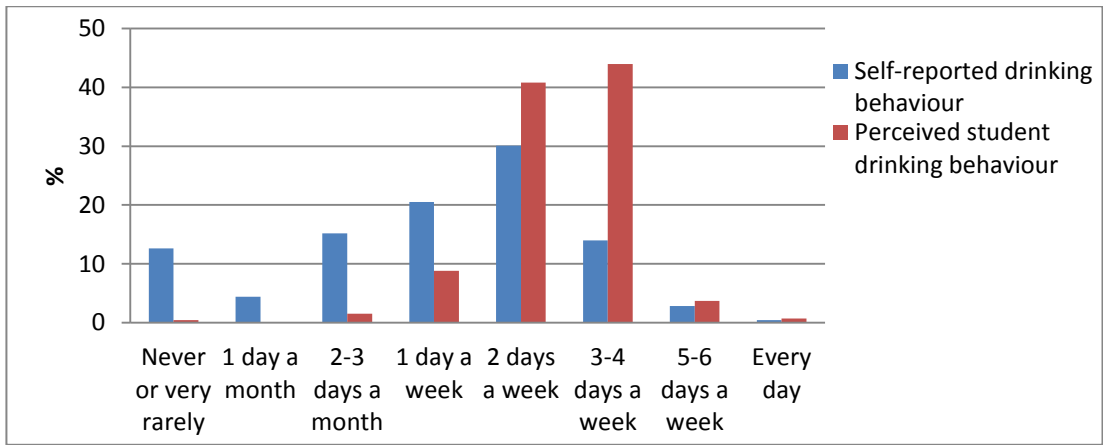


Figure 5.3 Number of Drinking Days in a Month and Perceived Number of Drinking Days in a Month for University of Strathclyde Students of the Same Age

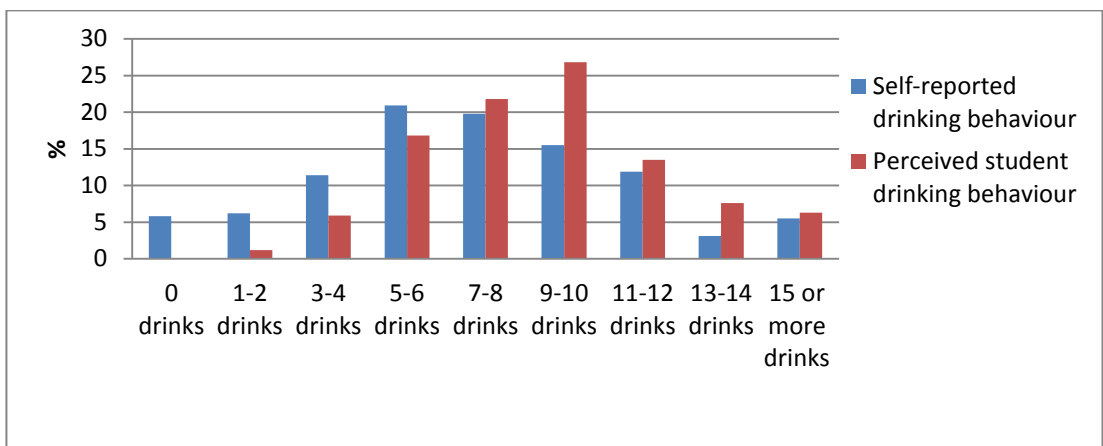


Figure 5.4 Number of Drinks Consumed on a Night Out and Perceived Number of Drinks Consumed on a Night Out for University of Strathclyde Students of the Same Age

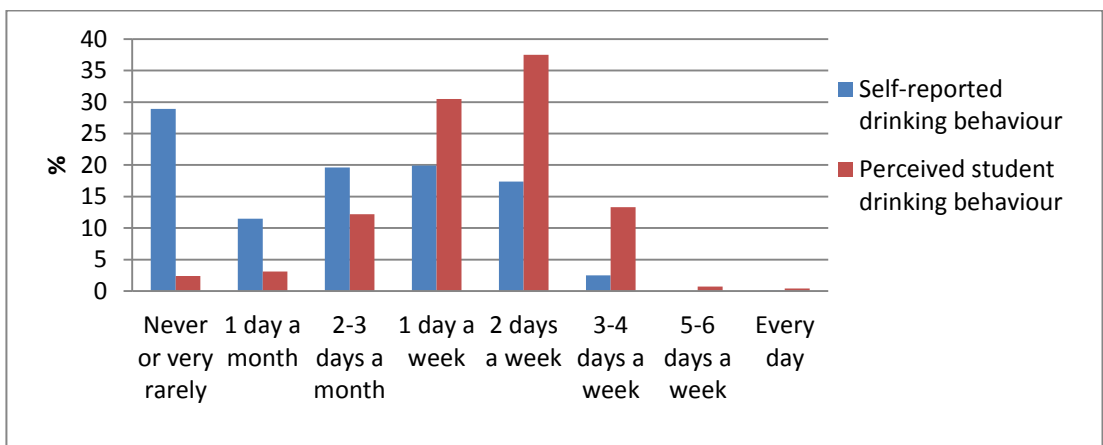


Figure 5.5 Number of Days of Drunkenness in a Month and Perceived Number of Days of Drunkenness in a Month for University of Strathclyde Students of the Same Age

5.4 Discussion

Using a methodology modelled on local research, and which is also broadly representative of similar work carried out in the U.S, University of Strathclyde students were found to perceive that other targets drink more often, drink more drinks and get drunk more often than they do. These results are generally supportive of a substantial body of U.S literature (Baer et al., 1991; Borsari & Carey, 2001, 2003; LaBrie et al., 2009; Lewis & Neighbors, 2004; Perkins et al., 2005) as well as that found in other cultural contexts (Bewick, Trusler, et al., 2008; Franca, Dautzenberg, Falissard, & Reynaud, 2010; Franca, Dautzenberg, & Reynaud, 2010; Kypri & Langley, 2003; Lintonen & Konu, 2004; McAlaney & McMahon, 2007; Page et al., 2008; Perkins, 2007b). The findings also support local research undertaken at the University of West of Scotland (McAlaney, 2007; McAlaney & McMahon, 2007) upon which aspects of Study Three were modelled.

Although the sample used in this study was drawn from the University of Strathclyde student population, and it may follow that University of Strathclyde students overestimate drinking norms for the average student, the overrepresentation of younger students and females in the sample suggests caution should be exercised when generalising to the wider student body. Notwithstanding this limitation, having established that the tendency to overestimate and perceive self-other discrepancies with peers is found among the University of Strathclyde population, this would seem an appropriate setting to examine these effects in greater detail through a series of smaller, more focused, studies.

CHAPTER 6: STUDY FOUR – AN INVESTIGATION OF QUESTIONNAIRE RESPONSES IN CONTRASTING ENVIRONMENTAL CONTEXTS USING A UNIVERSITY STUDENT SAMPLE

6.1 Introduction

Evidence in support of social norms theory and related interventions is based frequently on research demonstrating a discrepancy between self-reported own behaviour and perceptions of that behaviour among peers. Given that students' drinking behaviour presumably take place in environments other than those in which social norms questionnaires are completed, it would seem useful to know whether positive self-other discrepancies are also found when social norms questionnaire data are collected in a naturalistic drinking environment. It was therefore decided that Study Four would make use of an identical question-set as that used in the replication study (Study Three), except that collection of data would take place both in a naturalistic drinking context, and a more conventional context for obtaining social norms questionnaire responses i.e., one which is detached from the typical drinking environment.

Although there is a paucity of research examining the drinking patterns of U.K students recruited in naturalistic drinking contexts, it is intuitively appealing to expect a heavier pattern of personal use from students recruited from this context relative to those recruited from a context which is more detached from the typical drinking environment. In U.S college research, heavier drinkers, and those affiliated with heavy drinking Greek organisations, have been shown less likely to perceive a positive self-other discrepancy than other students (Borsari & Carey, 2001; Carey et al., 2006). If students recruited from a naturalistic drinking context are indeed heavier consumers of alcohol then a positive self-other discrepancy may be absent in this context. On the other hand, given the novel nature of this fieldwork and (to this author's knowledge) an absence of organisations in the U.K higher education system comparable to U.S Greek organisations, specific predictions concerning students' own consumption and

their perceptions of other targets' drinking are difficult to arrive at. Therefore, Study Four will examine whether the behaviour and perceptions of students recruited from a naturalistic drinking environment differ from those who are recruited from more conventional settings, and whether a positive self-other discrepancy is found within each context.

6.2 Methodology

6.2.1. Contextual settings

Two contexts were selected to test the study hypotheses. The first context was selected on the basis that it was broadly representative of those environments in which social norms work has tended to take place and included campus libraries, lecture halls and computing labs. Importantly, locations such as these are markedly detached from the typical drinking environment, and therefore lack salient features of a naturalistic drinking context. Although a number of locations were used to collect questionnaire responses in this detached context (DC), all were located within the confines of the University of Strathclyde campus. The Students' Union was selected as the naturalistic drinking environment based on its affiliation with the University, proximity to the University's main Glasgow city centre campus, and restrictive entry policy requiring student identification or a student of the University to act as a signatory for guests. In contrast to the detached context, questionnaire responses collected in this bar context (BC) would provide a picture of student behaviour and perceptions in a setting where drinking is a more salient feature of the environment.

6.2.2. Materials and design

A paper and pencil version of the online question-set from Study Three was used. Therefore, questionnaires included an item each to record how many days participants consumed alcohol and got drunk in a month, the number of

drinks they consumed on a typical night out, and reciprocal versions to assess perceptions for close friends, the average student their own age at the University, and the average person in the U.K their own age.

Although they are reported separately, data comprising Study Four and Study Five were collected as part of the same exercise. Thus in addition to the questionnaire already described which included all four targets, a total of 4 single-target questionnaires were used to collect information relevant to a single target in each case [i.e., single-target: 'self'; 'close friends'; 'average student'; or 'similar aged person in the U.K' versions]. Data derived from responses to these single-target versions of the questionnaire are not reported in the present study. A copy of the 'full' questionnaire used to collect data reported in Study Four can be found in Appendix D.

The study had a mixed design with four levels of a within-subjects *target* variable and two levels of a between-subjects *context* variable. The shared data collection exercise undertaken for Study Four and Study Five meant participants were randomly allocated, within sex, to complete one of five different types of questionnaire. They were not randomly allocated to the context of data collection.

6.2.3 Recruitment and procedures

An opportunistic recruitment method was used to recruit 430 (200 male; 230 female) University of Strathclyde students split equally across the detached and bar contexts and across the five different types of questionnaire. The five different types of questionnaire used across Study Four and Study Five were randomly ordered within sex. Students attending institutions other than the University of Strathclyde, non-students, and non-drinkers were ineligible. This latter criterion for exclusion was based on the common-sense assumption that this category of student would be more heavily concentrated in the detached context. Therefore, students who reported they "did not usually consume

alcohol at least once a month” were excluded. Students who participated in Study Three were also excluded to avoid cross-study contamination.

Although collection of data in the detached context took place at various times throughout the working week (Mon-Fri, 9am-5pm), data collection in the bar context was restricted to afternoons and early evenings on these days. This approach was based on the assumption that the Students Union bar would be busy enough for recruitment purposes, yet relatively few students would be heavily intoxicated at these times. In those cases where students exhibited clear signs of intoxication they were not asked to participate. Regardless of context the researcher approached students and asked whether they would be willing to respond to a brief questionnaire about alcohol. Students were advised the questionnaire would take only a few minutes to complete and, in exchange for their participation, they would be eligible for entry into a prize draw to win £50. If consent was provided then participants were verbally screened for eligibility by the researcher before being given a clipboard and a copy of the questionnaire to complete. Participants were asked not to confer with friends or other students while completing the questionnaire, though the researcher remained nearby to ensure compliance. On the small number of occasions when participants communicated with others during questionnaire completion their data were discarded. Ethical approval for this research was given by the University of Strathclyde’s Psychology Department’s Ethics Committee.

6.3 Results

6.3.1. Participants

Only participants who completed the full version of the questionnaire comprising all four targets were of interest in Study Four. Complete data were therefore available for 86 (40 male; 46 female) University of Strathclyde students evenly split across the detached and bar contexts (DC/BC). Age of respondents ranged from 18 to 44 years of age, with an average of 21 years and 3 months ($SD = 3$ years and 11 months). DC students ($M = 22$ years and 1 month, $SD = 5$ years) were significantly older than BC students ($M = 20$ years and 5 months, $SD = 2$ years and 2 months), $t(84) = 2.14, p = .037$.

6.3.2 University of Strathclyde students' drinking behaviours and perceptions of other targets' drinking behaviour in naturalistic and detached drinking contexts

Data from the three drinking measures were transformed according to the procedure set out in Study Three (section 5.3.2), to: (i) create a pseudo-interval linear scale for the number of drinking days and days of drunkenness measures, and; (ii) correct for normality across all three of the drinking behaviour measures. For descriptive purposes, untransformed means based on the midpoint of each option on the natural response scale are presented in Table 6.1 for students' drinking behaviour and perceptions according to the context of questionnaire completion.

Table 6.1 Descriptive Statistics [Raw Mean (SD)] for Self-reported Behaviour and Perceived Behaviour of Three Targets According to Context

| Drinking measure | Target | | | | | | | |
|--------------------------------------|----------------|----------------|----------------|-----------------|-----------------|----------------|----------------|----------------|
| | Self | | Close friend | | Average stud. | | U.K | |
| | DC | BC | DC | BC | DC | BC | DC | BC |
| <i>Number of drinking days</i> | 6.41 (5.52) | 9.63 (6.28) | 9.05 (4.55) | 10.49 (6.16) | 10.71 (4.74) | 9.88 (4.4) | 9.65 (4.63) | 9.09 (3.89) |
| <i>Number of drinks</i> | 8.76 (3.52) | 9.31 (3.14) | 9.92 (3.16) | 9.97 (2.92) | 10.01 (3.24) | 9.73 (2.32) | 9.22 (3.48) | 9.08 (2.53) |
| <i>Number of days of drunkenness</i> | 3 (2.15) | 7.79 (6.49) | 5.23 (2.74) | 7.57 (5.16) | 6.88 (3.37) | 7.79 (2.89) | 6.47 (4.16) | 6.7 (2.96) |

From Table 6.1 a trend exists for those students who completed questionnaires in the detached context to report that the three other targets drink, and get drunk more often, and consume a greater number of drinks than they do. However, this pattern is less clear for those students who completed questionnaires in the bar context which appears to be due to an increase in students' own frequencies and quantities.

Three mixed design ANOVAs, with four levels of a within-subjects *target* factor, and two levels of a between-subjects *context* factor, examined whether logarithmically transformed behaviour and perception responses differed between and within the two contexts. The results (Table 6.2) indicate main effects of target on responses across each of the three measures of drinking behaviour. Follow up comparisons using Tukey's HSD procedure revealed that, by comparison with perceptions of close friends' and the average student's behaviour, students reported fewer drinking days, drinks on a night out in a pub or a club and days of drunkenness themselves; only on the number of drinking days and drunkenness measures was this true for the average person the student's age in the U.K (all $ps < .01$). BC students also reported more frequent drunkenness overall than DC students, and significant interactions were found on the number of drinking days and drunkenness measures. The source of each

interactive effect was located at the level of the students' own behaviour, with DC students drinking and getting drunk less often than BC students ($ps < .01$). These data are also presented graphically in Figures 6.1 - 6.3.

Table 6.2 4 x 2 Mixed Analyses of Variance Examining Effect of Context and Target on Logarithmically Transformed Responses

| Source | <i>SS</i> | <i>df</i> | <i>MS</i> | <i>F</i> | <i>p</i> | η_p^2 |
|--------------------------------------|-----------|-----------|-----------|----------|----------|------------|
| <i>Number of drinking days</i> | | | | | | |
| Context (C: between Ss) | .03 | 1 | .03 | .96 | .331 | .01 |
| Error (C) | 2.5 | 84 | .03 | | | |
| Target (T: within Ss) | 1.11 | 2.49 | .44 | 11.36 | <.001 | .12 |
| T X C | .54 | 2.49 | .22 | 5.5 | .002 | .06 |
| Error (T) | 8.18 | 209.27 | .04 | | | |
| <i>Number of drinks</i> | | | | | | |
| Context (C: between Ss) | .00 | 1 | .00 | .19 | .666 | .00 |
| Error (C) | 1.1 | 84 | .01 | | | |
| Target (T: within Ss) | .15 | 2.47 | .06 | 7.65 | <.001 | .08 |
| T X C | .01 | 2.47 | .01 | .72 | .538 | .01 |
| Error (T) | 1.67 | 207.26 | .01 | | | |
| <i>Number of days of drunkenness</i> | | | | | | |
| Context (C: between Ss) | .32 | 1 | .32 | 8.8 | .004 | .1 |
| Error (C) | 3.04 | 84 | .04 | | | |
| Target (T: within Ss) | 2.11 | 1.99 | 1.06 | 22.62 | <.001 | .21 |
| T X C | .77 | 1.99 | .39 | 8.24 | <.001 | .09 |
| Error (T) | 7.82 | 166.97 | .05 | | | |

Note. On the number of drinks measure, Levene's test indicated heterogeneity of variances across context for the 'U.K person' target ($p < .05$) and all of the targets on the drunkenness measure ($ps < .05$). However, analysis of variance is frequently robust to departures from homogeneity, particularly when sample sizes are equal. As $n = 43$ in each cell the results of the analyses of variance are likely to be reliable.

The simple effects of target within each context

Given the interactive effect of context and target on the number of drinking days and days of drunkenness measures, the simple effect of target was examined separately within each context on these measures. Two repeated measures one-way ANOVAs revealed an effect of target in the detached context for both the number of drinking days [$F(2.43, 102.22) = 16.43, p < .001, \eta_p^2 = .28$] and days of drunkenness measures [$F(2.30, 96.79) = 30.87, p < .001, \eta_p^2 = .42$]; students in this detached context perceived that close friends, the average University of Strathclyde student, and person their own age in the U.K, all drank and got drunk significantly more often than themselves ($ps < .01$). In contrast, in the bar context, there was no effect of target on either the number of drinking days [$F(2.44, 102.29) = .78, p = .48, \eta_p^2 = .02$] or the number of days of drunkenness measures [$F(1.71, 71.94) = 2.43, p = .10, \eta_p^2 = .06$].

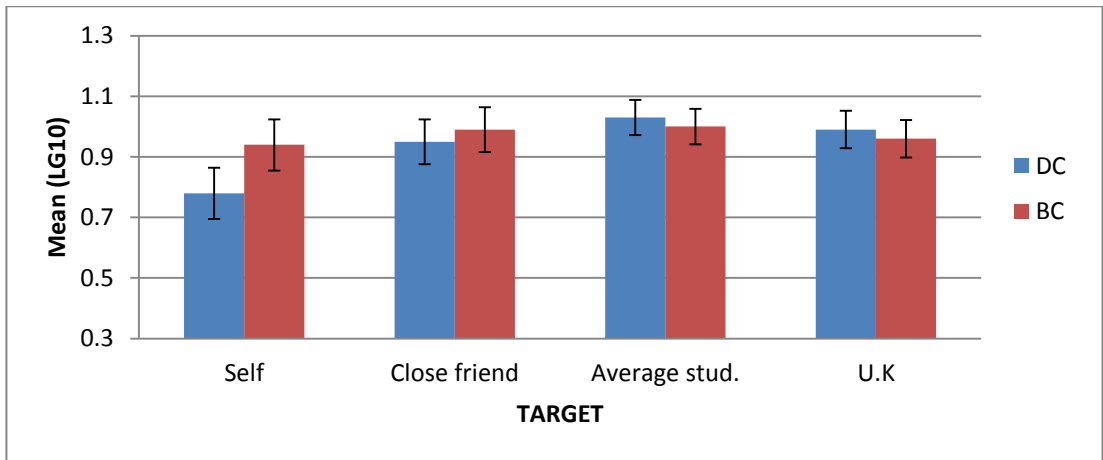


Figure 6.1 Number of Drinking Days in a Month and Perceived Number of Drinking Days in a Month for Three Other Targets (error bars: 95% CI of mean)

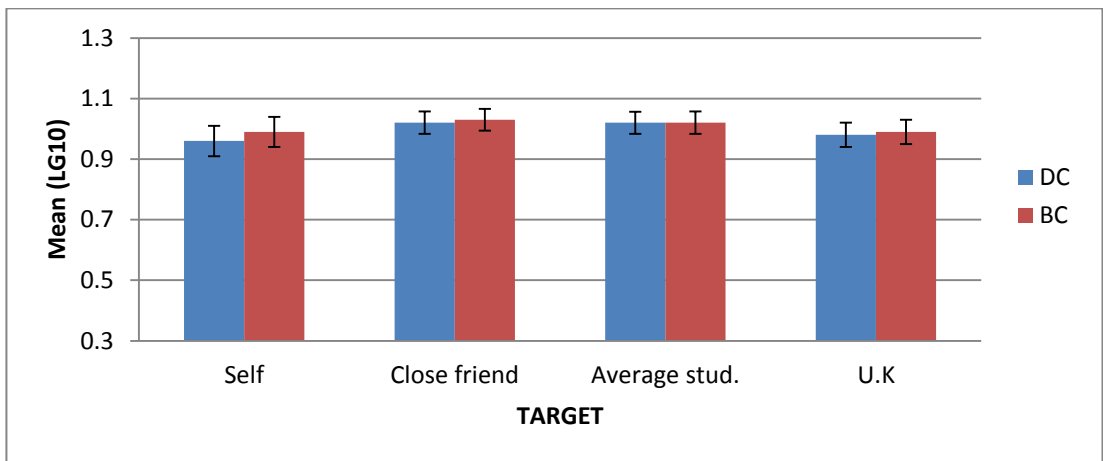


Figure 6.2 Number of Drinks Consumed on a Night Out and Perceived Number of Drinks Consumed on a Night Out for Three Other Targets (error bars: 95% CI of mean)

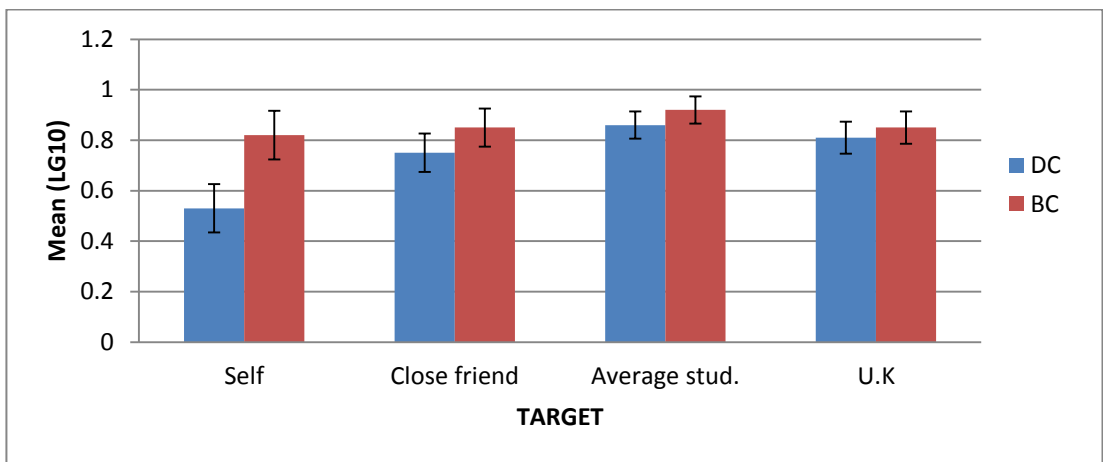


Figure 6.3 Number of Days of Drunkenness in a Month and Perceived Number of Days of Drunkenness in a Month for Three Other Targets (error bars: 95% CI of mean)

6.4 Discussion

Study Four examined students' drinking questionnaire responses in two contrasting contexts. Students who completed the questionnaires in the naturalistic drinking environment of the Students' Union bar reported drinking, and getting drunk, with greater frequency each month than students who completed identical measures in an environment which was detached from the typical drinking environment. Although students from the bar reported more frequent drunkenness overall, this effect was driven by the large differences in their own frequencies of drunkenness and the main effect of context is therefore of limited interest. In contrast, when students were questioned about the number of drinks reportedly consumed on a typical night out in a pub or a club, responses were similar in both contexts.

Responses made on the number of drinks measure, and those provided in the detached context generally, were consistent with findings reported in Study Three and elsewhere (e.g., Lewis et al., 2011; McAlaney, 2007; McAlaney & McMahon, 2007) which have indicated that students perceive other targets as drinking a greater quantity of drinks when in a pub/club/bar environment. Importantly, by confirming that a positive discrepancy remains when responses are provided in the physical surroundings of a naturalistic drinking environment, rather than when this information is collected in more remote settings, the present findings extend this line of research.

Whereas students' responses on the quantity of drinks measure did not differ across context, a heavier pattern of personal behaviour was found in the bar context on the two frequency measures. An explanation for this divergence may be found in the specific nature of the information sought by the quantity measure. Consistent with McAlaney (2007) and McAlaney and McMahon (2007), the usual quantity of drinks measure sought information on the quantity of drinks consumed in a pub or a club, whereas the frequency of alcohol use and intoxication measures did not specify particular drinking

contexts. It may be the case that setting the parameters within which the reported behaviour should take place ensures that students in either context base their responses on similar criteria involving comparable experiences, memories and beliefs. In contrast, on the frequency of alcohol use and intoxication measures respondents are forced to make a subjective judgment about the kind of information required to answer the question, before retrieving the relevant information and constructing an appropriate response. The bar and detached contexts may act to influence any stage in this process by swaying interpretation of the question or cueing students' to attend to certain experiences, memories, and beliefs consistent with the environment in which the questionnaire is completed.

In the absence of differences in perception across the two contexts, the relatively greater frequencies of drinking and drunkenness reported by students in the bar meant those students did not perceive other targets as drinking or getting drunk more often than themselves. Several authors have noted that, while not all students perceive positive self-other discrepancies with the average student, perceptions tend to be inflated relative to another available target such as a close friends or fellow members of a Greek organisation (Berkowitz, 2005; Borsari & Carey, 2001; Carey et al., 2006). That students in the bar context did not perceive any of the other targets as drinking or getting drunk more often than themselves may be a novel finding in this field and raises several important considerations relevant to social norms interventions.

6.4.1 Implications for social norms interventions

Social norms interventions often feed-back university-wide norms to challenge perceptions that others drink heavily (Kypri & Maclennan, 2011). This university-wide approach is an appropriate strategy when the misperception is likely due to pluralistic ignorance of drinking levels among peers and the erroneous conclusion that they drink more heavily. In both contexts, students' responses on the quantity of drinks measure exhibited the familiar pattern of

positive discrepancy and the assumption of pluralistic ignorance seems justified. However, a different strategy would perhaps be necessary for the bar population on the number of drinking days and drunkenness measures for the simple reason that students in this context did not perceive a positive self-other discrepancy with the available targets. Instead, it may be necessary to take a different approach and aim to challenge the false consensus that other students drink at similarly high levels. This is arguably a more challenging task given that any such intervention must (a) successfully align perceptions with the behaviour of the more moderate wider student body, and; (b) be sufficiently powerful to *reduce* drinking in line with the modified perception. In contrast, whereas interventions based on pluralistic ignorance also aim to modify perception, for the moderate majority of the population they do so to prevent *increases* in consumption; they do not always need to reduce the consumption of some on top of this.

Similar issues to those described above have been faced in the U.S college system where those affiliated with heavy drinking Greek organisations have proven resistant to normative feedback based on the wider student population. In several cases, and with some limited success, attempts have been made to feed-back proximal norms specific to an immediate peer group to increase the relevance of the normative information (Lewis & Neighbors, 2006). However, it is unclear how normative feedback directly relevant to those in the bar context may be arrived at. At present these students are defined according to physical location rather than group membership. If a social grouping relevant to the bar population was identified, then any norm based on this group may potentially be a useful source of normative feedback. However, if the norms for this hypothetical group resemble the frequencies of alcohol use and drunkenness reported in the bar in this study, it is not at all clear that feeding back these more permissive norms would be in any way desirable.

An alternative intervention approach with a bar population may instead focus on the use of injunctive rather than descriptive norms. Although perceived

injunctive and descriptive norms can lead to similar courses of action, the two norm types are a result of different processes which need not retain consistency with one another (Cialdini et al., 1990). Therefore, although descriptive norms in the bar were immoderate, it may be the case that students' attitudes in this context are less permissive than their behaviour. Although intervention work with university populations has tended to focus on descriptive norms, the measurement and practical use of injunctive norms in prevention contexts is a growing area of research (Demartini, Carey, Lao, & Luciano, 2011; Jacobson et al., 2011; LaBrie et al., 2010; Lewis et al., 2010; Neighbors et al., 2008; Prince & Carey, 2010) and may help to identify whether they constitute a useful intervention strategy with those exhibiting more permissive behaviour.

6.4.2 Alternative interpretations

Although greater parsimony favours an account where cross-context variance in self-reported frequencies of drinking and drunkenness is a result of sampling two subpopulations, with distinct behavioural drinking patterns, it is conceivable that a more liberal and permissive approach towards presenting their own drinking behaviour took place among students in the bar relative to those from the detached context. Findings along these lines have been reported in the past for self-reported heroin use (Davies & Baker, 1987), but there is a clear distinction between the cultural acceptability of immoderate student drinking practices and hard illicit-drug use.

Future work could resolve uncertainty here by examining the responses of the same students in both contexts. A consistent pattern of responding from the same student when questioned in both contexts would reinforce the different subpopulation account, whereas a more variable pattern would favour an account based on shifts in subjectively motivated response criteria. However, fluctuations in students' drinking patterns across the academic calendar provide a limited window of opportunity for researchers to collect more than a single round of data, and superficially short lags between data collection points may

introduce saliency and recency effects as potential confounders. In addition, although the questionnaires used in this research were brief, reactivity to questionnaire assessment poses a risk where multiple rounds of data collection are required. In several recent studies favourable changes in self-reported alcohol outcomes have occurred in the absence of any intended treatment or intervention (Kypri, Langley, Saunders, & Cashell-Smith, 2007; McCambridge & Day, 2008). Assessment reactivity would therefore make it difficult to tease apart effects due to the context of questionnaire completion from those due to a classic Hawthorne effect. Perhaps most importantly, however, a major strength of Study Four was the opportunistic recruitment of students in a naturalistic drinking environment - it is not clear how the advantages of this in situ approach would be replicable for those initially recruited in the detached context, who would then be required to complete questionnaires in the bar in an arranged meeting at some later date.

6.4.3 Limitations

It may be the case that the targets used in Study Four were not of sufficient specificity to tap perceptions held by the bar population that other students drink and get drunk more frequently. Perhaps asking students in the bar context to provide estimates for the average student *in the bar* would have elicited a positive self-other discrepancy. However, the range of targets which students were asked to estimate consumption for included close friends, and presumably students recruited in the bar context may have been accompanied at the time by friends. Therefore, while a lack of target specificity cannot be ruled out as an explanation of these results it does not provide a particularly convincing account.

The higher frequencies of drinking and drunkenness and subsequent failure to observe a positive discrepancy with the average student may be due to sampling bias. The small sample size of this study would be more sensitive to oversampling of heavier drinkers, potentially gathered in clusters, than would a

larger sample. Given the opportunistic recruitment method this possibility cannot be ruled out, and a larger sample size or more measured approach to sampling and recruitment would be necessary. Alternatively, a multi-level modelling approach may be useful for adjusting for within-cluster variance, though this would require direct observation of student social groupings.

Recent longitudinal research (Bewick, Mulhern, et al., 2008) with cohorts of U.K university students identified an inverse relationship between personal consumption and year of study, while other research among U.K university students has shown age relates inversely to hazardous or problematic alcohol use (Heather et al., 2011). As students who completed questionnaires in the Students' Union bar were younger than those completing them in the detached setting, the different age profiles may account for differences in hazardous behaviours such as drunkenness. However, if this interpretation is correct, it is unclear why a similar cross-context difference wasn't found on the number of drinks measure given that previous research has shown that this also bears an inverse relationship to age.

The study was amply powered to detect the positive self-other discrepancy effect in the detached context at a statistically significant level. However, as statistical power is a positive function of sample size, a larger study aiming for greater representation of the student population might also have reported the much more modest effect found in the bar at a statistically significant level. Whereas, according to Cohen's (1988) subjective criteria, the sample effect size associated with self-other discrepancy in the bar on the number of drinking days measure ($\eta_p^2 = .02$) was small and accounted for a negligible proportion of the variance in the target variable, a medium effect was found in this context on the drunkenness measure ($\eta_p^2 = .06$) which approached statistical significance ($p=.1$). Given the conventionally large sample sizes associated with social norms research it may be argued that, by comparison, the current study was underpowered. However, the sample effect size associated with self-other discrepancy of drunkenness in the bar should be interpreted in light of the very

large sample effect ($\eta_p^2 = .42$) obtained in the detached context on the same measure. Moreover, the finding that students in bar context perceived a positive self-other discrepancy with peers on the number of drinks measure suggests there was not a fundamental lack of power to detect differences in the bar context.

6.4.4 Conclusions

This study found University of Strathclyde students recruited from and who completed questionnaires in a naturalistic drinking environment, reported drinking and getting drunk more frequently than those recruited from locations detached from this drinking environment. In turn, these students did not perceive close friends, the average student at the University, or the average person their age in the U.K, as drinking or getting drunk more often than themselves. This challenge to the usual self-other discrepancy effect was based on the responses of a modest number of students but, among this bar population, may indicate the need for interventions based on challenging the false consensus that others drink at similarly high levels. In contrast there was no difference in the number of drinks reported by students across the two contexts and no difference in perceptions. This suggests that social norms interventions feeding back the average quantity of drinks for the wider student population remains a viable option for correcting misperceived drinking norms among students in both contexts.

CHAPTER 7: STUDY FIVE - AN INVESTIGATION OF QUESTIONNAIRE STRUCTURE IN CONTRASTING ENVIRONMENTAL CONTEXTS USING A UNIVERSITY STUDENT SAMPLE

7.1 Introduction

In Chapter 2 an argument was presented that the structure of questionnaires often used in the social norms field may play an active role in the tendency of young people to report a positive self-other discrepancy with peers. The mechanism for this effect was suggested to be the heightened salience of social comparison information when self- and peer-referent items are present in a single questionnaire. Study Two tested this hypothesis with a large Scottish secondary school sample, with several results consistent with this social comparison account. Study Five extends this line of research to University of Strathclyde students, comparing responses obtained using deconstructed single-target questionnaires with those obtained via the full multiple-target questionnaire reported on in Study Four. Data collection took place in parallel to that of Study Four and questionnaires were once again completed in two contrasting environmental contexts.

Unlike Study Two, but consistent with Study Three and Four, measurement of injunctive norms was not sought and the focus was on descriptive norms. This was due to the majority of social norms research at this time focusing on descriptive norms, including the work of McAlaney and McMahon (2007) upon which the question-set was modelled. It is also important to bear in mind that data for this study were collected at the same time as Study Four and prior to any analysis undertaken for Study Two; thus directional hypotheses based on the findings of those studies would be inappropriate. Instead, it is anticipated that students' responses will differ to questionnaires that seek information on self and peer targets conjointly, compared to when questionnaires focus on self or each peer target in isolation, and; that students' responses will vary according to the context of questionnaire completion.

7.2 Methodology

7.2.1 Contextual settings

The two contexts are described in section 6.2.1 of Study Four.

7.2.2 Materials, design and procedures

Ethical approval for this research was given by the University of Strathclyde's Psychology Department's Ethics Committee. In addition to making use of the data collected using the conventional multiple-target (MT) structure of instrument reported on in Study Four, a total of 4 single-target (ST) questionnaires were used to collect information relevant to a single target in each case [i.e., single-target: 'self' (ST-self); 'close friends' (ST-CF); 'average student' (ST-AS); or 'similar aged person in the U.K' (ST-UK) versions]. The Study was a between-subjects design with two levels of a *questionnaire* (MT or ST) variable, four levels of a *target* (self, close friends, the average student and the average person of a similar age in the U.K.) variable²⁷ and two levels of a *context* (bar or detached) variable.

Drinking measures were identical to those used in Study Three and Four, with data collection taking place in parallel with that of Study Four and following identical recruitment strategies, procedures and eligibility criteria (see section 6.2.4 for full description). A shared data collection exercise for Study Four and Five randomly allocated participants, within sex, to complete one of five different types of questionnaire. They were not randomly allocated to the context of data collection. A copy of the multiple-target version of the questionnaire can be found in Appendix D while the four single target versions can be found in Appendixes E-H.

²⁷ Strictly speaking, the target variable can be considered both within- *and* between-subjects by way of the multiple- and single-target questionnaires used to collect this information. However, for the purpose of this study, the target variable is analysed at a between-subjects level.

7.3 Results

7.3.1 Participants

In addition to the sample of 86 (40 male; 46 female) students who completed a MT version of the questionnaire and were described in Study Four, complete data were available from a further 344 (160 male; 184 female) students evenly split across the four single-target versions of the questionnaire and two contexts. The Study Five sample therefore comprised a total of 430 (200 male; 230 female) University of Strathclyde students. Age of respondents ranged from 18 to 44 years of age, with a mean of 21 years and 2 months ($SD = 3$ years, 4 months). Average age of respondents was similar across questionnaires [$F(4, 420) = 1.30, p = .268$], but students recruited in the detached context were once again older than those who provided data in the bar context of the Students' Union [DC: $M = 21$ years and 8 months, $SD = 3$ years, 8 months; BC: $M = 20$ years and 8 months, $SD = 2$ years, 9 months; $F(1, 420) = 9.01, p = .003$]. In addition to the different age profiles of students who responded to the MT version (see section 6.3.1), students who completed the ST-CF version of the questionnaire in the detached context were also significantly older than those who completed the same questionnaire in the bar context [DC: $M = 21$ years and 3 months, $SD = 3$ years, 5 months; BC: $M = 20$ years and 7 months, $SD = 1$ year, 8 months; $t(1, 84) = 2.12, p = .037$].

7.3.2 University of Strathclyde students' drinking behaviours and perceptions of other targets' drinking behaviour across single- and multiple-target questionnaires and bar and detached contexts

Students' responses were logarithmically transformed according to the procedure described in earlier studies (i.e., Study Three and Study Four) to correct for normality and create a linearly structured response scale. Tables 7.1 and 7.2 contain descriptive statistics for students' self-reported drinking behaviours, and/or perceptions for each target and questionnaire type, separately within each context. As in Studies Three and Four, for descriptive purposes, students' mean responses are presented on the original scale using the midpoint of each response option as an approximation of the mean.

Table 7.1 Descriptive Statistics [Raw Mean (SD)] for Self-reported Behaviour and Perceived Behaviour of Three Other Targets In the Detached Context According to Questionnaire Type

| Drinking measure | Target | | | | | | | |
|--------------------------------------|----------------|----------------|----------------|----------------|-----------------|-----------------|----------------|----------------|
| | Self | | Close friend | | Average stud. | | U.K | |
| | MT | ST | MT | ST | MT | ST | MT | ST |
| <i>Number of drinking days</i> | 6.41 (5.52) | 6 (3.88) | 9.05 (4.55) | 7.91 (3.74) | 10.71 (4.74) | 10.09 (3.35) | 9.65 (4.63) | 10.65 (4.4) |
| <i>Number of drinks</i> | 8.76 (3.52) | 6.57 (2.67) | 9.92 (3.16) | 8.48 (3.42) | 10.01 (3.23) | 9.83 (2.83) | 9.22 (3.48) | 8.66 (3) |
| <i>Number of days of drunkenness</i> | 3 (2.15) | 2.7 (2.34) | 5.23 (2.74) | 4.56 (3.17) | 6.88 (3.37) | 7.14 (4.6) | 6.47 (4.16) | 7.14 (4.15) |

In terms of students' own behaviour and their perceptions of close friends' behaviour, there was a general trend for more frequent consumption, drunkenness, and a larger quantity of drinks to be consumed in the bar context and in response to the MT instrument more generally. An exception here was the number of drinking days reported for close friends in the bar context, where

responses to the ST instrument indicated a greater number of days than the MT instrument. For the more distal targets - the average University of Strathclyde student and person the respondents' own age in the U.K - there was little clear pattern among responses, with more moderate differences seen in both directions across context and questionnaires.

Table 7.2 Descriptive Statistics [Raw Mean (SD)] for Self-reported Behaviour and Perceived Behaviour of Three Other Targets In the Bar Context According to Questionnaire Type

| Drinking measure | Target | | | | | | | |
|--------------------------------------|----------------|----------------|-----------------|-----------------|----------------|----------------|----------------|-----------------|
| | Self | | Close friend | | Average stud. | | U.K | |
| | MT | ST | MT | ST | MT | ST | MT | ST |
| <i>Number of drinking days</i> | 9.63 (6.28) | 9.36 (5.97) | 10.49 (6.16) | 11.27 (5.72) | 9.88 (4.4) | 8.48 (4.91) | 9.09 (3.89) | 10.24 (4.39) |
| <i>Number of drinks</i> | 9.31 (3.14) | 8.85 (3.37) | 9.97 (2.92) | 9.22 (3.42) | 9.73 (2.32) | 9.73 (2.48) | 9.08 (2.53) | 9.22 (3.34) |
| <i>Number of days of drunkenness</i> | 7.79 (6.49) | 4.79 (3.84) | 7.57 (5.16) | 5.83 (3.35) | 7.79 (2.89) | 7.02 (3.09) | 6.7 (2.96) | 5.97 (3.32) |

A series of two-way between-subjects ANOVAs were carried out separately for each target and drinking measure in order to examine students' logarithmically transformed responses across single- and multiple-target questionnaires and bar and detached contexts. The results of these analyses are presented in Tables 7.3 - 7.5, followed by a graphical presentation of the data in Figures 7.1 - 7.12. A textual description of the full set of results then follows.

Table 7.3 Four 2 x 2 Independent Analyses of Variance Examining Effects of Context and Questionnaire Type on Logarithmically Transformed Number of Drinking Days

| Source | <i>SS</i> | <i>df</i> | <i>MS</i> | <i>F</i> | <i>p</i> | η_p^2 |
|-------------------------------|-----------|-----------|-----------|----------|----------|------------|
| <i>MT vs. ST-self</i> | | | | | | |
| Context (C: between Ss) | 1.1 | 1 | 1.1 | 16.09 | <.001 | .09 |
| Questionnaire (Q: between Ss) | .001 | 1 | .001 | .01 | .926 | 0 |
| Q X C | .001 | 1 | .001 | .01 | .913 | 0 |
| Error | 11.45 | 168 | .01 | | | |
| Total | 140.78 | 172 | | | | |
| <i>MT vs. ST-CF</i> | | | | | | |
| Context (C: between Ss) | .32 | 1 | .32 | 6.33 | .013 | .04 |
| Questionnaire (Q: between Ss) | .001 | 1 | .001 | .02 | .88 | 0 |
| Q X C | .1 | 1 | .1 | 1.88 | .17 | .01 |
| Error | 8.46 | 168 | .05 | | | |
| Total | 171.72 | 172 | | | | |
| <i>MT vs. ST-AS</i> | | | | | | |
| Context (C: between Ss) | .25 | 1 | .25 | 5.97 | .016 | .03 |
| Questionnaire (Q: between Ss) | .1 | 1 | .1 | 2.44 | .12 | .01 |
| Q X C | .07 | 1 | .07 | 1.72 | .19 | .01 |
| Error | 6.98 | 168 | .04 | | | |
| Total | 176 | 172 | | | | |
| <i>MT vs. ST-UK</i> | | | | | | |
| Context (C: between Ss) | .02 | 1 | .02 | .7 | .405 | 0 |
| Questionnaire (Q: between Ss) | .13 | 1 | .13 | 3.87 | .051 | .02 |
| Q X C | 0 | 1 | 0 | .002 | .969 | 0 |
| Error | 5.68 | 168 | .03 | | | |
| Total | 178.52 | 172 | | | | |

Note. Levene's test indicated heterogeneity of variances across cells for the average student target ($p < .05$). However, analysis of variance is frequently robust to departures from homogeneity, particularly when sample sizes are equal. As $n = 43$ in each cell the results are likely to be reliable.

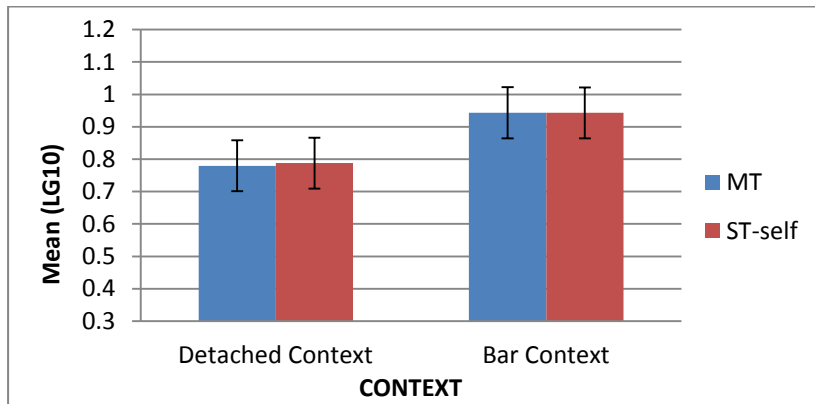


Figure 7.1 Self-reported Number of Drinking Days in a Month (error bars: 95% CI of mean)

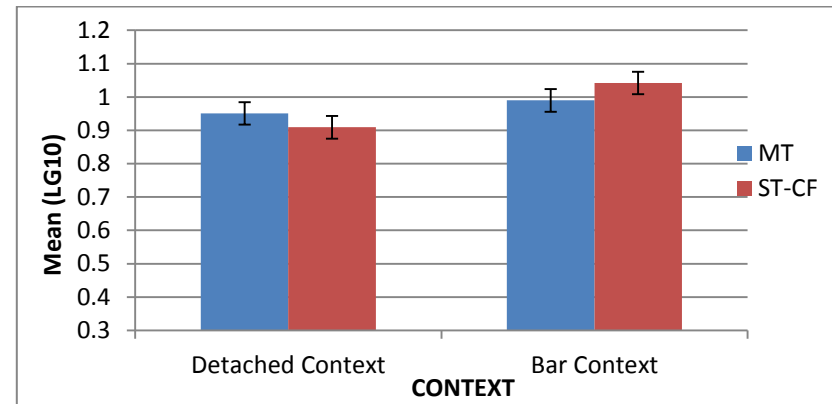


Figure 7.2 Perceived Number of Drinking Days in a Month for Close Friends (error bars: 95% CI of mean)

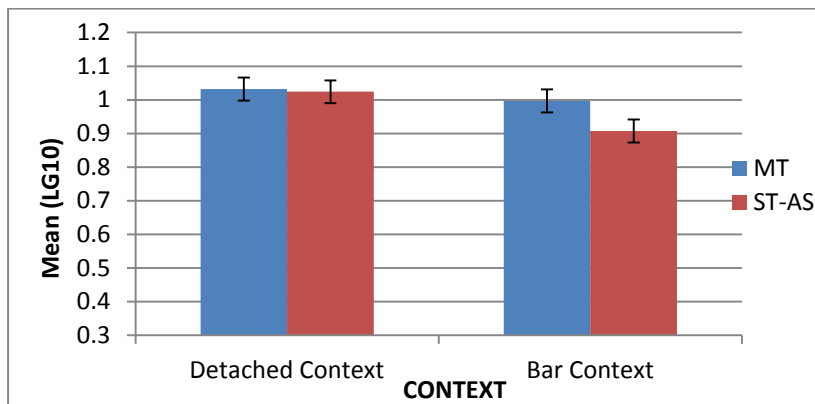


Figure 7.3 Perceived Number of Drinking Days in a Month for the Average Student (error bars: 95% CI of mean)

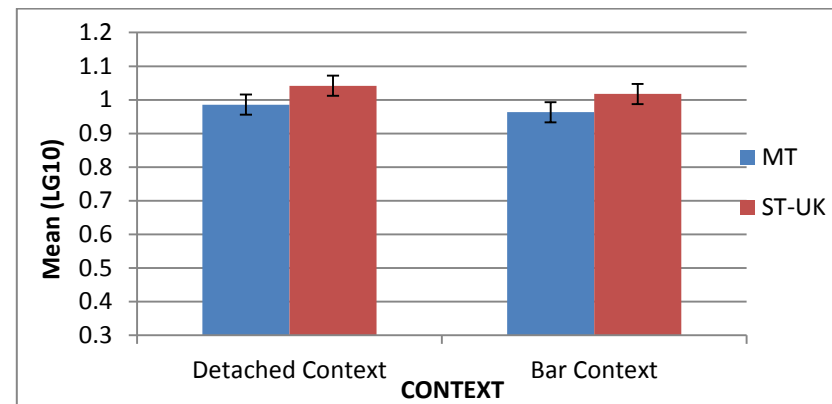


Figure 7.4 Perceived Number of Drinking Days in a Month for the Average U.K. Individual (error bars: 95% CI of mean)

Table 7.4 Four 2 x 2 Independent Analyses of Variance Examining Effects of Context and Questionnaire Type on Logarithmically Transformed Number of Drinks Responses

| Source | SS | df | MS | F | p | η_p^2 |
|-------------------------------|--------|-----|-----|------|------|------------|
| <i>MT vs. ST-self</i> | | | | | | |
| Context (C: between Ss) | .23 | 1 | .23 | 9.09 | .003 | .05 |
| Questionnaire (Q: between Ss) | .18 | 1 | .18 | 7.1 | .008 | .04 |
| Q X C | .07 | 1 | .07 | 2.81 | .096 | .02 |
| Error | 4.31 | 168 | .03 | | | |
| Total | 157.42 | 172 | | | | |
| <i>MT vs. ST-CF</i> | | | | | | |
| Context (C: between Ss) | .02 | 1 | .02 | .91 | .341 | .01 |
| Questionnaire (Q: between Ss) | .14 | 1 | .14 | 6.92 | .009 | .04 |
| Q X C | .01 | 1 | .01 | .57 | .453 | 0 |
| Error | 3.37 | 168 | .02 | | | |
| Total | 173.61 | 172 | | | | |
| <i>MT vs. ST-AS</i> | | | | | | |
| Context (C: between Ss) | 0 | 1 | 0 | 0 | .999 | 0 |
| Questionnaire (Q: between Ss) | 0 | 1 | 0 | .01 | .937 | 0 |
| Q X C | 0 | 1 | 0 | 0 | .987 | 0 |
| Error | 2.18 | 168 | .01 | | | |
| Total | 181.26 | 172 | | | | |
| <i>MT vs. ST-UK</i> | | | | | | |
| Context (C: between Ss) | .01 | 1 | .01 | .44 | .510 | 0 |
| Questionnaire (Q: between Ss) | .01 | 1 | .01 | .36 | .548 | 0 |
| Q X C | 0 | 1 | 0 | .14 | .707 | 0 |
| Error | 3.26 | 168 | .02 | | | |
| Total | 168.74 | 172 | | | | |

Note. Levene's test indicated heterogeneity of variances across cells for the average U.K person target ($p < .05$). However, analysis of variance is frequently robust to departures from homogeneity, particularly when sample sizes are equal. As $n = 43$ in each cell the results are likely to be reliable.

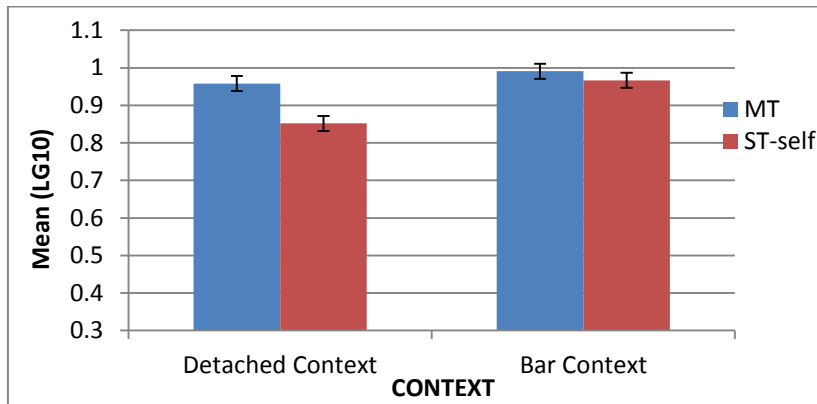


Figure 7.5 Self-reported Number of Drinks Consumed On A Night Out (error bars: 95% CI of mean)

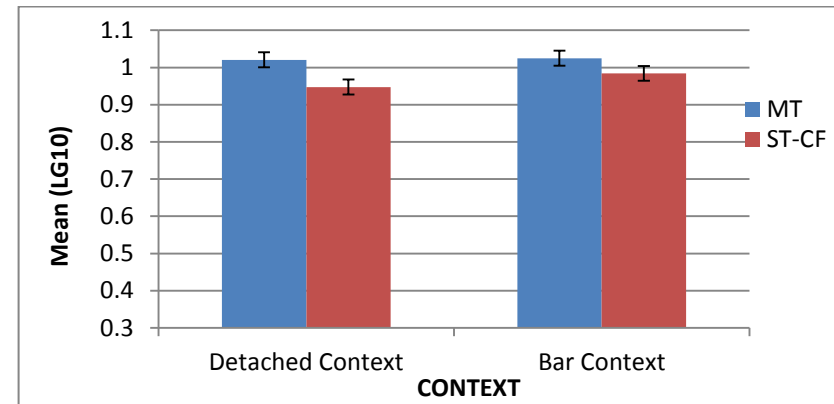


Figure 7.6 Perceived Number of Drinks Consumed by Close Friends on a Night Out (error bars: 95% CI of mean)

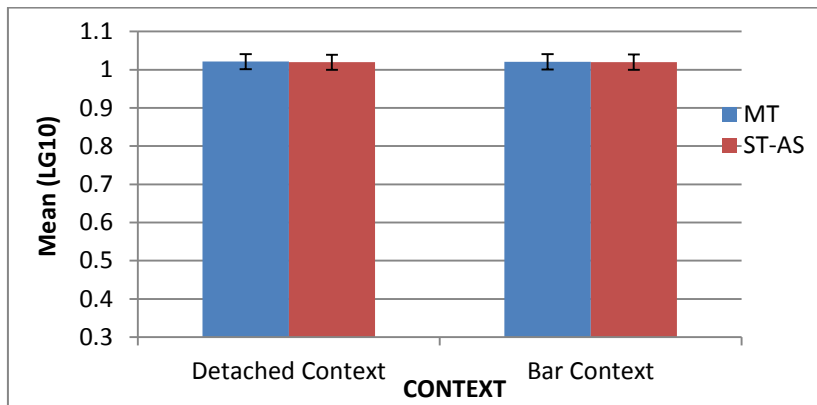


Figure 7.7 Perceived Number of Drinks Consumed by the Average Student on a Night Out (error bars: 95% CI of mean)

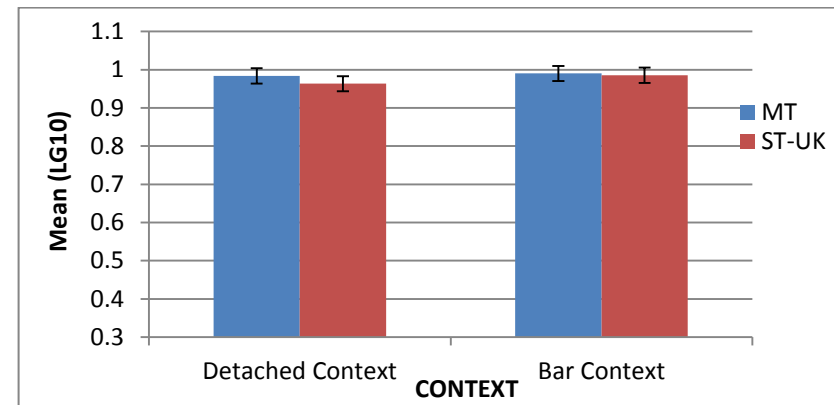


Figure 7.8 Perceived Number of Drinks Consumed by the Average U.K Individual on a Night Out (error bars: 95% CI of mean)

Table 7.5 Four 2 x 2 Independent Analyses of Variance Examining Effects of Context and Questionnaire Type on Logarithmically Transformed Number of Days of Drunkenness

| Source | SS | df | MS | F | p | η_p^2 |
|-------------------------------|--------|-----|------|-------|-------|------------|
| <i>MT vs. ST-self</i> | | | | | | |
| Context (C: between Ss) | 2.27 | 1 | 2.27 | 24.03 | <.001 | .13 |
| Questionnaire (Q: between Ss) | .44 | 1 | .44 | 4.63 | .033 | .03 |
| Q X C | .12 | 1 | .12 | 1.22 | .271 | .01 |
| Error | 15.85 | 168 | .09 | | | |
| Total | 85.64 | 172 | | | | |
| <i>MT vs. ST-CF</i> | | | | | | |
| Context (C: between Ss) | .42 | 1 | .42 | 7.25 | .008 | .043 |
| Questionnaire (Q: between Ss) | .21 | 1 | .21 | 3.55 | .061 | .02 |
| Q X C | 0 | 1 | 0 | 0 | .984 | 0 |
| Error | 9.83 | 168 | .06 | | | |
| Total | 111.3 | 172 | | | | |
| <i>MT vs. ST-AS</i> | | | | | | |
| Context (C: between Ss) | .07 | 1 | .07 | 1.88 | .173 | .01 |
| Questionnaire (Q: between Ss) | .03 | 1 | .03 | .73 | .395 | 0 |
| Q X C | .02 | 1 | .02 | .7 | .406 | 0 |
| Error | 5.84 | 168 | .04 | | | |
| Total | 137.93 | 172 | | | | |
| <i>MT vs. ST-UK</i> | | | | | | |
| Context (C: between Ss) | 0 | 1 | 0 | .08 | .78 | 0 |
| Questionnaire (Q: between Ss) | 0 | 1 | 0 | .01 | .942 | 0 |
| Q X C | .11 | 1 | .11 | 2.6 | .11 | .02 |
| Error | 7.41 | 168 | .04 | | | |
| Total | 125.98 | 172 | | | | |

Note. Levene's test indicated heterogeneity of variances across cells for the close friend and average student targets ($p < .05$). However, analysis of variance is frequently robust to departures from homogeneity, particularly when sample sizes are equal. As $n = 43$ in each cell of the study design the results are likely to be reliable.

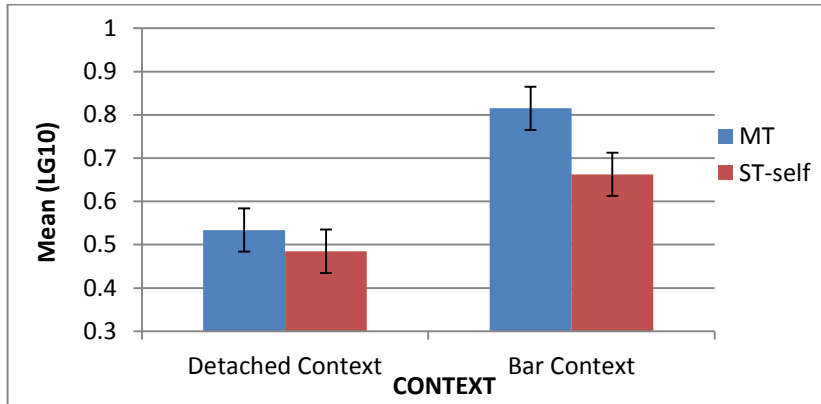


Figure 7.9 Self-reported Number of Days of Drunkenness in a Month (error bars: 95% CI of mean)

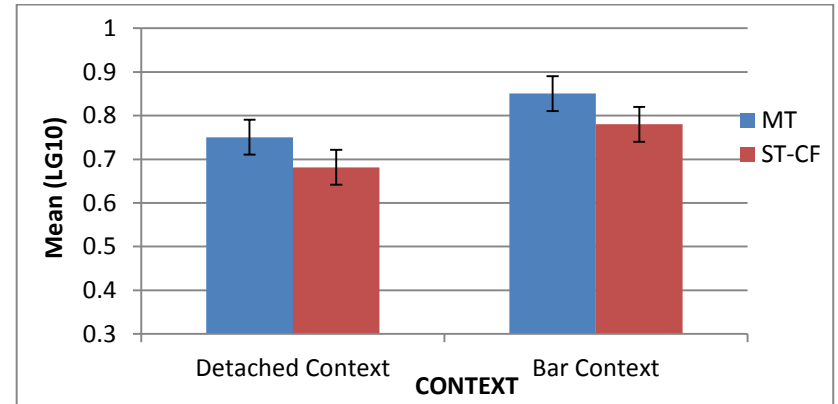


Figure 7.10 Perceived Number of Days of Drunkenness in a Month for Close Friends (error bars: 95% CI of mean)

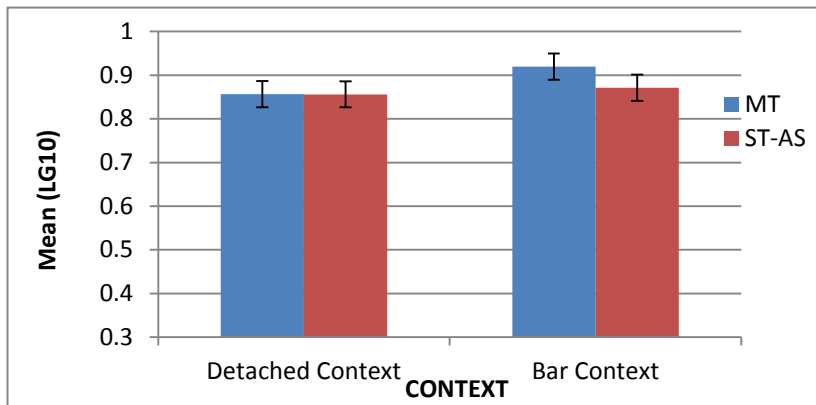


Figure 7.11 Perceived Number of Days of Drunkenness in a Month for the Average Student (error bars: 95% CI of mean)

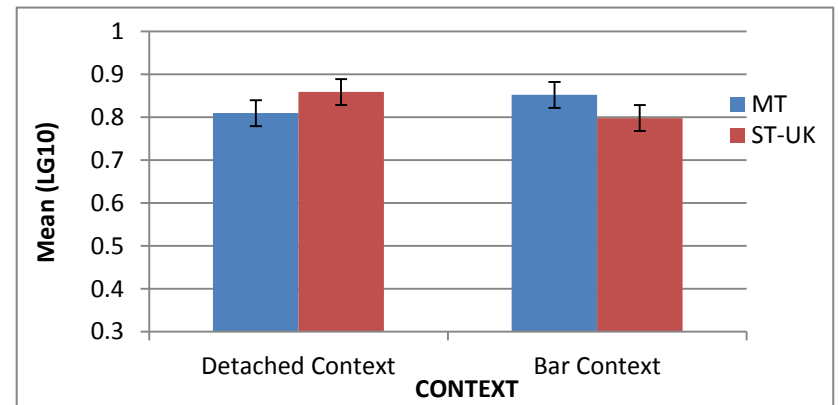


Figure 7.12 Perceived Number of Days of Drunkenness in a Month for the Average U.K Individual (error bars: 95% CI of mean)

7.3.3 Summary of the analysis

Students in the bar context reported more frequent consumption and drunkenness than students in the detached context. They also reported a larger quantity of drinks in the bar and perceived more frequent drinking among close friends in the bar context. Counter to this trend towards heavier patterns of responding in the bar context, perceptions of the average student's frequency of alcohol use were higher in the detached context.

Whether students completed multiple- or single-target versions of the questionnaire had little impact on the number of drinking days reported and, for the most, the number of drinking days perceived; only for the average U.K individual target did responses differ, with a more frequent pattern reported by students completing the single target version for the average U.K individual target ($p = .051$). The pattern of responses for the quantity of drinks consumed on a night out in a pub or a club and the number of days of drunkenness varied more consistently by questionnaire type. Compared to students who completed the multiple-target version of the questionnaire, students who completed single-target versions reported fewer drinks on a night out in a pub or a club, and fewer drinks consumed by close friends. A similar pattern emerged when students were asked how often they got drunk and how often they thought close friends got drunk, though the difference only approached statistical-significance for the latter target ($p = .061$). No statistically significant interactions between context and questionnaire type were reported.

7.4 Discussion

7.4.1 Summary of results

This research compared university students' questionnaire responses on two types of questionnaire structure and in two contexts. A questionnaire that sought information on students' own drinking behaviour in isolation resulted in a greater quantity of drinks and days of drunkenness being reported than when questionnaires also included peer reciprocal questions. A similar pattern emerged when the target was the student's close friends, but was reversed in one case for the average person the student's age in the U.K where the multiple-target instrument yielded lower frequencies of consumption. Consistent with the findings of Study Four, students recruited in the naturalistic drinking environment of the Students' Union bar reported higher frequencies of alcohol use and drunkenness than those recruited from the detached context, with this pattern extending to the number of drinks reported. Differences across context were also evident for perception responses, with a larger number of drinking days and days of drunkenness reported for close friends in the bar context, but a lower number perceived in this context for the average student.

7.4.2 Interpretation and comparison with Study Two

The results of Study Five complement and extend those of Study Two in so far as they demonstrate that university student responses are also sensitive to the format of questionnaire completed and, that; this occurred across a different set of measures than those used with secondary school pupils in Study Two. As questionnaires varied only in the range of targets for which students were asked to report or estimate drinking behaviour, it is difficult to attribute these differences to anything other than an effect of the different format of questionnaire. However, whereas in Study Two, perception responses on the multiple-target version of the questionnaire appeared to enhance a self-vs.-peer overestimation effect, the pattern of responses provided by students in the

current study appear less straightforward and careful consideration of these data is warranted.

Kypri and colleagues have suggested that: "Folklore depicts drunkenness as integral to the student experience, and the 'drunken student rampage' is staple fare for the news media. Students are perceived to be among the heaviest young drinkers." (Kypri, Cronin, & Wright, 2005, p. 713). One possible explanation for the heavier pattern of personal consumption in response to the multiple-target version of the questionnaire is that when social comparison information is a more salient feature of the question-set, personal drinking reports may assimilate upwards towards a heavy drinking student prototype. By contrast, secondary school populations are not associated with the same kind of heavy-drinking profile in popular culture that university students are. Most university students in the U.K are also legally entitled to purchase and consume alcohol freely whereas the vast majority of secondary school pupils are not. Therefore, for pupils taking part in Study Two, the social context and motivations surrounding reports may be quite different from those operating among university students in Study Five.

Personal quantities of alcohol use and drunkenness were higher when measured using the multiple-target version of the questionnaire, yet perceptions of the average student's behaviour did not differ across questionnaires. This response pattern is clearly inconsistent with an account based on maximising the difference between students' own behaviour and perceptions of the average student. However, as estimates for the close friend target group were also elevated on the multiple- compared with single-target instrument, it remains possible that this reflects a bias towards maintaining a positive self-other discrepancy with at least one of the available targets. On the other hand the inflated estimates for close friends could also indicate that the higher personal frequencies reported by students served as an anchor for estimating close friends' behaviour. That this effect occurred for close friends, rather than the average student or U.K individual, may be explained by the

stronger ties often found between personal behaviour and that of a socially proximate target group such as close friends (Baer et al., 1991; Campo et al., 2003; McAlaney & McMahon, 2007). Unfortunately, whether the larger quantity of drinks and higher frequencies of drunkenness perceived for the close friend target group are indicative of a socially motivated pattern of responding, or reflect a tendency for students to project from their own behavioural response, cannot be determined from these data.

It is worthy of note that despite a reasonably consistent pattern across questionnaires for students' own behavioural responses and those for close friends on the quantity of drinks and drunkenness measures, no differences of this sort were observed on the frequency of alcohol use measure. This may reflect the insensitivity of the number of drinking days responses to the mechanism responsible for producing cross-questionnaire differences on the quantity and intoxication measures. However, a more convincing explanation can be found in the order of presentation of the three types of drinking measure; regardless of the format of questionnaire students initially reported the number of drinking days first, followed by the quantity of drinks and then the number of days of drunkenness. This pattern of results suggests the mechanism responsible for producing cross-questionnaire differences did not feature until after the early questionnaire items had been responded to i.e., those assessing the number of drinking days. In other words, although questionnaires were brief in nature, a degree of learning may have taken place over the first set of items measuring the number of drinking days.

7.4.3 Context

Responses provided by students also differed between the two contexts. Students who completed questionnaires in the naturalistic bar environment reported more drinks, more frequent consumption, and more frequent drunkenness than those in the detached context - the latter two findings retaining a degree of consistency with those of Study Four. Cross-context

differences in personal drinking behaviour were the subject of detailed discussion in Study Four and there is little to be gained by further discussion here.

Of somewhat greater interest, however, Study Five indicated that cross-context differences extended to perceptions of close friends' drinking frequency and drunkenness, and; in a reversal of the trend seen so far, students in the detached context perceived the average student as drinking alcohol more often than students who responded in the bar. To the extent that students in the bar are a heavier drinking population, it would seem reasonable to assume that they may count other heavy drinkers as close friends (e.g. Borsari & Carey, 2001), perhaps explaining the higher frequencies of use and drunkenness perceived for close friends in this context. This pattern is, however, at odds with the findings of Study Four where the interaction of the target and context variables appeared to be a result of differences in personal frequencies of consumption and drunkenness across context, whereas perceptions of peer behaviour were similar. Any cross-context comparisons made in Study Five included both single- and multiple-target questionnaire respondents, effectively doubling cell sizes relative to those of Study Four. This would provide additional statistical power to detect any cross-context differences, and a reasonable explanation of the discrepancy between Study Four and Five findings.

Intriguingly, students in the detached setting ostensibly perceived a higher frequency of drinking among other students than did those in the bar. Visual inspection of the data suggests this finding may be driven by the lower frequencies reported by students who responded to the single-target questionnaire in the bar. However, there was no significant interaction of context and questionnaire type, and no clear explanation for the direction of this particular effect can be arrived at that retains any form of consistency with the arguments presented so far.

7.4.4 Implications for social norms interventions

Use of one structure of questionnaire over the other would have a differential impact on self-other differences for the number of drinks and intoxication measures. For instance, data taken from the single-target versions of the questionnaire would lead to larger self-other differences with the average student than using the more conventional multiple-target version. It was argued from the pattern of responses provided by secondary school pupils in Study Two that, in certain cases, prevention workers may intervene where the apparent severity of norm overestimation appears most substantial. Given that university students' own behaviour varied as a function of questionnaire format, but perceptions of the average students' did not, a different set of implications for social norms interventions may be drawn from the current study findings.

Interventions based on correcting misperceived norms have been criticised on the basis that, in seeking to instil more moderate perceptions and encourage healthier behaviour through conformity to a shared norm, they discourage diversity among youth (F. Robinson, 2001). Others have argued that as conformity processes operate regardless of outside intervention it is preferable that the healthier pattern of behaviour is encouraged through normative intervention (Berkowitz, 2002). This latter position is morally defensible as long as the normative feedback to which young people are being asked to align their perception and behaviour accurately reflects the 'real' or 'true' population norm. Where the accuracy of the normative feedback is unknown social norms interventions risk the dubious practice of marketing (potentially) spurious normative information as *fact*. Given the sensitivity of students' self-reported quantity of drinks and drunkenness responses to arbitrary changes in questionnaire structure, it is unclear whether or not drinking norms extracted from social norms-type questionnaire items are fit for the purpose of an intervention using normative feedback.

Although students' self-reported frequencies of alcohol-use were similar across questionnaire structure, caution should be exercised in relying on normative feedback extracted from measures of this type. Until the mechanism for producing cross-context questionnaire differences among university students is better understood it is unclear whether these (frequency of alcohol use) findings reflect a generally robust and reliable set of measures or an ordering effect. If a social comparison mechanism does require a learning phase in order to engage, then, for example, presenting the quantity measures first and frequency of alcohol use measures second may lead to cross-questionnaire differences on the frequency of alcohol use measure instead.

7.4.5 Limitations

Whereas descriptive and injunctive measures were used in Study Two, measures used in the current study were exclusively descriptive. These measures were modelled on those used in the closely related work of McAlaney (2007) and McAlaney and McMahon (2007) which reflected a general trend for most published social norms research of the time to focus on descriptive over injunctive norms. However, a singular focus on descriptive norms prevents an understanding of whether the findings reported here among university students would also generalise to measures of injunctive norms.

Several of the issues discussed in earlier studies remain relevant here. For instance, differences in the average age of students across contexts may contribute towards the different response patterns observed over the two contexts. In addition, the standard order-of-presentation of targets and drinking measures mean that ordering effects cannot be ruled out as an alternative explanation for these findings. That several similar limitations apply in Study Five as in Study Four is unsurprising given that the two studies shared elements of a single dataset. This also inevitably leads to an increased risk of Type 1 error through repeated use of a dataset without controlling for the effects of multiple comparisons. This may be a concern given that Study Five involved a substantial

number of statistical tests. Nevertheless, a need existed to collect a substantial body of data across a total of 10 conditions, covering 5 types of questionnaire and 2 contexts, with few resources and a brief window of opportunity due to the fluctuating pattern of university student drinking throughout the academic year. Therefore, it is argued that a degree of economy was both necessary and permissible given the more labour-intensive nature of collecting field data. Future work seeking to build on the findings reported here should, however, attempt to balance ecological and internal validity and correct for these methodological issues.

7.4.6 Conclusions

The results of Study Five indicate that university students' responses to drinking questionnaires were sensitive to the structure of questionnaire completed. Questionnaires assessing personal and peer behaviour conjointly, rather than in isolation, resulted in students reporting an increased quantity of drinks and days of drunkenness for themselves and close friends. Given that questionnaires were identical other than the range of targets included, it seems likely these differences were a specific effect of the different format of questionnaires used. Although these findings may be consistent with an account based on the increased salience of social comparison information when multiple targets are present in questionnaires, the underlying processes driving this mechanism among university students are not well understood at this time. While specific insight into the processes underpinning these questionnaire effects is therefore limited, variability in university students' questionnaire responses across context and structure hold potentially important implications for social norms interventions.

CHAPTER 8: GENERAL DISCUSSION

8.1 Overview of the thesis

Although moderate alcohol use can make a positive contribution at individual and societal levels, heavier patterns of consumption carry an increased risk of harm to mind, body and society. Attempting to reduce or prevent alcohol misuse and related harms therefore seems justified. Universal primary prevention of alcohol misuse targets the alcohol-using behaviour of whole populations prior to the onset of substantial health, social, or psychological problems and is a common feature of secondary school curricula. School-based education has been popular historically and is likely to continue to be so (e.g., National Institute for Health and Clinical Excellence, 2007; Scottish Government, 2009) given substantial socio-political appeal (Paglia & Room, 1999) and the opportunity to reach large numbers of young people in a learning environment. However, despite the popularity of school-based approaches to prevention, evidence of effectiveness is generally limited (Foxcroft, 2006; Foxcroft & Tsertsvadze, 2011b). Recently, interest shown by Scottish stakeholders in a popular U.S approach based on correcting misperceptions of alcohol-related norms led to the programme of research reported in this thesis: an evaluation of a two-year social norms marketing intervention carried out in a Scottish secondary school context to assess broad impacts of the intervention on pupils' alcohol-related behaviours, attitudes and perceptions, and; a series of studies critically examining methodological features of social norms research, with a focus on questionnaire structure (secondary school pupils and university students) and context of questionnaire completion (university students only).

8.2 Findings and implications of the social norms marketing intervention evaluation

Following a two-year period of intervention activity, findings of the evaluation, for the most part, suggested little beneficial effect of the intervention on pupils' alcohol-related perceptions. Whilst attending the intervention school was associated with a limited number of positive behavioural outcomes for a specific cohort of pupils, the failure to correct perceptions means these outcomes could not be attributed to distinctive elements of a social norms intervention (Perkins, 2007b). It should be borne in mind that these findings were qualified by a number of methodological and design limitations, and limitations of the evaluation procedures themselves. It may therefore be the case that there is an absence of good quality evidence for this type of intervention rather than robust evidence of ineffectiveness. Given these important caveats to the evaluation findings, attempts to correct misperceived norms should not be abandoned as potentially useful methods of preventing alcohol misuse and related harms; rather, the modest design and scope of the intervention mean it is best considered as an early attempt to understand how some of the key features of social norms marketing interventions originating from the U.S would transfer to a U.K secondary school context. In this light, the most useful application of the evaluation findings would be to inform future research that may provide a more definitive assessment, in which case, there are several important lessons to be learned and important avenues for future research.

8.2.1 Methodological issues and lessons learned from the evaluation

The intervention study benefited from the inclusion of a comparison school to better understand the nature of any changes in perception and behaviour and, in particular, whether these were attributable to the intervention or to factors extraneous to the intervention. This marks an improvement in design on several well-known social norms marketing

initiatives conducted in the U.S college and university system which have lacked a control group to rule out alternative explanations for changes in perception and behaviour (Haines & Spear, 1996; Johannessen & Glider, 2003).

While the intervention and comparison schools were a good socioeconomic and regional match, a range of difficulties were encountered in the evaluation which highlighted several barriers to conducting rigorous evaluation of real-world research outside the controlled setting of the laboratory. These involved baseline differences between intervention and comparison school samples on several alcohol-related variables, but also basic differences in the infrastructures for delivering classroom-based alcohol education. Recent findings have drawn attention to a variable quality of school-based alcohol education in Scotland (Stead, MacKintosh, et al., 2007) and to some extent this may be unsurprising given that the content and structure of drug education may be determined within schools, some of which employ teachers with specialist PSE/PSHE skills whilst others rely on teachers with expertise in more traditional pedagogical disciplines. Other recent work has also pointed to the lower priority attached to drug education in secondary schools (Fletcher et al., 2010). Whether these school-level characteristics contributed to the disappointing outcome of the evaluation is unknown, but it seems reasonable to suggest they may have made it more difficult to discern effects due to the intervention from those already present at school level.

The difficult position of teaching staff in the comparison site must also be acknowledged. A conceptually appealing theory, elegant intervention model, and some promising findings have created a prominent profile for social norms interventions. In this light it may be unreasonable to expect teaching staff to actively avoid using normative feedback that may benefit pupil welfare and (perhaps) personal career advancement. It is not entirely surprising, then, that rumours surfaced of teaching staff in the comparison school feeding back alcohol-related normative information to pupils in PSE/PSHE classes. A lack of clarity over whether the social norms marketing intervention was being

assessed against 'alcohol education as usual', or 'alcohol education *plus* normative feedback', is a further barrier to evaluating the impact of the intervention. While varying dosages or intensities of an intervention to gauge the relative effect of each would be of some use at a more advanced stage of development, it is not particularly helpful when examining the impact of a largely untested form of intervention.

The presence, full-time, of the on-site coordinator ensured a committed and knowledgeable individual was available in the intervention school for the duration of the two-year period of intervention activity. In this role the coordinator was often privy to valuable contextual information provided informally by pupils that may otherwise have gone unrecorded. For instance, anecdotal evidence suggested any issues over credibility of the feedback were usually addressed with some success in more focused class- and group-work activities. While it cannot be stated that anecdotal evidence of this type constitutes an objective or entirely reliable assessment of this or any other aspect of the intervention, and it is also probable the coordinator's presence introduced a range of demand characteristics into the study, the possibility that workshops or class sessions may be necessary to work through barriers to acceptance of normative feedback in a Scottish secondary school context is valuable information. This information would seem particularly useful given the opportunistic approach to intervention delivery which took place at both school and classroom level, preventing any assessment of the independent effects of these two formats of delivery. While the presence of the on-site coordinator in the intervention school would be problematic in the context of a tightly controlled definitive trial, subjective information of this sort can be used to formulate future hypotheses and procedures to be tested or modelled. In this respect the presence of the on-site coordinator was highly valuable and, until a greater understanding of how best to deliver normative feedback to secondary school pupils can be arrived at, an onsite presence may be advantageous.

8.2.2 Future directions: Are social norms marketing approaches the best way forward for social norms interventions in Scottish secondary schools?

Evidence from a variety of sources suggested that, with time, some pupils became weary of exposure to the normative feedback. Although it is perhaps disingenuous to suggest that intervening to change behaviour can exist independently of moral judgment of what constitutes right and wrong behaviour, social norms marketing interventions appear subtler on this issue than programmes conveying risk and harm information to deter. Even so, Campo and Cameron (2006) have described results following exposure to normative feedback which are consistent with psychological reactance, where those perceiving a threat to personal freedoms react through non-compliance to produce boomerang effects. Prentice (2008) has also drawn attention to a logical paradox inherent to high-profile marketing interventions targeting a reduction in misperceptions: although this type of intervention aims to promote an accurate picture of reality, where the majority are healthy and moderate, high-profile and intense intervention activity may be perceived as signalling the very existence of the problematic and unhealthy behaviour the intervention aims to dispel. Perversely, this means that two markers on which marketing activity is frequently judged - degree of exposure and intensity - may counteract the intended impact of an intervention.

A recent example of 'enthusiasm' perhaps outstripping available evidence can be seen in the Drinkaware Trust developed programme 'In:tuition' (In:tuition, 2011). The programme is available for use in PSE/PSHE classes and is at least partly based on evidence from the European Drug Addiction Prevention Trial, a multi-site cluster randomised controlled trial featuring normative education as a major component (Caria et al., 2011; Faggiano, Richardson, Bohrn, & Galanti, 2007; Faggiano et al., 2010; Kreeft et al., 2009). Although several publications report positive, albeit modest, effects for alcohol-related outcomes across varying degrees of follow-up, iatrogenic effects for girls with low self-esteem

were reported three months after the completion of the classroom programme (Ashton, 2010; Vigna-Taglianti et al., 2009).

It is noteworthy that a series of supportive statements for the In:tuition resource are provided by consultants in PSE/PSHE and Drinkaware executives, yet a more cautious approach is taken by one Drinkaware trustee, who states: “I look forward to new independent randomised studies to evaluate the effectiveness of In:tuition so it can become an ‘evidence-based’ resource.” (Foxcroft, 2012). Given the increasing profile of social norms interventions in the U.K, until a better understanding of their likely impact in U.K secondary school contexts is established, careful consideration should be given to unintended effects.

The ability of normative feedback interventions to correct perceptions and prevent alcohol misuse is also limited to the extent that the normative referent used in the intervention is a sufficiently meaningful and influential entity to create cognitive discrepancy and motivate change among the target population. Whole-of-school or universal marketing approaches have therefore tended to provide feedback on the relevant behaviours or attitudes at an aggregate level for the ‘average student’. While targets such as these may be influential among U.S college campuses and universities, less is known about the appropriateness of the ‘typical pupil’ for state-funded Scottish secondary school pupils spanning the spectrum of adolescence. It is not difficult to imagine older secondary school pupils discounting aggregate level whole-of-school norms as bearing little direct relevance to them if those norms are known to reflect the behaviours and views of much younger pupils as well. Also pertinent to this issue, is that, while perceptions of the typical pupil’s behaviours and attitudes were significantly associated with actual behaviours and attitudes at baseline, in several cases the strength of association was moderate at best (i.e., $r/rs < .3$). Assuming a causal direction consistent with the theory on which the intervention is based (whereby perceptual change drives change in behaviour), shared variance approximating 9% suggests a substantial shift in perception may be necessary

to propel meaningful behaviour change. Although research with U.S. college students provides a degree of support for the causal direction of the perception-behaviour relationship (Mattern & Neighbors, 2004; Neighbors et al., 2006) little is known on this matter with respect to secondary school pupils in the U.K, both in terms of the direction and magnitude of effect.

Uncertainty over the impact of high-profile social norms marketing approaches may suggest that alternative approaches to challenging misperceptions should be pursued. Personalised normative feedback approaches have shown promise (e.g., Moreira et al., 2009), with advantages including tailoring of feedback to ensure personal relevance to the recipient and, from an evaluative perspective, a more precise estimate of intervention impact due to known exposure rates. Personalised feedback also has a strong empirical basis for behaviour change through its frequent inclusion in more established approaches such as motivational interviewing (Miller, 1983). Unfortunately, personalised feedback outside of counselling sessions has tended to use computer and/or internet access, the logistics of which may be unappealing to schools. Furthermore, much of the evidence for this approach also originates from outside the U.K (Carey, Scott-Sheldon, Carey, & DeMartini, 2007; Lewis & Neighbors, 2006; Neighbors, Larimer, & Lewis, 2004; White, 2006) and there is a need to consider cultural transferability and differences in the populations on which the evidence is based. John and Alwyn (2010) note that U.K studies using personalised normative feedback have thus far demonstrated poor uptake of the intervention facility in both university (Bewick, Trusler, et al., 2008) and senior secondary school populations (Bewick et al., 2009) despite using incentives.

An alternative to whole-of-school or personalised approaches may be to focus on classroom-level norms. Recent findings from Denmark report favourable outcomes from a social norms intervention targeting prevention of smoking initiation at this level (Balvig & Holmberg, 2011). Although the feedback provided was specific to tobacco the authors report a 'ripple' effect of positive outcomes across a range of substances including alcohol. However, this project

involved younger pupils of primary age (i.e., 11-13 years old) and classrooms were known to include close friends, a context not guaranteed in Scottish secondary schools but which may provide a high degree of personal relevance and increase the potency of the normative feedback. There is also a need to consider the appropriateness of using classroom norms if there is any risk that pupils might disclose information about classmates in order to challenge the results.

In comparison to a personalised or classroom-oriented approach, the whole-of-school marketing approach adopted in this study may therefore hold greater potential for integration into the Scottish secondary education system. However, future work would need to address several of the more pressing methodological and design limitations encountered in Study One to allow for a more robust set of conclusions to be drawn at the evaluation stage. These should include attempting to minimise potential for school-level confounding by ensuring that participating schools are well matched on key variables, and seek comprehensive information on the standard alcohol educational practices within them. In addition, to avoid contamination of the normative intervention between comparison and intervention schools, attempts could be made to stress to teaching staff the importance of research in informing educational practice and that the quality and robustness of evidence is generally enhanced when contamination is avoided.

Several important changes in design would also be warranted. For instance, the success of examining the impact of the intervention at a whole-of-school level in a three-stage between-subjects cross-sectional design was contingent on obtaining representative cross-sectional samples across all three rounds of data collection. However, the characteristics of the obtained samples limited the evaluation reported in Study One to examining change among subgroups, with only limited statistical power to detect potentially small but important effects of the normative intervention. In many ways a longitudinal within-subjects design would present a more robust test of this type of intervention. Benefits would

include increased power to detect small but perhaps important effects by examining change within- rather than between-subjects. Under certain conditions a longitudinal design would also permit adjustments in order to control for known predictors of alcohol use or clustering within classrooms, providing a more precise estimate of the impact of the intervention. Further benefits may include scope for ensuring that changes in perception mediate any effect of feedback on behaviour, as is suggested by the social norms approach model, and that there are no unintended side-effects across specific subgroups of pupils. Although the feasibility of tracking pupils across time would need consideration, some methods are relatively simple and require young people to self-generate codes so that responses can be tracked anonymously over time. All of these suggestions would mark general improvements to the design of a social norms marketing intervention and would permit more robust conclusions over its usefulness in a Scottish secondary school context.

8.3 Investigations of questionnaire structure and context of questionnaire completion

Study Two through Five adopted an alternative line of enquiry from the evaluation of the social norms marketing intervention by examining common methodological features of social norms research with two different populations of young people.

The findings of Study Two suggest that the investigation of questionnaire structure on secondary school pupils' questionnaire responses was warranted. In several cases, secondary school pupils' responses were sensitive to the type of questionnaire completed with a more extreme pattern of perception responses recorded when pupils provided responses about their own behaviour/attitudes and the typical pupil's conjointly, than when the latter were measured in isolation. In contrast, pupils' own responses were similar regardless of the type of questionnaire used to record them.

Consistent with local research which had recently been carried out at the University of West of Scotland (McAlaney & McMahon, 2007) and employing a similar methodological approach, Study Three found University of Strathclyde students perceived a heavier pattern of consumption among fellow students and several other targets. This basic replication of existing work justified an attempt to examine responses to questionnaires among smaller samples of University of Strathclyde students, within- and between-contexts, and as a function of questionnaire structure. The findings of the two smaller studies suggest that, in certain circumstances, students' own and peer (close friends) responses are sensitive to questionnaire structure, and that students recruited in a naturalistic bar environment report a heavier pattern of consumption for themselves and close friends than students recruited from more remote environments.

8.3.1 Investigations of questionnaire structure and context of questionnaire completion: implications for social norms theory and interventions

The findings of Study Two through Five demonstrate the importance of questionnaire structure and context in social norms research. It has also been argued that the implications of these findings extend beyond academic interest in refining measurement to important considerations for social norms theory and interventions.

The basic finding that young people's questionnaire responses are sensitive to seemingly arbitrary and trivial changes in the structure of the questionnaire is problematic for a number of reasons. As empirical support for social norms theory and related interventions is often based on findings of discrepancy between the actual drinking practices/attitudes of young people with their beliefs of these among peers, evidence supporting this basic tenet of social norms research appears less robust. Despite a generally consistent and sizable literature demonstrating this effect (e.g., Berkowitz, 2005; Borsari & Carey, 2001, 2003; Perkins, 2002a), the findings of Study Two and Study Five imply such data may be of variable accuracy to any 'real' state of affairs. The current popularity and intuitive appeal of social norms theory may also partly be a result of the apparent severity with which norms are overestimated. The findings of Study Two indicate the type of measurement tool used with secondary school populations may impact on the size of misperception and potentially fuel some of this enthusiasm.

Confidence in the robustness of data collected using social norms questionnaires is also important at the coalface of intervention work. Although, ideally, decisions to intervene and the type of feedback used should be guided by modelling of likely impact based on strength of perception-behaviour relationships, the degree of overestimation is also likely to play an important role in attracting and directing attention of prevention workers. For instance,

among secondary school pupils use of multiple-target questionnaires holds potential to influence interventions if specific alcohol-related behaviours or attitudes are attended to because the degree of overestimation appears to be more severe.

As described in Study Five, there is also an ethical issue to consider when delivering normative feedback. Normative interventions are probably only defensible if the feedback used is representative of the extant norms in the population. Where confidence is lacking that this is in fact the case, young people should not be asked to model their perceptions and behaviour on information collected using such questionnaires, regardless of the desirability of the outcome from a health perspective. While one solution may lie in feeding back norms that appear less sensitive to changes in methodology, this conclusion may be premature at such a preliminary stage of this kind of research. For instance, the frequency of drinking responses provided by students did not vary across questionnaire type, but the study design did not permit examination of ordering effects as a possible explanation for this pattern of results. Specifically, frequency of alcohol use items preceded the quantity of drinks and days of drunkenness measures, and it may be the case that the social comparison processes hypothesised to be responsible for the differences across questionnaires only engage after a learning phase. On this issue it is worthy of note that school pupils' responses to the multiple- and single-target questionnaires differed at the first available point in Study Two, ruling out this account for that population at least.

More philosophically, evidence that young people's social norms responses appear to be constructed during the there-and-then of questionnaire completion means it is valid to question an a priori assumption of social norms research - that youth already hold meaningful cognitive representations of peer behaviours/attitudes. A wealth of psychological, sociological and historical evidence suggests that movement often occurs in accordance with group patterns and expectations, but whether measurable cognitive entity

representing what others do and think exists is a separate question. The issue is complicated further via the notion that people have introspective access to this information and can relate it accurately in the context of a structured questionnaire, yet it is necessarily the case that any report of this kind is itself a product of numerous other cognitive processes (Nisbett & Ross, 1980).

Perhaps, rather than tapping a pre-existing cognition, a skilled researcher is actually using careful lines of questioning to selectively probe for relevant pieces of information that may infer the existence of a perception of peer behaviour/attitude. However, considerable care would need to be taken to ensure that this kind of information is actually of substantive importance, not only for the researcher but also the respondent. Speaking of social cognition models in general, Ogden (2003) has queried whether attempts at measuring abstract cognitions of theoretical importance to the researcher may at times lead to their creation rather than accurate description. Neighbors et al (2006) have also shown that some of the variance in future behaviour which is predicted by current perceived norms is actually due to the effect of current behaviour on current perceived norms. While several interpretations of Neighbors and colleague's findings are possible, which may be more or less supportive of social norms theory and interventions, their results are also consistent with an account whereby a perception is constructed during measurement that is based around current behaviour. As current behaviour is often a powerful predictor of future action (Weinstein, Rothman, & Sutton, 1998) it would be unsurprising if current perceptions did not predict future behaviour well. Pape (2012) has also recently made the important point that when asking young people to report on their perceptions of peer substance use, researchers have rarely included an 'I don't know' response option; however, when the option is present, a notable minority have used it.

The finding that responses provided by university students in a naturalistic drinking environment differed from those provided by students in more remote environments such as libraries and lecture theatres is also of some importance.

Although many social norms interventions feed-back university-wide norms using a broadcast approach to challenge misperceptions that are a result of pluralistic ignorance, initiatives specifically challenging the false consensus that other students drink at similarly high levels may be a more appropriate strategy for a heavier drinking bar population. Unfortunately, U.S college system research has reported mixed success in modifying the perceptions of heavier drinking populations who, at times, would appear to be both aware and unconcerned that they drink more heavily than the wider student population (Carter & Kahnweiler, 2000). It has been suggested that focusing on norms of greatest relevance to these populations such as fellow fraternity or sorority members may be a useful strategy for these groups (Berkowitz, 2005). However, membership of such groups is not widespread in the U.K and whether there are norms of relevance to the bar population that may be quantified according to social group is unknown. Moreover, if the high frequencies of alcohol use and drunkenness reported in Study Four provide an accurate reflection of norms within these hypothetical groups, it is questionable whether modelling behaviour on these immoderate norms should be encouraged.

It was suggested earlier that an alternative intervention approach may instead focus on the use of injunctive rather than descriptive norms. Recent work by Cooke and French (2011) points towards an important role in naturalistic drinking environments for the subjective norm component of the Theory of Planned Behaviour, which is often operationally defined in similar terms to injunctive norms. Consistent with a hypothesis that peer influence on drinking behaviour is likely to be of heightened salience in the social context of a bar setting, these authors found subjective norms were stronger predictors of behavioural intention to binge drink among a U.K student bar sample than among those recruited in contexts detached from this environment. Within the bar subjective norm was also the strongest predictor of intention, despite its frequently inferior status in this literature relative to attitudes and perceived behavioural control (Conner & Sparks, 2005). Although the accuracy of subjective norms is not a feature of the Theory of Planned Behaviour, Cooke and

French's research offers initial clues that injunctive/subjective norms may be a useful mechanism for influencing behaviour in drinking environments. Moreover, their study empirically supports an assumption underlying parts of this thesis, that attempting to measure alcohol-related behaviour and cognition outwith the social context where they would seem most relevant will provide an incomplete picture at best.

8.3.2 Investigations of questionnaire structure and context of questionnaire completion: future directions

The usual caveats concerning replication within other populations and groups are necessary. However, this is a matter of some importance in this series of studies investigating questionnaire structure and context. Just as drinking norms and perceptions of these norms are likely to differ between and within various groups, the pattern of responses provided by student populations may vary from locality-to-locality or from bar-to-bar. The different pattern of responses observed between secondary school pupils and university students are instructive that social motivations underlying responses to different types of questionnaire may vary among populations. Additional research will therefore be necessary to understand the generalisability of these findings.

Although collectively Study Four and Five report data from 430 university students, distributed equally across 5 types of questionnaire and 2 contexts, the imbalanced age profiles across some of the cells may be important when considering the robustness of these findings. Several data were also used in both Study Four and Study Five, which increases the risk of Type 1 error. However, as significant or near significant results were reported across several variables this increases confidence the findings reported in Study Four and Five were not due to chance. Nevertheless, greater assurance in the generalisability of these results would be afforded through replication.

In addition to extending the approach used in this series of studies to different contexts and populations, different measures of drinking norms should also be examined. The narrow focus on behavioural drinking measures in the series of university student studies mean it is unclear how this population would respond to measures of injunctive norms. As school pupils' responses varied over injunctive measures it would be useful to see whether this effect is generalisable to university student populations. Future work can also vary the order in which specific measures and targets are presented. This would shed light on the extent to which a learning phase is necessary for differences across questionnaire structure to manifest. A research question of practical importance would be whether questionnaire effects may be avoided if a sufficiently short battery of items is used.

Questions over which is the more real or meaningful data to come from different questionnaires cannot be answered from Study Two and Study Five. At the present time it can only be stated that the structure of one questionnaire would seem more likely to encourage a pattern of responding that is influenced by social motivations. Future work should proceed on the basis that reports of perceived norms which remain consistent, despite basic changes in the data collection methods, are less likely to be artefacts of specific data collection tools or elicitation settings. Prospective studies may also shed light on this issue. Here, several methods of measurement may be used to collect information at baseline and the method providing the best prediction of subsequent behaviour/perception would be deemed the more statistically meaningful of the available options.

A question that was not answered in this series of studies is whether or not perceptions collected in naturalistic drinking environments are more or less important in predicting subsequent behaviour. Cooke and French (2011) argue that one implication of their findings is that attention should shift from attempting to modify antecedents of attitudes and perceived behavioural control in order to change intentions to binge drink, to a focus on the

antecedents of subjective norms. Although field research may be less economically appealing, laborious, and can forfeit experimental control it is not unreasonable to speculate that important advances may be made using other health behaviour models if this in situ approach became a routine part of alcohol research. Future work of this sort may provide a better understanding of the dynamics of health behaviour models in naturalistic drinking environments and improve understanding of how interventions may operate in these contexts.

8.4 Conclusions

The evaluation of the social norms marketing intervention in two Scottish secondary schools found little evidence that the intervention modified pupils' perceptions in line with a more conservative norm. A range of difficulties with the design of the intervention study and its evaluation prevent conclusive answers on whether it is likely to be a useful approach for reducing alcohol misuse and harm among Scottish secondary school pupils. In light of these limitations it is important that any future work using a similar social norms approach is designed to provide convincing evidence - either way - of the usefulness of this kind of intervention and that it is properly evaluated.

The proliferation of social norms research within the alcohol field means taken for granted assumptions of the theory and intervention model should be revisited and tested. Several findings reported in this thesis suggest that social norms-type questionnaire responses may be sensitive to the structure of the questionnaire used to record them. Additionally, responses obtained in naturalistic students drinking environments differ in several important ways from those collected in more conventional yet remote settings. While the findings of an evaluation of a localised intervention may be of limited consequence for the wider social norms field, findings that responses are sensitive to seemingly arbitrary and trivial changes in questionnaire structure, and that a different pattern of responses may be obtained within the coalface of

a student drinking environment, are issues of importance for social norms theory and interventions and the young people they mean to serve.

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**APPENDIX A: MULTIPLE-TARGET VERSION OF THE SECONDARY SCHOOL PUPIL
QUESTIONNAIRE**

Teenage Alcohol Use and Attitudes Survey

This survey is being carried out by Forth Valley Alcohol and Drug Partnership. Your views are very important and will help provide an accurate picture of attitudes to alcohol and alcohol use among people of your age.

This questionnaire is about your own drinking behaviour and views toward alcohol and also what you think are the typical behaviours and views of pupils in your year.

The information you provide will be kept private and will not be seen by your parents or anybody from school.

- 1) Are you Male 1 or Female 2
- 2) How old are you? years
- 3) School year S.....
- 4) Which of these do you think you are most likely to be doing when you leave school? *(please tick one box only)*
- | | | | | |
|---------------------------|----------------------------|--------------------------------|---------|----------------------------|
| Apprenticeship/Trade | <input type="checkbox"/> 1 | | Working | <input type="checkbox"/> 5 |
| Further education/College | <input type="checkbox"/> 2 | Youth Training/Skill Seekers | | <input type="checkbox"/> 6 |
| Unemployed | <input type="checkbox"/> 3 | Don't know | | <input type="checkbox"/> 7 |
| University | <input type="checkbox"/> 4 | Other <i>(please write in)</i> | | <input type="checkbox"/> 8 |
-
- 5) Have you participated in any of the following groups or activities in this school year? *(please tick any that apply)*
- | | | |
|---|--|----------------------------|
| a) School club or pupil council | | <input type="checkbox"/> 1 |
| b) Youth club (including Scouts, Guides etc) | | <input type="checkbox"/> 2 |
| c) Sports team/club | | <input type="checkbox"/> 3 |
| d) Performing theatre, dance or musical group | | <input type="checkbox"/> 4 |
| e) Volunteer work | | <input type="checkbox"/> 5 |
| f) Part-time job (e.g. milk or paper round) | | <input type="checkbox"/> 6 |
| g) Church or religious group | | <input type="checkbox"/> 7 |
| h) <i>Other (please write in)</i> | | <input type="checkbox"/> 7 |
-

----- YOUR DRINKING -----

6) When you are with your friends, what do you usually drink? *(please tick one box only)*

- | | | | | | |
|--------------|--------------------------|---|--|--------------------------|---|
| Water | <input type="checkbox"/> | 1 | Fruit juice | <input type="checkbox"/> | 6 |
| Sports drink | <input type="checkbox"/> | 2 | Milk | <input type="checkbox"/> | 7 |
| Fizzy juice | <input type="checkbox"/> | 3 | Alcoholic drinks | <input type="checkbox"/> | 8 |
| Tea | <input type="checkbox"/> | 4 | | | |
| Coffee | <input type="checkbox"/> | 5 | <i>Other (please write in type of drink if not listed)</i> | | |
-

7) How old were you when you had your first full drink of alcohol? *(please tick one box only)*

- | | | | | | |
|---|--------------------------|---|--------------|--------------------------|---|
| I've never tasted alcohol. | <input type="checkbox"/> | 1 | | | |
| I've only ever had a few sips of alcohol. | <input type="checkbox"/> | 2 | 12 years old | <input type="checkbox"/> | 6 |
| 9 years or younger | <input type="checkbox"/> | 3 | 13 years old | <input type="checkbox"/> | 7 |
| 10 years old | <input type="checkbox"/> | 4 | 14 years old | <input type="checkbox"/> | 8 |
| 11 years old | <input type="checkbox"/> | 5 | 15 years old | <input type="checkbox"/> | 9 |

IF YOU ANSWERED 'I'VE ONLY EVER HAD A FEW SIPS' TO THIS QUESTION GO STRAIGHT TO QUESTION 10

8) How often, if ever, did you drink alcohol in the past 30 days? *(please tick one box only)*

- | | | | | | |
|---------------------------|--------------------------|---|-----------------------|--------------------------|---|
| Never in the past 30 days | <input type="checkbox"/> | 1 | Twice a week | <input type="checkbox"/> | 5 |
| Once a month | <input type="checkbox"/> | 2 | Three times a week | <input type="checkbox"/> | 6 |
| Twice a month | <input type="checkbox"/> | 3 | Every day of the week | <input type="checkbox"/> | 7 |
| Once a week | <input type="checkbox"/> | 4 | | | |

9) How often, if ever, did you get drunk in the past 30 days? *(please tick one box only)*

- | | | | | | |
|---------------------------|--------------------------|---|-----------------------|--------------------------|---|
| Never in the past 30 days | <input type="checkbox"/> | 1 | Twice a week | <input type="checkbox"/> | 5 |
| Once a month | <input type="checkbox"/> | 2 | Three times a week | <input type="checkbox"/> | 6 |
| Twice a month | <input type="checkbox"/> | 3 | Every day of the week | <input type="checkbox"/> | 7 |
| Once a week | <input type="checkbox"/> | 4 | | | |

10) What rules about drinking alcohol (if any) are put in place by your parents/guardian? *(please tick one box only)*

I am not allowed to drink alcohol

I am allowed to drink with family

I am allowed to drink a little at home with friends if a parent/guardian is present

3

I am allowed to drink without a parent/guardian present, as long as I do not get drunk

4

There are no rules

5

----- **OTHER PUPILS' DRINKING** -----

11) When they are with friends, what do you think the typical pupil in your year usually drinks? *(please tick one box only)*

Water 1

Sports drink 2

Fizzy juice 3

Tea 4

Coffee 5

Fruit juice 6

Milk 7

Alcoholic drinks 8

Other 9

Other (please write in type of drink if not listed)

12) How old do you think the typical pupil in your year was when they had their first full drink of alcohol? *(please tick one box only)*

I don't think the typical pupil in my year has ever tasted alcohol 1

I don't think the typical pupil in my year has had a drink of alcohol other than a few sips 2

9 years or younger 3

10 years old 4

11 years old 5

12 years old 6

13 years old 7

14 years old 8

15 years old 9

IF YOU DON'T THINK THE TYPICAL PUPIL IN YOUR YEAR HAS HAD A DRINK OF ALCOHOL (OTHER THAN A FEW SIPS) GO STRAIGHT TO QUESTION 15

13) How often, if ever, do you think the typical pupil in your year drank alcohol in the past 30 days (more than a few sips)? *(please tick one box only)*

- | | | | |
|---------------------------|----------------------------|-----------------------|----------------------------|
| Never in the past 30 days | <input type="checkbox"/> 1 | Twice a week | <input type="checkbox"/> 5 |
| Once a month | <input type="checkbox"/> 2 | Three times a week | <input type="checkbox"/> 6 |
| Twice a month | <input type="checkbox"/> 3 | Every day of the week | <input type="checkbox"/> 7 |
| Once a week | <input type="checkbox"/> 4 | | |

14) How often, if ever, do you think the typical pupil in your year got drunk in the past 30 days? *(please tick one box only)*

- | | | | |
|---------------------------|----------------------------|-----------------------|----------------------------|
| Never in the past 30 days | <input type="checkbox"/> 1 | Twice a week | <input type="checkbox"/> 5 |
| Once a month | <input type="checkbox"/> 2 | Three times a week | <input type="checkbox"/> 6 |
| Twice a month | <input type="checkbox"/> 3 | Every day of the week | <input type="checkbox"/> 7 |
| Once a week | <input type="checkbox"/> 4 | | |

15) What rules about drinking alcohol (if any) do you think are put in place by the parents/guardian of the typical pupil in your year? *(please tick one box only)*

- | | |
|---|----------------------------|
| The typical pupil is not allowed to drink alcohol | <input type="checkbox"/> 1 |
| The typical pupil is allowed to drink with family | <input type="checkbox"/> 2 |
| The typical pupil is allowed to drink a little at home with friends if a parent/guardian is present | <input type="checkbox"/> 3 |
| The typical pupil is allowed to drink without a parent/guardian present, as long as he/she does not get drunk | <input type="checkbox"/> 4 |
| I don't think there are any rules | <input type="checkbox"/> 5 |

----- **WHAT DO YOU THINK?** -----

16) Please state whether you agree or disagree with the following statements *(please tick one box only for each statement)*

| | Strongly disagree | Disagree | Agree | Strongly agree |
|--|------------------------------|----------------------------|----------------------------|----------------------------|
| a) There is nothing wrong with people under 18 years drinking alcohol every now and then. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| b) There is nothing wrong with people under 18 years drinking alcohol in small amounts. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| c) There is nothing wrong with people under 18 years drinking alcohol frequently as long as it does not affect their school work or family life. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| d) There is nothing wrong with people under 18 years drinking alcohol frequently if that is what they want to do. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| e) Pupils should be told about the harmful side effects of alcohol. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| f) I would prefer to go out with a non-drinker. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| g) I need to have a drink of alcohol to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| h) I need to be drunk to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |

----- **WHAT DO THEY THINK?** -----

17) Please state whether you think the typical pupil in your year would agree or disagree with the following statements. *(please tick one box only for each statement)*

| | Strongly disagree | Disagree | Agree | Strongly agree |
|--|------------------------------|----------------------------|----------------------------|----------------------------|
| a) There is nothing wrong with people under 18 years drinking alcohol every now and then. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| b) There is nothing wrong with people under 18 years drinking alcohol in small amounts. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| c) There is nothing wrong with people under 18 years drinking alcohol frequently as long as it does not affect their school work or family life. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| d) There is nothing wrong with people under 18 years drinking alcohol frequently if that is what they want to do. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| e) Pupils should be told about the harmful side effects of alcohol. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| f) The typical pupil in your year would prefer to go out with a non-drinker. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| g) The typical pupil in your year needs to have a drink of alcohol to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| h) The typical pupil in your year needs to get drunk to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |

----- **HOW MANY?** -----

18) What percentage of pupils in your year do you think have ever drunk alcohol? (*please tick one box only*)

| | | | |
|-----|----------------------------|-------------|----------------------------|
| 0% | <input type="checkbox"/> 1 | 50% | <input type="checkbox"/> 6 |
| 10% | <input type="checkbox"/> 2 | 60% | <input type="checkbox"/> 7 |
| 20% | <input type="checkbox"/> 3 | 70% | <input type="checkbox"/> 8 |
| 30% | <input type="checkbox"/> 4 | 80% | <input type="checkbox"/> 9 |
| 40% | <input type="checkbox"/> 5 | 90% or more | <input type="checkbox"/> |

19) What percentage of pupils in your year do you think have drunk alcohol in the past 30 days? (*please tick one box only*)

| | | | |
|-----|----------------------------|-------------|----------------------------|
| 0% | <input type="checkbox"/> 1 | 50% | <input type="checkbox"/> 6 |
| 10% | <input type="checkbox"/> 2 | 60% | <input type="checkbox"/> 7 |
| 20% | <input type="checkbox"/> 3 | 70% | <input type="checkbox"/> 8 |
| 30% | <input type="checkbox"/> 4 | 80% | <input type="checkbox"/> 9 |
| 40% | <input type="checkbox"/> 5 | 90% or more | <input type="checkbox"/> |

20) Have you seen or heard information before about how many pupils at your school do not drink alcohol? (*please tick one box only*)

Yes 1 No 2

----- INFORMATION -----

21) During this school year, have you seen or heard information about alcohol from the following sources
(please tick one box for each source):

| | Never | Occasionally | Frequently |
|--|----------------------------|----------------------------|----------------------------|
| a) Your parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Your teachers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Your friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) The internet <i>Social networking site</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) The internet <i>Web pages designed for people your age</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) The internet <i>General webpages</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) TV or radio | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Newspapers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Magazines | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) School newsletter | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) A poster at school | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) A flyer/leaflet | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| m) The police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| n) Religious group | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| o) Non-teaching school staff | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| p) School nurse | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| q) Nurse, doctor or other health professional | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| r) Other <i>(please write in source of information)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

22) The following are possible sources of information about alcohol. How believable is each source to you? (please tick one box for each source)

| | Unbelievable | Unsure | Believable |
|--|----------------------------|----------------------------|----------------------------|
| a) Your parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Your teachers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Your friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) The internet <i>Social networking site</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) The internet <i>Web pages designed for people your age</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) The internet <i>General webpages</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) TV or radio | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Newspapers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Magazines | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) School newsletter | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) A poster at school | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) A flyer/leaflet | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| m) The police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| n) Religious group | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| o) Non-teaching school staff | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| p) School nurse | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| q) Nurse, doctor or other health professional | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| r) Other <i>(please write in source of information)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

----- YOUR DRINKING AGAIN -----

23) How often, if ever, do you drink alcohol with the following people?

| | Never | Sometimes | Frequently |
|--------------------------------|----------------------------|----------------------------|----------------------------|
| a) Parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Older brother/sister | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Younger brother/sister | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) Aunt/Uncle | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) Grandparents | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) Group of friends my age | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) Group of older friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Group of younger friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Other (please write in) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

24) During the past year have you tried to avoid drinking alcohol when at a party or with friends? (please tick one box only)

Yes 1

No 2

25) What kind of things did you do to try and avoid drinking alcohol? *(please tick all that apply)*

- a) I left 1
 - b) I had a soft drink 2
 - c) I took a drink with a low alcoholic content 3
 - d) I avoided people who were drinking alcohol 4
 - e) I politely declined when offered a drink of alcohol 5
 - f) I took an alcoholic drink but didn't drink from it 6
 - g) I pretended a non-alcoholic drink was an alcoholic one 7
 - h) I did nothing 8
 - i) Other *(please write in)*
-

26) In the past year have you experienced any of the following as a consequence of your drinking alcohol?
(please tick all that apply)

- | | Yes | No | Don't drink |
|--|----------------------------|----------------------------|----------------------------|
| a) Physical injury to yourself | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Involved in a fight | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Involved in damaging property | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) Failure to complete schoolwork | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) Damage to a friendship or relationship | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) Punishment by parent or guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) Trouble with police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Sickness (hangover, nausea, illness) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) School absences | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) Could not remember events or actions after drinking | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) Hospitalisation | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) Other <i>(Please write in).</i> | | | |
-

IF YOU HAVE NEVER DRUNK ALCOHOL IN THE PAST 30 DAYS GO STRAIGHT TO THE INSTRUCTION AT THE END OF THE SURVEY.

27) If you have drunk alcohol in the past 30 days what kind of alcohol did you drink and how much?

Example: *2 bottles of beer*

28) If you drank alcohol within the last 30 days, how easy was it for you to get the alcohol? (*please tick one box only*)

- | | | |
|----------------|--------------------------|---|
| Very easy | <input type="checkbox"/> | 1 |
| Easy | <input type="checkbox"/> | 2 |
| Difficult | <input type="checkbox"/> | 3 |
| Very difficult | <input type="checkbox"/> | 4 |

29) If you drank alcohol within the last 30 days, from whom did you get the alcohol? (*please tick all that apply*)

- | | Yes | No |
|---|----------------------------|----------------------------|
| a) Parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| b) A brother/sister who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| c) A brother/sister who is under 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| d) Another relative who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| e) A friend who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| f) A friend who is under 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| g) I asked a stranger to buy it for me | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| h) I bought it myself using fake ID | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| i) I bought it myself without using a fake ID | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| j) Other (<i>please write in how you got your alcohol if it is not listed here</i>) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |

**Thank you for taking the time to complete this survey.
Please put it in the envelope and return it.**

**APPENDIX B: SINGLE-TARGET 'SELF' VERSION OF THE SECONDARY
SCHOOL PUPIL QUESTIONNAIRE**

Teenage Alcohol Use and Attitudes Survey

This survey is being carried out by Forth Valley Alcohol and Drug Partnership. Your views are very important and will help provide an accurate picture of attitudes to alcohol and alcohol use among people of your age.

This questionnaire is about your own drinking behaviour and views toward alcohol.

The information you provide will be kept private and will not be seen by your parents or anybody from school.

- 1) Are you Male 1 or Female 2
- 2) School year S.....
- 3) How old are you? years
- 4) Which of these do you think you are most likely to be doing when you leave school? *(please tick one box only)*
- | | | | | | |
|---------------------------|----------------------------|--------------------------------|--|------------|----------------------------|
| Apprenticeship/Trade | <input type="checkbox"/> 1 | | | Working | <input type="checkbox"/> 5 |
| Further education/College | <input type="checkbox"/> 2 | Youth Training/Skill Seekers | | | <input type="checkbox"/> 6 |
| Unemployed | <input type="checkbox"/> 3 | | | Don't know | <input type="checkbox"/> 7 |
| University | <input type="checkbox"/> 4 | Other <i>(please write in)</i> | | | <input type="checkbox"/> 8 |
- 5) Have you participated in any of the following groups or activities in this school year? *(please tick any that apply)*
- | | |
|---|----------------------------|
| a) School club or pupil council | <input type="checkbox"/> 1 |
| b) Youth club (including Scouts, Guides etc) | <input type="checkbox"/> 2 |
| c) Sports team/club | <input type="checkbox"/> 3 |
| d) Performing theatre, dance or musical group | <input type="checkbox"/> 4 |
| e) Volunteer work | <input type="checkbox"/> 5 |
| f) Part-time job (e.g. milk or paper round) | <input type="checkbox"/> 6 |
| g) Church or religious group | <input type="checkbox"/> 7 |
| h) Other <i>(please write in)</i> | |
-

----- YOUR DRINKING -----

6) When you are with your friends, what do you usually drink? *(please tick one box only)*

- | | | | | | |
|--------------|--------------------------|---|--|--------------------------|---|
| Water | <input type="checkbox"/> | 1 | | <input type="checkbox"/> | 6 |
| Sports drink | <input type="checkbox"/> | 2 | | <input type="checkbox"/> | 7 |
| Fizzy juice | <input type="checkbox"/> | 3 | | <input type="checkbox"/> | 8 |
| Tea | <input type="checkbox"/> | 4 | | | |
| Coffee | <input type="checkbox"/> | 5 | <i>Other (please write in type of drink if not listed)</i> | | |

7) How old were you when you had your first full drink of alcohol? *(Please tick one box only)*

- | | | | | | |
|---|--------------------------|---|--------------|--------------------------|---|
| I've never tasted alcohol. | <input type="checkbox"/> | 1 | | | |
| I've never had a drink of alcohol other than a few sips | <input type="checkbox"/> | 2 | 12 years old | <input type="checkbox"/> | 6 |
| 9 years or younger | <input type="checkbox"/> | 3 | 13 years old | <input type="checkbox"/> | 7 |
| 10 years old | <input type="checkbox"/> | 4 | 14 years old | <input type="checkbox"/> | 8 |
| 11 years old | <input type="checkbox"/> | 5 | 15 years old | <input type="checkbox"/> | 9 |

IF YOU ANSWERED 'NEVER OTHER THAN A FEW SIPS' TO THIS QUESTION GO STRAIGHT TO QUESTION 10

8) How often, if ever, did you drink alcohol in the past 30 days? *(please tick one box only)*

- | | | | | | |
|---------------------------|--------------------------|---|-----------------------|--------------------------|---|
| Never in the past 30 days | <input type="checkbox"/> | 1 | | <input type="checkbox"/> | 5 |
| Once a month | <input type="checkbox"/> | 2 | Twice a week | <input type="checkbox"/> | 6 |
| Twice a month | <input type="checkbox"/> | 3 | Three times a week | <input type="checkbox"/> | 7 |
| Once a week | <input type="checkbox"/> | 4 | Every day of the week | <input type="checkbox"/> | 7 |

9) How often, if ever, did you get drunk in the past 30 days? *(please tick one box only)*

- | | | | | | |
|---------------------------|--------------------------|---|-----------------------|--------------------------|---|
| Never in the past 30 days | <input type="checkbox"/> | 1 | | <input type="checkbox"/> | 5 |
| Once a month | <input type="checkbox"/> | 2 | Twice a week | <input type="checkbox"/> | 6 |
| Twice a month | <input type="checkbox"/> | 3 | Three times a week | <input type="checkbox"/> | 7 |
| Once a week | <input type="checkbox"/> | 4 | Every day of the week | <input type="checkbox"/> | 7 |

10) What rules about drinking alcohol (if any) are put in place by your parents/guardian? *(please tick one box only)*

I am not allowed to drink alcohol

I am allowed to drink with family

I am allowed to drink a little at home with friends if a parent/guardian is present

3

I am allowed to drink without a parent/guardian present, as long as I do not get drunk

4

There are no rules

~

----- **WHAT DO YOU THINK?** -----

11) Please state whether you agree or disagree with the following statements *(please tick one box only for each statement)*

| | Strongly disagree | Disagree | Agree | Strongly agree |
|--|----------------------------|----------------------------|----------------------------|----------------------------|
| a) There is nothing wrong with people under 18 years drinking alcohol every now and then. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| b) There is nothing wrong with people under 18 years drinking alcohol in small amounts. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| c) There is nothing wrong with people under 18 years drinking alcohol frequently as long as it does not affect their school work or family life. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| d) There is nothing wrong with people under 18 years drinking alcohol frequently if that is what they want to do. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| e) Pupils should be told about the harmful side effects of alcohol. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| f) I would prefer to go out with a non-drinker. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| g) I need to have a drink of alcohol to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| h) I need to be drunk to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |

----- INFORMATION -----

12) During this school year, have you seen or heard information about alcohol from the following sources
(please tick one box for each source):

| | Never | Occasionally | Frequently |
|--|----------------------------|----------------------------|----------------------------|
| a) Your parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Your teachers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Your friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) The internet <i>Social networking site</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) The internet <i>Web pages designed for people your age</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) The internet <i>General webpages</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) TV or radio | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Newspapers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Magazines | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) School newsletter | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) A poster at school | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) A flyer/leaflet | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| m) The police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| n) Religious group | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| o) Non-teaching school staff | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| p) School nurse | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| q) Nurse, doctor or other health professional | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| r) Other <i>(please write in source of information)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

13) The following are possible sources of information about alcohol. How believable is each source to you? (please tick one box for each source)

| | Unbelievable | Unsure | Believable |
|--|----------------------------|----------------------------|----------------------------|
| a) Your parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Your teachers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Your friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) The internet <i>Social networking site</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) The internet <i>Web pages designed for people your age</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) The internet <i>General webpages</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) TV or radio | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Newspapers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Magazines | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) School newsletter | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) A poster at school | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) A flyer/leaflet | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| m) The police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| n) Religious group | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| o) Non-teaching school staff | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| p) School nurse | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| q) Nurse, doctor or other health professional | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| r) Other <i>(please write in source of information)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

----- YOUR DRINKING AGAIN -----

14) How often, if ever, do you drink alcohol with the following people?

| | Never | Sometimes | Frequently |
|--------------------------------|----------------------------|----------------------------|----------------------------|
| a) Parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| a) Older brother/sister | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Younger brother/sister | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Aunt/Uncle | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) Grandparents | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) Group of friends my age | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) Group of older friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) Group of younger friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Other (please write in) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

15) During the past year have you tried to avoid drinking alcohol when at a party or with friends? (please tick one box only)

Yes 1 No 2

16) What kind of things did you do to try and avoid drinking alcohol? (please tick all that apply)

- a) I left 1
- b) I had a soft drink 2
- c) I took a drink with a low alcoholic content 3
- d) I avoided people who were drinking alcohol 4
- e) I politely declined when offered a drink of alcohol 5
- f) I took an alcoholic drink but didn't drink from it 6
- g) I pretended a non-alcoholic drink was an alcoholic one 7
- h) I did nothing 8
- i) Other (please write in)

17) In the past year have you experienced any of the following as a consequence of your drinking alcohol?
(please tick all that apply)

| | Yes | No | Don't drink |
|--|----------------------------|----------------------------|----------------------------|
| a) Physical injury to yourself | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Involved in a fight | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Involved in damaging property | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) Failure to complete schoolwork | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) Damage to a friendship or relationship | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) Punishment by parent or guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) Trouble with police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Sickness (hangover, nausea, illness) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) School absences | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) Could not remember events or actions after drinking | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) Hospitalisation | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) Other (please write in). | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

IF YOU HAVE NEVER DRUNK ALCOHOL IN THE PAST 30 DAYS GO STRAIGHT TO THE INSTRUCTION AT THE END OF THE SURVEY.

18) If you have drank alcohol in the past 30 days what kind of alcohol did you drink and how much?

Example: 2 bottles of beer

19) If you have drank alcohol within the last 30 days, how easy was it for you to get the alcohol? (please tick one box only)

- | | |
|----------------|----------------------------|
| Very easy | <input type="checkbox"/> 1 |
| Easy | <input type="checkbox"/> 2 |
| Difficult | <input type="checkbox"/> 3 |
| Very difficult | <input type="checkbox"/> 4 |

20) If you have drank alcohol within the last 30 days, from whom did you get the alcohol? (please tick all that apply)

- | | Yes | No |
|---|----------------------------|----------------------------|
| a) Parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| b) A brother/sister who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| c) A brother/sister who is under 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| d) Another relative who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| e) A friend who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| f) A friend who is under 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| g) I asked a stranger to buy it for me | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| h) I bought it myself using fake ID | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| i) I bought it myself without using a fake ID | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| j) Other (please write in how you got your alcohol if it is not listed here) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |

**Thank you for taking the time to complete this survey.
Please put it in the envelope and return it.**

**APPENDIX C: SINGLE-TARGET 'PEER' VERSION OF THE SECONDARY
SCHOOL PUPIL QUESTIONNAIRE**

Teenage Alcohol Use and Attitudes Survey

This survey is being carried out by Forth Valley Alcohol and Drug Partnership. Your views are very important and will help provide an accurate picture of attitudes to alcohol and alcohol use among people of your age.

This questionnaire is about what you think are the typical drinking behaviours and views toward alcohol of pupils in your year.

The information you provide will be kept private and will not be seen by your parents or anybody from school

- 1) Are you Male 1 or Female 2
- 2) School year S.....
- 3) How old are you?..... years
- 4) Which of these do you think you are most likely to be doing when you leave school? *(please tick one box only)*
- | | | | | | |
|---------------------------|----------------------------|------------------------------|--|--------------------------------|----------------------------|
| Apprenticeship/Trade | <input type="checkbox"/> 1 | | | Working | <input type="checkbox"/> 5 |
| Further education/College | <input type="checkbox"/> 2 | Youth Training/Skill Seekers | | | <input type="checkbox"/> 6 |
| Unemployed | <input type="checkbox"/> 3 | | | Don't know | <input type="checkbox"/> 7 |
| University | <input type="checkbox"/> 4 | | | Other <i>(please write in)</i> | <input type="checkbox"/> 8 |
-
- 5) Have you participated in any of the following groups or activities in this school year? *(please tick any that apply)*
- | | |
|---|----------------------------|
| a) School club or pupil council | <input type="checkbox"/> 1 |
| b) Youth club (including Scouts, Guides etc) | <input type="checkbox"/> 2 |
| c) Sports team/club | <input type="checkbox"/> 3 |
| d) Performing theatre, dance or musical group | <input type="checkbox"/> 4 |
| e) Volunteer work | <input type="checkbox"/> 5 |
| f) Part-time job (e.g. milk or paper round) | <input type="checkbox"/> 6 |
| g) Church or religious group | <input type="checkbox"/> 7 |
| h) <u>Other <i>(please write in)</i></u> | |

----- **OTHER PUPILS' DRINKING** -----

6) When they are with friends, what do you think the typical pupil in your year usually drinks? *(please tick one box only)*

| | | | | | |
|--------------|--------------------------|---|------------------|--------------------------|---|
| Water | <input type="checkbox"/> | 1 | Fruit juice | <input type="checkbox"/> | 6 |
| Sports drink | <input type="checkbox"/> | 2 | Milk | <input type="checkbox"/> | 7 |
| Fizzy juice | <input type="checkbox"/> | 3 | Alcoholic drinks | <input type="checkbox"/> | 8 |
| Tea | <input type="checkbox"/> | 4 | Other | <input type="checkbox"/> | 9 |
| Coffee | <input type="checkbox"/> | 5 | | | |

Other (please write in type of drink if not listed)

7) How old do you think the typical pupil in your year was when they had their first full drink of alcohol? *(please tick one box only)*

| | | | | | |
|---|--------------------------|---|--------------|--------------------------|---|
| I don't think the typical pupil in my year has ever tasted alcohol. | <input type="checkbox"/> | 1 | | | |
| I don't think the typical pupil in my year has had a drink of alcohol other than a few sips | <input type="checkbox"/> | 2 | 12 years old | <input type="checkbox"/> | 6 |
| 9 years or younger. | <input type="checkbox"/> | 3 | 13 years old | <input type="checkbox"/> | 7 |
| 10 years old | <input type="checkbox"/> | 4 | 14 years old | <input type="checkbox"/> | 8 |
| 11 years old | <input type="checkbox"/> | 5 | 15 years old | <input type="checkbox"/> | 9 |

IF YOU DON'T THINK THE TYPICAL PUPIL IN YOUR YEAR HAS HAD A DRINK OF ALCOHOL OTHER THAN A FEW SIPS GO STRAIGHT TO QUESTION 10

8) How often, if ever, do you think the typical pupil in your year drank alcohol in the past 30 days? *(please tick one box only)*

| | | | | | |
|---------------------------|--------------------------|---|-----------------------|--------------------------|---|
| Never in the past 30 Days | <input type="checkbox"/> | 1 | Twice a week | <input type="checkbox"/> | 5 |
| Once a month | <input type="checkbox"/> | 2 | Three times a week | <input type="checkbox"/> | 6 |
| Twice a month | <input type="checkbox"/> | 3 | Every day of the week | <input type="checkbox"/> | 7 |
| Once a week | <input type="checkbox"/> | 4 | | | |

9) How often, if ever, do you think the typical pupil in your year got drunk in the past 30 days? *(please tick one box only)*

| | | | | | |
|---------------------------|--------------------------|---|-----------------------|--------------------------|---|
| Never in the past 30 days | <input type="checkbox"/> | 1 | Twice a week | <input type="checkbox"/> | 5 |
| Once a month | <input type="checkbox"/> | 2 | Three times a week | <input type="checkbox"/> | 6 |
| Twice a month | <input type="checkbox"/> | 3 | Every day of the week | <input type="checkbox"/> | 7 |
| Once a week | <input type="checkbox"/> | 4 | | | |

10) What rules about drinking alcohol (if any) do you think are put in place by the parents/guardian of the typical pupil in your year? *(please tick one box only)*

- The typical pupil is not allowed to drink alcohol 1
- The typical pupil is allowed to drink with family 2
- The typical pupil is allowed to drink a little at home with friends if a parent/guardian is present 3
- The typical pupil is allowed to drink without a parent/guardian present, as long as he/she does not get drunk 4
- I don't think there are any rules 5

----- **WHAT DO THEY THINK?** -----

11) Please state whether you think the typical pupil in your year would agree or disagree with the following statements. *(please tick one box only for each statement)*

| | Strongly disagree | Disagree | Agree | Strongly agree |
|--|----------------------------|----------------------------|----------------------------|----------------------------|
| a) There is nothing wrong with people under 18 years drinking alcohol every now and then. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| b) There is nothing wrong with people under 18 years drinking alcohol in small amounts. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| c) There is nothing wrong with people under 18 years drinking alcohol frequently as long as it does not affect their school work or family life. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| d) There is nothing wrong with people under 18 years drinking alcohol frequently if that is what they want to do. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| e) Pupils should be told about the harmful side effects of alcohol. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| f) The typical pupil in your year would prefer to go out with a non-drinker. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| g) The typical pupil in your year needs to have a drink of alcohol to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |
| h) The typical pupil in your year needs to get drunk to have a good time. | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 |

----- INFORMATION -----

12) During this school year, do you think the typical pupil in your year has seen or heard information about alcohol from the following sources (*please tick one box for each source*):

| | Never | Occasionally | Frequently |
|--|----------------------------|----------------------------|----------------------------|
| a) Parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Teachers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) The internet <i>Social networking site</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) The internet <i>Web pages designed for people your age</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) The internet <i>General webpages</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) TV or radio | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Newspapers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Magazines | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) School newsletter | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) A poster at school | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) A flyer/leaflet | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| m) The police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| n) Religious group | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| o) Non-teaching school staff | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| p) School nurse | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| q) Nurse, doctor or other health professional | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| r) Other <i>(please write in source of information)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

13) Please rate how believable you think the typical pupil in your year finds each of the following sources of information about alcohol? (*please tick one box for each source*)

| | Unbelievable | Unsure | Believable |
|---|----------------------------|----------------------------|----------------------------|
| a) Their parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Their teachers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Their friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) The internet <i>Social networking site</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) The internet <i>Web pages designed for people their age</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) The internet <i>General webpages</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) TV or radio | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Newspapers | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Magazines | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) School newsletter | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) A poster at school | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) A flyer/leaflet | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| m) The police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| n) Religious group | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| o) Non-teaching school staff | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| p) School nurse | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| q) Nurse, doctor or other health professional | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| r) Other <i>(please write in source of information)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

----- OTHER PUPILS' DRINKING AGAIN -----

14) How often, if ever, do you think the typical pupil in your year drinks alcohol with the following people?

| | Never | Sometimes | Frequently |
|---------------------------------------|----------------------------|----------------------------|----------------------------|
| a) Parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Older brother/sister | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Younger brother/sister | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) Aunt/Uncle | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) Grandparents | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) Group of friends their own age | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) Group of older friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Group of younger friends | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) Other <i>(please write in)</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |

15) During the past year do you think the typical pupil in your year has tried to avoid drinking alcohol when at a party or with friends? (please tick one box only)

Yes 1 No 2

16) What kind of things do you think the typical pupil in your year has done to try and avoid drinking alcohol? *(please tick all that apply)*

- j) The typical pupil left
 1
 - k) The typical pupil had a soft drink
 2
 - l) The typical pupil took a drink with a low alcoholic content
 3
 - m) The typical pupil avoided people who were drinking alcohol
 4
 - n) The typical pupil politely declined when offered a drink of alcohol
 5
 - o) The typical pupil took an alcoholic drink but didn't drink from it
 6
 - p) The typical pupil pretended a non-alcoholic drink was an alcoholic one
 7
 - q) The typical pupil did nothing
 8
 - r) Other *(please write in)*
 8
-

17) In the past year, do you think the typical pupil in your year has experienced any of the following as a consequence of their drinking alcohol? (*please tick all that apply*)

| | Yes | No | Don't drink |
|--|----------------------------|----------------------------|----------------------------|
| a) Physical injury to themselves | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| b) Involved in a fight | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| c) Involved in damaging property | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| d) Failure to complete schoolwork | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| e) Damage to a friendship or relationship | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| f) Punishment by parent or guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| g) Trouble with police | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| h) Sickness (hangover, nausea, illness) | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| i) School absences | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| j) Could not remember events or actions after drinking | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| k) Hospitalisation | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 |
| l) Other (<i>please write in</i>). | | | |

IF YOU THINK THE TYPICAL PUPIL IN YOUR YEAR HAS NEVER DRUNK ALCOHOL (APART FROM A FEW SIPS) IN THE PAST 30 DAYS GO STRAIGHT TO THE INSTRUCTION AT THE END OF THE SURVEY.

- 18) If you think the typical pupil in your year has drunk alcohol in the past 30 days what kind of alcohol do you think they drunk and how much?

Example: *2 bottles of beer*

- 19) If you think the typical pupil in your year drank alcohol within the last 30 days, how easy do you think they found it to get the alcohol? *(please tick one box only)*

| | | |
|----------------|--------------------------|---|
| Very easy | <input type="checkbox"/> | 1 |
| Easy | <input type="checkbox"/> | 2 |
| Difficult | <input type="checkbox"/> | 3 |
| Very difficult | <input type="checkbox"/> | 4 |

- 20) If you think the typical pupil in your year drank alcohol within the last 30 days, from whom do you think they got the alcohol? *(please tick all that apply)*

| | Yes | No |
|--|----------------------------|----------------------------|
| k) Parents/guardian | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| l) A brother/sister who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| m) A brother/sister who is under 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| n) Another relative who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| o) A friend who is over 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| p) A friend who is under 18 | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| q) They asked a stranger to buy it for them | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| r) They bought it themselves using fake ID | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| s) They bought it themselves without using a fake ID | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 |
| t) Other <i>(please write in how they got their alcohol if it is not listed here)</i> | | |

**Thank you for taking the time to complete this survey.
Please put it in the envelope and return it.**

**APPENDIX D: MULTIPLE-TARGET VERSION OF THE UNIVERSITY STUDENT
QUESTIONNAIRE**

- 1 How many days in a month do you normally drink Alcohol?
- | | |
|------------------------|--------------------------|
| Never or very rarely | <input type="checkbox"/> |
| Less than once a month | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| 2 – 3 days a month | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Twice a week | <input type="checkbox"/> |
| 3 – 4 days a week | <input type="checkbox"/> |
| 5 – 6 days a week | <input type="checkbox"/> |
| Every day | <input type="checkbox"/> |
- 2 How many days in a month do you think most of your closest friends normally drink alcohol?
- | | |
|------------------------|--------------------------|
| Never or very rarely | <input type="checkbox"/> |
| Less than once a month | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| 2 – 3 days a month | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Twice a week | <input type="checkbox"/> |
| 3 – 4 days a week | <input type="checkbox"/> |
| 5 – 6 days a week | <input type="checkbox"/> |
| Every day | <input type="checkbox"/> |
- 3 How many days in a month do you think an average student your age at the University of Strathclyde normally drinks alcohol?
- | | |
|------------------------|--------------------------|
| Never or very rarely | <input type="checkbox"/> |
| Less than once a month | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| 2 – 3 days a month | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Twice a week | <input type="checkbox"/> |
| 3 – 4 days a week | <input type="checkbox"/> |
| 5 – 6 days a week | <input type="checkbox"/> |
| Every day | <input type="checkbox"/> |
- 4 How many days in a month do you think an average person your age in the UK normally drinks alcohol?
- | | |
|------------------------|--------------------------|
| Never or very rarely | <input type="checkbox"/> |
| Less than once a month | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| 2 – 3 days a month | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Twice a week | <input type="checkbox"/> |
| 3 – 4 days a week | <input type="checkbox"/> |
| 5 – 6 days a week | <input type="checkbox"/> |
| Every day | <input type="checkbox"/> |

5 How many alcoholic drinks would you normally drink during a night out in a pub or club?

- 0
- 1 – 2
- 3 – 4
- 5 – 6
- 7 – 8
- 9 – 10
- 11 – 12
- 13 – 14
- 15 or more

6 How many alcoholic drinks do you think most of your closest friends would normally drink during a night out in a pub or a club?

- 0
- 1 – 2
- 3 – 4
- 5 – 6
- 7 – 8
- 9 – 10
- 11 – 12
- 13 – 14
- 15 or more

7 How many alcoholic drinks do you think an average student your age at the University of Strathclyde would normally drink during a night out in a pub or a club?

- 0
- 1 – 2
- 3 – 4
- 5 – 6
- 7 – 8
- 9 – 10
- 11 – 12
- 13 – 14
- 15 or more

8 How many alcoholic drinks do you think an average person your age in the UK would normally drink during a night out in a pub or a club?

- 0
- 1 – 2
- 3 – 4
- 5 – 6
- 7 – 8
- 9 – 10
- 11 – 12
- 13 – 14
- 15 or more

- 9 How many days in a month do you drink enough alcohol to become drunk?
- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day
- 10 How many days in a month do you think most of your closest friends drink enough alcohol to become drunk?
- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day
- 11 How many days in a month do you think an average student your age at the University of Strathclyde drinks enough alcohol to become drunk?
- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day
- 12 How many days in a month do you think an average person your age in the UK drinks enough alcohol to become drunk?
- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day

13 Are you male or female?

Male

Female

14 How old are you?

18 – 20

21 – 24

25 – 34

35 – 44

45 – 54

55 – 64

65 or above

APPENDIX E: SINGLE-TARGET 'SELF' VERSION OF THE UNIVERSITY

STUDENT QUESTIONNAIRE

- 1 How many days in a month do you think an average student your age at the University of Strathclyde normally drinks alcohol?

| | |
|------------------------|--------------------------|
| Never or very rarely | <input type="checkbox"/> |
| Less than once a month | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| 2 – 3 days a month | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Twice a week | <input type="checkbox"/> |
| 3 – 4 days a week | <input type="checkbox"/> |
| 5 – 6 days a week | <input type="checkbox"/> |
| Every day | <input type="checkbox"/> |

- 2 How many alcoholic drinks would you normally drink during a night out in a pub or club?

| | |
|------------|--------------------------|
| 0 | <input type="checkbox"/> |
| 1 – 2 | <input type="checkbox"/> |
| 3 – 4 | <input type="checkbox"/> |
| 5 – 6 | <input type="checkbox"/> |
| 7 – 8 | <input type="checkbox"/> |
| 9 – 10 | <input type="checkbox"/> |
| 11 – 12 | <input type="checkbox"/> |
| 13 – 14 | <input type="checkbox"/> |
| 15 or more | <input type="checkbox"/> |

- 3 How many days in a month do you drink enough alcohol to become drunk?

| | |
|------------------------|--------------------------|
| Never or very rarely | <input type="checkbox"/> |
| Less than once a month | <input type="checkbox"/> |
| Once a month | <input type="checkbox"/> |
| 2 – 3 days a month | <input type="checkbox"/> |
| Once a week | <input type="checkbox"/> |
| Twice a week | <input type="checkbox"/> |
| 3 – 4 days a week | <input type="checkbox"/> |
| 5 – 6 days a week | <input type="checkbox"/> |
| Every day | <input type="checkbox"/> |

4 Are you male or female?

- Male
- Female

5 How old are you?

- 18 – 20
- 21 – 24
- 25 – 34
- 35 – 44
- 45 – 54
- 55 – 64
- 65 or above

**APPENDIX F: SINGLE-TARGET 'CLOSE FRIENDS' VERSION OF THE
UNIVERSITY STUDENT QUESTIONNAIRE**

1 How many days in a month do you think most of your closest friends normally drink alcohol?

- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day

2 How many alcoholic drinks do you think most of your closest friends would normally drink during a night out in a pub or a club?

- 0
- 1 – 2
- 3 – 4
- 5 – 6
- 7 – 8
- 9 – 10
- 11 – 12
- 13 – 14
- 15 or more

3 How many days in a month do you think most of your closest friends drink enough alcohol to become drunk?

- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day

4 Are you male or female?

- Male
- Female

5 How old are you?

- 18 – 20
- 21 – 24
- 25 – 34
- 35 – 44
- 45 – 54
- 55 – 64
- 65 or above

**APPENDIX G: SINGLE-TARGET 'AVERAGE STUDENT' VERSION OF THE
UNIVERSITY STUDENT QUESTIONNAIRE**

1 How many days in a month do you think an average student your age at the University of Strathclyde drinks alcohol?

- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day

2 How many alcoholic drinks do you think an average student your age at the University of Strathclyde would normally drink during a night out in a pub or a club?

- 0
- 1 – 2
- 3 – 4
- 5 – 6
- 7 – 8
- 9 – 10
- 11 – 12
- 13 – 14
- 15 or more

3 How many days in a month do you think an average student your age at the University of Strathclyde drinks enough alcohol to become drunk?

- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day

4 Are you male or female?

- Male
- Female

5 How old are you?

- 18 – 20
- 21 – 24
- 25 – 34
- 35 – 44
- 45 – 54
- 55 – 64
- 65 or above

APPENDIX H: SINGLE-TARGET 'SIMILAR UK PERSON' VERSION OF THE UNIVERSITY STUDENT QUESTIONNAIRE

1 How many days in a month do you think an average person your age in the UK drinks alcohol?

- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day

2 How many alcoholic drinks do you think an average person your age in the UK would normally drink during a night out in a pub or a club?

- 0
- 1 – 2
- 3 – 4
- 5 – 6
- 7 – 8
- 9 – 10
- 11 – 12
- 13 – 14
- 15 or more

3 How many days in a month do you think an average person your age in the UK drinks enough alcohol to become drunk?

- Never or very rarely
- Less than once a month
- Once a month
- 2 – 3 days a month
- Once a week
- Twice a week
- 3 – 4 days a week
- 5 – 6 days a week
- Every day

4 Are you male or female?

- Male
- Female

5 How old are you?

- 18 – 20
- 21 – 24
- 25 – 34
- 35 – 44
- 45 – 54
- 55 – 64
- 65 or above

Overestimation of peer drinking: error of judgement or methodological artefact? ...

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ABSTRACT

Aims To examine whether inclusion of both self- and peer-referent items in the context of a single social norms drinking questionnaire plays an active role in producing the much-reported tendency for young people to overestimate the extent of peers' alcohol-related behaviour and the permissiveness of their attitudes towards alcohol. **Design, setting, participants and measurements** In a between-subjects design pupils attending two Scottish secondary schools ($n = 1074$, 12–18 years; 52.5% male) completed one of three questionnaires designed to measure a range of alcohol-related behaviours, attitudes and perceptions: a paradigmatic multiple-target questionnaire included self- and peer-referent items while two single-target questionnaires included self-referent or peer-referent items only. **Findings** Pupils' self-reported drinking behaviours and attitudes were similar, regardless of whether multiple or single-target versions of the questionnaire were used, as were perceptions of peers' frequencies of alcohol use and drunkenness. In contrast, by comparison with pupils who responded to a single-target version that omitted self-referent items, use of a multiple-target questionnaire was significantly more likely to result in reports that peers would consume alcoholic drinks when with friends and hold more permissive or liberal attitudes towards alcohol. **Conclusions** Social norms research and related health promotion programmes that seek to reduce the extent of overestimation of peer drinking norms are heavily reliant upon multiple-target drinking questionnaires. The use of such a questionnaire may lead to more distorted or extreme perceptions being reported by pupils compared to single-target versions, which omit self-referent drinking items. By implication, use of multiple-target questionnaires may encourage young people to 'over-estimate' peer drinking norms.

Keywords Drinking norms, methodological artefacts, methodological bias, misperceptions, overestimation, school pupils.

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INTRODUCTION

A substantial body of American research documents a tendency for young people to overestimate the extent of peers' alcohol-related behaviours and the permissiveness of their attitudes towards alcohol [1–3]. Evidence that young people hold distorted perceptions of peer drinking norms is based frequently on responses to drinking questionnaires that ask young people about their own alcohol-related behaviours and attitudes as well as their perceptions of peers' alcohol-related behaviours and attitudes. The current research seeks to identify whether inclusion of self- and peer-referent items in the context of

a single social norms drinking questionnaire encourages such overestimation.

Given known tendencies towards group patterns and expectations [4], holding an inflated perception or 'misperception' in relation to peer drinking norms predicts migration of behaviour upwards, towards those inflated perceptions [5]. Health promotion programmes based on, or incorporating, social norms seek to identify misperception among young people and encourage the adoption of realistic and healthy perceptions of peer drinking norms by feeding back accurate normative drinking information. It is argued that if perception can be brought into line with more realistic and healthy perceptions of the

norm, then young people's own attitudes and behaviour are likely to follow a similar path [6]. Despite a recent systematic review noting a lack of high-quality controlled studies in this field [7], social norms programmes are increasingly popular within US college campuses and schools [8]. There is also evidence that young people misperceive drinking norms in other cultural contexts [9–14] and that social norms programmes may be implemented outside the United States with some success [15].

For those working in applied health promotion settings social norms programmes are attractive, given the ease with which normative data can be collected and the programme implemented and evaluated. A representative sample of the population respond to a simple questionnaire containing a battery of alcohol-related items targeting their own alcohol-related behaviours and attitudes (i.e. self-referent) and a similar or identical battery intended to record their perceptions of peers' alcohol-related behaviours and attitudes (i.e. peer-referent). Self-report responses are used to identify the 'actual' drinking norms within the population while peer-referent responses specify 'perceived' peer drinking norms. Where the actual drinking norm is moderate and healthy, yet perceptions of peer drinking norms are more extreme, actual normative drinking information extracted from questionnaire responses may be fed back to the population in an attempt to correct exaggerated perceptions. Subsequent evaluations of the effectiveness of the programme are likely to make use of similar or identical questionnaires to evaluate the impact of the intervention on perception and behaviour. As the process is cyclical, this normative information constitutes up-to-date normative feedback which may be used in subsequent waves of the feedback programme [8]. Despite a heavy reliance on questionnaire-based methodology at each stage, little research has sought to examine the extent to which data collected as part of a typical social norms programme provide an accurate estimation of young people's physical and perceptual environments.

Researchers [16] have tended to explain the exaggerated nature of young people's perceptions through cognitive biases such as the fundamental attribution error [17]. Young people are conceived of as information-processing organisms, albeit occasionally inefficient ones prone to errors in reasoning and logic, where limited information regarding other people's alcohol-related behaviours and attitudes can lead to inaccuracies when making judgements about them. From this perspective, discrepancies between young people's alcohol-related behaviours and attitudes and perceived peer norms constitute genuine errors of judgement in young people's estimation of the prevalence and extent of peers' alcohol-related behaviours and attitudes.

In contrast, alternative lines of research suggest that motivational or self-serving biases may also play an important role in alcohol consumption reports [18]. In numerous cases, substance-use reports have been shown to be highly functional, varying in accordance with the perceived requirements, motivations and context of responses [19–21]. Furthermore, general rather than specific-to-substance-use research has shown that categorization into groups on arbitrary and seemingly trivial bases can induce acts of in-group favouritism and out-group discrimination [22]. Work carried out into social comparison processes has also identified that individuals compare extensively with other individuals for a variety of reasons, including self-enhancement: 'While social comparison is often concerned with truly evaluating personal characteristics, sometimes self-serving motives come into play . . . constructive social comparison is often self-serving and it is typically engaged when people want to devise esteem-maintaining views of social reality' ([23] p. 31–32). In one study, Klein & Kunda [24] found that by comparison with controls given no information about the frequency of peer engagement in 'health-threatening' behaviours such as alcohol consumption, college students provided with actual norms for their peer group adjusted their own self-reported frequencies downwards. Despite no instruction to attend to the normative information, participants reconstructed their own behaviours in order to maintain positive self-evaluations relative to peers.

Research of this type suggests that the tendency for young people to misperceive peer-drinking norms may not result solely from errors when making judgements about others, but may also involve a motivational self-serving element. While use of a single questionnaire to record young people's behaviours and attitudes as well as their perceptions of peers' behaviours and attitudes may be economically appealing and statistically powerful, the salience of any comparison between self and peers on relevant alcohol-related variables is likely to be heightened. By implication, this practice may encourage motivated, self-serving responses that enable respondents to maintain positive social comparisons with peers. Given that evidence showing young people misperceive drinking norms is based frequently on questionnaire responses indicating a discrepancy between young people's self-reported behaviours and attitudes and their perceptions of peers' behaviours and attitudes, it seems prudent to investigate whether the paradigmatic format of questionnaire used in the field plays an active role in producing the apparent mismatch between perception and reality. If it is the case that young people's responses to social norms questionnaires are motivated to some degree by self-enhancement or self-presentation, it is likely that self-reported and perceived behaviours and attitudes will

differ across questionnaires which vary the degree to which social comparison information is a salient feature. Thus, it is anticipated that responses to a conventional questionnaire incorporating self- and peer-referent items will differ from responses to questionnaires which include self- or peer-referent items only.

METHODS

Sampling

Pupils of mixed age and gender attending two publicly funded Scottish secondary schools from the NHS Forth Valley region responded to one of three questionnaires designed to measure alcohol-related behaviours, attitudes and perceptions. The schools were selected on the basis of local authority and head teacher support, were matched for age of school, socio-economic status and were both non-denominational. Data collection took place in April 2009 when pupil rolls stood at 1206 and 700. Based on the percentage of pupils eligible to receive free school meals, those attending the two schools (14.2%; 14.8%) were slightly more deprived compared to local authority and national averages (12.2%; 12.9%) [25], and most at either school (97.19%; 94.13%) identified themselves as white-British, which is also slightly above the national secondary school average (93.84%) [26].

Design and measures

The standard social norms paradigm involves collection of self- and peer-referent data using a single questionnaire—a within-subjects design. To investigate whether this design has an impact on pupils' responses, three different versions of a social norms questionnaire were developed for use in a between-subjects experimental design. One questionnaire, similar in design and format to that used in the standard social norms paradigm, included both self- and peer-referent items to record pupils' self-reported alcohol-related behaviours and attitudes in addition to their perceptions of those alcohol-related behaviours and attitudes for 'the typical pupil' in their year [i.e. a multiple-target (MT) version]. Two further questionnaires split this format and included items to record the alcohol-related behaviours and attitudes of a single target in each case [i.e. single-target (ST) 'self' or 'peer' versions].

The battery of social norms items used in this research was based on those found in sample questionnaires available in *A Guide to Marketing Social Norms for Health Promotion in Schools and Communities* [27]. Therefore, included items are likely to be representative of those used in applied social norms health promotion programmes. Although questionnaires contained various alcohol-

related measures, only those likely to be used as part of a social norms campaign to correct pupil misperceptions were of interest. Behavioural items of interest were: (i) the usual type of drink consumed when with friends, based on eight alcoholic and non-alcoholic drink response options. Pupils who had ever consumed more than a few sips of alcohol also provided; (ii) past 30-day frequencies of consumption; and (iii) past 30-day frequencies of drunkenness information using seven-point ordinal scales ranging from zero occasions in the past 30 days (coded 1) to every day of the week (coded 7). Eight attitudinal items required pupils to state degree of agreement on a four-point scale ranging from strongly disagree (coded 1) to strongly agree (coded 4) with statements such as: 'There is nothing wrong with people under 18 years drinking alcohol every now and then' and 'I need to have a drink of alcohol in order to have a good time'. In all cases self- and peer-referent item strings were identical, varying only the target-referent (e.g. 'When you are with your friends, what do you usually drink?' versus 'When they are with friends, what do you think the typical pupil in your year usually drinks?').

Procedure

Questionnaires were completed in classes of medium size (21 pupils) under examination conditions. Classroom teachers who were blind to the experimental manipulation received equal numbers of the three types of questionnaire, the order of which had been randomized by hand by members of the research team prior to enclosing each in an unmarked envelope. Teachers and questionnaire headers stressed the anonymous nature of responses and that pupils were under no obligation to complete questionnaires. Pupils sealed completed questionnaires inside envelopes before returning them.

RESULTS

Notwithstanding examination commitments, absences and opting out, complete data were available for 56.88% and 55.43% of each school roll, a total of 1074 pupils (52.5% male). Questionnaires were completed by pupils of all ages (12–18 years); the average was 14 years and 5 months [standard deviation (SD) = 1 year and 7 months]. Of the three types of questionnaire, 371 pupils (34.5%) responded to the MT version, 358 (33.3%) to the ST-self version and 345 (32.8%) to the ST-peer version. Composition of the three groups did not differ significantly by age, $F_{(2,1052)} = 0.08$, $P = 0.93$ or gender, $\chi^2_{(2, n=1073)} = 4.33$, $P = 0.12$, although male responses were more heavily represented in ST-self (55% male) and ST-peer (54.5% male) versions than in the MT (48.1% male) version.

Usual drink type

After collapsing into an alcoholic drink versus non-alcoholic drink dichotomy, self- and peer-referent responses to the usual type of drink item were compared across questionnaire type. The results of each comparison, detailed in Table 1, indicate virtually no difference in the proportion of MT- or ST-self version respondents who reported use of alcoholic drinks themselves. In contrast, when pupils were asked about their perceptions of the typical pupil's usual drink choice, the odds of MT respondents stating that peers would consume alcoholic drinks were twice those of pupils who responded to the ST-peer version of the questionnaire.

Past 30-day frequency of consumption and drunkenness

Table 2 presents the results of comparisons made across questionnaire type for self-reported and perceived past 30-day frequencies of consumption and drunkenness. Although pupils who responded to the ST-self version (median, zero occasions) reported less frequent consumption during the past 30 days compared to MT respondents (median, one occasion), this difference was not

significant. There was also no difference between MT and ST questionnaire responses in pupils' perceptions of the typical pupil's frequency of consumption (medians, four occasions), self-reported past 30-day frequency of drunkenness (medians, zero occasions) or perceptions of the typical pupil's past 30-day frequency of drunkenness (medians, four occasions). In other words, self-reported frequencies of drinking and drunkenness and perceived frequencies of drinking and drunkenness were similar, regardless of whether single or multiple-target versions of the questionnaire were used.

Attitudes towards alcohol

Self-reported and perceived attitude responses to the single- and multiple-target versions of the questionnaire were examined using two composite index scores. On six of the eight attitude items agreement ratings were scored as strongly disagree (1), disagree (2), agree (3) and strongly agree (4). Remaining items were reverse-scored. Self- and peer-referent attitude-item scores were then summed separately with a higher score on the index indicating more liberal or permissive attitudes or perceived attitudes towards alcohol and lower scores indicating

Table 1 Pupils reporting consumption of alcoholic drinks with friends according to target and questionnaire version.

| Target | Percent alcoholic drinks | | χ^2 | OR (95% CI) |
|---------------|--------------------------|------------------------|--------------------|---------------------------|
| | MT | ST | | |
| Self-referent | 19.1 <i>n</i> = 351 | 20.5 <i>n</i> = 336 | 0.23 ^{NS} | 0.91 (95% CI: 0.63, 1.33) |
| Peer-referent | 56.5 <i>n</i> = 354 | 37.5 <i>n</i> = 320 | 24.32* | 2.16 (95% CI: 1.59, 2.95) |

MT/ST: multiple/single-target versions of the questionnaire; χ^2 = Pearson's χ^2 ; OR: odds ratio associated with MT questionnaire respondents reporting consumption of alcohol drinks relative to ST respondents; CI: confidence interval. * $P < 0.001$. ^{NS} $P > 0.05$.

Table 2 Frequency of alcohol consumption and drunkenness according to target and questionnaire version.

| Target | Median occasions in past 30 days | | <i>U</i> | <i>Z</i> |
|--------------------------|----------------------------------|---------------------|----------------------|----------|
| | MT | ST | | |
| Frequency of consumption | | | | |
| Self-referent | 1 <i>n</i> = 301 | 0 <i>n</i> = 303 | 43 069 ^{NS} | -1.22 |
| Peer-referent | 4 <i>n</i> = 343 | 4 <i>n</i> = 314 | 52 779 ^{NS} | -0.46 |
| Frequency of drunkenness | | | | |
| Self-referent | 0 <i>n</i> = 343 | 0 <i>n</i> = 314 | 40 899 ^{NS} | -0.63 |
| Peer-referent | 4 <i>n</i> = 345 | 4 <i>n</i> = 316 | 52 776 ^{NS} | -0.73 |

MT/ST: multiple/single-target versions of the questionnaire; *U*: Mann-Whitney *U*-test; *Z* = *Z*-score. ^{NS} $P > 0.05$.

Table 3 Attitude scale score according to target and questionnaire version.

| Target | Mean (SD) attitude-scale score | | t | d (95% CI) |
|---------------|--------------------------------|-------------------------|--------------------|--------------------------------|
| | MT | ST | | |
| Self-referent | 17.8 (4.22) n = 352 | 17.47 (4.18) n = 347 | 1.04 ^{NS} | d = 0.08 (95% CI: -0.36, 0.52) |
| Peer-referent | 21.2 (4.14) n = 352 | 19.7 (4.59) n = 347 | 4.46* | d = 0.35 (95% CI: 0.02, 0.67) |

MT/ST: multiple/single-target versions of the questionnaire; t: Student's t-test; d: Cohen's d; CI: confidence interval; SD: standard deviation. *P < 0.001, ^{NS}P > 0.05.

more moderate or conservative attitudes or perceived attitudes towards alcohol. Cronbach's alpha indicated a satisfactory degree of internal consistency for both self- and peer-referent scales ($\alpha = 0.77-0.81$). Consistent with preceding analyses, Table 3 indicates that self-referent scores were similar across MT and ST versions of the questionnaire. Conversely, peer-referent scale scores derived from responses to the MT version were significantly higher than those who responded to the ST-peer version. In short, whether multiple- or single-target versions of the questionnaire were used to collect information on pupils' self-reported attitudes made little difference to the type of response given. In contrast, completing a multiple-target questionnaire resulted in pupils reporting a more permissive set of perceived attitudes for the typical pupil.

DISCUSSION

Although pupils' self-reported alcohol-related behaviours and attitudes are robust across multiple- and single-target versions of a social norms drinking questionnaire, in comparison to a version which only includes questions about peer-behaviour and attitudes, use of a multiple-target version results in a more extreme set of perceptions over several key items. In the context of a social norms questionnaire comprising self- and peer-referent alcohol-related items, social comparison information is a more salient feature of the questionnaire which may foster an environment where management of contextually relevant needs and motivations is encouraged, a position overlooked in the social norms field to date.

Evidence that young people misperceive peer-drinking norms is often derived from research utilizing multiple-target questionnaires, yet the current results question the extent to which multiple-target drinking questionnaires should be considered, a priori, suitable tools for measuring perceived drinking norms. Although speculation over which type of questionnaire produces the more 'real' or 'meaningful' set of data remains tempting, at this point it may only be stated that two methods of collecting

normative drinking information, which cannot be distinguished in wording or content of relevant items, produced marked differences over several normative perception items. Further work is therefore necessary to examine the conditions under which normative data are robust. This work should proceed on the basis that reports of perceived norms which remain consistent, despite basic changes in the context of data collection, are less likely to be artefacts of specific data collection tools or elicitation settings [28]. Work currently under way in our laboratory addresses this issue to some extent by examining variability in university student responses to social norms questionnaires when these are collected across different environmental settings. Importantly, this methodological approach runs counter to that typically endorsed in the social norms field, where it is argued that measures used to evaluate programme impact should resemble or mirror those used to collect baseline data [8,5]. In fact, while such a procedure may improve reliability of responses, in the absence of corroborating information it also enables methodological artefacts to remain undetected.

Prevention programmes making use of normative feedback to correct overestimated drinking norms are an increasingly popular method of attempting to reduce alcohol-related harm among young people. Unfortunately, limited resources may require that feedback of normative information is targeted selectively at overestimated norms where the magnitude of overestimation appears most severe. The current results indicate that over several items a more extreme set of perceptions were reported by those who responded to a multiple-target questionnaire, thereby increasing the magnitude and apparent severity of pupils' overestimation of the norm. Consequently, use of multiple-target questionnaires may pose a risk to prevention programmes if specific alcohol-related behaviours or attitudes are targeted to receive normative feedback over others because the degree of overestimation appears to be more severe. Few researchers would argue that decisions over where to target valuable resources should be a matter solely for prevention

experts and allowing methodological bias to influence this process is to be avoided.

In contrast to perceptions of peer attitudes and the usual type of drink consumed by peers, pupils' self-reported behaviours and attitudes were similar across questionnaires, and this was also true of perceptions of peer consumption and drunkenness. In general, self-report responses may be more robust than perception responses because pupils are more knowledgeable about their own alcohol-related behaviours and attitudes than they are about those of their peers'. It is also likely to be the case that pupils are more knowledgeable about certain aspects of their peers' alcohol-related worlds than others. For instance, perceptions of past 30-day frequencies of consumption and drunkenness can, to some extent, be based on observations of the relevant behaviour. In contrast, accurately judging peer attitudes towards drinking is a more difficult process requiring young people to identify the cognitive structures underlying peer behaviour. Therefore, where respondents are less knowledgeable about the area in question, responses may be more malleable and sensitive to self-serving motivations because 'the facts' do not get in the way so much.

Although pupils' frequencies of consumption and drunkenness reports were robust to the experimental manipulation, this finding may be of limited benefit to those working in the applied field. Particularly among school-aged children, ethical considerations may preclude the use of normative feedback considered to be unhealthy or undesirable. Even where a moderate degree of alcohol use is the norm, those working in applied settings may be reluctant to feed back norms of this category to young people. As a result, attitudinal norms may be preferred in settings such as secondary schools where a degree of alcohol use may in fact be normal. These findings which highlight the extent to which perceptions of attitudinal norms are robust to changes in questionnaire structure are timely, given recent interest in norms of this type as a means of reducing alcohol consumption and related harm among college students in the United States [29–31]. Although statistically significant, the mean difference of 1.5 scale points in peer-referent attitude scores may appear limited in terms of practical importance. Here it is instructive to note that self- and peer-referent scores collected using the conventional multiple-target instrument differed only by 3.4 scale points. Therefore, the difference across questionnaire type of 1.5 scale points reported in the present study clearly erodes the degree of this overestimation and represents a substantive effect.

It has been stated elsewhere that the data collection stages of social norms programmes offer a valuable opportunity for young people to reflect upon their alcohol-related behaviours and attitudes, making the process a worthy endeavour in its own right [16].

Paradoxically, given the major premise of social norms research, that situations perceived to be real are real in their consequences, repeated use of multiple-target questionnaires may in fact contribute towards the problems which social norms programmes try to address by creating an environment where a more extreme set of perceptions are included in young people's reflections on their alcohol-related behaviour and attitudes.

Possible limitations to this research include the uniform self-then-peer order of presentation of target-referents in the multiple-target version of the questionnaire which fails to control for possible ordering effects. While research conducted by Baer *et al.* [1] found no effect of presentation order on college students' responses to drinking norms items, differences between the samples and normative measures used by Baer *et al.* and this study mean their findings may not be entirely generalizable to those reported here. Nevertheless, the self-then-peer order of presentation used in this research was consistent with sample questionnaires contained in a popular social norms programming handbook and is an appropriate example of that used in applied social norms research. Based on the number of pupils eligible to receive free school meals, the two schools used in this research were slightly more deprived than regional and national averages and also included a higher proportion of pupils identifying themselves as white-British. Furthermore, as most published social norms research has been carried out in the United States, where the cultural context of young people's alcohol use may differ from that found in the United Kingdom, motivations surrounding young people's responses to social norms questionnaires may also differ. Consequently, this research would benefit from replication at other institutions and among other cohorts in different geographical and cultural contexts.

To conclude, social norms research and related health promotion programmes are heavily reliant on drinking questionnaires which ask young people to respond to questions about their own alcohol-related behaviours and attitudes as well as their perceptions of peers' behaviours and attitudes. Use of this questionnaire format has been shown to result in a more extreme or exaggerated set of perceptions over several key alcohol-related items when compared to an alternative format which includes questions about peers only. Further research is warranted to examine more closely the potentially active role of researcher-imposed methodologies in encouraging the overestimation of young people's alcohol-related perceptions.

Declarations of interest

The Centre for Applied Social Psychology has never received research funds from companies involved in the gaming industry or the production of pharmaceuticals.

tobacco products or alcohol, although it has received funding in the past from the Alcohol Education and Research Council. In the last year, J.B.D. has been consulted by a law firm involved in tobacco litigation with regard to the issue of 'addiction', and has been paid for his time.

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The 'social norms' approach to alcohol misuse prevention: Testing transferability in a Scottish secondary school context

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Aim: To report baseline findings and discuss their implications for the transferability of the predominantly American 'Social Norms' approach to alcohol misuse prevention to a UK (Scottish) secondary school setting.

Design, setting, participants and measurement: Baseline data from a 3-year control case study are reported here, and data from the larger study will be published later. Both schools are located in the central belt of Scotland within the same local authority area. This article reports the baseline results for the intervention school only. In total, 686 pupils of mixed age (12–18 years) participated at baseline. The mean age of pupils was 14 years and 4 months (SD ¼1 year and 7 months) and 54% of the sample were male. Baseline data were collected by self-reported questionnaire during class time in April 2009.

Findings: Substantial misperceptions of theoretical importance were found among secondary school pupils: what peers usually drink when with friends, frequency of drinking and frequency of drunkenness. A range of attitudinal misperceptions have also been identified.

Conclusion: Baseline data are consistent with the social norms theory, i.e. that young people tend to overestimate how much and how often their peers consume alcohol. Early indications suggest that the 'Social Norms' approach to alcohol misuse prevention may be transferable to a Scottish secondary school setting. Two main questions, however, remain unanswered: first, the extent to which findings are influenced by a theoretical artefact and second, does the approach produce behaviour change?

INTRODUCTION

In the UK, children under 5 years must not be given alcohol unless under medical supervision or in an emergency. The minimum age for the purchase of alcohol in the UK is 18. However, in some circumstances, for example with a table meal, consuming wine, beer or cider on licensed premises is permissible at the age of 16 or 17. Across all parts of the UK, purchasing alcohol on behalf of a minor is illegal. School-based alcohol misuse prevention programmes have become an embedded feature in the UK education system from around 1985 (Coggans, 1991). Since that time, various studies and reports have commented on the content, effectiveness and delivery of a wide range of approaches (Advisory Council on the Misuse of Drugs [ACMD], 2006; Coggans & Watson, 1995; Foxcroft, Ireland, Lister-Sharp, Lowe, & Breen, 2003; Foxcroft, Lister-Sharp, & Low, 1997). All the studies included in the Foxcroft et al. (2003) review had methodological problems and issues related to transferability to a UK setting.

The health and social impacts of substance use, including tobacco, drugs and alcohol use, is well documented (ACMD, 2006). At an intuitive level, primary prevention would seem to be the best way to tackle the increased health and social problems associated with these issues. However, evaluation studies of school-based primary prevention in the UK (e.g. health education and other information-based programmes) are often viewed as ineffective (ACMD, 2006; Foxcroft et al., 2003).

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Grant and Dawson (1997) and Hingson, Heeren, and Winter (2006) explained why the search for evidence should continue, particularly the importance of school-based primary prevention. These authors refer to the importance of 'age of onset' showing that the lifetime dependence rate for those who start using alcohol by the age of 14 is four times as high as those who start at the age of 20. Adjusting for potentially confounding factors, these researchers calculated that the odds of dependence decreased by 14% for every year of delayed use. Research evidence from American social norms programmes in secondary schools report that age of onset for substance use can be significantly delayed by reducing misperceptions among peers (Haines, Barker, & Rice, 2003; Hansen & Graham, 1991; Linkenbach & Perkins, 2003; Perry, Kelder, Murray, & Knut-Inge, 1992). Viner and Taylor (2007) analysed the data from the 1970 British birth cohort study and report that 17% of adolescent binge drinkers were dependent on alcohol at the age of 30 (compared to 11% of the remaining cohort); 43% exceeded the recommended weekly limits (compared to 30% of the remaining cohort) and 24% were taking illicit drugs (compared to 16% of the remaining cohort).

In 2000 in Britain, nearly 14% of young people aged 16–19 were estimated to be either mildly (12.4%) or moderately (1.4%) dependent on alcohol, that is, they scored more than four on the 'Severity of alcohol dependence questionnaire' (Singleton, Bumpstead, O'Brien, Lee, & Meltzer, 2000). Among adults, excessive alcohol consumption is associated with 15,000–22,000 premature deaths annually. In 2005, 4160 people in England and Wales died from alcoholic liver disease (Department of Health, Home Office, Department for Education and Skills, Department for Culture, Media and Sport, 2007). According to analysis by the Office for National Statistics (2007), Scottish alcohol-related death rates were around double the rates for the UK as a whole.

The National Institute for Health and Clinical Excellence (National Institute for Health and Clinical Guidance, 2007) recommends that schools focus on encouraging pupils not to drink, delaying the age at which they start drinking and, reducing the harm it can cause among those who do drink. This guidance document also draws attention to the general lack of evidence for school-based alcohol misuse prevention and the need to apply US-based evidence with caution. A more detailed examination of evidence in relation to alcohol misuse prevention is covered by Mulvihill, Taylor, Waller, Naidoo, and Thom (2005).

Results from the 'Blueprint' study (Home Office, 2009) were expected to provide answers to the much reported evidence gap in school-based prevention. Unfortunately, the study reported methodological problems that prevented conclusive results. The Blueprint study included 'normative education' as a feature of its overall approach, and in keeping with the theory of social norms described below, concluded

that many pupils overestimate peer tobacco and alcohol use. However, the study states that teachers, who delivered the programme, did not understand or adequately implement the central component of the work, i.e. to reduce perceptual error. Reducing errors in perception is seen as a necessary first step in the process of reducing actual alcohol consumption.

While the social norms approach is predominately used in the USA, it is also worth noting that other countries report the potential for successful application of this paradigm, e.g. Australian school children (Hughes, Julian, Richman, Mason, & Long, 2008a, b), adolescents in Finland (Lintonen & Konu, 2004), university students in Scotland and England (Bewick, Mulhern, & Hill, 2009; McAlaney & McMahon, 2007). Promising results have been reported in Denmark in a large community-based project (Balvig, 2005). The growing popularity of this approach in applied health promotion settings may be partly due to the relative ease with which normative data can be collected and outcomes evaluated. The perceived value of an approach that could be useful across a range of health-risk behaviours, e.g. prevention of skin cancer (Mahler, Kulik, Butler, Gerard, & Gibbons, 2008), the spread of rumouring in high school (Cross & Patsner, 2009), risky sexual behaviour (Lewis, Lee, Patrick, & Foscos, 2007), drug use (Moore & Miles, 2004) and gambling (Neighbors et al., 2007), also helps to explain the attraction of the theory. The international development of the social norms approach to drug education and prevention is described in McAlaney, Bewick, and Hughes (2010).

This article reports the baseline findings from a social norms research project following the model developed in America. In keeping with the substantial body of American research (Baer, Stacy, & Larimer, 1991; Borsari & Carey, 2001, 2003), this study relies on survey methodology to collect and analyse the self-reported anonymous data. Despite the limitations of this type of method, McAlaney et al. (2010) expresses the need for further research given the ineffectiveness of traditional approaches such as health education and fear arousal models. Described below is a summary of traditional approaches.

Over the past 30 years, two behaviour change theories have dominated primary prevention for substance use in a UK school setting. The approaches can be broadly classified as 'rational choice theories' and social learning theories. Outlined below is a brief description of the challenges associated with these theories. This is followed by the rationale for investigating the transferability of a social norms approach to primary prevention in Scotland.

Health education: A rational choice theory

The most common model of primary prevention in UK schools is health education. Health education is based on rational choice theory (Montano & Kasprzyk, 2002). The theory proposes that when young people

are provided with health information, e.g. how alcohol affects the body, its pharmacology, etc., they will process this information and as a result, modify subsequent risk behaviour. Having the knowledge to make 'informed choices' is seen as sufficient to motivate behaviour change that reduces risk/consequences to the individual.

Researchers tend to unite on one point, that traditional health education alone does not reduce the risk behaviour (Apollonio & Malone, 2009; Balbach, Smith, & Malone, 2006; Chin, Monroe, & Fiscella, 2000; Lindbladh & Lyttkens, 2002; Pescosolido, 1992; Reyna & Farley, 2006). These authors explain the failure of health education to produce positive health outcomes in terms of the inability of the model to take into account the complexity of social decision making. In some cases, authors (Chin et al., 2000) argue that an individualistic approach amounts to 'victim blaming'. Hodgson (2003) details further difficulties in terms of generalizing the approach.

Critics of rational choice models maintain that behavioural choices made by young people are not 'rational'. Young people may be influenced by their social identity and make choices that are often not in their own best interests (Aguilar & De Francisco, 2009). Among some groups, risk-taking behaviour is valued because it enhances social identity and status.

Scare-tactics or fear arousal: Social learning theory Interventions that use 'scare tactics' or 'fear arousal' tend to be used when a more balanced information approach fails to produce intended results. These so-called 'hard hitting' messages are based on social learning theory and modelling (Akers, 1985; Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Bandura, 1969; Rotter, 1954). Research evidence in support of social learning theory is well documented, (Bandura, 1977; Kim, McLeod, & Shantzis, 1989). Behaviour is said to be shaped through the positive reinforcement of reward and the negative reinforcement of punishment. The theory posits that behaviour is learnt and moulded by watching others' behaviour and by integrating how others respond. Some young people, for example, will 'learn' to use alcohol and other drugs if their parents, peers or other important people in their environment do so. Translating this long-recognized human characteristic to develop a school-based intervention has tended to consist of young people learning about the extreme consequences of heavy drinking, e.g. sexual assault, acute alcohol poisoning, drowning, death, etc. The theory suggests that young people will be motivated to avoid these negative consequences and will alter or reduce risk-taking behaviour accordingly.

The work of Lapsley and Hill (2010) helps to explain the failure of 'scare tactics' or 'fear arousal' to prevent substance misuse among young people. The terms 'optimism bias' and 'subjective invulnerability' are used to explain the tendency for young people to believe that while something might happen to other

people, it will never happen to them. Hill and Lapsley (2009) suggest that subjective invulnerability may be a form of 'adolescent narcissism' that plays an adaptive role in helping young people manage important social and emotional transitions. These authors argue that efforts to prevent adolescent risk-taking behaviour through fear arousal could lead to one detrimental and unintended consequence, an erosion of self-esteem among young people.

The use of 'social policy' measures to reduce problem alcohol behaviour has had greater success. These include legally enforceable restrictions on price, age and availability and have an impressive evidence base (Babor, 2003; Babor et al., 2003; Bloomfield, Wicki, Gustafsson, Mäkelä, & Room, 2010; Chaloupka, Grossman, & Saffer, 2002; Grube & Nygaard, 2001). However, on their own, these measures are unlikely to provide effective solutions to the issues raised. Young people can be very creative when it comes to finding their way around 'the system', and enforcement costs are high and, as such, difficult to sustain in the longer term.

Social norms

The term 'social norm' is used to define standards of acceptable behaviour. It refers to our beliefs about how society and our peers expect us to act in particular situations (Perkins, 2007a). In this study, the norms explored relate to alcohol use among young people aged 12–18 years and their implications for the prevention and reduction in alcohol-related harm.

Approaches based on 'social norms' have not been included in the systematic reviews of alcohol education perhaps due to its more prominent use in university and college settings, where students tend to be of a legal age to purchase alcohol (Moreira, Smith, & Foxcroft, 2009). However, in the recent years, interest in the approach for use in schools has grown as more international evidence has been published (Balvig, 2005; Hughes et al., 2008; Lintonen and Konu, 2004; McAlaney et al., 2010). More details on a number of European projects can be downloaded from the social norms website: www.normativebeliefs.org.uk

Social norms research indicates that university students overestimate alcohol use and risk-taking peer-group behaviour (McAlaney & McMahon, 2007; Moreira et al., 2009; Perkins, Haines, & Rice, 2005). This overestimation leads to a discrepancy between perception and reality which can result in an increase in alcohol use among young people (Perkins, 2003; Perkins & Craig, 2003). Health promotion programmes which adopt a social norms approach aim to identify areas where misperceptions exist and develop normative interventions which feedback true peer-group norms. Perkins (2002) claims that reducing errors in perception is the first step in the process for reducing alcohol consumption. The approach holds that if perception can be brought into line with reality, then actual attitudes and behaviour are likely to follow.

The social norms theory of alcohol misuse prevention is based on two underlying assumptions: first, that young people are group oriented and, second, that they are influenced by the group to conform to the behaviour of the majority. By identifying where errors in perception exist and promoting the healthy attitudes and behaviours of the majority, attitudes to alcohol and actual alcohol use will come into line with that majority. In contrast with traditional prevention initiatives, social norms interventions emphasise that exaggerated perceptions underpin the social norms model. Measuring young people's behaviours and attitudes around drinking and their perceptions is, therefore, an initial key step in working out whether the model is transferable to a Scottish secondary school context. Following the guidelines laid down in the US model (Haines, Perkins, Rice, & Barker, 2005; Haines et al., 2003), measurable behaviour change should emerge in this study after 2 years of intervention.

METHODS

Taking into account the learning from the Blueprint study cited earlier, a dedicated member of staff leads and co-ordinates the implementation of the entire social norms programme in the intervention school and the local community.

Participants

In total, 686 pupils of mixed age (12–18 years) and gender attending a secondary schools in Central Scotland responded to questionnaires comprising a range of items representative of those commonly used within US social norms research to measure actual and perceived alcohol-related behaviours and attitudes. The mean age of pupils was 14 years and 4 months (SD 1 year and 7 months) and 54% of the sample were male (Table I).

Measures

Questionnaires included a range of items to measure alcohol-related behaviours and attitudes, and

perceptions of those behaviours and attitudes, for the typical pupil in the respondent's year. Items were based on examples contained in sample questionnaires available in *A Guide to Marketing Social Norms for Health Promotion in Schools and Communities* (Haines et al., 2005). Americanized items were adapted for use in the Scottish context by Ayrshire and Arran Alcohol and Drug Partnership, (Pulford, Murfet, & McDevitt, 2009) and piloted with a relevant cohort to ensure suitability. Behavioural items of interest included the usual type of drink consumed when with friends, past 30-day frequency of consumption and drunkenness. Items were included for those pupils who had consumed more than a few sips of alcohol in their lifetime. Eight attitudinal items were also included.

In most cases, social norms research collects self- and peer-referent data using a single questionnaire. However, ongoing research closely linked to the study reported here required use of three different questionnaires to collect these data. The impact of this methodological manipulation on pupils' responses is not the focus of this study and to be discussed elsewhere (Melson, Davies, & Martinus, 2011). The statistical analyses take into account the fact that some participants provided self- and peer-referent data, while others provided data corresponding to just one of those targets.

Procedure

Questionnaires were self-completed by pupils during class time, April 2009. Questionnaire headers stressed the confidential nature of pupils' responses and this was mirrored in a prepared statement read by teaching staff. Upon completion, pupils placed the questionnaire inside a sealed envelope and returned them to the class teacher.

RESULTS

Usual drink when with friends

Pupils' usual drink responses were collapsed into a non-alcoholic and alcoholic drink dichotomy. The first column of data in Table II shows the percentage of pupils who reported consuming non-alcoholic drinks when with friends and the percentage of pupils who reported that the typical pupil consumes non-alcohol drinks, both overall, and for specific age groups. In all cases, a majority of pupils reported consuming non-alcoholic drinks when with friends yet fewer said this was the case for peers. At the whole school level, where pupils responded to single-target versions of the questionnaire, the results of Pearson chi square indicated that the proportion of pupils who reported consuming non-alcoholic drinks themselves was significantly greater than those who reported that peers consumed non-alcoholic drinks, $\chi^2(1, N=390) = 16.13$, $p < 0.001$, OR = 2.78 (95% CI, 1.67–4.64). Similarly, for pupils who responded to the multiple-target version of the questionnaire, a

Table I. Sample demographics.

| Characteristic | Number | Percentage |
|----------------|--------|------------|
| Pupils | 686 | 100 |
| Gender | | |
| Male | 370 | 54 |
| Female | 315 | 46 |
| Age | | |
| 12 years | 88 | 13.1 |
| 13 years | 177 | 26.3 |
| 14 years | 80 | 11.9 |
| 15 years | 134 | 19.9 |
| 16 years | 138 | 20.5 |
| 17–18 years | 55 | 8.3 |

Table II. Descriptive statistics for pupils' self-reported alcohol-related behaviours and attitudes and perceptions of peers' alcohol-related behaviours and attitudes.

| Age (years) | Percentage of non-alcoholic drinks (self vs. peers) | Percentage of zero occasions of alcohol use in the past 30 days (self vs. peers) | Percentage of zero occasions of drunkenness in the past 30 days (self vs. peers) | Mean (SD) attitude scale score (self vs. peers) |
|-------------|---|--|--|---|
| 12 | 93.1% vs. 80.8% | 67.7% vs. 18.9% | 94.6% vs. 40% | 15.15 (4.29) vs. 17.69 (4.66) |
| 13 | 93% vs. 64.9% | 56.1% vs. 7.2% | 74.4% vs. 24.3% | 16.91 (4.00) vs. 19.68 (4.29) |
| 14 | 78.4% vs. 50% | 45.1% vs. 6.1% | 55.1% vs. 12.5% | 18.17 (4.36) vs. 20.69 (4.43) |
| 15 | 89.2% vs. 50% | 35.4% vs. 2.4% | 51.3% vs. 6.4% | 17.96 (4.13) vs. 21.39 (3.97) |
| 16 | 78.3% vs. 46.1% | 20.5% vs. 0% | 40.2% vs. 1.1% | 18.09 (3.78) vs. 21.08 (4.00) |
| 17-18 | 75.8% vs. 33.3% | 14.7% vs. 2.3% | 45.5% vs. 2.6% | 18.03 (2.73) vs. 21.58 (3.75) |
| Overall | 86.1% vs. 55.7% | 40.2% vs. 5% | 60.1% vs. 14.4% | 17.37 (4.07) vs. 20.35 (4.35) |

McNemar test based on the binomial distribution found that self-reported drink choice and perceived usual drink choice of peers proportions differed significantly, $N=224$, exact $p < 0.001$, OR $\%1.19$ (95% CI, 7.86-59.86).

Frequency of consumption and drunkenness

Responses to these items were dichotomously collapsed into 'zero reported occasions of consumption' versus 'at least one reported occasion of consumption' and 'zero reported occasions of drunkenness' versus 'at least one reported occasion of drunkenness'. From Table II, it can be seen that, for pupils who had ever consumed alcohol, there is a trend for increasing use of alcohol and drunkenness with age; only among younger pupils do norms of non-consumption (12-13 years) or non-drunkenness (12-15 years) exist. A larger proportion of pupils report that they had not consumed alcohol during the past 30 days and had not been drunk during the past 30 days, compared to the proportion who perceived this to be typical. This was found both for pupils who responded to the single-target versions of the questionnaire using Pearson chi square tests: zero occasions of alcohol use, $\chi^2(1, N=378) = 70.93$, $p < 0.001$, OR $\%10.98$ (95% CI, 5.84-20.7); zero occasions of drunkenness, $\chi^2(1, N=377) = 87.27$, $p < 0.001$, OR $\%9.22$ (95% CI, 5.6-15.16); and also for pupils who responded to the multiple-target version of the questionnaire using McNemar tests: zero occasions of alcohol use, (1, $N=194$, exact $p < 0.001$, OR $\%65$ (95% CI, 9-468.44); zero occasions of drunkenness, (1, $N=196$, exact $p < 0.001$, OR $\%1$).

Alcohol-related attitudes

For the purposes of this research, a composite index scale was constructed using responses to each of the self- and peer-referent attitudinal items. This provides a summary measure of the permissiveness of pupils' attitudes towards alcohol and the perceived permissiveness of the typical pupil's attitude towards alcohol. On six of the eight attitudinal items, agreement ratings were treated as strongly disagree (1), disagree (2), agree (3) and strongly agree (4). The coding of the

remaining items ('Pupils should be told about the harmful side effects of alcohol' and 'I would prefer to go out with a non-drinker') was reversed. Attitude ratings were summed independently for either self- or peer targets, so that a higher score on the index indicated a more permissive attitude or perceived attitude towards alcohol. Lower scores indicated a more conservative attitude or perceived attitude towards alcohol. Cronbach's alpha indicated a satisfactory degree of internal consistency for both self- and peer-oriented scales ($\alpha = 0.77/0.80$).

Table II details the mean scores for self- and peer-referent attitudinal scales. Mean self-reported attitude scale scores were lower than perceived attitude scale scores for pupils of all ages and at the whole school level. The results of independent and paired samples t -tests carried out on the two-scale scores at the whole school level confirmed the statistical significance of this difference for pupils who responded to the multiple-target questionnaires, $t(225) = 12.49$, $p < 0.001$, $d = 0.83$ (95% CI, 0.52-0.128); and the single-target questionnaires, $t(412) = 5.22$, $p < 0.001$, $d = 0.51$ (95% CI, 0.11-0.92).

DISCUSSION

At baseline, this study found that substantial misperceptions of theoretical importance exist among secondary school pupils in Scotland. These findings are consistent with the social norms theory that young people tend to overestimate how much and how often their peers consume alcohol. However, this is not sufficient to claim the transferability of the model to a Scottish secondary school context. At this stage, the nature of the responses, i.e. misperceptions or other social biases such as 'impression management' or 'self-serving biases', is not yet established. It is still possible, therefore, that these findings are capable of alternative interpretations. Further research will look at these possible artefacts.

These first-wave data require further consideration and will be used to develop tailored normative interventions involving school pupils, teachers and

the local community. The necessity for those delivering the intervention to fully understand and apply the approach has been raised earlier. To enable this, a project lead will be based in the intervention school and use the recognized standard delivery manual (Haines et al., 2005) to develop interventions. Evidence of intervention impact will be measured at 1-year follow-up, i.e. April 2010.

In keeping with the American model, year-1 intervention will focus on reducing errors in perception, specifically, that the majority of pupils choose to drink non-alcoholic drinks when with friends. According to social norms theory, this error in perception will put pressure on young people to consume alcohol in social situations. Although moderate in comparison to perceived drinking norms, cumulatively, several 'actual' norms were found to include a degree of alcohol use and drunkenness. For example, the norm at a whole school level includes a degree of past 30-day alcohol use. Limitations associated with working in a school environment and with this age group limit the practical application of these data. Activities that could be interpreted as promoting unhealthy behaviours, i.e. frequent alcohol use or a norm for drunkenness, are considered contrary to Scottish education policy because it is possible that harm could result. The nature of this harm lies in the potential for some pupils to believe that they can increase their alcohol consumption to meet the norm. In light of these issues, normative messages for frequency of drinking will only be used for 12- and 13-year-olds, where consuming no alcohol in the past 30 days was found to be the norm. In the case of frequency of drunkenness, normative campaigns will be developed for 12–15-year-olds, where zero drunkenness was found to be the norm. Alcohol policy and legislation across the UK restrict the age at which alcohol can be purchased in an attempt to prevent access and exposure to alcohol and therefore delay age of onset. The effectiveness of age restriction and alcohol misuse prevention is not the focus of this article but is considered elsewhere (Babor et al., 2003; Lash, 2002; New Zealand Advisory Committee, 2002; Voas, Tippetts, & Fall, 2003; Wagenaar & Toomey, 2002).

Attitudinal norms tended to vary with age but, in general, indicate a tendency for young people (12–18 years) to attribute more permissive attitudes to peers rather than self. A normative intervention will be developed to correct misperception in three main attitudes: most (58%) pupils prefer to go out with a non-drinker; most (88%) pupils do not need to drink to have a good time; and most (94%) pupils do not need to be drunk to have a good time.

Consistent with the majority of studies of the effectiveness of the social norms approach, this study relied upon self-report methodology. The limitations of this type of methodology is not the focus of this study; however, the use of a single questionnaire which includes self- and peer-referent

items may play a part in producing the reported overestimation of liberal attitudes among peer-groups and peer-group alcohol related behaviours. Further research is needed to produce any convincing findings in this regard.

The social norms model cites attribution theory to help explain errors in young people's perception (Ross, 1977). In the absence of any other information about someone's alcohol-related behaviour, the tendency is to assume that the observed behaviour is the 'norm' for that individual or group, i.e. part of their disposition; therefore, what they do most of the time. An alternative explanation based on social comparison research is also possible; this body of research indicates that self-serving processes or biases may be at work. Some studies report the adult tendency to shift their recall of previous health-threatening behaviour patterns when confronted by information about actual behaviour frequency reported by peers. In a Canadian online-study of university students who reported alcohol use in the past year, Davis et al. (2010) assess the degree to which 'impression management' biases influence self-reported alcohol use and associated harms. These authors report that participants who were 'high-impression managers' were between 20% and 50% less likely to report risky drinking and associated harms. Impression management bias was reported as being a significant threat to the validity of self-reported alcohol use and harms.

Klein and Kunda (1993) examined what happened when adult males who believed that they had fewer health-threatening behaviours than their typical peer, were given accurate normative feedback. Compared with controls, the experimental group reconstructed their own past behaviour in what was believed to be an effort to maintain the belief that they were superior to their peers. This effect was not found in subjects who were given exaggerated peer norms to which most were able view themselves as superior without biasing their self-reports. In later work, Klein and Monin (2009) raised practical concerns about the reliability and validity of self-judgements.

In this study, no attempt was made to measure impression management. The degree to which these characteristics are present among school age pupils, and the extent to which belief in the reliability and validity of adolescents' self-reported alcohol behaviour is affected, has not been established. Work by Smith, McCarthy, and Goldman (1995) examined the reliability and validity of self-reports during the transitional years of early adolescence. In total, 214 boys and 247 girls took part in a school-wide survey each year for 3 years. Measures were validated by peer (collateral) reports and by separate 7-day drinking diaries. Internal consistency and test-retest reliability were also assessed. The authors concluded that researchers could be confident in the reliability and validity of adolescents' self-reported alcohol behaviour.

CONCLUSIONS

The implications of these first-wave data require careful consideration. The data look promising insofar as they appear to mirror similar data from the USA and elsewhere. The nature of these data, however, remains an unresolved issue, as does their predictive value for future behaviour. As always, evidence of transferability and effectiveness to a Scottish context will be found in the follow-up studies which examine the results for both (1) social artefacts which may be in the data and which may question whether they are in fact 'mis-perceptions' or other socially mediated biases, and (2) evidence of behavioural change.

Declaration of interest: The Centre for Applied Social Psychology has never received research funds from companies involved in the gaming industry or the production of pharmaceuticals, tobacco products or alcohol, although it has received funding in the past from the Alcohol Education and Research Council. In the last year, J.B.D. has been consulted by a law firm involved in tobacco litigation with regard to the issue of 'addiction', and has been paid for his time.

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NOTICE OF CORRECTION

The Early Online version of this article which was published online ahead of print on 31 October 2011 contained an error on page 5. The following data (95% CI, 0.52-0.128) should have read (95% CI, 0.52-0.128). This has been corrected for the current version.