A Psychosocial Model of Drinking Amongst Young People and the Effects of Brief Interventions

by

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The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

Abstract

The Theory of Planned Behaviour (TPB) is an attitude-behaviour model that has received considerable research attention for a plethora of health topics. However, it has received little attention in the alcohol use arena among young people, particularly adolescents. The main aim of the thesis is to test the augmented model of the TPB that encapsulates more theory driven conceptualisations of the social norm component. The behaviour of interest is alcohol consumption. The second aim of the thesis is to utilise and test the effectiveness of brief interventions. The population of interest is young people – namely university undergraduates and adolescents. The thesis is divided into two broad sections.

First, two studies that provide data to support the usefulness of the TPB as a predictor of alcohol consumption intentions and behaviour are reported. Evidence is submitted supporting the inclusion of wider conceptualisations of the social norm component to aid in the prediction of this behaviour, as well as for the inclusion of past behaviour as an important determinant of future behaviour. The data support the distinction between behavioural intentions and behavioural willingness for younger and older adolescents.

Second, the effectiveness of brief intervention studies is reported. The primary aim of the interventions was to reduce alcohol consumption in adolescents and undergraduates. A secondary aim of the research was to utilise the augmented TPB as an evaluation tool to establish how effective interventions work. The first intervention study examined the effect of personalised feedback in reducing the number of weekly units consumed among university undergraduates, whilst exploring the role of social cognition variables as moderators of efficacy. Although the feedback intervention was effective at reducing behaviour, contrary to predictions, social cognition variables did not moderate the intervention; however, past behaviour was shown to moderate the relationship between condition and behaviour scores. The second intervention study examined the effect of resistance skills training in reducing drinking behaviour among adolescents. It was shown that none of the augmented TPB variables were mediators.

The conclusions that can be drawn from these studies and their implications for the existing research literature are discussed.

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Chapter 1

Determinants of Drinking Amongst Young People and Behaviour Change Interventions

1.1 General Introduction

Alcohol, along with tobacco and marijuana, is one of the most frequently used drugs among adults and adolescents in the United Kingdom. Alcohol use and misuse by young people in the UK is a major cause of concern and is one that is likely to remain a concern in the foreseeable future. It has been shown, by government statistics (Office for National Statistics, 2005), that the level of drinking is on the increase, particularly amongst the adolescent population. It has also been noted that individuals who started drinking at an earlier age are more likely to become alcohol dependent as adults (Grant & Litvak, 1998). Excessive alcohol consumption has been shown to have detrimental effects on several areas of an individual's life (e.g., workplace sickness, alcohol-related crime, physical and mental health) costing the workplace and NHS billions per annum. Alcohol drinking is an important health behaviour that the Government has identified as a target for change, yet there is very little quality empirical research on this topic especially amongst young people within the UK.

The present chapter provides justification for the study of alcohol behaviour amongst young people within the UK. Drinking alcohol amongst young people is primarily a social behaviour that can present health and social consequences. The chapter shall examine the utility of using a social cognitive model, which encapsulates facets of attitudinal, normative, control, motivational and social influence variables towards prediction of behaviour. These variables will be built around the Theory of Planned Behaviour to provide an enhanced understanding of the predictors of alcohol consumption amongst a sample of University Undergraduates and a sample of school-going adolescents between 11-16 years of age.

1.1.1 Problems Associated with the Misuse of Drinking in the UK

Over the past two decades there has been a marked increase in the consumption of all types of alcoholic beverages within Great Britain. The Institute of Alcohol Studies (IAS, 2004) estimated that in 1985 the total alcohol consumption was 9.05 annual litres per person over the age of 14, increasing to 11.34 annual litres per person in 2003. Furthermore it has been suggested that the unrecorded consumption could add another 2 litres of pure alcohol per capita for the years after 1995 (IAS, 2001).

Alcohol consumption is a major cause of economic problems within the United Kingdom (Alcohol Concern, 2002). Excessive alcohol consumption can result in up to 40,000 deaths every year, and a significant amount of accidents and working days lost every year (Office for National Statistics, 2005), as well as the unaccountable level of social disturbances. For most individuals within the United Kingdom, drinking alcohol is part of a pleasurable social system, causing no harm to themselves or others around them. However, for other people, alcohol misuse can be responsible for serious damage and harm to themselves and others around them. In this context, drinking can be responsible for significant costs not only to the individuals, but also to the economy. The Department of Health (DH, 2004) has estimated that alcohol misuse is creating an enormous burden on an existing overloaded health system within the UK, costing the NHS up to £1.7 billion a year. Alcohol misuse is also estimated to cost employers approximately £3 billion a year in sickness, absenteeism at work, premature deaths, accidents and alcohol related crime (Alcohol Concern, 2002). Consequences of alcohol use vary depending upon whether use occurs occasionally or regularly. However, alcohol use is one of the most common health risk behaviours amongst young people. Alcohol, especially the misuse of alcohol, affects the health of individuals via a number of mechanisms. These effects are can be either chronic or acute. Epidemiological studies have clearly indicated that alcohol is causally related to cancers of the oral cavity and pharynx, larynx, oesophagus, and liver, while there is suggestive but inconclusive data for a causal role in rectal and breast cancer (DH, 2004). Studies demonstrate that those people who drink alcohol are at increased

risk of these cancers compared with non-drinkers, the risk of which increases with increasing levels of alcohol intake (Single, Rehm, Robson, & Van Truong, 2000). The impact of alcohol consumption on productivity and work career have been demonstrated; it is well established that alcohol-dependent people and heavy drinkers have more sick leave days than other employees and thus cost the workplace considerable amounts (in the UK, for instance, this has been estimated at £779 million per year (World Health Organisation, 2001). Studies have also demonstrated that unemployment and heavy drinking tend to go together (WHO, 2001). Numerous research reports attest to the significant impact of drinking on accidents, suicide and violence. The findings from studies using different methods and data from a wide spectrum of countries and cultures are consistent in this respect. Drinking to intoxication increases the likelihood of injury or death from accidents and violence (Rossow, 1996).

Although alcohol consumption amongst young people does not have an immediate economic impact on the UK health system, it has been reported that the younger in age that the individuals begin drinking, the more likely it is that they will become alcohol dependent in adulthood (Bernstein & Bernstein, 2005). A related concern is that early onset of tobacco and alcohol use may contribute to the use of other illicit drugs. According to the "gateway hypothesis" of adolescent drug use (Kandel, 2002), young people who use cigarettes and alcohol are more likely to experiment with marijuana, and those who use marijuana are more likely to progress to the use of depressants, stimulants, hallucinogens, narcotics and other dependency-producing drugs.

1.1.2 Young People and Alcohol

Over the past few years there has been unprecedented media coverage that has brought the issue of young people's alcohol consumption to the fore of public debate. In recent years, the average consumption of alcohol, the levels of heavy drinking and the amount of alcohol related harm have been increasing. By 2002 hazardous drinking, i.e., drinking bringing the risk of physical or physiological harm, was most prevalent in teenagers and young adults compared to those over the

age of 25. It can be seen that the age of onset of drinking is declining. Separating those statistics by gender it was shown that in women, hazardous drinking reached its peak in the 16 – 19 age group, with just under one third (32%) of the female population having a hazardous drinking pattern. Examining the male statistics, it was revealed that the peak was in the 20 –24 age group, with just under two thirds (62%) having a hazardous drinking pattern. Not only is there a change in the levels of hazardous drinking but also there appears to be a decline in the age of onset of regular drinking. Most 14-15 year olds are drinking regularly, though not necessarily frequently (IAS, 2004). These ages are well below the age of legal drinking for young people within the UK.

1.1.2.1 Adolescents

The negative consequences of adolescent alcohol use and misuse are well documented, and include decreased academic achievement, depression, other substance use, unintentional injuries and serious traffic accidents (Barnes & Welte, 1986; DeSimone, Murray, & Lester, 1994; Vega Gil, Zimmerman, & Warheit, 1993). One survey (Balding & Shelley, 1993) found that a quarter of boys aged 9 – 10 and a third of those a year older reported drinking at least once in the previous week, usually at home. More recently, a Government monitoring survey of English school children aged 11 – 15 (Office for National Statistics, 2005), found that the prevalence of drinking alcohol in the last week had risen from 21% of 11 – 15 year olds in 1998 and 1999, to 25% in 2003. When examining the amount the pupils drank, it was reported that the average weekly consumption in the last 7 days increased from 5.3 units in 1990, to 9.5 units in 2003. Among those who drank, boys drank on average 10.5 units in the previous week in 2003 compared with 8.5 units drunk by girls (ONS, 2004). A unit is 10ml of pure alcohol. For example, a can of standard beer is 1.8 units, whereas a large glass of wine equals 3 units (DH, 2004).

1.1.2.2 Young People at University

Consumption of alcohol amongst young adults is a widely recognised problem (Oei & Morawska, 2004). Recently, there has been growing concern from Government agencies surrounding the levels

of excessive drinking in the UK (Institute of Alcohol Studies, 2004). Examining international statistics, it can be seen that drinking in the UK is higher than in any other European country (Institute of Alcohol Studies, 2004). Comparatively, research has shown this risky behaviour to be more prevalent in individuals who attend university in comparison with individuals from the same age bracket that do not attend university (Bennett, Miller, & Woodall, 1999).

The most recent review examining research that assesses the prevalence of UK undergraduate drinking reported that levels were excessive (Gill, 2002). Gill (2002) conducted a review examining research spanning over 25 years that assessed the levels of UK university students' alcohol consumption. Based on 18 empirical studies, Gill (2002) found that the recorded levels of binge drinking among both male and female students were extreme. Pickard, Bates, Dorian, Greig, and Saint, 2000 reported that 50% of all males and 63% of all females claimed drinking excessively (defined as more than 30 units for females and 50 units for males) at least once a week. Other researchers declared that 46% of all males and 53% of all females reported drinking excessively in a typical week (Gill, 2002).

1.2 Definition of Drinking

Government guidelines on alcohol use suggest that women should not regularly exceed three units per day and that men should not regularly exceed four units per day. Recent data from the Office for National Statistics (ONS: 1999) indicates that for some sectors of society these guidelines have little relevance or meaning. The ONS issued figures for 'consumption on the heaviest drinking day in the last week'; the results showed that 21% of men and 8% of women had drunk 'heavily', having consumed more than eight units and six units respectively, on at least one day in the previous week (ONS, 1999). Young people (aged 16-24) were more inclined to report this behaviour, with 37% of males and 23% of females having drunk more than eight units and six units respectively, on at least one day in the previous week (ONS, 1999). The Alcohol Needs Assessment Research Project (DH, 2005) identifies three categories of alcohol use disorders; hazardous drinking, harmful drinking, and

alcohol dependence. Harmful drinking is described as people drinking above recognised 'sensible' levels and experiencing harm (DH, 2005). Alcohol dependence is described as people drinking above 'sensible' levels and experiencing harm and symptoms of dependence (DH, 2005). Hazardous drinking is described as people drinking above recognised 'sensible' levels but not yet experiencing harm (DH, 2005). Hazardous drinking encapsulates the term 'binge drinking', which refers to people who drink more than double the daily-recognised sensible levels in any one day.

One key difficulty faced by researchers is the lack of consensus surrounding the definition of 'binge drinking'. A report for the US International Center for Alcohol Polices (ICAP: 1997) describes the lack of definition both at international level and amongst studies undertaken within individual countries. Originally the term, in its clinical sense, referred to 'binge' as a periodic bout of continual drinking, perhaps over a couple of days, by someone who was alcohol dependent, and ending only when the drinker was unable to continue (IAS, 2001). Recently, the term has gained currency as referring to a high intake of alcohol on a single drinking occasion. For research purposes, binge drinking is often defined as the consumption of more than a certain number of drinks over a short period of time (IAS, 2001). In the UK, drinking surveys examining young people normally define binge drinkers as men consuming at least eight, and women at least six standard units of alcohol in a single day, double the maximum recommended 'sensible' levels for men and women respectively (e.g., Norman, Bennett, & Lewis, 1998). This definition is very broad – eight units consumed over the course of a whole day and as an accompaniment to meals will not have the same effect as eight units over a couple of hours on an empty stomach. There are a number of individual variations (e.g., body weight, speed of consumption, types of drinks and alcohol tolerance) that affect the drinker.

Many young people, as shown in research by Coleman and Cater (2006), associate 'binge drinking' with daily drinking rather than a weekly occurrence, therefore it is possible that young people understand the message that to binge drink is bad, but do not realise that this applies to their

habits. McAlaney and McMahon (2007) further debate the use of the term 'binge drinking' by pointing out that a leading journal, the *Journal of Studies on Alcohol and Drugs,* will not accept articles that use the phrase 'binge drinking' unless the term is clearly defined and used in a specific way. The Journal of Studies on Alcohol and Drugs (2009) has provided guidance to clinicians and academics on their policy for the use of this term. According to policy, 'the term "binge" should only be used to describe an extended period of time (usually two or more days) during which a person repeatedly administers alcohol or another substance to the point of intoxication, and gives up his/her usual activities and obligations in order to use the substance. It is the combination of prolonged use and the giving up of usual activities that forms the core definition of a "binge"'. The reason behind this policy is due to the variance in the definition of "binge drinking" measured by clinicians and researchers, leading to a term measuring quite different phenomena.

Binge drinking is often associated with drinking with the intention of getting intoxicated and the usage of an arbitrary number of drinks can reflect differing stages of drunkenness for young people. For example, one study showed that university students often have numerous different definitions of 'binge drinking' depending on their drinking habits, with drinkers having significantly higher definitions than non-drinkers (Weschler & Kuo, 2000). Hammersley and Ditton (2005) argue that the term 'binge drinking' is unclear and unhelpful in that many young people do not identify themselves as binge drinkers because, despite exceeding the number of drinks officially used to define binging, young people drink at a slow enough pace to avoid getting seriously drunk. For these reasons, it has been suggested that a subjective rather than a unit-based definition should be used, such as drinking sufficient alcohol to reach a state of intoxication on one occasion (Alcohol Concern, 2002). Taking into account the criticisms surrounding the term "binge drinking", particularly the use of the term amongst undergraduate populations, the thesis will incorporate a more subjective definition (as recommended by Alcohol Concern) into the measurement of alcohol misuse. For the studies (Chapter 2 & Chapter 4) examining drinking amongst undergraduates, items

will refer to "drinking to get drunk". The decision to use *drinking to get drunk* was reached due to the lack of agreement on which definition best signifies drinking excessively for young people. For instance, the term binge drinking was not used due to the problems inherent with the phrase, both in definition and in semantics, and similar criticisms can be made of phrases such as hazardous drinking and excessive drinking. Research conducted by Wechsler and Kuo (2000) reported that students defined binge drinking on the basis of how much they themselves drank. Abstainers considered the definition to be 5 drinks in a row for men and 4 for women, whereas frequent binge drinkers used the higher limits of 8 and 6 drinks, respectively. Research has also shown that almost two in five male students reported drinking more than 10 units of alcohol in a single session; for females, very similar figures were recorded for the consumption of six units (Gill, 2002). For the purposes of the present study, it was felt that using a definition relevant to the target sample would provide closer approximations of excessive drinking. The term, similar to 'heavy episodic drinking', is intended to capture the non-continuous or sporadic consumption of large amounts of alcohol in a short time.

1.3 Social and Psychological Influences on Drinking: Models of Health Behaviour

The IAS considers there to be three main models that explain the occurrence of alcohol problems; the Disease Model, the Public Health Model and the Integration Model, and that each of these models have different implications for prevention. The Disease Model deems that the cause of alcohol problems is down to the psychological and/or physical make-up of individuals. This concept implies that little can be done to prevent the occurrence of alcohol problems. The Public Health Model postulates that alcohol related harm tends to rise and fall in line with changes in the total or average level of consumption. Prevention should be aimed at reducing the overall level of consumption in society. Finally, the Integration Model suggests that alcohol problems arise because alcohol use is insufficiently governed by consistent social norms, and by the existence of confused and unhealthy attitudes to alcohol use. This explanation suggests that there is scope for primary

prevention, and that it may be achieved by encouraging, through education and other means, a more healthy approach to the use of alcohol and its place in society (IAS, 2001).

This Integration Model suggests that exploring the social cognitive reasons behind alcohol consumption can offer better understanding of behaviour amongst young people, which could lead to greater implications for the implementation of alcohol reduction interventions. A variety of social cognition models have been developed to represent relationships among beliefs, attitudes, intentions and behaviour (Eagly & Chaiken, 1993). The two most influential models that have been applied to health-related behaviour have been the Theories of Reasoned Action (TRA; Fishbein & Ajzen, 1975) and Planned Behaviour (TPB; Ajzen, 1991). These two theories have been applied over the decades very successfully to the prediction of a variety of health behaviours.

The TRA and TPB have been utilised for decades to explain the social cognitive reasons for a given behaviour. The Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975) examines the effects of behavioural beliefs, attitude, subjective norm and intention on behaviour. It states that people's volitional behaviour is directly caused by their intentions to perform that behaviour (Conner & Sparks, 1996). Intentions, in turn, are determined by two specific factors: attitude and subjective norms. Attitudes are based upon an individual's beliefs about the consequences of a behaviour, while subjective norms are based upon an individual's beliefs about the approval of significant others when performing a behaviour. Attitudes result from the multiplication of beliefs about outcomes by evaluations of outcomes, while subjective norms result from the multiplication of normative beliefs by motivation to comply. There are several quantitative and narrative reviews that have provided support for the use of the TRA in the prediction of a number of behaviours (e.g., Sheppard, Hartwick, & Warshaw, 1988; van den Putte, 1991). In relation to alcohol use there have been few studies that have evaluated the model in this domain. London (1982) used the TRA to explain alcohol use in pre-adolescents. The theory predicted intention to use alcohol, with the

attitudes component emerging as the best predictor, whilst subjective norms did not increase the predictive utility of the model.

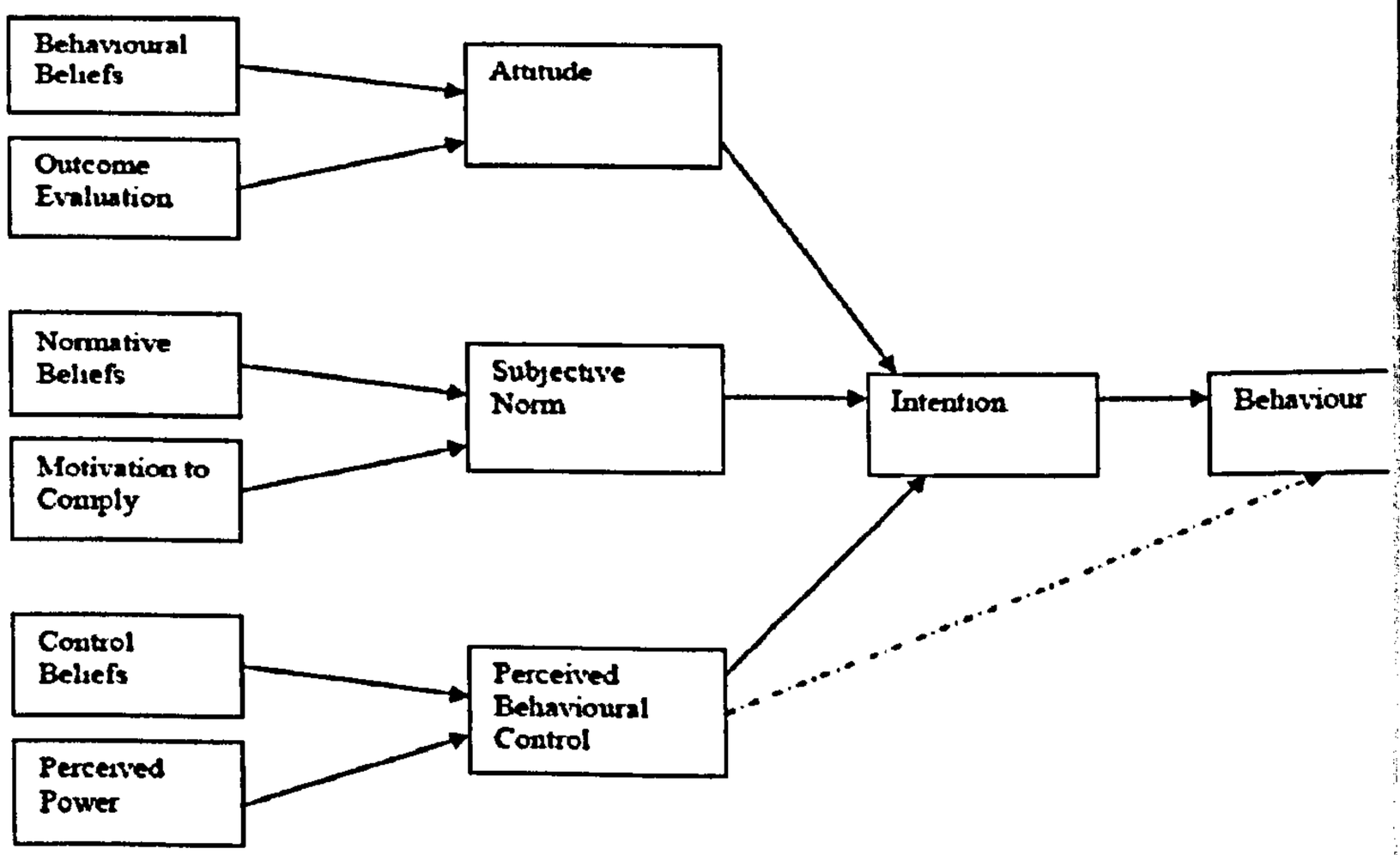
However, the TRA has been criticised for not encapsulating non-volitional behaviours. Therefore, addressing the limitations of the TRA, Ajzen (1988) proposed "... a conceptual framework that addresses the problems of incomplete volitional control" (p. 132), which led to the development of the Theory of Planned Behaviour (TPB; Ajzen, 1988, 1991 - see Figure 1.1). The TPB is perhaps the most influential theory for the prediction of social and health behaviours. The central premise of the theory is that behavioural decisions are not made spontaneously, but result from a number of reasoned processes in which the behaviour is influenced, albeit indirectly, by attitudes, subjective norms and perceived control.

The TPB identifies intention as the key cognitive antecedent of behaviour. *Intention* refers to a person's decision to undertake an action, for example, "I intend to drink alcohol this weekend". Intention itself is determined by three factors: *Attitudes*, the evaluation of performing the behaviour, e.g., "Drinking alcohol this weekend would be healthy/unhealthy". *Subjective norms,* the perceptions of what important others consider, e.g., "People who are important to me think that I should drink alcohol this weekend". *Perceived Behavioural Control (PBC)* includes the perceptions of how easy or difficult carrying out a particular behaviour is, e.g., "Drinking alcohol this weekend would be easy/difficult".

The three antecedents of intention, attitudes, subjective norm and PBC, are determined by various beliefs. Behavioural beliefs produce a favourable or unfavourable attitude toward the behaviour, normative beliefs result in perceived social pressure or subjective norm, and control beliefs give rise to perceived behavioural control (see Figure. 1.1). Behavioural beliefs consist of beliefs about the likely consequences of the behaviour. Normative beliefs are beliefs about the normative expectations of others. Control beliefs are beliefs about the presence of factors that may facilitate or impede performance of the behaviour. According to Fishbein and Ajzen (1975),

attitudes and subjective norms have additive effects on intention, although the relative strength of each component will vary across behaviours, populations and contexts. In contrast, PBC is proposed to have both a direct effect and an indirect effect, through intentions, on behaviour. Ajzen (1988) argues that perceived control accurately predicts behaviour only when perceived control closely approximates actual control. For example, some people may have a strong perception of control over particular health behaviours, but this may be different in reality as factors may be beyond their control. Under such circumstances, perceived control will not accurately predict behaviour. Intentions are the prime motivating force and they mediate the effects of other factors. The degree of success in performing behaviour will depend not only on one's desire or intention, but also on non-motivational factors such as availability and resources. The more positive people's attitudes and subjective norms and the greater their perceived behavioural control regarding a behaviour, the more likely they are to intend to perform that behaviour. Similarly, the stronger people's intentions, the more likely they are to perform the behaviour. To the extent that perceptions of control accurately reflect the person's actual control over behavioural performance, perceived behavioural control can also directly affect behaviour.

Figure 1.1. The theory of planned behaviour (Ajzen, 1988, 1991).



The TPB has been utilised as a predictive tool for many behaviours including a range of health behaviours. The model has been shown to have good predictive utility for both health-enhancing behaviours, such as exercise (e.g., Godin, 1993) and dietary change (e.g., Povey, Conner, Sparks, James, & Shepherd, 2000), as well as health risk behaviours, such as drug use (e.g., Conner, Sherlock, & Orbell, 1998) and smoking (e.g., Hanson, 1997). Further evidence for the predictive utility of the model has been presented in the form of meta-analytic reviews (i.e., Armitage & Conner, 2001). There have been several meta-analytic reviews of the TRA/TPB (e.g., Ajzen, 1991; Armitage & Conner, 2001; Hausenblas, Carron, & Mack, 1997), which have all demonstrated the predictive utility of these theories to the prediction of intention and behaviour, all showing similar amounts of variance being explained. It has been shown that the multiple regression of attitude, subjective norm and perceived behavioural control on intention ranges between *Rs* = .64 - .71. The multiple regression of intention and PBC on actual self-reported behaviour ranges from *Rs* = .46 - .58.

Armitage and Conner's (2001) extensive review consisted of 185 independent empirical tests that utilised the TPB. Overall, the findings showed that the TPB accounted for 27% and 39% of the variance in behaviour and intention across multiple behaviours. Specifically, it was found that attitudes accounted for 24% of the variance in behavioural intention; subjective norm accounted for 12% of the variance in behavioural intention; and perceived behavioural control accounted for 18% of the variance in behavioural intention. Examining the relationships with behaviour, intention accounted for 22% of the variance and PBC accounted for 13% of the variance. The meta-analysis provided additional support for the efficacy of using the TPB for the prediction of health behaviours.

Despite the success of the TPB, there has been growing debate over the conceptual clarity of the PBC construct (e.g., Armitage & Conner, 1999; Manstead & van Eekelen, 1998; Terry & O'Leary, 1995). Conner and Sparks (2005) describe that early definitions of the PBC construct

encompassed both internal and external factors. More recently, it has been argued that the PBC should consist of separate, but related constructs (Trafimow, Sheeran, Conner, & Findlay, 2002). It has been argued that a distinction should be made between perceptions of one's ability to perform a behaviour (i.e., self-efficacy) and perceptions of control over a behaviour (i.e., perceived control) constructs to allow for an examination of the differential aspects of these control-related perceptions. Although Ajzen (1991) argues that perceived behavioural control and self-efficacy are synonymous, other researchers have argued against this suggestion both empirically (DuCharme & Brawley, 1995) and conceptually (e.g., Terry & O'Leary, 1995). Bandura (1986) argued that control and self-efficacy are entirely different concepts. That is, self-efficacy is more concerned with cognitive perceptions of control based on internal factors; whereas perceived behavioural control reflects more general, external factors. Armitage and Conner (1999) suggest that identifiable control factors may be either internal to the person (e.g., skills, abilities, power of will, compulsion) or external to the person (e.g., time, opportunity, dependence on others). Internal factors refer to whether performance of behaviour is difficult or easy, whereas external control concerns whether the individual feels in complete control over performing the behaviour. Although the nature of the two identifiable factors remains unclear, measures of PBC construct should combine items that reflect both factors (Ajzen & Fishbein, 2005).

Trafimow et al. (2002) presented a range of experimental studies to support the distinction of PBC into two related constructs, perceived control (i.e., the extent to which an individual perceives the performance of a behaviour to be under his or her volitional control) and perceived difficulty (i.e., the extent to which an individual perceives the performance of a behaviour to be easy or difficult). The latter definition is equated with self-efficacy. Results emanating from these experimental studies revealed that manipulations were able to affect perceived control more than perceived difficulty, offering support for the distinction. Empirically, research has demonstrated that self-efficacy predicts intentions alone (e.g., Terry & O'Leary, 1995), behaviour alone (Conner

et al., 1998), both intentions and behaviour (DuCharme & Brawley, 1995) in addition to the independent effects of PBC on intention and behaviour.

According to the TPB, actions are reasoned. However, it has been argued that many behaviours are not in fact guided by cognitions, but instead one's previous behaviour is the strongest predictor of future behaviour (Godin, Joblin, & Bouillon, 1986; Mullen, Hersey, & Iverson, 1987; Norman & Smith, 1995). When past behaviour is entered into a regression with the other TPB variables it has been found to have an independent effect on intention, and to significantly improve the prediction of behaviour (Ajzen, 1991; Bagozzi, Tybout, Craig, & Sternthal, 1979; Towler & Shepherd, 1992). This suggests that the behaviour is not completely reasoned, and that the frequency of behaviour is an indicator of habit strength, and consequently can be used as an additional predictor of future behaviour.

At the moment research has assumed that if a participant has a relatively high past behaviour score, this suggests that the behaviour in question is more likely to be habitual. Researchers have argued that behaviour is determined by an individual's past behaviour rather than cognitions as described in the TPB (Sutton, 1994). This argument is based on results from a number of studies that show past behaviour emerging as the best predictor of future behaviour (e.g., Conner et al., 1999; Van Ryn, Lyttle, & Kirscht, 1996). Such empirical support has led to the suggestion that past behaviour should be included as a predictor variable in the TPB model (e.g., Fredicks & Dossett, 1983).

1.3.1 Utilising the Theory of Planned Behaviour in the Prediction of Alcohol Use/Misuse

The use of alcohol has become a significant part of many people's lives, with Government statistics showing increases in misuses of the substance, particularly amongst the younger generation. However, few studies have examined the TPB in relation to alcohol use or misuse. Empirical studies examining the TPB in relation to alcohol consumption have mainly measured the theory in relation to binge drinking. For example, Norman et al. (1998) found that the TPB accounted for

29% of the variance in binge drinking amongst a sample of 136 UK undergraduate students. Two variables emerged as significant predictors of binge drinking; perceived behavioural control (negative beta) and positive control beliefs. Frequent binge drinkers were less likely to feel they had control over their binge drinking and were more likely to binge drink. Similarly, Murgraff, McDermott, and Walsh (2001) explored the application of the TPB amongst a sample of 173 participants. The sample consisted of female psychology undergraduates and it was found that 17% of the variance was explained by the TPB variables for single occasion drinking, with attitudes and perceived behavioural control emerging as significant predictors. Johnston and White (2003) reported that the TPB accounted for 59% of the variance in intentions and 52% of the variance in behaviour amongst 289 Australian undergraduate students. All three variables contributed significantly and approximately equally to the prediction of intentions to binge drink. Thus participants who had more positive attitudes, perceived greater pressure from significant others to binge drink, and perceived that performing the behaviour was easy, were more likely to intend to binge drink. For the self-reported behaviour, intentions contributed significantly to the prediction of behaviour, such that participants who intended to binge drink tended to perform the behaviour. Perceived behavioural control did not predict behaviour. Similarly, Norman and Conner (2006) assessed the predictive utility of the TPB amongst 398 psychology undergraduate students and reported that the TPB explained 66% of the variance in behavioural intentions, with attitudes, self-efficacy and perceived control emerging as significant predictors. Examining the efficacy of the model to predict binge drinking, Cooke, Sniehotta, and Schuz (2007), found that attitude and perceived behavioural control predicted 37% of variance in intentions; whilst intentions and perceived behavioural control predicted 25% of the variance in behaviour. These studies show the usefulness of the TPB as a model for predicting binge drinking intentions and behaviour, at least amongst students; although it appears that the subjective norm component fails to emerge as a strong significant predictor in the majority of the studies. Few studies have assessed the usefulness

of the TPB in the prediction of drinking behaviour outside of binge drinking. Conner et al. (1999) used the TPB to explain alcohol consumption in three prospective samples of university students. The researchers showed that the TPB variables explained between 28% and 40% of the variance in intentions to consume alcohol, and intentions and PBC explained between 12% and 50% of the variance in drinking behaviour.

Assessing the usefulness of the model in relation to young people outside the university population is more problematic. Little empirical work has been performed on adolescents in relation to the use and misuse of alcohol. One study (Marcoux & Slope, 1997) collected data from 4371 adolescents ranging in age from 9 – 16 years. Results showed that 76% of the variance in intentions to use alcohol was explained by attitudes, subjective norms and perceived behavioural control.

1.3.2 Problems Associated with the Theory of Planned Behaviour

As previously mentioned, numerous empirical studies have been conducted using the TPB as a model for prediction of both health promoting and health risk behaviour. Those studies have shown that the TPB is an effective model that explains the factors involved in the enactment of a given behaviour. Offering additional support for the model are the many accessible meta-analyses that have tested the efficacy of the theory. However, there has been growing apprehension over the subjective norm component. This concern relates to numerous meta-analyses demonstrating that it plays a peripheral role in the predictive utility of the model (e.g., Armitage & Conner, 2001). Consequently, it has been suggested that the conceptualisation of the subjective norm component be reconsidered (e.g., Terry & Hogg, 1996).

1.4 Extending the Theory of Planned Behaviour: Further Sources of Social Influence

The findings, with respect to the norm-intention link, could indeed reflect the lesser importance of normative factors as determinants of intentions and behaviour. However, it has been suggested this lack of influence could be the result of the inadequate conceptualisation of social influences within

the models of reasoned action and planned behaviour. It has been argued that these models fail to represent the true extent of social influence because norms are being conceived as being additive across "significant others" rather than tied to specific reference groups (Terry & Hogg, 1996; Terry, Hogg, & White, 1999). Such an approach suggests that all sources of influence are created equal, but it is reasonable to assume, that in relation to particular behavioural context, not every other person or group is equally important to us.

Other researchers have also noted problems with the definition of norms within the dominant attitude-behaviour models. Cialdini and his colleagues (e.g., Cialdini, Kallgren, & Reno, 1991; Cialdini, Reno, & Kallgreen, 1990) have argued that the norm concept needs to be redefined if it is to have a strong and regular impact on behaviour. Rather than seeing norms as a unitary construct, Cialdini et al. (1991) argued that because the common definition of norms reflects conceptions of what people should do and what people actually do, two types of norms need to be considered. There is an important distinction in the literature on social influence between injunctive norm (i.e., what significant others think the person *ought* to do) and descriptive norms (i.e., what significant others themselves *do*) because these are separate sources of motivation (Deutsch & Gerard, 1955). Cialdini et al. (1991) refer to the normative measures used in the TPB as injunctive norms. Injunctive norms are the perception of what one's peers approve or disapprove of (Cialdini et al., 1991). This type of norm involves the thought of what one should or ought to do (Borsari & Carey, 2003). They are based on perceptions of rules of what constitutes morally approved conduct (Cialdini et al., 1990). Descriptive norms – termed 'group norms' (e.g., White, Terry, & Hogg, 1994) – on the other hand refer to perceptions of significant others' own attitudes and behaviours in the domain. Here, the opinions and actions of significant others provide information that people may use in deciding what to do themselves (e.g., "If everyone's doing it, then it must be the sensible thing to do", *cf.* Cialdini et al., 1991). Research has provided support for the distinction between the two types of norms (Cialdini et al., 1991; Cialdini et al., 1990). The motivating force of injunctive

norms is the expectancy of gaining social approval or disapproval, while the motivating force of descriptive norms is the expectancy that if most people are doing it, it is probably a wise thing to do. Consequently, expanding the definition of norms in line with the more widely accepted conceptualisation of this term could potentially have a greater impact on individual's intentions to perform the behaviour.

An additional limitation of norms outlined in the Theories of Reasoned Action and Planned Behaviour is that Fishbein and Ajzen (1975) conceptualised the subjective norm as perceived pressure from significant others to perform the target behaviour. This conceptualisation is inconsistent with the widely accepted definition of norms as the accepted or implied rules of how group members should and do behave (e.g., Brown, 1988; Cialdini & Trost, 1998; Turner, 1991). Thus, norms may have a stronger impact on intentions if they are redefined in line with the wider social psychological definitions of norms. Researchers have found that by assessing the perceived behaviour of others, the behavioural norm (Grube, Morgan, & McGree, 1986), or by assessing the perceived group norm, incorporating items that measure behavioural norm and group attitude (White, Terry, & Hogg, 1994), descriptive norms do predict intentions. Few researchers have measured perceived group norm by asking participants how many of their friends and peers thought that performing a specific behaviour was 'a good thing to do' (i.e., Fekadu & Kraft, 2002; Terry & Hogg, 1996). For example, Fekadu and Kraft (2002) study showed that addition of perceived norm led to a significant increment in the amount of variance explained in intention. Thus, contraceptive intentions were influenced by perceptions of other people's behaviour; that is, if most other people are believed to be performing the behaviour, then it is an appropriate thing to do.

A recent meta-analysis (Rivis & Sheeran, 2004) explored the impact that descriptive norms had on the prediction of intentions and behaviour. The reviewers identified 21 studies that showed an average positive correlation between descriptive norms and intentions ($r = .44$). In determining the additive nature of descriptive norms to the model, a hierarchical regression was conducted. It

was established that, after controlling for attitudes, perceived behavioural control and subjective norms, descriptive norms led to a significant increment in the variance explained in intentions (ΔR^2 = .05). Examining the moderators of age and type of health behaviour, the reviewers found that the effect size for children and students (r = .46) was significantly larger than the effect size for older adults (r = .41). Furthermore, the descriptive norm-intention was stronger for health-risk behaviours (r = .48) than for health promoting behaviours (r = .37). Breaking these findings down further within the younger sample, it was found that the descriptive-norm intention correlation was stronger among participants engaging in health-risk behaviour (r = .48) than the correlation among participants engaging in health promoting behaviour (r = .37). These findings would suggest that incorporating descriptive norms into the TPB amongst adolescents who participate in health-risk behaviours (i.e., drinking alcohol) would be sensible.

1.4.1 Social Identity Approach

The social identity approach, encapsulates social identity theory (Tajfel & Turner, 1979) and self-categorisation theory (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). For Tajfel (1972), social identity represents "the individual's knowledge that he belongs to certain social groups together with some emotional value significance to him of his group membership" (p. 292). Thus, social identity is not merely the knowledge that one is a member of a group and the defining attributes of group membership, but also an emotional attachment to the group. The motivational aspect of social identity is represented by the need for self-enhancement, which assumes that people have the basic need to attain positive self-evaluation and positive self-esteem. Individuals categorise themselves in terms of a social group and one way to satisfy this need is through positive evaluation of that social group relative to other groups.

Social identity is associated with distinctive group behaviours, behaviours that are depersonalised and regulated by context-specific group norms and stereotypic attitudes. According to the social identity approach, the norms of salient and important social groups should influence

people's willingness to display group behaviour because the process of belonging to a group means that there is an assimilation of the self to the cognitive representation of the group norm – the group prototype. As a result, self-perceptions, beliefs, attitudes and behaviour are defined with respect to the group prototype. People are influenced by group norms not simply because they lead to social approval in a public context, as outlined in traditional approaches to social influence (Deutsch & Gerard, 1988), but because they prescribe the context-specific attitudes and behaviours appropriate for group members.

Research within the social identity approach has demonstrated the power of norms to guide and direct behaviour. Building upon the social identity approach to account for the apparent lack of support for the role of norms in attitude-behaviour relations, Terry and Hogg (1996) argued that normative factors do impact upon the attitude-behaviour relationship provided that the norm emanates from a behaviourally relevant reference group, and that the group is a salient basis for self-definition. When social identity is salient, behaviours, attitudes and feelings should be guided more by group norms than personal factors. Thus, the attitude-behaviour relationship will be strengthened when group members perceive normative support for their attitude.

Recent research has provided support for the social identity approach to attitude-behaviour relations. In two tests of the TPB, Terry and Hogg (1996) found that the perceived norms of a specific and behaviourally relevant reference group were positively related to students' intentions to engage in health behaviours, but only for students who did identify strongly with the reference group. In contrast, for students who did not identify strongly with the reference group, personal factors (PBC and personal attitude) were the primary determinants of intentions. The validity of the social identity approach to attitude-behaviour relations has also been demonstrated in studies of smoking in young people (Schofield, Pattison, Hill, & Borland, 2001), healthy eating behaviour (Astrom & Rise, 2001) and recycling behaviour (Terry, Hogg, & White, 1999).

In addition to field research, the social identity approach to attitude-behaviour relations has been examined in experimental studies. These studies have demonstrated consistently that the attitude-behaviour relationship is strengthened when individuals are exposed to an in-group norm consistent with their initial attitude, and weakened when exposed to an attitude-incongruent norm, but only for individuals who identify strongly with the group (Terry, Hogg, & McKimmie, 2000; Wellen, Hogg, & Terry, 1998).

1.4.2 Prototype Perceptions

Another area within social influence that has been neglected by the TPB is prototype perceptions. Prototypes are images that young adults have of the type of person who engages in health risk behaviours (e.g., the typical drinker is "popular and cool"). In examining young people's health – related decisions, prototypes have been studied in the context of Gibbons et al.'s. Prototype/Willingness Model (PWM: Gibbons & Gerrard, 1995, 1997). The PWM takes into account both the social nature, and the seemingly irrationality, of many young people's health behaviours.

Gibbons and Gerrard (1995) suggested that individuals socially compare their own self-image with their prototype of the "typical" person engaging in the behaviour (e.g., the typical drinker is "cool and popular"). Prototypes are images that young people have of a particular person who performs specific health behaviours. Prototype perception has it roots in the prototype/willingness model of adolescent health-risk behaviour (P/W model; Gibbons, Gerrard, Ouwellette, & Burzette, 1998). According to the P/W model, prototype perception operates via two processes; prototype similarity, the similarity of the image to oneself, and prototype evaluation, the degree of liking one has for the prototype. These two processes are suggested to influence health-related decisions. The more positive an individual's evaluation of the prototype and the greater their perceived similarity to the prototype, then the greater their inclination to engage in the health risk behaviour associated with the prototype. When an individual considers participating in a particular

behaviour, he/she compares themselves to the associated image. Generally, the more comparisons made the more likely the image will influence participating in the behaviour.

According to the model, young people perform risky behaviours for two reasons; firstly because they are acting upon their intentions, or secondly they are reacting to a situation in which the opportunity to engage in risk behaviour has arisen (social reaction). The P/W model postulates that the more positive one's attitudes and subjective norm concerning the behaviour, the more likely one is to intend to perform the behaviour. However, these variables can also impact upon the reactive pathway, behavioural willingness. Behavioural willingness does not involve planning or consideration of the behaviour's likely consequences. People who are "willing" to perform a risky behaviour respond to risk conducive circumstances.

There has been growing empirical support for the prototype paradigm in relation to young people's health-risk behaviour. For example, Gibbons, Gerrard, and Boney-McCoy (1995) reported that the more favourable adolescents' images of the "type of teenager who gets pregnant", and the more similar they perceived themselves to be to that image, the greater was their willingness to engage in unprotected sex. A later study performed by Blanton, Gibbons, Gerrard, Conger, and Smith (1997) found similar results in relation to drinking and smoking behaviour; the greater the prototype perception of adolescents to the risk behaviour, the greater the likelihood for them to perform that behaviour.

In relation to the predictive utility of this theory in the context of the TPB, it has been demonstrated that the prototype perception predicts intentions and behaviour over and beyond the TPB variables. For instance, Rivis and colleagues (2003, 2006) assessed the relationship of prototype perception to various health behaviours, once variables from the TPB were controlled. In one study Rivis and Sheeran (2003) examined an integration of the TPB with the P/W model on a health protective behaviour, regular exercise in 333 UK undergraduate students. Rivis and Sheeran (2003) reported that for both intentions and behaviour, prototype similarity was associated with

exercise even after controlling for the TPB variables. In a later study, Rivis, Sheeran, and Armitage (2006) reported similar findings in relation to a number of health risk behaviours, including undergraduate drinking, and found that on average the TPB and past behaviour explained 62% variance in health risk intentions.

1.5 Using the Theory of Planned Behaviour to Guide Interventions

The TPB has been utilised for decades as a model to identify predictors of health behaviour, and although it has been shown to provide useful predictor of intentions, but less so of behaviour (e.g., Armitage & Conner, 2001), it does not provide guidance on how to promote behaviour change (Hobbis & Sutton, 2005). It has been suggested that it is possible to change people's behaviour by targeting the variables specified in the model and designing theory-based interventions (Michie & Abraham, 2004). However, there has been little work that has utilised the TPB as a basis for the design of interventions for behaviour change. Hardeman et al. (2002) conducted a systematic review examining papers that explicitly applied the TPB to behaviour change interventions. The reviewers identified 30 papers that described 24 distinct interventions. Most of the interventions targeted health–related behaviour (e.g., Anderson, et al., 1998; Warden & Koballa, 1995). The interventions described in the review were heterogeneous in their method (e.g., information only, persuasion, increasing skills, goal setting, rehearsal of skills, planning/implementation and social encouragement) and in their delivery styles (e.g., audiotaped, printed material, videotaped, or educational classes). Results from the systematic review revealed that only 13 interventions reported a change in behaviour, and from those 13 intervention studies just under half that used the TPB to develop the intervention showed positive effects (Brubaker & Fowler, 1990; Caplan, Vinokur, Price, & Van Ryn, 1989; Jemmott, Jemmott, & Fong, 1998; Murphy & Brubaker, 1990; Van Ryn & Vinokur, 1992; Vinokur, Van Ryn, Gramlich, & Price, 1991). However, the effect sizes were typically small to moderate and it was explained that these findings needed to be interpreted with caution due to the poor design of the studies.

In 2005, the Journal of Health Psychology published an article by Hobbis and Sutton describing the lack of impact TPB-based interventions had on behaviour change and how research examining behaviour change may be improved by incorporating Cognitive Behavioural Therapy (CBT) techniques. In a commentary to Hobbis and Sutton's (2005) article, Michie (2005) provides a number of possible explanations why interventions based on the TPB are ineffective. Michie describes how targeted cognitions are confined to three types of belief; how targeted cognitions are those most frequently reported as salient by the group, rather than those most salient to the individual; that ineffective change techniques may be applied to cognitions (e.g., the most commonly used techniques in the TPB interventions are known to be of low efficacy in changing behaviour); and cognitive techniques are not used in conjunction with behavioural techniques, such as behavioural experiments, contingency control and action planning. However, Michie stresses that there is no current evidence available to test these explanations.

Taking into consideration the evidence that demonstrates how ineffective TPB based interventions are to the area of behaviour change, the present research, rather than 're-inventing the wheel', intends to assess the literature and examine the type of interventions utilised within the domain of alcohol prevention and reduction. There has been a plethora of research that has examined and demonstrated that alcohol reduction and prevention interventions generated from theory are efficacious. The following sections examine interventions in the young adult and adolescent literature that have known efficacy in the reduction of alcohol consumption amongst these cohorts.

1.6 Reducing Alcohol Consumption

Alcohol use and misuse by young people residing within the UK is a major concern and one that is likely to remain so in the foreseeable future. The use of alcohol during the teenage years and young adult years is a common phenomenon and a potentially powerful predictor of progression to alcohol-related harm as age at first use has been associated with future hazardous drinking

(Bernstein & Bernstein, 2005). Response to this problem is largely based on the implementation of prevention and education initiatives that lack a theoretical base. School programmes focus on global information and education about the effects of alcohol use to promote prevention. This approach assumes knowledge of harmful effects would lead to rational choices to avoidance; however, this method does not consistently modify alcohol consumption behaviour (Scarpatti & Datesman, 1980).

Over recent years, research in health behaviour change has typically been directed toward developing effective intervention programmes. The past 20 years has seen considerable prevention research activity within the alcohol literature. Numerous approaches have attempted to alleviate alcohol-related problems among young people. Perhaps most widespread have been the use of one or more of a variety of educational methods, often in school settings. Whether seeking to change attitudes or levels of knowledge about alcohol use and consequences, to improve young people's ability to resist pressures to drink, or to give a more accurate picture of how many young people actually drink and thereby change the norms of drinking among young people, these approaches have generally shown mixed results at best. Evaluations have found that in some cases they may result in changes in beliefs and attitudes, but little if any change in actual behaviours around drinking (Paglia & Room, 1999). The WHO advocates viewing alcohol problems on a continuum and using a broader range of prevention programmes for particular populations. The idea is that "one size does not fit all" and a less generic approach should be considered depending on the population group.

1.6.1 Interventions Directed at Young People

Statistics from government agencies in the UK are consistently showing increases in the levels of alcohol consumption in society and a decline in the age that young people are participating in this potentially risky behaviour. One of the key initiatives outlined In the DH's National Alcohol Harm Reduction Strategy (2002) is the reduction and prevention of alcohol-related harm and consumption amongst young people. However, within the UK the effectiveness of alcohol interventions to reduce

consumption is a scantly researched area. To date the majority of the empirical research examining the effectiveness of interventions with young people have been conducted in the US and Australia.

Drinking among young people is an issue of public health and policy concern in countries around the world. Not all young people drink and, among those who do, not all do so in a harmful way. However, certain drinking patterns and general risk-taking behaviour among young people may place them at considerable risk for harm. Efforts to ensure that this risk is minimized are a key objective of prevention approaches aimed at this population group. When it comes to the consumption of alcohol, there is currently no consensus regarding the age threshold at which an individual ceases to be a "young person" and becomes an adult; the WHO defines "young people" as those between the ages of 10 and 24 (WHO, 1986). Many countries have a legally mandated threshold around drinking, which within the UK is set at 18. In developing prevention approaches, it is important to differentiate between young people who are above the legal drinking age and those below it. For the purposes of the present research, two groups defined to be within the young people cohort will be assessed; (i) young people aged between 18 years and 23 years attending University and (ii) school-going adolescents aged between 11 years and 16 years.

1.6.2 Interventions Directed at University Students

Alcohol use is an accepted part of social interaction in our culture, and a lot of young people within the UK drink regularly (Office for National Statistics; ONS, 2005). Current advice on sensible drinking advocates consideration of daily consumption levels and the number of alcohol free days, with weekly benchmarks being set at 14 units for women and 21 units for men (DH, 2001). Examination of the statistics show that the 16-24 year old age group are consuming the most units per week, with 42% of males drinking over 21 units weekly and 33% of women drinking over 14 units weekly (IAS, 2004). These figures offer concern to health professionals with reports claiming that alcohol misuse is costing the NHS up to 3 billion pounds per year (Alcohol Concern, 2002). Therefore, one of the aims of the UK government strategies is to reduce alcohol consumption

especially among the young; yet drinking is increasing in school children and university students (Royal College of Physicians, 1995). Webb, Ashton, Kelly, and Kamali (1996) performed the first survey assessing university students' drinking consumption across the UK and found that 61% of men and 48% of women exceeded 'sensible' limits of 14 units per week for women and 21 units per week for men. The review by Gill (2002) found comparable figures. Based on 18 empirical studies, Gill (2002) found that the recorded levels of binge drinking among both male and female students were extreme. Gill documented a number of studies (e.g., Norman et al., 1998; Webb et al., 1998), which revealed high percentages of students exceeding sensible drinking levels (52% of males and 43% of females, averaged across studies).

The study by Webb et al. (1996) and the review by Gill (2002) have indicated that over 50% of the university undergraduate population are exceeding sensible drinking levels. Finding ways to reduce this level of alcohol misuse can have implications for public health. Although statistics demonstrate that the extent of alcohol use within the UK student population is vast, little empirical research has been performed within the UK on this population. Empirical research conducted with this population has been mainly performed in the United States. These programmes have included alcohol awareness campaigns that educate students about the negative consequences of alcohol use. Implicit in this approach is the belief that students will reduce high risk drinking after hearing about the dangers of alcohol use. Despite the lack of a theoretical foundation or experimental studies, alcohol education programmes have continued to rely on strategies that warn students about the negative consequences of alcohol use. Some studies have demonstrated that these methods are insufficient (e.g., DeJong et al., 1998).

In recent years there has been a call for a response to the increase in levels of drinking amongst the student population; however, the majority of harm reduction approaches, which students experience within the university environment focus on providing information about the negative effects of alcohol and the benefits of abstention (Walters, Bennett, & Miller, 2000). These

programmes rarely demonstrate a change in behaviour and it can be observed that university drinking is on the increase (see Gill, 2002).

In the US in direct contrast to the UK, colleges and universities have initiated and expanded multiple types of general alcohol education programmes for college students. These well-intentioned programs have included peer education, curriculum infusion and alcohol awareness campaigns (Gonzalez, 1986; Gonzalez, 1991; Kraft, 1988). Strategies have included individual and campus wide strategies and alcohol related programmes designed primarily to prevent high-risk drinking. Programmes utilising those methods are generally aimed at those students who are at risk from or already abusing alcohol, and are time consuming and expensive to run. The World Health Organisation has identified alcohol as a key area for prevention with considerable scope for secondary prevention strategies such as early and brief interventions. Brief interventions are short sessions aimed at alcohol consumption that can be utilised with individuals at any point on the continuum of drug use, abuse or dependence. There is a large body of evidence supporting the efficacy of brief interventions, indicating that they are extremely cost-effective and have a substantial capacity to prevent the development or escalation of alcohol problems (Roche & Freeman, 2003). A meta-analysis by Moyer, Finney, Swearingen, and Vergun (2002) concluded that among non-treatment populations, brief interventions had a statistically significant medium effect size that was evident up to 12 months from the time of intervention.

The meta-analysis also revealed that there were significant differences in effect size for gender. Moyer et al. (2002) revealed, from the small number of studies no significant heterogeneity effects for gender across varying follow-up periods ($Q = 4.09 - 13.82$, $p = 0.39 - 0.54$). However, the effect size was significantly larger when alcohol dependent participants were omitted. This result supports the contention that brief interventions are best directed towards those individuals within the alcohol misuse category rather than the alcohol dependent category. It can be argued that most university students fall into the alcohol misuse category, hence permitting use of a brief

intervention. Most brief interventions have provided clients with feedback, in some form, of assessment results that instigate change in behaviour.

Feedback intervention research dates back almost 100 years, with several experiments indicating that knowledge of results – a form of feedback – increases performance (i.e., Brand, 1905; Johanason, 1922; Wright, 1906). In recent years a proliferation of feedback interventions has been used in the area of behaviour change. Feedback interventions draw on the motivational and social psychology literature. They rely on a presentation of discrepant information such as a personal drinking profile, risk factors and normative comparisons. DiClemente, Marinilli, Singh, and Bellino (2001) have suggested a taxonomy for feedback interventions, relating to three types: generic, targeted and personalised. Generic feedback simply provides the individual with general population based or subpopulation-based information. Targeted feedback offers a more tailored approach; information is provided on more personalised but general characteristics. Targeted feedback examines information pertaining to a characteristic of the group involved with the intervention, such as age, gender or ethnicity. The final type of feedback intervention, personalised, noted by Diclemente et al., offers a service based on personal information provided by the individual as a form of assessment procedure. The advantage that personalised feedback has over the other types is that it presents personally relevant information to the individual. Two recent reviews of the literature, within the area of college treatment programmes (Larimer & Cronce, 2002; Walters & Bennett, 2000), showed that nearly every individual intervention that showed a reduction in drinking employed personalised drinking feedback.

For example, the review conducted by Walters and Neighbors (2004) on the efficacy of feedback interventions found that 11 of the 13 studies (77%) reviewed showed a reduction of drinking behaviour as compared to a control or comparison control group. Some studies (e.g., Dimeff, Baer, Kivlahan, & Marlatt, 1999) have used a feedback message alongside motivational interviewing techniques to reduce participants' alcohol consumption. Studies of this type have

given feedback in the form of personal consumption information, perceived norms and other risk factors. Results have generally found reductions in behaviour at 6 weeks (Borsari & Carey, 2001) and at a 24-month follow-up (Marlatt et al, 1998). Baer and Carey (2000) randomised heavy drinking students to either a single motivational interview with feedback or a no-treatment control condition. At the 6-week follow-up, the control group had significantly reduced their alcohol use relative to the control group. Participants who received the intervention reduced their drinking from 17.57 to 11.40 drinks per week (DPW), while participants in the control group reduced their drinking from 18.45 to 15.78 DPW. In a longer follow-up study, Marlatt et al. (1998) randomised at-risk college students to receive an individual motivational session with feedback or an assessment group only. At a 24-month follow-up students in the intervention group showed greater reductions in use, fewer alcohol related problems and fewer symptoms of alcohol dependence, as compared to the control group (3.6 drinks per occasion vs. 4.0 drinks per occasion, respectively).

Some studies have examined feedback as an adjunct to an individual or group interview, whereas some studies, albeit few, have investigated feedback as the primary intervention tool. Agostinelli, Brown, and Miller (1995) found mean reductions of 7.9 DPW for the intervention group, compared with mean reductions of 0.5 DPW for the control group, using a mailed feedback population norm intervention. In a similar study, Collins, Carey, and Sliwinski (2002) found comparable results at a 6-week follow-up, but not at a 6-month follow-up. Testing the efficacy of a computerised normative feedback methodology, Neighbors, Larimer, and Lewis (2004) found that at 6-month follow-up participants in the intervention group reported a 3.41 DPW reduction in drinking relative to control participants (0.90 DPW reduction). It is evident that feedback, whether stand-alone or as part of a wider intervention strategy, can facilitate the reduction of drinking behaviour; it would be useful to ascertain if interventions can be effective without the additional individual or group sessions.

Most of the research performed using behaviour change interventions has utilised feedback in conjunction with an individual or group session motivational strategy. Therefore, ascertaining the efficacy of feedback as a primary intervention tool has been difficult. Several researchers have tested the hypothesis that feedback alone would be efficacious as a behaviour change intervention. For example, Walters (2000) compared mailed feedback to feedback discussed in a group setting. Participants were either randomised to a group session that integrated feedback, a mailed feedback session only or assessment only. Participants in the group condition attended a class consisting of educational, attitudinal and skills-based approaches to promote responsible drinking. Participants assigned to the feedback condition were mailed personalised information about the quantity and frequency of their consumption, peak weekly and monthly blood alcohol content levels, as well as other information about personal risk factors. At a 6-week follow-up, results showed that participants in the mailed feedback condition reported the largest mean reduction in alcohol consumption (13.8 DPW) compared with mean reductions in the group condition (6.35 DPW) and mean reductions in the control condition (0.36 DPW). The efficacy of the feedback only condition provides hope for the utilisation of inexpensive and quick interventions that can be targeted at a large number of drinkers, at least within the student population.

1.6.3 Interventions Directed at Adolescents

Drug and alcohol abuse are important problems that affect school-age youth at earlier ages than in the past. Alcohol use and misuse is a problem that is growing faster than the use of any other drug use in the UK and it causes the most widespread problems (Advisory Council on the Misuse of Drugs, 2006). By the age of 15-16 years the vast majority of young people have tried their first alcoholic drink (Becker et al., 2006). In 2005, 22% of 11 year olds had drunk alcohol in comparison to 86% of 15 year olds (Becker et al., 2006). There are no guidelines on what constitutes safe and sensible alcohol consumption for this cohort but evidence has demonstrated that drinking earlier in life can lead to more serious alcohol problems in later life, both physical (e.g., Roberston & Plant,

1988) and mental (e.g., West, Drummond, & Eames, 1990). Analysing data from the 1970 British birth cohort study (Vinor & Taylor, 2007) found that 17% of adolescent binge drinkers were dependent on alcohol at age 30 (compared to 11% of the remaining cohort); 43% exceeded the recommended weekly units (compared to 30% of the remaining cohort); 24% were taking illegal drugs (compared to 16% of the remaining cohort). Commencing drinking at an early age can potentially lead to a number of chronic conditions, such as certain type of cancers, stroke and cirrhosis of the liver (Rehm et al., 2003); however, there are more immediate problems resulting from drinking amongst this age group. Hibbell, Andersson, and Bjarnason (2004) revealed that 8% of young people aged 15-16 reported having unprotected sex after drinking alcohol (11% females, 6% males). Eleven percent of all those in this age group who had (unprotected or protected) sex as a result from drinking subsequently regretted it. In 2005-2006 over 2500 children aged 0-14 years were admitted to hospital in England with a primary, alcohol-related diagnosis (The Information Centre for Health and Social Care, 2006). These statistics demonstrate the need to develop drinking reduction strategies to prevent the adverse effects of alcohol within this age group. Schools have become the major focus of drug and alcohol abuse education and prevention activities for young people. This makes sense from a practical standpoint because schools offer efficient access to large numbers of young people during the years that they typically begin to use drugs and alcohol. There has been a growing recognition since the 1970s that social and psychological factors are central in promoting the onset of cigarette smoking and, later, drug and alcohol abuse. Drug abuse education and prevention approaches are increasingly more closely tied to psychological theories of human behaviour.

Since the 1970s several approaches to drug and alcohol abuse education and prevention have been implemented in school settings. Traditionally, drug and alcohol abuse education has involved the dissemination of information on drug abuse and the negative health, social, and legal consequences of abuse. It is acknowledged that information-giving alone is unlikely to reduce

consumption. The most commonly used approach to drug and alcohol abuse education involves simply providing students with factual information about drugs and alcohol. Some information-dissemination approaches attempt to dramatise the dangers of drug abuse by using fear-arousal techniques designed to attract attention and frighten individuals into not using drugs, accompanied by vivid portrayals of the severe adverse consequences of drug abuse. Informational approaches may include classroom lectures about the dangers of abuse, as well as educational pamphlets and other printed materials, and short films that impart information to students about different types of drugs and the negative consequences of use. Some programmes have police officers come into the classroom and discuss law-enforcement issues, including drug-related crime and penalties for buying or possessing illegal drugs. Other programmes use doctors or other health professionals to talk about the severe, often irreversible, health effects of drug use. Evaluation studies of informational approaches to drug and alcohol abuse prevention have shown that in some cases a temporary impact on knowledge and anti-drug attitudes can occur. However, a meta-analytic study by Tobler and Stratton (1997) failed to show any consistent impact on drug use behaviour or intentions to use drugs in the future. It has become increasingly clear that the aetiology of drug and alcohol abuse is complex, and prevention strategies that rely primarily on information dissemination are not effective in changing behaviour.

Over recent years contemporary approaches have included social influence and competence-enhancement programmes, which focus less on didactic instruction and more on interactive skills-training techniques. The most promising contemporary approaches are conceptualised within a theoretical framework based on the aetiology of drug abuse and have been subjected to empirical testing using appropriate research methods. Contemporary programmes are typically categorized into one of three types: (1) *universal* programmes focus on the general population, such as all students in a particular school; (2) *selective* programmes target high-risk groups, such as poor school achievers; and (3) *indicated* programmes are designed for young people

already experimenting with drugs or engaging in other high-risk behaviours. Universal programmes conducted within the school setting will be the focus of this literature review, particularly research that targets alcohol use. Due to the enormity of the literature, it is beyond this review to look at high-risk populations or interventions that are not school-based only. The research contained within the thesis will be aimed at all students, whether they are a high-risk of alcohol use or not, with the intervention being conducted in a school environment.

In a critical review of the primary prevention research of alcohol programmes, Moskowitz (1989) describes three behavioural-change models: a knowledge/attitudes model, a values/decision-making model, or a social competency model. The knowledge model attempts to increase negative attitudes toward misuse with education thereby reducing alcohol abuse. The values/decision-making model "...promotes self-examination of one's needs or values and of the roles that alcohol use serves in fulfilling these values" (Moskowitz, 1989, p.67). Often used in college programmes as part of experiential discussion groups, the values/decision-making model approach suggests that greater self-understanding will lead to more responsible decision-making regarding the use of alcohol.

The social competency approach suggests that students abuse alcohol because of a lack of psychological skills. The social competency model generally consists of three techniques: modelling health-promoting behaviours, teaching skills to resist social influences that promote alcohol or other drug use (e.g., social inoculation and teaching), and more general intra- and interpersonal life skills (e.g., communication and coping skills). In a review of 14 alcohol education studies, Goodstadt and Caleekal-John (1984) reported significant changes in behaviour, attitudes and knowledge with programmes that included these experiential components.

Over the decades there has been a vast amount of research conducted within the adolescent substance misuse area, particularly within the USA. These interventions have generally been

complex, extensive, multi-component heavy, dealing with a magnitude of outcome measures, delivered via a diverse range of people from peers to specialists, and based on many different theoretical models. There have been many programmes that have shown to be effective in well-conducted studies, such as Life Skills Training (Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995), the programmes of Project Northland (Komro et al., 2001; Perry et al., 1996), Project Star (Pentz et al., 1989) and the 'Healthy Schools and Drugs' project (Cuijpers, Jonkers, De Weerdt, & DeJong (2001). In the drug prevention literature, school-based interventions have been examined most extensively and it has been well established that school-based prevention programmes can result in significant increases in knowledge, improved attitudes and the reduction of substance use.

The studies examining school-based interventions on alcohol use are either studies that have looked at alcohol specifically or form part of a larger substance misuse programme, and are delivered by classroom teachers or external contributors. There have been a number of school-based interventions that have targeted only alcohol use (e.g., Bagnall, 1990; Klitzner, Gruenewald, Bamberger, & Rossiter, 1994; McBride, Farrington, & Milford, 2000; McBride, Farrington, Milford, Meuleners, & Phillips, 2004; Newman, Anderson, & Farell, 1992; Padget, Bell, Shamblen, & Ringwalt, 2006; Perry & Grant, 1991; Shope, Copeland, Maharg, & Dielman, 1996a; Shope, Copeland, Marcoux, & Kamp, 1996b; Shope, Dielman, Butchart, Campanelli, & Klosha, 1992; Shope, Kloska, Dielman, & Maharg, 1994), and the results from the studies are mixed, with some showing positive effects, others neutral effects and some showing negative effects on a variety of outcome measures.

From these studies a number of meta-analyses and systematic reviews have been conducted that examine the effectiveness of a number of differing elements related to alcohol reduction/ prevention interventions (i.e., Bruvold, 1990; Coggans, Cheyne, & McKellar, 2003; Cuijpers, 2002; Tobler, 1993; Tobler et al., 2000). Bruvold (1990) undertook a meta-analysis of interventions that

examined the California school-based risk reduction programme. Coggan and colleagues (2003) examined the effectiveness of the Life Skills Training drug education and prevention programmes. Cuijpers (2002) reviewed universal school-based drug prevention programmes aimed at the reduction of tobacco, alcohol and illegal drug use. The two articles (Bruvold, 1990; Croggans et al., 2003) that examined specific intervention approaches found that Botvin's Life Skills Programme could positively affect knowledge, attitudes and behaviour with respect to alcohol use. Cuijpers (2002) stated that programmes should be based on well-designed scientific research demonstrating effectiveness, use interactive delivery methods and be based on a social influence model. Tobler and colleagues (1997, 2000) reported on a series of meta-analyses on school-based prevention/reduction programmes.

One of the most extensive meta-analyses was conducted by Tobler et al. (2000). The reviewers examined 144 studies of 207 school-based drug prevention programmes. Most of these studies were conducted within the US (19 studies from other countries). The meta-analysis demonstrated that certain programmes reduced substance use whereas others did not. Programmes that reduced substance use employed interactive methods. Interactive programmes provide contact and communication opportunities for the exchange of ideas among participants and encourage a learning of drug refusal skills. The researchers analysed the content of the interventions and identified eight types of programmes, five non-interactive and three interactive. The non-interactive programmes included interventions that focus on knowledge of substances, interventions that focus on helping the individual develop insight into personal feelings and behaviours (affective interventions), and programmes that focus on problem solving skills regarding personal drug use. The non-interactive programmes showed a mean standardised effect size of .03, indicating that students in the non-interactive intervention group improve .03 standard deviations compared to those in the control group. The interactive interventions are based on social influence approach. There are several components that are used in social influence programmes. Comprehensive life-

skills programmes also use the social influence approach but add generic life skills training (i.e., assertiveness, coping, communication, and sometimes an affective component). Community-wide change programmes also use the social influence approach, but add components of community change (community mobilisation, media change and family programmes). The social influence interventions, either stand-alone or including life-skills training or the community wide programme, had a standardised mean effect size of .16. The programmes combining interactive methods and a social influence approach (or in combination with comprehensive life-skills training or with system-wide change) have a mean standardised effect size of .16, which is considerably larger than the effect size of non-interactive programmes (.03) (Tobler et al., 2000).

The other major claim made by Tobler and colleagues (2000) was that prevention programmes based on the social influence model are the most effective programmes that are available, and preventions programmes should use this model (Tobler et al., 2000). The social influence approach to drug prevention is based on the idea that "inoculation" in the classroom against active or indirect social pressure to use drugs will help prevent substance use (Donaldson, Graham, & Hansen, 1994). Social influence programmes focus extensively on teaching students how to recognise and deal with social influences to use drugs from peers. These programmes focus on skills training to increase students' resistance to negative social influences to engage in drug use, particularly peer pressure. The goal of resistance-skills training approaches is to have students learn ways to avoid high-risk situations where they are likely to experience peer pressure to smoke, drink, or use drugs, and/or acquire the knowledge, confidence, and skills needed to handle peer pressure in these and other situations. Resistance skills programmes as a whole have generally been successful. A comprehensive review of resistance skills studies published from 1980 to 1990 reported that the majority of prevention studies (63%) had positive effects on drug use behaviour, with fewer studies having neutral (26%) or negative effects on behaviour (11%) - with several in the neutral category having inadequate statistical power to detect programme effects. Furthermore, several follow-up

studies of social influence interventions have reported positive behavioural effects lasting for up to three years. There has been growing appreciation of the benefits of school alcohol education programmes in terms of future alcohol consumption (Coggans et al., 1999). Many of the interventions directed at children involve enhancing the social skills required to refuse alcohol. These programmes attempt to provide adolescents with both information and with the confidence to make their own choices relating to alcohol. The majority of studies provide support for the effectiveness of teaching social resistance skills (i.e., Botvin et al., 1995; Wynn, Schulenberg, Kloska, & Laetz, 1997).

The Alcohol Misuse Prevention Study (AMPS; Shope et al., 1992, 1994, 1996) was designed as a social pressure resistance-training curriculum with the aim of teaching students about alcohol use and misuse. The first programme implemented by Shope and Colleagues (1992) examined the programme delivered over 2 years, with four sessions delivered over four weeks in the first year and three additional "booster" sessions delivered one week apart in the second year. Schools were assigned to receive the programme plus booster, programme only or control. Shope and colleagues (1996) followed up a sample of students in 1996. These students received the AMPS programme as 6th graders (11 year olds) through 8th graders (13 year olds), and an additional five sessions in the 10th grade (15 year olds). Shope and Colleagues (1992) found that there were no significant differences in levels of alcohol use and misuse between students who received the AMPS programme (with or without booster) and students in the control group at first follow-up. Follow-up of a sample of these students in high school found that delivery of the 6th grade (11 year olds) curriculum had no long-term effects on alcohol use or misuse in high school. In contrast, following delivery of the 10th grade (15 year olds) programme, students who received the intervention reported significantly less alcohol misuse than comparison students at the end of the 12th grade (17 year olds) at the 1-year follow-up. However, the studies using the AMPS programme suffered from methodological problems. Shrope et al. (1992) did not provide any pre-test

equivalence of the sample and attribution was large (28% over 2.5 years).

The Alcohol Education Package (AEP; Bagnall, 1990) was based on the social influence theory with an emphasis on pupil participation through group exercise and role-play. Evans (1976) originally researched Social Influence Theory in relation to cigarette use. Social Influence Theory was one of the first strategies to produce an impact on drug use behaviour. The theory posits that alcohol and other drug use among young people is primarily a social behaviour, strongly influenced by social motives. There is a complex and reciprocal interaction between personal and environmental factors, including both overt and covert pressure from friends and others to perform what is depicted as the group norm (Evans, 1976). The aim of the programme was to increase the student's alcohol knowledge and skills in relation to alcohol to enable them to make responsible decisions. Students were followed up approximately 10 months after completion of the intervention programme. At the 10-month follow-up, results from the research showed that, after delivery of the intervention, students from the control groups were significantly more likely than intervention students to have drunk alcohol in the last 7 days. However, there are a number of issues related to the study's quality. There was no information as to whether data from the intervention and control participants were collected contemporaneously or whether the sites were well matched. In addition, few details on baseline equivalence were collected and there were no details of the participants lost to follow-up.

School and Alcohol Harm Project (SHAHRP; McBride et al. 2000, 2004) a curriculum-based programme, was conducted over two phases. Phase one was implemented when students were aged 13 years and consisted of 17 consecutive skills-based activities conducted over 8 to 10 lessons. Phase two was conducted in the following year, and consisted of 21 consecutive activities delivered over 5 to 7 weeks. The emphasis of the activities in both phases was on the identification of alcohol-related harm and the development of harm reduction strategies. Intervention and control

groups were followed up at 3 time points: (1) 8-months from baseline, (2) 20-months from baseline, and (3) 32-months from baseline. The study was quasi-experimental, with most schools randomly allocated to intervention or control conditions. Results of multi-level modelling revealed that the SHAHRP group consumed significantly less alcohol than the comparison group at both the 8 and 20-month follow-up (McBride et al., 2004). At the final follow-up, the total amount of alcohol consumed by both groups was beginning to converge. In relation to study quality, the SHAHRP suffered from methodological limitations. Intervention and control students were not matched at baseline. There were significantly more drinkers in the control group at baseline and control students reported experiencing more harm associated with their own use of alcohol than students in the intervention group. The authors did not report whether these differences were accounted for in subsequent analyses. Also, there was relatively high attrition (20%) over the course of the study and those lost to follow-up tended to have less safe attitudes towards alcohol use, a higher level of alcohol consumption and experience more alcohol related harm - no measures were taken to account for these differences.

The Adolescent Alcohol Prevention Trial (Hansen & Graham, 1991; Palmer, Graham, White, & Hanson, 1998) was taught by trained project staff and was based on social influence theory and aimed at the prevention of alcohol misuse. The programme consisted of 4 elements: resistance skills training, normative education, a mixture of resistance skills training and normative education, and information provision only. Students either received the interventions in the 5th grade (10 year olds) and a booster session in the 7th grade or the booster session in the 7th grade only (12 year olds). The programme was based on an RCT design with schools as the unit of assignment. The five studies utilised data from the same sample of 11,995 students. Hansen and Graham (1991) reported that compared with the group that had received normative education alone, the experimental group had significantly reduced rates of alcohol consumption in terms of lifetime use, 30-day use, seven day use, drunkenness and problem use. The authors found no effects of resistance

training. Palmer and Colleagues (1998) re-analysed the data from one cohort of the programme utilising multi-level analysis on the school level and classroom level. Results revealed that there were no significant differences for alcohol use at 1-year follow-up. At the 2-year follow-up, there were significant effects on alcohol use demonstrated for the normative education condition versus the information only control. This effect was found for the classroom level of the analysis as well as for the school level analysis. However, the findings should be interpreted with caution, as the participants were not matched on alcohol use outcomes at baseline, with lowest alcohol use in the normative education and combined programmes. These studies did not provide details on attrition.

Many programmes have examined alcohol prevention/reduction as part of an intervention designed to reduce adverse health behaviours, such as smoking and drug taking. For instance, Botvin and Colleagues, throughout the 1990s, have conducted a plethora of studies into the effectiveness of resistance training programmes. Their programmes, named Botvin's Life Skills Training (LST) were designed to be delivered to students in the 7th grade (12 year olds) with the aim to develop personal and social skills for coping with social influences to smoke, drink or use drugs. Botvin, Baker, Dusenbury, Tortu, and Botvin (1990a) examined the effectiveness of LST delivered by teachers sent on a one-day workshop compared to delivery by teachers who received training by video or a no intervention control. The programme consisted of 15 sessions delivered in 7th grade (12 year olds) and booster sessions in the 8th and 9th grade (13 & 14 year olds, respectively) and was an RCT. Following delivery of the 15 sessions and booster sessions, it was found that over the three years the LST programme was compared to control students, students who were taught the programme by teachers who received training by video reported significantly fewer occasions of drunkenness. However, Botvin, Baker, Dusenbury, Tortu, and Botvin (1995) followed up the students 6 years after baseline and found that there were no significant differences between intervention and control groups in terms of monthly or weekly alcohol use. Botvin, Baker, Filazzola, and Botvin (1990b) also examined the effectiveness of another programme based on the

LST, utilising a 20 session version of the 7th grade (12 year olds) programme with and without 8th grade (13 year olds) booster sessions implemented by older (15-17 year old) peer leaders or teachers. The researchers found that the 20-session programme had significant effects on weekly and monthly drinking rates, with students in the intervention group reporting significantly lower scores than students in the control group after one year. In addition, it was found that students in the peer boosted condition reported consuming less alcohol per occasion than students in the control group, the teacher booster and the non-booster group.

A few researchers have evaluated or replicated aspects of the LST programme. For instance, Smith et al. (2004) evaluated the standard LST curriculum (15 sessions and 10 booster sessions). These researchers found that at the end of 7th grade (12 year olds) there were no significant effects on alcohol use for the male participants, but for females it was observed that the intervention produced a significant reduction in the frequency of alcohol use. Moreover, by the end of the 8th grade, after the implementation of the booster sessions, all intervention effects had disappeared. Spoth and colleagues examined the combination of the standard LST programme (15 sessions in 7th grade (12 year olds)) with a family-based programme; the programmes were delivered in 7th grade with booster sessions administered in 8th grade (13 year olds). Spoth, Redmond, Trudeau, and Shin (2002) found that significantly fewer students in the LST and combined (LST and strengthening families) programmes were 'new users' at the 1-year follow-up relative to control students. However, this effect disappeared at the 2-year follow-up from post-test (Spoth, Randall, Shin, & Redmond, 2005).

Further programmes have been developed that have been based on the refusal skills paradigm. For example, Eisen and colleagues Lion's Quest Skills for Adolescents Programme was a 40-session curriculum delivered to 7th graders (12 year olds). The main aims of the programme were to teach social competency and refusal skills. Eisen and colleagues (2002) used an RCT design with schools as the unit of assignment to examine the effects of the programme on prevalence of

previous 30 days use of tobacco, alcohol and illicit drugs. At the end of the intervention school year there were no significant differences between intervention and control group in terms of alcohol use (Eisen, Zellman, Massett, & Murray, 2002). At the year follow–up there were still no significant differences between intervention and control group (Eisen, Zellman, & Murray, 2003). However, students who reported binge drinking (three or more drinks at one time) at baseline and received the intervention were significantly less likely to report recent binge drinking in comparison with students in the control group at the one year follow-up. Another study, the Million Dollar Machine (Schinke & Tepavac, 1995) examined the effectiveness of an 8-week substance abuse prevention programme, which focused on knowledge and resistance skills training amongst 4th graders (9 year olds). Those in the intervention group reported drinking significantly less, and spending significantly less time drinking, than 4th graders in the control group.

The above programmes examined the effectiveness of school-based interventions that were delivered by teachers. There have been a number of programmes that have evaluated the usefulness of substance use and abuse curriculum using external contributors. Two studies (Ellickson & Bell, 1990; Ellickson, Bell, & Harrison, 1993) examined the effectiveness of Project ALERT, which was based on the social influence model of prevention. The programme was taught over two years (8 sessions delivered in 7th grade (12 year olds) and 3 sessions delivered in the 8th grade (13 year olds)) by an adult health educator, with or without assistance from a teen leader from a neighbouring school. Ellickson and Bell (1990) reported that among baseline non-drinkers, Project ALERT reduced the number of students who initiated alcohol use in the subsequent 3 months by 28%; they also found that for those students who drank alcohol, Project ALERT reduced past month's drinking. Moreover, at follow-up it was observed that there were no significant differences on any measure of alcohol use (Ellickson et al., 1993). Ellickson et al. (2003) revised the original Project ALERT, by increasing the numbers of sessions, and found that there were no significant effects of the revised version on initial or current drinking behaviours. The results from the studies appear to

show mixed results but as previously demonstrated a number of meta-analyses (i.e., Tobler, 1997; Tobler et al., 2000) have revealed the effectiveness of programmes using a social influence approach, particularly based on the contemporary interactive style rather than the traditional knowledge based approach.

The *Alcohol Harm Reduction Strategy for England* (Strategy Unit, 2004) recognises the ineffectiveness of disseminating alcohol information alone amongst children and young people and actively encourages the use of interactive school programmes that develop personal skills. Tobler et al. (2000) conducted a meta-analysis examining the effectiveness of school based drug programmes that compared the self-reported drug use of treatment to control or comparison youth. Across all behaviour types it was found that the interactive programmes showed a higher level of effectiveness and that social influence programmes were most effective. These programmes are 'psychosocial', based on Bandura's (1977) social learning theory, which provides a framework for increasing adolescents' interpersonal skills. Alcohol use is a social behaviour for adolescents and may be more amenable to the interpersonal skills development and the exchange of ideas typical of interactive programmes.

The *Alcohol Harm Reduction Strategy for England* (Strategy Unit, 2004) identifies that children and young people need to receive adequate alcohol education. In particular schools should provide alcohol education that aims to motivate children and young people to change their drinking behaviours and attitudes. Indeed, alcohol education in schools is a statutory requirement of the National Curriculum Science Order as part of drugs education. Drug and alcohol education is also provided through non-statutory PSHE (Personal, Social and Health Education) lessons from key stage 1 to key stage 4. The aim of PSHE is to prepare children and young people to lead healthy, confident and independent lives. The aim of PSHE lessons, with reference to alcohol use and misuse, is to increase pupils' knowledge and understanding of this behaviour whilst developing their ability to make safe, healthy and responsible decisions. However, these approaches are

typically based on the knowledge model, which primary and secondary research have demonstrated are ineffective (*cf.* Tobler & Stratton, 1997). In addition, problems exist with delivering the interventions that have been proven to be effective. These interventions have been developed in research settings and may not fit easily within the standard practice of schools. The interventions are costly, time consuming and with the broad range of school curriculum, it is not feasible to conduct such interventions. For this reason it is important to develop quality programmes that can be easily translated within the school curriculum.

Over the past two decades, the efficacy of brief interventions has been studied in relation to the prevention of alcohol misuse, particularly amongst young adults. As previously discussed, brief interventions have demonstrated their efficacy in a number of non-problem drinking populations. However, brief approaches might similarly be used to decrease adolescent drinking. There has been some work that has examined the effect of brief interventions on the adolescent population. Monti et al. (1999) evaluated a brief, motivational interview to reduce alcohol use among adolescents who had been admitted to hospital following an alcohol-related event. Although no significant differences were found between the intervention and control groups in alcohol consumption at follow-up, adolescents in the intervention group reported significantly fewer alcohol-related problems (e.g., injuries, traffic violations). . Other studies that have examined the effect of brief interventions on alcohol prevention in young people have utilised a prevention model based on the transtheoretical model and have been typically non-interactive (Werch et al., 1996a; Werch, Carlson, Pappas, & DiClemente, 1996b; Werch, Carlson, Owen, Diclemente, & Carbonari, 2001; Werch et al., 2005; Werch et al., 2003; Werch et al., 2000). The interventions included motivational interviewing consultation with a nurse and involved sending out information to the individual or parents of the individual. Results from these studies were mixed, typically showing differing effects across different outcomes. For example, Werch et al. (1996a) revealed that the intervention had significant effects on 30-day quantity and frequency of alcohol use at 10-week follow-up (after

delivery of the peer follow-up consultation). However, there was no difference between groups on the measure of recent alcohol use or heavy alcohol use. Similarly, Werch et al. (1996b) found at a 3-month follow-up that there were no significant differences in the prevalence of 7-or 30-day alcohol use, or frequency or quantity of alcohol use. However, heavy alcohol use was significantly lower in the intervention group compared to the control group. More recently, other brief intervention programmes have been identified.

Werch and colleagues (2003, 2005) examined the effectiveness of two sport-based programmes. Werch et al. (2003) examined the effects of an alcohol prevention programme in the context of a sport programme with a prevention consultation, alcohol consultation or an alcohol consultation plus parent materials. Results revealed that there were reductions in alcohol use across all participants who received a sport consultation; however, there were no differences between groups. Werch et al. (2005) examined the effectiveness of an intervention designed around sport that included a health screening and nurse consultation with a take-home fitness prescription and prevention flyer. The researchers reported significantly less alcohol frequency, quantity and heavy use in the last 30 days compared to no intervention control groups.

There was only one intervention that included an interactive component (D'Amico & Fromme, 2002). These researchers examined the effectiveness of an interactive risk skills training programme that lasted 50 minutes, along with four modules on drug and alcohol prevention delivered over a 50-minute session. The programme was delivered over three days by high school staff and external expert guests. The programme included a presentation by external experts, small group extracurricular activities, presentation of videotapes and movies and parental involvement events. The researchers reported that there were significant decreases in risky drinking behaviour in the intervention group between baseline and post-test. The control group did not show significant decreases in risky drinking between baseline and post-test. The researchers did not compare

outcomes across groups.

It has been highlighted that there is comparatively little work that assesses the effects of brief interventions in the adolescent literature, and there is indeed only one brief intervention that has examined an interactive interventional design; this makes it difficult to make assumptions on the efficacy of these types of interventions in the adolescent population. However, it has been demonstrated that brief interventions are gaining a lot of support in the young adult population due to research indicating they are efficacious for alcohol reduction. The research within the thesis aims to examine the effects of brief intervention utilising an interactive intervention based on the social influence paradigm, specifically the social resistance approach.

1.7 Evaluating the "Whos" and "Whys" of Effective Interventions

Many primary studies designed at reducing or preventing alcohol abuse/misuse focus on the efficacy of a particular approach in terms of its impact on reducing or preventing use. However, there is increasing recognition of the need to identify programme effects on hypothesised mediating and moderating variables, and to the extent these variables lead to changes in alcohol use behaviour (Botvin et al., 1992; Donaldson et al., 1994; Saunders, Kypri, Walters, Laforge, & Larimer, 2004). A common thread that runs through health improvement and protection research is how can researchers design and deliver effective health communication (Noar, Benac, & Harris, 2007). In other words, how can researchers create and deliver health communication to the public that is relevant, interesting, informative and most of all has the greatest chance of being persuasive? One way to address this issue is to understand how effective interventions work (i.e., *who* they work for and *why* they work),

Exploring *for whom* interventions work has been a neglected area in drug prevention research, and analysis of problem behaviours that take moderators or statistical interactions into account are needed (Epstein, Zhou, Bang, & Botvin, 2007). Moderated analysis findings are

important because few primary research studies are designed to detect differences associated with intervention characteristics (Haynes, Ackloo, Sahora, McDonald, & Yao, 2008). They can potentially provide important information surrounding the influence of personal characteristics of the individual, demonstrating that different individuals are effectively influenced more by certain health messages than others (Saunders et al., 2004). In a recent meta-analytic review, evidence demonstrated that few studies concentrated on interactions or moderating relationships in the aetiology of alcohol use. Most of the work within this area has examined if responses to interventions are influenced by age, gender, or ethnic background of the individual. For example, Moyer et al. (2002) in a meta-analytic review examining the effectiveness of brief interventions for alcohol misuse reported that these interventions are more effective for at-risk rather than dependent drinkers and that women are more responsive than men. Similarly, Laforge (*cf.* Saunders et al., 2004) reports how treatment effects were moderated by gender in a population based individualised alcohol harm reduction feedback intervention study. Laforge reported that results demonstrated that significant treatment effects on the outcome measures were found to be earlier and greater for women than for men. Little research has been conducted on theoretical concepts (e.g., goal setting, locus of control and self-efficacy) in relation to alcohol prevention and reduction interventions. However, one study assessing brief interventions in the emergency department (Walton et al., 2008) examined interaction effects between intervention condition and hypothesised moderator variables (stage of change, self-efficacy, acute alcohol use and attribution of injury to alcohol). They found that participants who reported higher levels of self-efficacy had lower weekly consumption and participants with higher readiness to change had greater weekly consumption. Additionally, individuals who attributed their injury to alcohol and received the intervention had significantly lower levels of average weekly alcohol consumption and less frequent heavy drinking from baseline to 12-month follow-up. Research such as this demonstrates how understanding the mechanisms of

change can potentially assist in streamlining or amplifying interventions to target certain groups, thereby delivering more effective health communication messages.

Similarly, providing evidence about *why* an intervention works is as important as providing evidence that it works (Michie & Abraham, 2004). An important task of intervention evaluation is the investigation of the mediating mechanisms by which programme effects are obtained. Typically prevention interventions are designed to change mediating variables hypothesised to be related to the dependent variable. Focusing on mediating mechanisms in evaluation studies is important because it can identify the "active ingredients" and provides new information to guide future prevention programme development. Mediational analyses are needed to test whether the prevention programme changed the mediator, which in turn changed the dependent variable. Such analyses provide a test of the theoretical basis of the intervention and are crucial for furthering the science of health behaviour. Despite the success of several intervention approaches to the reduction of alcohol misuse in adolescents, only a small number of studies have examined mediational mechanisms (e.g., Botvin et al., 1990, 1992; Donaldson et al., 1994; Eisen et al., 2002; MacKinnom et al., 1991). Findings from these studies indicate that the interventions, based on the social influences approach, had significant effects on several hypothesised mediators, including knowledge and attitudes, assertiveness, refusal skills, risk-taking and perceived norms. Most of these studies have used conventional regression methods for testing mediation, as defined by Baron and Kenny (1986). Such comprehensive evaluation plans are critical to thoroughly evaluate interventions and their effectiveness, in order to gain a better and more thorough understanding of the complexities and areas of effectiveness in preventing or reducing adolescent alcohol misuse.

Although there has been generally little work carried out examining mediating mechanisms in alcohol prevention research, a few researchers have been making progress in investigating these mechanisms. For example, a number of researchers have examined the extent to which specific variables mediate the effects of interventions on tobacco, alcohol or marijuana use. Findings have

demonstrated that changes in perceived norms (Botvin et al., 1999), refusal skills (Botvin et al., 1995) and risk-taking (Botvin et al., 1999) significantly mediate the effects of the prevention programme on substance use. In a large-scale prevention trial of the Life Skills Training programme (Botvin, Griffin, Diaz, & Hill-Williams, 2001), prevention effects on drug use outcomes were found to be mediated in part by risk-taking and peer normative expectations.

Cuijpers (2002), in a meta-analysis of school-based prevention programmes, examined studies that evaluated mediators of prevention programmes. Several important mediators of prevention programs were identified. One of the most important mediators found in several studies was the focus on a normative approach, including social prevalence knowledge, social acceptability knowledge, normative expectations, and friends' reactions to drug use (Botvin et al., 1992; Donaldson, Graham, & Hansen, 1994; MacKinnon et al., 1993; Wynn, Schulenberg, Maggs, & Zucker, 2000). These studies emphasise the need to focus on prevention programmes on social influence components, especially those that are aimed at the acceptability of drugs, knowledge about the prevalence of drug use, and perceived peer approval of drug use. Other mediators that were found to be associated with effects of prevention programmes included commitment to not use substances (Hansen & McNeal, 1997), intentions not to use (MacKinnon et al., 1993), and increasing parent – child communication (Komro et al., 2001).

The present research intends to extend the literature by exploring the mechanisms that lead to intervention effectiveness. Examining the moderators and mediators of interventions may yield practical information on the intervention's strengths and weaknesses allowing for the design of more effective and efficient programmes. If the interventions employed within the thesis were efficacious, the augmented TPB model will be instrumental in exploring the *whos* and the *whys* surrounding their effectiveness.

1.8 Overview and Broad Aims of the Thesis

Understanding the factors involved in alcohol consumption amongst young people is important for health, especially as alcohol consumption during adolescence can lead to alcohol dependency in later life (Bernstein & Bernstein, 2005). Having an understanding of these factors may lead to greater understanding for the implementation of interventions to reduce the use of alcohol. The TPB provides a well-validated starting point because it is perhaps the most influential model of health and social behaviour. The TPB has been utilised for decades to predict a range of health behaviours, and the theory has been shown to be efficacious in predicting intentions and behaviour. However, meta-analyses have shown that the model lacks predictive utility for the norm-intention relationship. Therefore, the normative component of the TPB will be re-conceptualised to encompass wider definitions of social influence as well as incorporating variables from additional theories to better understand this behaviour in young people with the view to implementing quick cost-effective interventions. The thesis will be spilt into two sections; the first section will assess the motivations to drink by utilising prospective studies. The second section of the thesis will implement cost effective brief interventions with the aim of reducing alcohol intake within these cohorts.

The broad aim of this thesis is to assess the efficacy of an extended TPB as an explanatory tool for the prediction of intentions and behaviour and to test the efficacy of interventions. The thesis will test the efficacy of the extended model via the application of the model to drinking in undergraduates and adolescents (Chapter 2 & 3), and the application of the model to a reduced alcohol consumption intervention amongst adolescents (Chapter 5). Chapter 4 assesses the variables within the extended TPB as moderators of efficacy for a brief intervention amongst undergraduates. Chapter 5 uses the extended TPB to further assess the intervention to explain why the intervention worked for the adolescents. The final chapter (Chapter 6) offers a conclusion and suggestions for future directions.

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Chapter 2

Explaining UK Undergraduate Drinking Behaviour: Testing an Augmented Theory of Planned Behaviour

2.1 Overview

During recent years considerable publicity has suggested that alcohol misuse amongst young people has reached unprecedented or at least epidemic proportions. The DH, ONS (2006) has reported that younger people were more likely to drink heavily, with 48% of men and 39% of women aged 16-24 drinking above the daily recommendations compared to 19% of men and 5% of women aged 45-64. Furthermore within this age group, evidence suggests that University undergraduates engage in heavy drinking more frequently than their peers (Gill, 2002). For example, Webb et al. (1996) assessed the drinking behaviour of 3075 2nd year undergraduates across ten UK universities and found that among drinkers, "sensible" levels (1-14 units per week for women, and 1-21 units per week for men) were exceeded by 61% of men and 48% of women. Hazardous drinking, defined as drinking more than 36+ units for females and 51+ units for males, was reported by 15% of drinkers (20% of the men and 10% of the women). Due to the high numbers of young people drinking excessive amounts of alcohol, understanding the key motivational determinants of such behaviour may be used to encourage more appropriate drinking behaviour.

As discussed in Chapter 1, the TPB may be usefully employed to explain such behaviour. The TPB has been successfully applied to a range of behaviours, both positive and negative, although it has been used infrequently within the domain of alcohol consumption. However, the few studies that have utilised the TPB in the alcohol consumption domain have generally reported findings that have offered support for the model among undergraduate populations. Norman et al.

(1998) reported that the TPB variables explained 29% of the variance in binge drinking intentions with perceived control and positive control beliefs emerging as significant independent predictors. Perceived control had a negative relationship with binge drinking intentions. Johnston and White (2003) reported that the TPB variables explained 69% of the variance in binge drinking intentions and 51% of the variance in binge drinking behaviour, with intentions emerging as the only significant predictor of behaviour. Norman and Conner (2006) reported similar results; after controlling for demographics, the TPB variables accounted for 66% of the variance in intentions with perceived control again having a negative relationship with intention. More recently, Norman, Armitage, and Quigley (2007) reported that the TPB variables explained 58% of the variance in binge drinking intentions, with attitudes and self-efficacy emerging as significant independent predictors. Intention and perceived control were significantly related to behaviour, although perceived control had a negative relationship with binge drinking. Taken together, the results of previous studies support the predictive utility of the TPB in relation to examining undergraduates' drinking intentions and behaviour.

Researchers on motives reported by students for why they drink has indicated 'pleasure' (Ashton & Kamali, 1995; Webb et al., 1996; 1998) and 'being sociable' (West et al., 1990) are important motives, which suggests that peer/social pressures should have an important impact on the drinking behaviour of students. In particular, the prevalence of alcohol based social opportunities at university is likely to contribute to the potency of peer influence on individual attitudes and behaviours. Alcohol is a prominent part of university culture, present at most social functions and present at many peer interactions (Thombs, 2000). As discussed in Chapter 1 the TPB suffers from a few limitations, particularly for behaviours that have been shown to be influenced greatly by peers where the subjective norm component of the model is a weak predictor of intentions and behaviour.

2.1.1 The Role of Social Influences in Young People's Health-Related Behaviour

Social influence variables are likely to facilitate the drinking that forms part of the life for most students. These social influence variables, in particular the impact of social norms and group membership, can play an important role in the attitude-behaviour relations promoting alcohol consumption. Peers are typically the most salient social referents for individuals attending university. Studies have indicated that students believe that their peers drink more than they actually do (Haines, 1997; Haines & Spear, 1996; Perkins & Berkowitz, 1986; Wechsler, Molnar, Davenport, & Baer, 1999) and that this misperception of the norm may lead to individuals drinking more in an effort to live up to that perception (Barnett, Far, Mauss, & Miller, 1996; Borsari & Carey, 1999; Perkins, Meilman, Leichliter, Cashin, & Presley, 1999). If students perceive that drinking is the usual behaviour of their peers, they may be more likely to engage in this behaviour. Having the belief that drinking is the norm may provide individuals with an excuse for drinking more because "everyone is doing it".

For health risk behaviours, social influence can be described as a set of external environmental pressures influencing experimentation or habituation to that risk behaviour (Elder & Stern, 1986). It is generally accepted that there are differing aspects of social influence, cognitive social influences and situational social influences (Oostveen, Knibbe, & DeVries, 1996). Cognitive social influences are defined as the perception of other people's behaviour (modelling) and the perceived social norms of other people; both are assumed to be internalised as cognition (Bandura, 1986). For undergraduate students the perception of other people's behaviour possibly has an impact on their behaviour. Borsari and Carey's (2001) overview of peer influences on college student drinking have suggested that peers influence drinking behaviour in both direct and indirect ways. Firstly, peers provide role models and students learn by observation that such behaviour is one way to be accepted and liked. Secondly, and more subtly, peer behaviour contributes to perceived norms about drinking.

Research on social norms has demonstrated that perceived normative support of others for drinking consistently predicts alcohol use (i.e., Clapp & McDonnell, 2000; Liccione, 1980; Nagoshi, 1999; Wood et al., 1992). The more the student perceives others as drinking heavily and/or approving of this behaviour the more likely the student will be to consume higher amounts of alcohol. A number of mechanisms have been proposed to explain misperceptions, from psychological attribution processes (i.e., Borsari & Carey, 2001) in which the individual tends to perceive the drinking actions of others as more reflective of their dispositions than of the situation, to "pluralistic ignorance" (Prentice & Miller, 1993), in which the attitudes and behaviours of others are perceived to be more common than is really the case. It is possible to distinguish between two types of perceived social norms; descriptive norms and injunctive norms (Cialdini et al., 1990). Descriptive norms describe the perception of others quantity and frequency of drinking. Injunctive norms reflect the perceptions of others' approval of drinking and represent perceived moral norms of the peer group. Cialdini et al. (1990, 1991) have provided empirical support for the distinction between these two types of norms. The motivating force of injunctive norms is the expectancy of gaining social approval or disapproval, whilst the motivating force of descriptive norms is the expectancy that if most people are doing it, it is probably a wise thing to do. Consequently, expanding the definition of norms in line with the more widely accepted conceptualisation of this term could potentially have a greater impact on individual intention to perform the behaviour. Researchers have found that assessing the group behavioural norm (e.g., Grube et al., 1986) and the group norm, incorporating behavioural norm and group attitude (e.g., White et al., 1994) adds to the prediction of behavioural intentions. Terry et al. (1999) provided a more fundamental critique of the normative component, arguing that such influences should be re-conceptualised in line with social psychological models of group influence, in particular, the social identity approach (Hogg & Abrams, 1988).

2.1.2 Social Influences and the TPB

As mentioned in Chapter 1, meta-analyses have demonstrated the weak role that the subjective norm component of the TPB tends to play in predicting a range of behaviours. This has led researchers to re-conceptualise the variable. It has been argued (Terry & Hogg, 1996; Terry et al., 1999) that the subjective norm component of the model fails to represent the true extent of social influence. The subjective norm approach assumes that all groups are considered and that the sources of influence from the groups have an equal impact. However, not all groups are equally important to us, and in reference to various behavioural contexts one group may be provide greater sources of influence over another. A further limitation to the conceptualisation of the subjective norm component is that it is limited in its scope to the more widely accepted definition of norms. Ajzen and Fishbein (1975) conceptualised subjective norm as the perceived pressure from significant others. However, the wider definition of norms describes the accepted or implied rules of how group members should and do behave (e.g., Brown, 1988; Cialdini & Trost, 1998).

Social Identity Theory (SIT: Tajfel & Turner, 1979) states that an important component of the self-concept is derived from memberships in social groups and categories. Social identity is based on two underlying processes: categorisation and self-enhancement. Categorisation operates to structure the world into meaningful categories and to highlight intergroup differences by stressing similarities and differences between categories. In other words, the individual stresses differences between the in-group and out-group, whilst stressing similarities between the self and the in-group members on stereotypic dimensions. The second process, self-enhancement, is the motivational aspect of social identity. It assumes that people have the basic need to attain positive self-evaluation and positive self-esteem. This is achieved by favouring more positively the in-group over the out-group on important dimensions. Accordingly, it has been demonstrated that the norms of a salient or important social group should influence people's willingness to display group behaviour; however only if the individual displays high group identity (Terry & Hogg, 1996).

Recent research has provided support for the social identity approach to attitude-behaviour relations. Terry and Hogg (1996) showed that, in accord with predictions derived from SIT, the perceived norms of a specific and behaviourally relevant reference group were related to students' intentions to engage in health behaviours, after controlling for the TPB variables. However, this effect was found only for students who identified strongly with the reference group. In contrast, for students who did not identify strongly with the reference group, personal factors (i.e., attitudes and perceived behavioural control) were the primary determinants of intention.

Further support for the expansion of the norms component come from Fekadu and Kraft (2002) who expanded the TPB by examining the role of descriptive norms (behavioural norms) and group norms (group attitude) for contraception use in 354 sexually active Ethiopian females. Descriptive norms were measured by using items pertaining to behaviour of friends, whilst the item measuring group norm asked participants to indicate if they perceived that their friends thought that contraception use was 'a good thing to do'. Results revealed that the TPB variables accounted for 27% of the variance in intentions (all independent variables having significant betas). In step 2, the inclusion of descriptive norms increased the R^2 significantly, with the variable independently explaining 4% of the variance in intentions. In step 3, the inclusion of group norm explained significantly a further 1% of the variance in intentions, independent of the other predictors. Entering group identity into the regression equation did not significantly contribute to the prediction of the model. The research indicates that the behavioural intentions seem to be motivated both by the expectancy of gaining approval or disapproval, as well as the information about other peoples' behaviour. These researchers did not investigate the predictive utility of the TPB on behaviour.

Johnston and White (2003) provided support for the re-conceptualisation of the norm component for risk behaviours. The results from the study indicated that participants who had more perceived normative support from their friends and peers at university to engage in binge drinking, were more likely to intend to binge drink. Additionally, it was reported that group norms

significantly predicted intentions, especially for participants who identified strongly with the reference group. The results for group norms and identification add to the growing body of research utilising a social identity approach to better understand the role of norms in attitude – behaviour models (Johnston & White, 2003). Studies to date signify the importance of extending the norm component in the TPB to better predict health risk behaviours, particularly in which groups contribute to the decision-making processes of whether or not to perform the behaviour.

In addition to field research, the social identity approach to attitude-behaviour relations has been examined in experimental studies (Terry et al., 2000; Wellen, Terry, & Hogg, 1998). These studies, which have examined a range of behaviours (e.g., career choice in psychology and recycling) have demonstrated that the attitude-behaviour relationship is strengthened when individuals are exposed to an ingroup norm consistent with their initial attitude, and weakened when exposed to an attitude-incongruent norm, but only for individuals who identify strongly with the group.

2.1.3 Prototype Perceptions

A further area requiring exploration and one area of social influence that has received little empirical research in conjunction with the TPB is prototype perception. Prototypes are the images that young people have of the type of person who engages in health behaviour. For example, the young person may describe a typical smoker as "cool". Prototypes have been examined in relation to health related decisions within Gibbons and colleagues' Prototype / Willingness Model (Gibbons & Gerrard, 1995, 1997). According to this model, the images or prototypes young people hold of peers who engage in risk behaviours are related to their own willingness to engage in risk behaviours when the opportunity arises. It has been proposed that it is the social reaction to risk inducing situations that leads young people to engage in a number of health risk behaviours as young people are highly concerned with their social images (Simmons & Blyth, 1987). Previous studies have indicated that social images associated with smoking and drinking peers affect young

people's decisions to start smoking or drinking (Aloise-Young & Henningan, 1996; Barton, Chassin, Presson, & Sherman, 1982; Blanton, Gibbons, Gerrard, Conger, & Smith, 1997). Additionally, a number of studies have shown that prototype perception explains additional variance in intentions and behaviour over and above the TPB variables (e.g., Norman et al., 2007; Rivis & Sheeran, 2003; Rivis et al., 2006). Rivis and colleagues (2003, 2006) and Norman et al. (2007) showed that greater perceived similarity to both health-protective and health-risk behaviours respectively, were associated with stronger intentions to perform these behaviours. This would suggest that prototype perception could usefully be included as additional variables in the TPB to understand motivations in behaviour.

2.1.4 Past Behaviour

A major inadequacy of the TPB is the failure to account for the influence that past behaviour has on intention and future behaviour. Past behaviour is typically the strongest predictor of intentions and future behaviour, explaining variance over and above that accounted by the TPB variables (e.g., Ajzen, 1991; Conner & Armitage, 1998; Ouellette & Wood, 1998). In a meta-analysis performed by Conner and Armitage (1998) it was demonstrated that past behaviour, on average, explained a further 7.2% of the variance in intentions, after controlling for the additional TPB variables. Additionally, past behaviour explained an average of 13% variance in behaviour after controlling for intentions and perceived control. In line with Triandis (1977), the strength of the relationship between past behaviour and future behaviour can be indicative of a habitual response. If a behaviour is repeated on a number of occasions it is believed to be performed with little effort and automatically; under these circumstances intentions and other social cognition variables may lose their predictive utility (Triandis, 1977).

In their meta-analysis, Ouelette and Wood (1998) reported that intention was a stronger predictor of future behaviour than past behaviour when the behaviour was not performed frequently. However, for frequently performed behaviours past behaviour was a stronger predictor of future

behaviour than intentions. This is indicative of an habitual response that should be observed when the behaviour has been performed frequently in the past. Thus frequency of past behaviour should moderate the intention-behaviour relationship. Repeating behaviour may lead to it being less under the influence of rational decision processes implied by the TPB and more under the influence of habitual responses (Eagly & Chaiken, 1993). Few studies have assessed the moderating role of past behaviour in the intention–behaviour relationship. Some studies have found that past behaviour moderates the relationship between intention and behaviour (e.g., Kashima, Gallois, & McCamish, 1993; Verplanken, Aarrts, van Knippenberg, & Moonen, 1998), whilst other studies have reported no moderating effect of past behaviour (Norman, Conner, & Bell, 2000). In relation to alcohol consumption, Norman and Conner (2006) revealed that, after controlling for demographics, the TPB variables and past behaviour, the intention x past behaviour interaction term led to a significant improvement in the model. The direction of the regression coefficient indicated that the intention - behaviour relationship became weaker as the frequency of past behaviour increased.

2.1.5 Overview and Hypotheses

There have been relatively few attempts to integrate the TPB with other models of behaviour despite the importance of such theoretical integration (Bagozzi & Kimmel, 1996; Conner & Norman, 1994). This chapter describes a study in which the TPB is used as a theoretical framework to examine the influence of different social cognitive factors on undergraduates' intentions to drink alcohol and the extent to which these factors predict subsequent drinking behaviour. In particular, the present study sought to add measures of descriptive norms, prototype perceptions and past behaviour to the predictions of drinking intentions and behaviour at one-month follow-up.

It is predicted that: (i) the TPB variables will explain variance in drinking intentions, such that positive attitudes, subjective norms and perceptions of control will be associated with drinking to get drunk intentions and behaviour, (ii) descriptive norms and prototype perceptions will explain additional variance in both students' intentions to get drunk and their behaviour, such that positive

behavioural and group attitude norms and positive prototype perceptions will predict drinking to get drunk intentions and behaviour over and above the TPB variables, (iii) past behaviour will explain additional variance, such that higher reports of past behaviour will predict drinking to get drunk intentions and behaviour, (iv) intention will explain variance in drinking to get drunk behaviour, such that positive intentions will be associated with drinking to get drunk behaviour and (v) past behaviour will moderate the relationship between intentions and behaviour, such that the intention-behaviour relationship will become weaker among students as the frequency of past behaviour increases.

2.2 Method

2.2.1 Participants and Procedure

The present sample comprised 1,383 undergraduate students (483 males and 940 females) from all disciplines within the University of Sheffield across the three years of study. The age of the participants ranged from 18-30 years (M = 20.19 years, SD = 2.72 years). The participants were in 1st, 2nd and 3rd year degree courses at the University of Sheffield (38.7%, 30.2% and 31.1%, respectively). The majority of the sample reported being White British (84.9%), the rest of the sample reported being Other White (7%), Mixed (2.8%), Asian (3.2%) or Black (2.1%). The students were contacted via email and asked to volunteer in a prospective questionnaire web-based survey concerning their "views on student life with particular emphasis on consuming alcohol". At Time 1, participants completed measures of TPB, PWM, descriptive norm variables, group identity and past behaviour. One month later (Time 2), participants completed a second questionnaire concerning their drinking behaviour (N = 789), a response rate of 57%.

2.2.2 Measures

The Baseline questionnaire (see Appendix A) included direct measures of the main constructs of the TPB constructed in line with recommendations (Ajzen & Fishbein, 1980), as well as measures of descriptive norms, adapted from Terry and Hogg (1996), group identity items from Brown, Condor,

Mathews, Wade, and Williams (1986) scale, and items measuring prototype evaluation and similarity (Rivis & Sheeran, 2003).

2.2.2.1 Theory of Planned Behaviour

2.2.2.1.1 Attitude

Seven items were used to measure attitudes. Participants indicated on bipolar (+1 to +7) semantic differential scales, if "Drinking to get drunk in the next month would be..." *unpleasant-pleasant, unhealthy-healthy, harmful-beneficial, unsociable-sociable, negative-positive, unsatisfactory-satisfactory, useless-useful*. The mean of the seven items was taken as a measure of attitude, with higher scores indicating a positive attitude towards getting drunk.

2.2.2.1.2 Subjective Norm

A global measure of subjective norm was measured with two items: "Most people who are important to me would *approve of me drinking to get drunk over the next month-disapprove of me drinking to get drunk over the next month*" and "Most people who are important think that I *should drink to get drunk over the next month-should not drink to get drunk over the next month*". Both were measured on 7-point bipolar (+1 to +7) scales, and scores were averaged to provide a measure of subjective norms.

2.2.2.1.3 Perceived Control

Perceived control was measured with three items: "Whether or not I drink to get drunk over the next month is under my control" (*disagree-agree)*, "It is up to me whether or not I drink to get drunk over the next month" (*disagree-agree)* and "I am in complete control whether or not I drink to get drunk over the next month" (*disagree-agree)*. The items were assessed using 7-point (+1 to +7) bipolar scales and were averaged to provide a measure of perceived control.

2.2.2.1.4 Self-Efficacy

Self-efficacy was measured using 3 items: "If I wanted to, drinking to get drunk over the next month would be (*easy-difficult)*", "How confident are you that you could drink to get drunk over the next month, if you wanted to (*very unsure-very sure)*" and "If I wanted to, I could easily drink to get drunk over the next month (*disagree-agree)*". The items were assessed using 7-point (+1 to +7) bipolar scales and were averaged to provide a measure of self-efficacy.

2.2.2.1.5 Intention

Intention was measured by three bipolar (+1 to+7) items. The items asked participants; "Do you intend to drink to get drunk over the next month?" (*definitely do not-definitely do)*, "I intend to engage in drinking to get drunk in the next month" (*definitely do not-definitely do)*, and "How likely are you to drink to get drunk in the next month?" (*very unlikely-very likely)*. The mean from the three items provided a measure of intention, with higher scores indicating a positive intention to drinking to get drunk in the next week.

2.2.2.2 Prototype Perceptions

2.2.2.2.2 Prototype Evaluation and Prototype Similarity

The following definition of a prototype was taken from Gibbons, Gerrard, and Boney-McCoy (1995, p.87) and was presented to participants:

> "The following question concerns your images of people. What we are interested in are your ideas about typical members of different groups. For example, we all have different ideas about what typical movie stars are like or what the typical grandmother is like. When asked, we could describe one of these images – we might say the typical movie star is pretty or rich, or that the typical grandmother is sweet and frail. We are not saying that all movie stars or all grandmothers are exactly alike, but rather that many of them share certain characteristics"

Previous studies have all supplied participants with an experimenter-defined series of bipolar scales; the present study employed an open-ended measure, similar to the measure utilised by Rivis and

Sheeran (2004). Participants were asked to write down at least three characteristics that they thought described the type of person who drinks to get drunk at least once a week. *Prototype evaluation* was assessed by one item. Participants were asked to provide a number between 0 and 100 (0 = Extremely Unfavourable, 100 = Extremely Favourable) to indicate "your overall evaluation of the type of person who drinks to get drunk". *Prototype similarity* was assessed by two items: "In general, how similar are you to the type of person who drinks to get drunk at least once a week?" *(very similar – not at all similar)* and "Do the characteristics that describe the type of person who drinks to get drunk at least once a week also describe you?" *(definitely yes – definitely no)*. The two measures were assessed using 7-point (+1 to +7) bipolar scales.

2.2.2.3 Descriptive Norms[1] and Group Identity

Friends and peers at University served as the social reference group. Similar procedures to Terry et al. (1999) were used to measure behavioural norms, whilst the measure of group attitude was adapted from the procedures of Terry and Hogg (1996).

2.2.2.3.2 Group Attitude

Four items measured group attitude. Participants were asked to respond to the following stems, "Most of my friends and peers think that drinking to get drunk in the next month would be..." (*a bad idea-a good idea*), "Most of my friends and peers think that drinking to get drunk in the next month would be"...(*not pleasant-pleasant*), "Most of my friends and peers think that drinking to get drunk in the next month would be..." (*a bad thing to do-a good thing to do*), and "Most of my friends and peers think that drinking to get drunk in the next month would be..."(*not enjoyable-enjoyable*). Items measuring group attitude were assessed using 7-point (+1 to +7) bipolar scales.

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[1] Descriptive norms have been measured in a variety of ways; however, they tend to focus on other's attitudes (e.g., Fekadu & Kraft, 2002; Terry & Hogg, 1996) and/or other's behaviour (Terry & Hogg, 1996; Terry & Hogg, 1999), these are sometimes combined to form one scale termed group norms. It was decided to measure these concepts separately in the present study.

The mean score from the four items provided a measure of group attitude with higher scores indicating more positive perceived group norms towards drinking to get drunk.

2.2.2.3.3 Behavioural Norm

Behavioural norm was measured by two bipolar (+1 to +7) items. The items asked participants to respond to the phrases: "Most of my friends and peers will drink to get drunk in the next month" (*disagree-agree*) and "How many of your friends and peers will drink to get drunk in the next month" (*none-all*). The mean score from the two items provided a measure of behavioural norms, with higher scores indicating more positive perceived group norms towards drinking to get drunk.

2.2.2.3.4 Group Identity

Group identity was measured using a modified version of the Brown, Condor, Mathews, Wade, and Williams (1986) scale. Participants responded to four items on 7-point Likert scales to assess identification with the reference group. The items were; "In general, how well do you feel you fit into your group of friends and peers?" (*very well-not very well*), "How much do you feel strong ties with your friends and peers? " (*very much-not very much*), "How much do you feel you identify with your friends and peers? " (*not at all-very much*), and "How much do you see yourself belonging to your group of friends and peers? " (*not very much-very much*). The mean score from the four items was taken as the measure of in-group identification, with higher scores indicating that the participant identified highly with the group.

2.2.2.4 Past Behaviour

Past behaviour was measured by one item. The item asked participants to report "On average, how often would you say that you drank to get drunk in the past month?" The response option to this item was open-ended.

2.2.2.5 Behaviour

Behaviour (see Appendix B) was measured by using a frequency by quantity index. The first asked participants to report "On average, how often did you drink to get drunk in the past month?" The second item asked participants "On average, how many units did you consume when you were drinking to get drunk?" For each respondent the two scores were multiplied together and divided by 4.34 to obtain units per week.

2.3 Results

2.3.1 Descriptive Statistics and Correlations

The intercorrelations between the main study measures are presented in Table 2.1 along with means, standard deviations and internal reliabilities. All measures were found to have good internal reliability. The mean for intention was 4.83 indicating that participants generally intended to drink to get drunk in the next month. All test variables scores were above the scale midpoints; however, attitudes, subjective norms, intentions and perceived similarity to the prototype were generally modest, with all means close to scale midpoints. Participants generally reported high perceptions of control and self-efficacy over drinking to get drunk, $M = 6.28$ and $M = 6.25$, respectively. The means for behavioural norms and group attitude were high, $M = 5.27$ and $M = 5.49$, respectively. The participants reported on a number of characteristics that they perceived to represent the typical person who drank to get drunk. The most frequently reported characteristics, were sociable (27%), fun-loving (21%), student (17%), outgoing (12%), unhealthy (11%) and loud (11%). Evaluations of the prototype were moderate with a mean rating of 51 out of 100.

All of the variables, with the exception of perceived control, were found to have significant positive correlations with drinking intentions. In turn, all test variables, with the exception of perceived control, had positive correlations with future behaviour. Some of the correlations among predictors exceeded $r = .70$ indicating that multicollinearity was possibly an issue (*cf.* Tabachnick & Fidell, 1989). Collinearity tests were performed using SPSS (SPSS V11, 2005). The results from the

regression analysis revealed that none of the variables had a tolerance statistic of 0.2 or below, a level that Menard (1995) suggests can be problematic. Similarly, the variance inflation factor for the variables did not have a level higher than 10 (Myers, 1990) indicating that multicollinearity was not a cause for concern.

PAGE NUMBERING AS FOUND IN THE ORIGINAL THESIS

Table 2.1. Intercorrelations, descriptive statistics, and Cronbach's alphas for the study variables.

	2	3	4	5	6	7	8	9	10	11	12	*M*	*SD*	α
1. Intention	.79**	.63**	-.16**	.35**	.56**	.52**	.26**	.53**	.64**	.61**	.62**	4.83	2.14	.97
2. Attitude		.66**	-.11**	.32**	.53**	.45**	.22**	.56**	.55**	.51**	.52**	3.81	1.23	.90
3. Subjective Norm			-.11**	.28**	.58**	.46**	.23**	.48**	.49**	.44**	.43**	4.20	1.53	.85
4. Perceived Control				.10**	-.06*	-.03	.12**	-.07*	-.15**	-.20**	-.25**	6.28	1.08	.75
5. Self-Efficacy					.35**	.33**	.19**	.26**	.30**	.25**	.26**	6.25	1.17	.77
6. Group Attitude						.71**	.04	.41**	.45**	.43**	.43**	5.49	1.35	.94
7. Behavioural Norms							.08**	.34**	.41**	.37**	.36**	5.27	1.49	.71
8. Group Identity								.22**	.24**	.22**	.17**	5.54	1.20	.86
9. Prototype Evaluation									.59**	.43**	.46**	51.16	23.74	_
10. Prototype Similarity										.55**	.57**	3.77	1.87	.91
11. Past Behaviour											.80**	4.33	4.10	_
12. Behaviour												3.95	3.83	_

** p< .01, * p< .001

2.3.2 Attrition Analysis

To check the possibility of attrition bias, a MANOVA was run to ascertain if there were any differences in responses to the extended TPB questionnaire between participants who were present at behavioural follow-up and those who were absent at behavioural follow-up, $F(11, 1344) = 2.00$, $p < .05$. Given the significant multivariate effects, univariate *Fs* were conducted (Table 2.2). Participants who were absent at behavioural follow-up scored significantly lower on intentions, attitudes, subjective norms, attitudinal norms, prototype similarity and past behaviour. It can be postulated from these findings that participants who filled out the follow-up questionnaire survey had more interest in drinking to get drunk than their absent counterparts.

2.3.3 Predictors of Intention

A hierarchical multiple regression was used to predict intentions to get drunk (see Table 2.3). A four-step hierarchical regression was conducted to assess the predictive utility of the augmented model over and above the TPB. The TPB variables were entered in the first equation. To see if there was any additional variance explained over and above the TPB variables, descriptive norms and group identity and their interactions were entered in the second step, prototype perception and the interactive term in the third step and past behaviour at the final step.

All variables at step 1 were significant predictors of intention and accounted for 66% of the variance, $F(4,1351) = 653.47$, $p<.001$; all variables showed positive relationships with intentions with the exception of perceived control. Attitudes emerged as the strongest predictor of intentions to drink to get drunk. Incorporating descriptive norms and group identity into the model at the second step accounted for an extra 3% of the variance in behavioural intentions $\Delta F(3,1348) = 43.69$, $p < .001$. All variables with the exception of the interaction terms showed significant betas. The prototype perception variables were entered into the model at the third step and these variables increased the variance by 3%, $\Delta F(2,1346) = 62.95$, $p < .001$. The interaction terms and prototype evaluation did not emerge as significant predictors of behavioural intention. The addition of past

behaviour increased the variance by 1%, $\Delta F(1,1345) = 70.15$, $p < .001$. All variables, with the exception of attitudinal norms and prototype evaluation remained significant predictors. The final model accounted for 73% of the variance, $\Delta F(10,1345) = 363.81$, $p < .001$, with all variables, except attitudinal norms and prototype evaluation, emerging as significant independent predictors.

Table 2.2 Differences in test variable means between participants present at behavioural follow-up and participants who were absent at behavioural follow-up.

	Participation at T2				
	Present		Absent		
Variable	*M*	(*SD*)	*M*	(*SD*)	*F*
Intention	4.96	(2.09)	4.64	(2.20)	7.74**
Attitude	3.89	(1.19)	3.71	(1.27)	7.14**
Perceived Control	6.25	(1.13)	6.83	(1.02)	1.79
Self-Efficacy	6.25	(1.14)	6.29	(1.18)	.35
Subjective Norms	4.32	(1.50)	4.03	(1.60)	12.31***
Attitudinal Norms	5.57	(1.31)	5.36	(1.41)	8.43**
Behavioural Norms	5.33	(1.46)	5.20	(1.52)	2.52
Prototype Evaluation	52.13	(23.14)	49.68	(24.52)	3.53
Prototype Similarity	3.89	(1.83)	3.59	(1.92)	8.07**
Past Behaviour	4.62	(4.16)	3.96	(4.00)	8.82**
N	789		594		

Table 2.3 Hierarchical regression of intention on the TPB, Descriptive Norms, Group Identity and Prototype Perception variables ($N = 1356$).

Step	Variables entered	β	β	β	β
1	Attitudes	.63***	.58***	.49***	.49***
	Perceived Control	-.08***	-.10***	-.08***	-.06***
	Self-Efficacy	.11***	.06***	.04**	.04**
	Subjective Norm	.17***	.10***	.08***	.07***
2	Group Attitude		.05*	.04	.02
	Behavioural Norms		.15***	.13***	.12***
	Group Identity		.09***	.07***	.05***
	Group Attitude X Group Identity		.05	.04	.04
	Behavioural Norms X Group Identity		.01	.02	.01
3	Prototype Evaluation			-.01	-.02
	Prototype Similarity			.21***	.17***
	Evaluation X Similarity			.02	.00
4	Past Behaviour				.15***
Adjusted R^2		.66***	.69***	.71***	.73***
R^2 Change		.66***	.03***	.03***	.01***

$p < .05$. $^{**}p < .01$. $^{***}p < .001$.

2.3.4 Predictors of Behaviour

A hierarchical multiple regression was used to predict behaviour at one-month follow-up (see Table 2.4). The independent variables were entered in four blocks: (i) TPB variables, (ii) descriptive norms and group identity, (iii) prototype perception and (iv) past behaviour.

The TPB variables were able to explain 41% of the variance in drinking to get drunk, $F(5,784) = 78.61$, $p < .001$, with intentions and perceived control (negative relationship) emerging as significant independent predictors. The addition of descriptive norms and group identity led to a significant increment in the amount of variance explained by 1%, $\Delta F(3,781) = 3.85$, $p < .01$, with intentions, perceived control (negative relationship), attitudinal norms and group identity emerging as significant independent predictors. Including the prototype perception variables led to further increment in the amount of variance explained by 5%, $\Delta F(2,779) = 23.42$, $p < .001$, with the previous variables remaining significant independent predictors along with prototype similarity. The addition of past behaviour produced a further significant increment in explained variance, by 22%, $\Delta F(1, 778) = 377.10$, $p < .001$. In the final regression equation the variables were able to explain 68% of the variance in future drinking behaviour, $F(11,778) = 108.76$, $p< .001$, with perceived control (negative relationship), intentions, prototype similarity and past behaviour emerging as significant independent predictors.

Table 2.4 Hierarchical regression of behaviour on the TPB, Descriptive Norms, Group Identity, Prototype Perception and Past Behaviour ($N = 789$).

Step	Variables entered	β	β	β	β
1	Intention	.52***	.48	.37***	.14**
	Attitudes	.04	.02	-.04	-.02
	Perceived Control	-.15***	-.17***	-.13***	-.07**
	Self-Efficacy	.07	.05	.03	.04
	Subjective Norm	.03	-.02	-.05	-.06
2	Group Attitude		.12*	.12*	.01
	Behavioural Norms		.00	-.02	.02
	Group Identity (GI)		.07*	.05	.01
	Group Attitude X GI		.02	.01	.01
	Behavioural Norms X GI		.01	-.01	.00
3	Prototype Evaluation			.07	.03
	Prototype Similarity			.24***	.10**
	Evaluation X Similarity			.05	.02
4	Past Behaviour				.65***
Adjusted R^2		.41***	.42***	.46***	.68***
R^2 Change		.66***	.01**	.05***	.22***

$p < .05$. ** $p < .01$. *** $p < .001$.

2.3.4 Moderator Analysis

Moderated linear regression was conducted to test the moderator hypothesis that group identity moderates the relationship between descriptive norms and intentions. Variables were standardised to minimise problems with multicollinlearity (Aiken & West, 1991). Table 2.4 shows the regression of intentions on TPB variables, descriptive norms (group attitudes and behavioural norms), group identity and their interactions. Findings indicated that the interaction terms were not associated with a significant increase in explained variance, $\Delta R^2 = .00$, $\Delta F(2,1382) = .14$, $p = .78$.

Similarly, moderated regression analysis was used to assess the moderating effect of past behaviour on the relationship between intention and future behaviour. Table 2.5 shows the regression of behaviour on intention, past behaviour and the interaction between past behaviour and intentions. Findings indicated that the interaction term added a significant improvement in the model indicating that past behaviour moderates the relationship between intention and behaviour, $\Delta R^2 = .01$, $\Delta F(1,788) = 15.77$, $p < .001$. A simple slope analysis was utilised to decompose the interaction (Aiken & West, 1991). The regression lines for intention were examined at three levels of the moderator (past behaviour): the mean level, one standard deviation above the mean, and one standard deviation below the mean. Simple slope analysis for the intention-behaviour relationship showed that for high levels of past behaviour, intentions strongly predicted behaviour (B = 2.80, p = .002). However, at the moderate and low levels of past behaviour, intentions did not significantly predict behaviour (B =.20, p = .40; B = -1.45, p = .90, respectively). In sum, the findings indicate that when participants have more experience of drinking to get drunk in the past then intention strongly predicts behaviour to get drunk. However, when levels are moderate or low then intention does not predict behaviour to get drunk.

Table 2.5 Hierarchical Regressions of behaviour on TPB variables, past behaviour and past behaviour x intention interaction term

Step	Variables entered	β	β	β
1	Intention	.61***	.18***	.29***
2	Past Behaviour		.69***	.59***
3	Past Behaviour X Intention			.13***
Adjusted R^2		.38***	.66***	.67***
R^2 Change		.38***	.29***	.01***

$p < .05$. ** $p < .01$. *** $p < .001$.

2.4 Discussion

The present study applied an augmented version of the TPB to the prediction of undergraduate students' self-reported 'drinking to get drunk' intentions and behaviour over a one-month period. Findings from the study showed that the TPB provided a good prediction of both intention and behaviour; however, the predictive utility of the model was enhanced by the addition of descriptive norms, group identity and prototype perception variables. The TPB variables together explained 66% of the variance in drinking intentions with all variables emerging as significant predictors, although perceived control had a negative relationship with intention. In the final regression equation all variables except attitudinal norms and prototype evaluation were significant predictors of behavioural intentions, accounting for 73% of the variance. The TPB was also predictive of behaviour with intentions and perceived control (negative relationship) predicting 41% of the variance in behaviour. Incorporating the additional variables into the regression equation increased the variance explained by 22% with intentions, perceived control (negative relationship), prototype similarity and past behaviour emerging as significant independent predictors of future drinking behaviour. The final model accounted for an impressive 68% of the variance in future drinking.

The finding that perceived control has a negative relationship with intentions is contrary to the direction of the relationship for the majority of studies utilising the TPB. Moreover, the inverse relationship is unlikely to be due to a suppressor effect as perceived control was negatively correlated with both intention and behaviour. This finding is typical when examining alcohol-related behaviour (i.e., Conner et al., 1999; Norman et al., 2007; Norman & Conner, 2006). Undergraduates who report that they have little control over their drinking are more likely to drink to get drunk. It has been suggested that this unexpected relationship is due to external processes (Thombs, 2000) and external pressures (Norman & Conner, 2006) that students experience whilst at University.

Examining the impact that group identity and behavioural norm had on intention, it was demonstrated that both of these variables had significant relationships over and beyond the TPB variables and remained significant after the inclusion of prototype perceptions and past behaviour. Regressing behaviour on these variables revealed that, in the final model, descriptive norms and group identity did not significantly predict behaviour. Group attitude failed to predict either intentions or behaviour; demonstrating that it is the perception of what people do that affects intentions to perform behaviour. Previous research has shown mixed results for the inclusion of descriptive norms. Studies have generally found that behavioural norm (e.g., Conner & McMillan, 1999; Conner et al., 1996; DeVries, Backbier, Kok, & Dijkstra, 1995; Grube et al., 1986; Sheeran & Orbell, 1999) is a better predictor of intentions than group attitude (e.g., Terry & Hogg, 1999). The findings from the present study provide further evidence in support of the suggestion that the normative component should be expanded to assess the influence of both injunctive and descriptive norms; in particular, behavioural norms (i.e., an individual's perception of what other people do).

Examining the impact that prototype perceptions had on intention and behaviour, it can be revealed that prototype similarity, and not prototype evaluation, significantly predicted both intentions and behaviour over and above the TPB variables. This demonstrates that those

undergraduates who perceived themselves to be similar to the drinker prototype had stronger intentions to engage in drinking to get drunk and reported drinking to get drunk more frequently at one month follow-up. This finding is similar to results presented by Norman et al. (2007), examining the relationship between prototype perceptions and binge drinking in undergraduates. Mannetti, Pierro, and Livi (2002) incorporated prototypical identity constructs into the TPB to examine the effect of prototype similarity on intentions to purchase three consumer goods. The researchers suggested that intention to own the product reflected the consumers' self-identity, as they were believed to desire characteristics of the prototype, subsequently wanting to be similar to the prototypical image. Mannetti et al. (2002) found that individuals who possess similar characteristics to an image of a typical behavioural performer were more likely to engage in behavioural performance. Mannetti et al. (2002) concluded that individuals express their identification with typical characteristics by engaging in the relevant behaviour. Similarity to a prototype facilitates self-expressive behaviour. Even more interestingly the findings demonstrated the direct effect of prototype similarity on behaviour. This relationship between prototypical images and behaviour has been explained through social comparison processes during which the cognitive schema of the typical image is compared with the self-image and the extent of overlap predicts behaviour (Niedenthal, Cantor, & Kihltrom, 1985). There is support for the social comparison process assumed to underlie the prototype-perception-behaviour link. For example, Gibbons and Gerrard (2002) found that social comparison tendencies moderated the impact of prototype perception on behaviour such that the link was stronger among people who reported frequently engaging in social comparison. Once again this demonstrates the importance of expanding the model to encapsulate external social pressures such as prototype perceptions, which can be thought of as an additional source of normative influence neglected by the TPB.

The present research also assessed the moderating role of group identification. Terry and Hogg (1996) have argued that the subjective norm component of the TPB does not fully encapsulate

the meaning of social norms and that this component should be reconceptualised to fall in line with wider theories of social norms (i.e., Social Identity Theory and Self-Categorisation Theory). It is proposed that when individuals define themselves in relation to the group they are more likely to perform the behaviour in line with group norms. Previous studies have found that group identification moderated the relationships between descriptive norms and intentions (e.g., Terry & Hogg, 1996; Terry & Hogg, 1999). However, the addition of the interaction terms between descriptive norms, both attitudinal and descriptive, and group identity failed to improve the predictions of intention, thereby providing no support for the hypothesis that group identity should moderate the descriptive norm–intentions relations.

Due to the influential impact that past behaviour appears to have on future behaviour, the present research also assessed the moderating effect of this variable on intention–behaviour relations. It is assumed that when past behaviour directly impacts on future behaviour, this usually reflects the involvement of habitual processes that serve to weaken the impact of intentions on behaviour (i.e., Ouellette & Wood, 1998; Triandis, 1977). It was hypothesised that there would be a negative regression coefficient for the interaction term, such that the intention-behaviour relationship would become weaker with increasing frequency of past behaviour. The findings from the present study did not support this expectation. It was found that the intention–behaviour relationship increased with high levels of past behaviour. This finding does not support the theory that as the frequency of behaviour increases habitual responses weaken the cognitive processes and the behaviour is performed automatically. This finding is in contrast with the findings from Norman and Conner (2006) who reported that as the frequency of past behaviour increased the intention-behaviour relationship became weaker. However, it is in line with findings from Kashima et al. (1993) who found that strong intentions to use a condom were only translated into actual condom use when the individual had used a condom in their last sexual encounter. The present study revealed that only high levels of past behaviour increased the intention-behaviour relationship.

There are a number of potential explanations for this finding; for example, high past behaviour gives people more information about the behaviour which might strengthen intentions or performing behaviour frequently in the past may make intentions more realistic and therefore predictive. Alternatively, this finding could be explained by the sample present at follow-up; it was shown that there were significant differences on a number of variables between those absent and present at follow-up, and that those differences favoured those more interested in drinking to get drunk. This could have easily impacted on the strength of the intention - behaviour relationship.

There were a number of limitations with the present study. Firstly, the response rate to the follow-up questionnaire was rather low (57%), and attrition analysis revealed that there were significant differences on a number of variables between those who were present at follow-up and those who were absent at follow-up. The follow-up questionnaire appeared to favour those who were more interested in drinking to get drunk; this could explain the significant relationships with prototype perceptions and behaviour. Second, the behaviour was assessed through the use of self-report measures, which may have inflated the size of the correlations with the TPB measures. A number of reviews (i.e., Gill, 2002; Webb et al., 1996) have reported on the high incidences of excessive drinking among university students; these reviewers indicated that university undergraduates could be classed as an 'at-risk' group. Subsequently, examining the motivations to drink within this group could be important for preventative purposes. The present research examined motivations to drink among a university wide sample. Students throughout the undergraduate university population were invited to take part in the research; the sample was not limited to a sub-set of students (e.g., psychology students), making the results of the survey more generalisable to the population under investigation.

The present research has important theoretical implications for future work on the TPB. First, the present results indicate that the TPB could be usefully expanded to include descriptive norms and prototype perceptions as an additional source of normative influence. Second, more

work is needed to investigate the mechanisms through which prototype perceptions impact on drinking behaviour (e.g., self-consistency motivations or self-enhancement motivations).

Chapter 3

Towards a Better Understanding of Drinking in Adolescence: Does Behavioural Intention or Behavioural Willingness Better Predict Drinking?

3.1 Overview

As discussed in Chapter 1, rates of alcohol use have been on the increase over the past decades, and it has been well-documented that there are a number of negative consequences of participating in this behaviour, including decreased academic achievement (Barnes & Welte, 1986) and depression (DeSimone et al., 1994). Empirical studies have consistently shown that social influence factors have a great deal of influence on whether or not adolescents engage in risky behaviours, particularly drinking behaviour (Brown, Classen, & Eicher, 1986; Dielman, Campanelli, Shope, & Butchart, 1987; Graham, Marks, & Hansen, 1991). It is argued that one of the reasons that social influence has such effects on behaviour in adolescence (more so than in other age groups) is the conformity pressure that this age group experience from both real and perceived social norms (Suls & Mullen, 1982).

Few empirical studies have used well-validated health behaviour models to explain the use of alcohol in adolescence; however, there have been a number of studies that have examined the predictors of substance use, and the literature suggests that attitudes towards alcohol use (e.g., Lacey, 1989), normative influences (e.g., Kandel, 1985) and intention to use alcohol (e.g., Wolford & Swisher, 1986) are important predictors of alcohol use. These variables are contained within the TPB; however, the TPB has received little attention in the prediction of alcohol use or misuse in the adolescent population.

The TPB will serve as the main framework for investigating the motivations for adolescent drinking behaviour. The TPB has been shown to be a good model for the examination of a range of behaviours (e.g., Amitage & Conners, 2001). However, due to the limitations stated in Chapters 1 and 2, the TPB will be extended to incorporate factors that provide a better understanding of social influence. This is particularly pertinent to the adolescent population as social influence plays an important role in the motivations involved in drinking alcohol among young people (Botvin, 2004). Two further conceptualisations of social influence have been identified as being of particular relevance to adolescents' health-behaviours; namely descriptive norms and prototype perceptions (Rivis et al., 2006).

One of the main criticisms (Terry & Hogg, 1999) is that the subjective norm component of the TPB does not fully encapsulate social influence. This criticism is supported by the results of meta-analyses, which have shown the link between subjective norm and intention is somewhat weaker than the relationships between other TPB variables and intention (Armitage & Conner, 2001). Consequently, it has been recommended that wider conceptualisations of social norm variables should be incorporated into the model to increase the predictive utility of the model (see Chapter 1 and Chapter 2). The wider definition of social norms describes the accepted or implied rules of how group members should and do behave (e.g., Brown, 1988; Cialdini & Trost, 1998). Expanding the definition of norms in line with more widely accepted conceptualisations of this term could potentially reveal a greater impact on individual intention to perform the behaviour. Perceptions of others' behaviour are the most frequently used measure of descriptive norms; however, studies have also examined a measure of group attitude (e.g., Terry & Hogg, 1996) or a combination of group attitude and behavioural norm (labelled 'group norm') (e.g., Anstrom & Rise, 2001). Researchers have found that assessing the group behavioural norm (e.g., Grube et al., 1986) and the group attitude (e.g., White, et al., 1994) adds to the prediction of behavioural intentions. However, studies have also found that descriptive norms do not contribute to the prediction of

intention (e.g., Povey et al., 2000). The findings from Chapter 2 reveal that the descriptive norms construct can be usefully added to the TPB to predict intention. More specifically, group behavioural norm rather than group attitude predicted drinking intentions.

Another source of social influence that has been neglected by the TPB is that of prototype perceptions. Gibbons and Gerrard (1995) suggest that individuals socially compare their own self-image with their prototype of the "typical" person engaging in the behaviour. Prototype perception operates via two processes: prototype similarity (the similarity of the image to oneself) and prototype evaluation (the degree of liking one has for the prototype). These two processes are suggested to influence health-related decisions. Therefore, the more positive an individual's evaluation of the prototype, and the greater their perceived similarity to the prototype, the greater their willingness to engage in the health risk behaviour described in the prototype. There has been growing empirical support for the prototype paradigm in relation to young people's health-risk behaviour. For example, Blanton et al. (1997) found that the greater the prototype perceptions of adolescents' images of the typical drinker and smoker, the greater the likelihood for them to perform that behaviour. The findings in relation to prototypes presented in Study 1 suggest that the inclusion of an additional source of social influence – prototype perception - might also serve to enhance the predictive validity of the TPB. The analysis of the data revealed that prototype similarity emerged as a significant predictor of both intentions and behaviour, over and above the TPB and descriptive norm variables. The evidence presented in Study1 suggests that young peoples' health behaviour is motivated, in part, by the desire to identify with social images.

A major component of the PWM is behavioural willingness to perform behaviour. Unlike intention, willingness does not involve planning or consideration of behaviour's likely consequence. People who are 'willing' to engage in a risky behaviour *respond* to (rather than create) risk-conducive circumstances. As a result, they are less likely to acknowledge that they will experience the negative outcomes of a risky behaviour (Gibbons, Gerrard, Blanton, & Russell, 1998). Thus,

young people may not intend to engage in risk behaviours such as drinking, but might be willing to perform the behaviour if the opportunity presents itself. It has been shown that intention is not always the best predictor of behaviour, particularly for adolescent behaviour (Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Sheeran & Orbell, 1998), or behaviour that involves health risk (Webb & Sheeran, 2006). Most theories of health behaviour share a common belief that the single best predictor of an individual's behaviour is their intention to perform the behaviour. Gibbons, Gerrard, Reimer, and Pomery (2006) state that when asked, most adolescents say they have no intention of engaging in behaviours that put their health at risk; however, statistics indicate that many of them will engage in these behaviours, and a fair number will do so repeatedly (Johnston, O'Malley, & Bachman, 2001). It has been proposed that young people can perform health behaviours via two pathways. In the first pathway, young people perform health behaviours because they are acting upon their intentions (reasoned pathway), or secondly, because they are reacting to a situation in which the opportunity to engage in risk behaviour has occurred (social reaction pathway). The first path shares the majority of its constructs with TRA, proceeding from attitudes and subjective norms, plus past behaviour, through intention and behaviour. Attitudes and subjective norm can also impact upon behaviour via the second pathway, however, through a construct unique to the PWM, namely, behavioural willingness. The willingness construct of the PWM encapsulates the social reaction side of engaging in health risk behaviour, such as drinking alcohol. In contrast to behavioural intention, behavioural willingness does not involve making a plan or a consideration of the negative impact on behaviour. Therefore, people may not intend to engage in the behaviour but may be willing to engage in the behaviour if the opportunity presents itself. For example, Gibbons et al. (1995) reported that the more favourable adolescents' images of the "type of teenager who gets pregnant", and the more similar they perceive themselves to be to that image, the greater their willingness to engage in unprotected sex. The findings from Study 1 revealed that prototype similarity predicted both intentions and behaviour to get drunk. Those

participants who perceived themselves to be similar to the prototype had greater intentions to drink to get drunk and reported more frequent drinking to get drunk occasions. Although Gibbons et al. (1995) argue that prototype perceptions should not predict intentions, findings from Study 1 and studies in this area (e.g., Norman et al., 2007; Rivis & Sheeran, 2004; Rivis et al., 2006) demonstrate that prototype perceptions frequently predict health intentions.

It has been suggested that the relationship between intention and behaviour is relatively low in adolescence, but increases with age (Albarracin et al., 2001). Meta-analytic reviews by Hagger, Chatzisarantis, and Biddle (2002) and Downs and Hausenblaus (2005) have reported that age moderates the intention-behaviour relationship. The strength of the relationship is weaker for younger individuals compared with older age groups. Specifically, Downs and Hausenblaus (2005) reported that samples of children/adolescents (8-17 year olds) showed weaker intention-behaviour relationships compared with older samples (18-25 year olds).

Intention is viewed as a rational construct, one that involves planning and a consideration of the behaviour's likely consequence. However, Gibbons, Gerrard, Blanton, and Russell (1998) point out that "Not all behaviours are logical or rational... It would be hard to argue that behaviours that impair one's health or well-being, such as having sex without contraception when pregnancy is not desired or drunk driving are either goal-directed or rational ... Nonetheless, these behaviours are common, especially among young persons" (p. 1164). The prototype/willingness model, which incorporates the behavioural-willingness construct, has been supported by studies showing that much adolescent risk taking behaviour is not planned and that willingness and intentions are related but independent constructs that separately predict risk behaviour (e.g., Gibbons et al., 1998; Gibbons et al., 2004). The model suggests that intentions and expectations become better predictors of risk behaviour as maturity increases, whereas with maturity the predictive power of behavioural willingness decreases.

Gibbons et al. (1998) examined reasoned action and social reactions as predictors of health risk behaviours. One study examined the moderation effect of age on the behavioural expectation - behaviour relationship and the behavioural willingness-behaviour relationship. Gibbons and colleagues reported that behavioural intention within the older adolescent sample was a stronger predictor of behaviour than was behavioural willingness, whereas for the younger sample the opposite was reported. This finding may be the result of experience, as the adolescent gets older it is likely that they will have the opportunity to engage in the behaviour more often. This experience is likely to evoke more consideration of the behaviour and the consequences associated with it (Gibbons et al., 1998), and it is this reasoned path or consideration that is associated with behavioural intention. It has been demonstrated for health impairing behaviours that behavioural intentions are sometimes not as well predicted by these theories for younger samples (Morojele & Stephenson, 1994; Stacy, Bentler, & Flay, 1994). Nonetheless, associations between intended and actual frequency of risky behaviour has been found in adolescent samples, supporting some degree of intentionality.

Since a number of risky behaviours are initiated during adolescence it seems prudent to investigate additional predictors of behaviour. Adolescents frequently find themselves in situations that encourage participation in risky behaviours, and it is their willingness to be seen by their peers to be associated with the prototype that potentially leads to engagement in the behaviour. It has been suggested that prototype and willingness form early, perhaps in early adolescence, much sooner than intentions to engage in behaviours are formed (Bowen, Dahl, Mann, & Peterson, 1991). One study consisting of a seven wave data collection with panel of adolescents between the ages of 13 and 19 found that the relation between smoking and drinking and behavioural expectation increased almost linearly with age and experience (Gibbons et al., 1998). This is supported by the plethora of research that demonstrates that although younger adolescents report that they do not intend or expect to engage in risky behaviour, statistics often show that they have. Gibbons et al.

(1998) believe that risk behaviours are predicted by willingness amongst the younger cohort; and with increasing age (and experience) willingness to perform risk behaviour will be translated into intention. Therefore, it can be expected that the relationship between both intentions and willingness on behaviour may be moderated by the age.

3.1.1 Overview and Hypotheses

Understanding the antecedents of adolescent alcohol use has become increasingly important as research has revealed an association between excessive drinking and concurrent and future related alcohol-related problems. Although the TPB has been shown to predict a variety of behaviours, it may be criticised when assessing its predictive utility for adolescents' risky behaviour. Firstly, it has been demonstrated and accepted that performing risky behaviours, such as drinking during adolescence, is controlled by social influence factors (Gibbons et al., 1995). However, the TPB has been criticised on many occasions in relation to the peripheral role that subjective norm plays in predicting intentions (Terry & Hogg, 1999). Secondly, reviews (e.g., Gibbons & Gerrard, 1997) have reported that willingness to perform behaviour is a better predictor of behaviour than behavioural intention, especially among adolescents.

It is predicted that; (i) the TPB variables will explain variance in drinking intentions, willingness and drinking behaviour, such that positive attitudes, subjective norms and perceptions of control will be associated with drinking intentions, willingness and behaviour, (ii) descriptive norms, group identity and prototype perceptions will explain additional variance in drinking intentions, willingness and behaviour, such that positive behavioural norms, stronger group identity and positive prototype perceptions will predict drinking intentions and behaviour, over and above the TPB variables, (iii) past behaviour will explain additional variance, such that more frequent past behaviour will predict drinking intentions, willingness and behaviour, (iv) expanding the TPB, to include the PWM, descriptive norms and past behaviour variables will enhance the prediction of drinking behaviour amongst adolescents, and (v) age will moderate the intention – behaviour

relationship and the willingness – behaviour relationship, such that willingness will provide a stronger prediction of behaviour among younger adolescents, whereas intention will provide a stronger prediction of behaviour among older adolescents.

3.2 Method

3.2.1 Participants and Procedure

The sample consisted of 1280 adolescents from two schools within the Sheffield area. At Baseline, participants completed measures of TPB variables, PWM variables, descriptive norms (behavioural norms and group attitude) and group identity (see Appendix C). One month later (Time 1), participants completed a second questionnaire (see Appendix D) concerning their drinking behaviour (N = 936), a response rate of 73%. The participants consisted of 652 males and 628 females, ranging in age between 10 years and 16 years (M = 13.13, SD = 1.49). The sample consisted mostly of White British adolescents (71.6%). The remainder of the sample consisted of Pakistani (6.1.%), African (4.5%), other Asian (3%) and other (14.8%).

3.2.2 Measures

The Baseline questionnaire included direct measures of the main constructs of the TPB constructed in line with recommendations (Ajzen & Fishbein, 1980), as well as measures of descriptive norms, adapted from Terry & Hogg (1996), group identity items from Brown, Condor, Mathews, Wade, and Williams (1986) scale, and items measuring prototype evaluation and similarity (Rivis & Sheeran, 2003).

3.2.2.1 Theory of Planned Behaviour

3.2.2.1.1 Attitude

Participants indicated on 3 bipolar (+1 to +5) semantic differential scales, if "Drinking alcohol in the next month would be… *very bad - very good, very unhealthy - very healthy, very boring - lots of*

fun". The mean of the 3 items was taken as a measure of attitude, with higher scores indicating a positive attitude towards getting drunk.

3.2.2.1.2 Subjective Norm

A global measure of subjective norm was measured with two items: "My friends would approve / disapprove of me drinking alcohol in the next month *definitely approve – definitely disapprove*" and "My friends think that I should / should not drink alcohol in the next month *definitely should not - definitely should*". Both were measured on 5-point bipolar (+1 to +5) scales, and scores were averaged to provide a measure of subjective norms.

3.2.2.1.3 Perceived Control

Perceived control was assessed using two items measured on 5-point (+1 to +5) bipolar scales:: "It is my decision whether or not I drink alcohol in the next month *strongly disagree – strongly agree*" and "It is up to me whether I drink alcohol in the next month? *definitely disagree – definitely agree*". The mean of the two items provided a measure of perceived control

3.2.2.1.4 Self-Efficacy

Self-efficacy was measured using two items: "If I wanted to, I would find drinking alcohol in the next month… *very easy – very hard*" and "If I wanted to, I could easily drink alcohol in the next month? *definitely yes – definitely no*". The items were assessed using 5-point (+1 to +5) bipolar scales. The mean of the two items provided a measure of self-efficacy.

3.2.2.1.5 Intention

Intention was assessed by 4 items measured on 5-point (+1 to +5) bipolar scales. The items asked participants: "Do you plan to drink alcohol in the next month? *definitely yes - definitely no*", "I will drink alcohol in the next month, *definitely no - definitely yes*", "How likely are you to drink alcohol in the next month? *very unlikely - very likely*" and "I am likely to drink alcohol in the next month,

definitely no – definitely yes". The mean from the four items provided a measure of intention, with higher scores indicating a positive intention towards drinking alcohol.

3.2.2.2 Prototype / Willingness Model

3.2.2.2.1 Prototype Evaluation and Prototype Similarity

Participants were supplied with 5 bipolar (+1 to +5) scales to measure prototype evaluation. The five items were: The type of person my age who drinks alcohol is… *very popular – very unpopular, very childish – very grown up, very cool – very uncool, very unattractive – very attractive* and *very dull – very exciting.* Prototype similarity was assessed by two items: "In general, are you like the type of person who drinks alcohol?" *(very different – very much alike)* and "Do the words above that describe the type of person who drinks alcohol also describe you?" *(definitely yes – definitely not).*

3.2.2.2.2 Willingness

First participants were provided with a paragraph stating:

> "Suppose you were with some friends and one of them offered you a drink of alcohol. How likely is it you would do EACH of the following?"

Behavioural willingness was measured using three items, on a 5 – point (+1 to +5) Likert scales. The items asked participants: "Take it and try it? *very likely – very unlikely*"; " Tell them no thanks? *very likely – very unlikely*"; and "Leave the place? *very likely – very unlikely*".

3.2.2.3 Descriptive Norms and Group Identity

Friends served as the social reference group. Six items, four measuring group attitudes and two measuring behavioural norms assessed group norms. Three items measured group identity.

3.2.2.3.1 Group Attitudes

Four items assessing group attitudes, measured on 5-point (+1 to +5) Likert scales, were used.

Participants were asked to respond to the following items, "My friends think that drinking alcohol

in the next month would be... *very healthy – very unhealthy, a bad thing to do – a good thing to do, very boring – lots of fun,* and *very good – very bad*". The mean score from the four items provided a measure of group attitudes, with higher scores indicating more positive perceived group norms towards drinking to get drunk.

3.2.2.3.2 Behavioural Norm

Behavioural norm was assessed using one item measured on a 5-point bipolar (+1 to +5) scale and one item measured on a 5-point (+1 to +5) unipolar scale. The items asked participants to respond to the phrases; "Do most of your friends drink alcohol" (*definitely yes – definitely no*) and "How many of your friends drink alcohol" (*none-all*). The mean score from the two items provided a measure of behavioural norms, with higher scores indicating more positive perceived group norms towards drinking to get drunk.

3.2.2.3.3 Group Identity

Group identity was measured using a modified version of the Brown et al. (1986) scale. Participants responded to three items on 5-point Likert scales to assess identification with the reference group. The items were; "In general, how well do you feel you fit in with your friends?" (*very well - not very well*), "How much do you feel you get on with your friends?" (*not very much - very much*) and "How much do you see yourself belonging to your group of friends? " (*not very much - very much*). The mean score from the three items was taken as the measure of in-group identification, with higher scores indicating that the participant identified highly with the group.

3.2.2.4 Past Behaviour

Originally the participants were asked a variety of questions concerning their drinking behaviour, including a retrospective weekly diary. Unfortunately, the younger children in particular had trouble with the diary method. Consequently, only one measure of past behaviour could be utilised. Participants were asked, "Do you drink alcohol?" (*yes* or *no*).

3.2.2.5 Behaviour

Behaviour was measured using one item. "How many times did you drink alcohol in the past month?" Responses were open-ended.

3.3 Results

3.3.1 Attrition Analyses

A MANOVA was run to ascertain if there were any differences between participants who were present and absent at Time 2; a multivariate effect was found $F(12, 1227) = 4.65, p < .001$. As the univariate *Fs* in Table 3.1 show, participants who were present at follow-up scored significantly higher on intentions, willingness, perceived control, self-efficacy, attitudes, subjective norms, attitudinal norms, prototype similarity and past behaviour than those absent from follow-up. It can be concluded from these findings that participants who filled out the Time 2 survey had more interest in drinking alcohol than their absent counterparts did.

3.3.2 Descriptive Statistics and Correlations

The intercorrelations between the main study measures are presented in Table 3.2 along with means, standard deviations and reliabilities. It can be observed from Table 3.2 that all alphas were high, demonstrating that the scales had good internal reliability. All test variables scores had means close to scale midpoints. Just over half of the sample reported drinking alcohol (52.7%). All test variables had significant moderate to strong positive correlations with both behavioural intentions and behavioural willingness. Both behavioural intentions and behavioural willingness had moderate significant correlations with Time 2 drinking behaviour. Group identity did not show any significant correlations with prototype evaluation or behavioural norms.

Multicollinearity was considered to be a cause for concern due to the high correlations between some of the variables; therefore collinearity diagnostics (SPSS V.11, 2005) were performed on the variables. The results from the regression analysis revealed that none of the

variables had a tolerance statistic of 0.2 or below. Similarly, the variance inflation factor for the variables did not have a level higher than 10.

Table 3.1 Differences in test variable means between participants present at behavioural follow-up and participants who were absent at behavioural follow-up.

	Participation at T2				
	Present		Absent		
Variable	*M*	(*SD*)	*M*	(*SD*)	*F*
Intention	2.89	(1.35)	2.37	(1.23)	38.02***
Willingness	3.20	(1.26)	2.80	(1.16)	26.07***
Attitude	2.68	(0.99)	2.37	(0.97)	24.38***
Perceived Control	3.69	(1.27)	3.49	(1.33)	5.99*
Self-Efficacy	3.31	(1.29)	2.92	(1.28)	22.55***
Subjective Norms	2.95	(1.10)	2.64	(1.12)	19.87***
Attitudinal Norms	2.94	(0.99)	2.67	(0.98)	18.05***
Behavioural Norms	2.99	(1.16)	2.73	(1.16)	11.99***
Group Identity	4.27	(0.75)	4.11	(0.84)	10.75***
Prototype Evaluation	3.09	(0.87)	2.98	(0.90)	3.43
Prototype Similarity	2.60	(1.07)	2.35	(1.05)	14.16***
Past Behaviour	0.58	(0.49)	0.38	(0.49)	39.38***
N	907		333		

Table 3.2. Intercorrelations, descriptive statistics, and Cronbach's alphas for the study variables.

	2	3	4	5	6	7	8	9	10	11	12	13	*M*	*SD*	α
1. Intention	.72***	.83**	.45***	.78***	.75***	72***	.68***	.16***	.51***	.65***	.57***	.49***	2.74	1.33	.96
2. Willingness		.70***	.42***	.69***	.64***	.64***	.57***	.15***	.50***	.58***	.43***	.36***	3.09	1.24	.83
3. Attitudes			.45***	.76***	.75***	.80***	.67***	.12***	.53***	.62***	.46***	.41***	2.60	1.00	.82
4. Perceived Control				.54***	.44***	.46***	.40***	.16***	.32***	.32***	.26	27***	3.63	1.30	.89
5. Self-Efficacy					.72***	.71***	.63***	.16***	.46***	.58***	.46***	.43***	3.21	1.30	.86
6. Subjective Norms						.80***	.72***	.10**	.53***	.56***	.42***	.38***	2.87	1.11	.79
7. Group Attitude							.75***	.07*	.57***	.59***	.40***	.46***	2.86	0.99	.90
8. Behavioural Norms	.05	.50***	.52***	.43***	.40**								2.91	1.17	.85
9. Group Identity		.05	.10***	.11***	.11***								4.23	0.78	.76
10. Prototype Evaluation			.54***	.30***	.24***								3.10	0.89	.84
11. Prototype Similarity				.37***	.36***								2.54	1.07	.72
12. Past Behaviour$_{(a,b)}$					.42***								67.2	52.3	-
13. Behaviour													3.31	3.80	-

*** p< .001, ** p< .01 (a) point-biserial correlations (b) N %

3.3.3 Predictors of Intention

A four-step hierarchical regression was conducted to assess the predictive utility of the augmented model over and above the TPB variables (see Table 3.3). The TPB variables were entered in the first step, followed by descriptive norms and group identity in the second step, prototype perception in the third step and past behaviour at the final step.

The TPB variables entered at step 1 were significant predictors of intention, accounting for 76% of the variance, $F(4, 1239) = 967.24$, $p < .001$; all variables showed positive significant relationships with intention with the exception of perceived control. Attitude emerged as the strongest predictor of intentions to drink alcohol over the next month. Adding the descriptive norms, group identity and prototypes to model 2 and 3 increased the variance by 1%, $\Delta F(3, 1236) = 16.49$, $p < .001$ and 1% $\Delta F(2, 1234) = 33.86$, $p < .001$, respectively. All variables, with the exception of perceived control and prototype evaluation, remained significant independent predictors; attitudinal norms had a negative beta coefficient, which given its positive correlation with intention is likely to reflect a suppressor effect. The final model accounted for 81% of the variance, $F(13, 1225) = 268.63$, $p < .001$, with all variables, except perceived control and prototype evaluation, emerging as significant independent predictors.

3.3.4 Predictors of Willingness

A similar hierarchical multiple regression analysis was performed on the test variables to examine the prediction of behavioural willingness (see Table 3.4). A four-step hierarchical regression was conducted to assess the predictive utility of the augmented model over and above the TPB on its own. The TPB variables were entered in the first step, followed by descriptive norms and group identity in the second step, prototype perception in the third step and past behaviour at the final step.

The TPB variables entered at step1 were significant predictors of willingness accounting for 56%, $F(4, 1235) = 392.77$, $p < .001$, of the variance; all variables except perceived control showed positive significant relationships with willingness. Attitudes emerged as the strongest predictor of

willingness to drink if the opportunity arose. Incorporating descriptive norms and group identity increased the variance by 1%, $\Delta F(5, 1230) = 4.44$, $p = .03$ attitudes, self-efficacy, subjective norms and group identity made significant contributions to the prediction of willingness. Adding the prototype variables increased the amount of variance by 2%, $\Delta F(3, 1228) = 27.76$, $p < .001$; prototype evaluation and prototype similarity had significant positive betas. In the final step, past behaviour was entered, which increased the amount of variance explained by 7%, $\Delta F(1, 1233) = 30.24$, $p < .001$. The final model accounted for 59% of the variance, $\Delta F(13, 1227) = 101.04$, $p < .001$, with attitudes, self-efficacy, subjective norm, group identity, prototype perceptions and past behaviour emerging as significant independent predictors.

Table 3.3 Hierarchical regression of intention on the TPB, Descriptive Norms, Group Identity, Prototype Perceptions and Past Behaviour ($N = 1243$).

Step	Variables entered	β	β	β	β
1	Attitudes	.46***	.47***	.43***	.35***
	Perceived Control	-.01	-.01	-.01	-.01
	Self-Efficacy	.30***	.28***	.26***	.21***
	Subjective Norm	.19***	.17***	.16***	.14***
2	Group Attitudes		-.10**	-.11***	.06*
	Behavioural Norms		.14***	.13***	.08***
	Group Identity (GI)		.04**	.04**	.03*
	Group Attitudes X GI		.02	.03	.03
	Behavioural Norm X GI		.02	.02	.00
3	Prototype Evaluation			-.01	-.02
	Prototype Similarity			.15***	.13***
	Evaluation X Similarity			.03	.03
4	Past Behaviour				.24***
Adjusted R^2		.76***	.77***	.78***	.81***
R^2 Change		.76***	.01***	.01***	.03***

$p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.4 Hierarchical regression of behavioural willingness on the TPB, Descriptive Norms, Group Identity, Prototype Perceptions and Past Behaviour ($N = 1239$).

Step	Variables entered	β	β	β	β
1	Attitudes	.34***	.30***	.26***	.22***
	Perceived Control	.04	.03	.03	.03
	Self-Efficacy	.29***	.27***	.25***	.23***
	Subjective Norm	.16***	.12**	.10**	.09*
2	Group Attitudes		.05	.01	.03
	Behavioural Norms		.04	.02	.00
	Group Identity (GI)		.06**	.05**	.05**
	Group Attitudes X GI		.04	.04	.03
	Behavioural Norms X GI		-.02	-.03	-.03
3	Prototype Evaluation			.08***	.08***
	Prototype Similarity			.14***	.13***
	Evaluation X Similarity			.04	.03
4	Past Behaviour				.11***
Adjusted R^2		.56***	.57***	.59***	.59***
R^2 Change		.56***	.01***	.02***	.01***

$p < .05$. ** $p < .01$. *** $p < .001$.

3.3.5 Predictors of Behaviour Using Intentions

A hierarchical multiple regression was used to predict behaviour at one-month follow-up (see Table 3.5). The independent variables were entered in four blocks: (i) intention, perceived control and self-efficacy, (ii) attitudes, subjective norm, descriptive norms and group identity, (iii) prototype perception variables and (iv) past behaviour.

In the first block the variables were able to explain 24% of the variance in drinking alcohol behaviour, $R^2 = .24$, $F(3, 906) = 98.14$, $p < .001$, with intentions emerging as the sole significant independent predictor. The addition of attitudes, subjective norms, descriptive norms and group identity variables did not lead to a significant increase in the amount of variance explained, $\Delta R^2 = .01$, $\Delta F(7, 889) = 1.31$, $p = .24$. In the second block intentions and behavioural norms emerged as significant predictors. Adding the prototype perception variables at step 3 did not lead to further increment in the amount of variance explained, $\Delta R^2 = .01$, $\Delta F(3, 896) = 2.08$, $p = .10$, with the previous variables remaining significant independent predictors in addition to prototype similarity. The addition of past behaviour at step 4 produced a further significant increment in the amount of variance explained, $\Delta R^2 = .02$, $\Delta F(1, 895) = 312.47$, $p < .001$. In the final regression equation the variables were able to explain 44% of the variance in future drinking behaviour, $F(14, 895) = 52.34$, $p < .001$, with intentions, prototype similarity and past behaviour emerging as significant independent predictors.

Table 3.5 Hierarchical regression of behaviour on the TPB, Descriptive Norms, Group Identity, Prototype Perceptions and Past Behaviour ($N = 910$).

Step	Variables entered	β	β	β	β
1	Intention	.41***	.41***	.38***	.27***
	Perceived Control	.02	.02	.02	.01
	Self-Efficacy	.09	.09	.09	.08
2	Attitudes		-.05	-.05	-.07
	Subjective Norms		-.04	-.04	-.04
	Group Attitudes		-.02	-.02	-.02
	Behavioural Norms		.11*	.12*	.09
	Group Identity (GI)		.03	.03	.03
	Group Attitude X GI		-.05	-.05	-.05
	Behavioural Norm X GI		.06	.06	.06
4	Prototype Evaluation			-.06	-.07
	Prototype Similarity			.09*	.08*
	Evaluation X Similarity			.00	.03
5	Past Behaviour				.54***
Adjusted R^2		.24***	.25***	.26***	.44***
R^2 Change		.24***	.01	.01	.19***

$p < .05$. ** $p < .01$. *** $p < .001$.

3.3.6 Predictors of Behaviour Using Willingness

A hierarchical multiple regression was used to predict behaviour at one-month follow-up (see Table 3.6). The independent variables were entered in four blocks: (i) willingness perceived control and self-efficacy (ii) attitudes, subjective norms, descriptive norms and Group Identity variables (iii) prototype perceptions and (iv) past behaviour.

In the first block the variables were able to explain 19% of the variance in drinking alcohol behaviour, $F(3, 903) = 71.80$, $p < .001$, with behavioural willingness and self-efficacy emerging as significant independent predictors. The addition of TPB, descriptive norms and group identity variables, at step 2 increased the variance by 3%, $\Delta F(7, 896) = 4.36$, $p < .001$, with self-efficacy, attitudes and behavioural norms emerging as independent predictors. Adding the prototype perception variables at step 2 increased the amount of variance explained in behaviour by 2%, ΔF $(2, 894) = 6.27$, $p = .01$, with self-efficacy, behavioural norms and prototype similarity having significant positive betas. Adding past behaviour, in the final block, increased the amount of variance explained by 21%, $\Delta F(1, 893) = 46.98$, $p < .001$. In the final regression equation the variables were able to explain 43% of the variance in future drinking behaviour, $F(14, 894) = 50.71$, $p < .001$, with self-efficacy, behavioural norms, prototype similarity and past behaviour emerging as significant predictors.

Table 3.6 Hierarchical regression of behaviour on Willingness, TPB, Descriptive Norms, Group Identity, Prototype Perceptions and Past Behaviour ($N = 910$).

Step	Variables entered	β	β	β	β
1	Willingness	.12**	.03	.01	-.01
	Perceived Control	.03	.01	.02	.01
	Self-Efficacy	.33***	.20***	.19**	.14**
2	Attitudes		.12*	.10	.02
	Subjective Norms		.03	.03	-.04
	Attitudinal Norms		-.04	-.05	.02
	Behavioural Norms		.17**	.17**	.11*
	Group Identity (GI)		.04	.04	.04
	Attitudinal Norm X GI		-.03	-.03	-.03
	Behavioural Norm X GI		.06	.05	.06
4	Prototype Evaluation			-.07	-.07
	Prototype Similarity			.14**	.11*
	Evaluation X Similarity			.02	.04
5	Past Behaviour				.43***
Adjusted R^2		.19***	.21***	.22***	.26***
R^2 Change		.19***	.03***	.01**	.04***

$p < .05$. ** $p < .01$. *** $p < .001$.

3.3.7 Predictors of Behaviour Using Willingness and Intentions

A hierarchical multiple regression was used to predict behaviour at one-month follow-up (see Table 3.7). The independent variables were entered in four blocks: (i) intentions and willingness (ii) perceived control and self-efficacy, attitudes, subjective norms, descriptive norms and group identity variables (iii) prototype perceptions and (iv) past behaviour.

In the first block the variables were able to explain 24% of the variance in drinking alcohol behaviour, $F(2, 904) = 147.13$, $p < .001$, with behavioural intention emerging as the sole significant independent predictor. The addition of TPB variables, at step 2 did not increase the variance, $\Delta F(4, 900) = 1.20$, $p = 3.1$, intention emerged as the independent predictor. Adding the descriptive norm, group identity and prototype perception variables at step 3 did not significantly increase the amount of variance explained in behaviour, $\Delta F(7, 893) = 1.91$, $p = .06$, with intention, behavioural norms and prototype similarity having significant positive betas. Adding past behaviour, in the final block, increased the amount of variance explained by 2%, $\Delta F(1, 892) = 26.21$, $p < .001$. In the final regression equation the variables were able to explain 27% of the variance in future drinking behaviour, $F(14, 892) = 24.99$, $p < .001$, with intentions and past behaviour emerging as significant predictors.

Table 3.7 Hierarchical regression of behaviour on Intentions, Willingness, TPB, Descriptive Norms, Group Identity, Prototype Perceptions and Past Behaviour (N=907).

Step	Variables entered	β	β	β	β
1	Intention	.49***	.44***	.38***	.27***
	Willingness	.01	-.01	-.02	-.03
2	Perceived Control	.03	.03	.02	
	Self-Efficacy	.09	.09	.08	
	Attitudes	-.03	-.04	-.06	
	Subjective Norms	.00	-.04	-.04	
3	Group Attitudes		-.01	.03	
	Behavioural Norms		.12*	.09	
	Group Identity (GI)		.03	.03	
	Group Attitude X GI		-.04	-.04	
	Behavioural Norms X GI		.05	.05	
	Prototype Evaluation		-.06	-.06	
	Prototype Similarity		.08*	.07	
	Evaluation X Similarity		.01	.02	
4	Past Behaviour			.20***	
Adjusted R^2		.24***	.24***	.25***	.27***
R^2 Change		.24***	.00	.01	.02***

$p < .05$. ** $p < .01$. *** $p < .001$.

3.3.8 Moderation effects of age on intentions and willingness with behaviour

The moderating role of age on the intention – behaviour relationship and the willingness - behaviour relationship was assessed separately by constructing age-intention and age-willingness interaction terms.

Moderated linear regression was conducted to test the moderator hypothesis. Variables were standardised to minimise problems of multicollinearity (Aiken & West, 1991). The age by intention interaction term was significant (B = .10, p = .001). Simple slope analysis was used to decompose the interaction (Aiken & West, 1991). Regression lines for intention and willingness were examined at three levels of the moderator (age): the mean level, one standard deviation above the mean and one standard deviation below the mean. Simple slope analysis for the intention-behaviour relationship showed that for high levels of age intentions strongly predicted behaviour as predicted (B = .47, p < .001). For the mean level of age intentions were found to also predict behaviour (B = .18, p < .01). However, for low levels of age intentions did not predict behaviour (B = .10, p = .28).

A similar regression was run for the willingness–behaviour relationship, and it was revealed that the age by willingness interaction term was significant (B = .13, p < .001). Simple slope analysis demonstrated that at low levels of age willingness strongly predicted behaviour (B = .76, p < .001), this was also true for the mean age level (B = .37, p < .001). However, for high levels of age willingness did not predict behaviour (B = -.02, p = .17).

In sum, findings from both analyses indicate that age moderates the relationship between intentions, willingness and behaviour. For older adolescents intention predicts behaviour, whereas for younger adolescents willingness is the better predictor of behaviour.

3.4 Discussion

The present research sought to examine the utility of an augmented TPB to the prediction of adolescent drinking behavioural intentions, drinking behavioural willingness and drinking behaviour. Additionally, it was hypothesised that willingness would lead to a better prediction of

drinking in the younger age group, and intentions would better predict drinking behaviour in the older age group.

The results of the present study demonstrate that the augmented TPB is a good predictor of drinking intentions, but a moderate predictor of willingness to drink and of future behaviour. It was observed that the TPB variables were good predictors of intentions; as expected, attitudes emerged as the most significant predictor of intentions, a finding that has been established in numerous previous studies (see Armitage & Conner, 2001). However, self-efficacy emerged as the most prominent predictor of willingness to drink. Perceived control failed to predict intentions, willingness or behaviour. In contrast, self–efficacy was predictive of intentions, willingness and behaviour, demonstrating the need for a distinction between those two variables. It has generally been discovered in the alcohol literature on undergraduates that perceived control holds a negative relationship with intentions and behaviour (e.g., Norman et al., 2007); however, in the present study perceived control failed to significantly predict any of the dependent variables. The finding that self-efficacy is significantly predictive of all criterion variables could indicate that adolescents overestimate their personal control over the behaviour, and believe that they have the social competence and demonstrate self-determination to make the decision to drink alcohol. In the integrated model, results demonstrated that intentions and not willingness had significant beta coefficients, suggesting that intention is a more relevant predictor of behaviour than willingness for adolescents conducting health risk behaviours.

An important and key finding obtained here was that prototype similarity to the typical person who drank to get drunk at least once a week significantly increased the variance explained in intention and behaviour, after the other predictors had been controlled. This is an important finding as according to Gibbons and colleagues (1995) prototype similarity should not affect intention to engage in health-risk behaviours because people do not want to identify with health-risk prototypes. However the findings from Study 1 and the findings throughout the literature are consistent: prototype similarity, rather than prototype evaluation, is the more stable and effective predictor of

health risk behaviour (e.g., Rivis et al., 2006; Walsh & White 2007). Study 1 demonstrated that prototype perceptions, specifically prototype similarity emerged as a significant predictor of both intention and behaviour. These findings from both Study 1 and Study 2 demonstrate that prototype similarity positively predicts intention and behaviour; this suggests that people's identification with prototypes is important in motivating health-related decisions. Aloise–Young and Henningan (1996) identify two mechanisms that may explain this occurrence of prototype perceptions to predict intentions: (i) it may reflect self-consistency motivations or (ii) it may reflect self-enhancement motivations. Self-consistency motivations suggest that individuals perform behaviour because their self-image is similar to the image of a person performing the behaviour. Mannetti et al. (2002) found that individuals who possess similar characteristics to an image of a typical behavioural performer were more likely to engage in behavioural performance. Mannetti et al. (2002) concluded that individuals express their identification with typical characteristics by engaging in the relevant behaviour. Similarity to a prototype facilitates self-expressive behaviour. Self-enhancement motivations indicate that if a stereotype is more valued than the self-image, then an individual may perform the behaviour to improve their self image. Early researchers postulated that prototypes represent a type of goal state for young people. For example, Chassin, Tetzloff, and Hershey (1985) suggested that the drinker prototype was likely to motivate adolescents to drink as it reflected characteristics they think their friends admire.

It was hypothesised that behavioural willingness would provide a better prediction of behaviour for the younger adolescents, whereas behavioural intention would provide a better prediction of behaviour for the older adolescents. The results from this present study supported the hypothesis. From the decomposition of the moderation analysis, using simple slopes analysis (Aiken & West, 1991), it was shown that age moderated the relationship between both willingness and intention and behaviour. It was shown that intentions were a better predictor of behaviour for older participants, whereas willingness was a better predictor of behaviour for younger participants. This finding supports the results from various meta-analyses (e.g., Downs & Hausenblaus, 2005; Hagger et al., 2002) and empirical research by Gibbons et al. (1998). Gibbons and Colleagues

attributed this phenomenon to increases in experience with the behaviour, so as the adolescent becomes older and performs the behaviour more frequently they consider the consequences of the behaviour and it is planning that is associated with behavioural intention.

Another purpose of the study was to include informational social influence variables within a TPB perspective. It was sought to investigate the predictive power of the social identity approach to attitude behaviour relationships – including descriptive norms (behavioural norms and group attitude) and group identity. Inclusion of the descriptive norm variables increased the amount of variance explained in intentions, attesting further to the benefits of including a wider conceptualisation of the social influence variables upon drinking intentions. Specifically, both Study 1 and Study 2 demonstrated that behavioural norms emerged as a significant predictor of intention after all variables were included in the model. This is in support of previous research where behavioural norms have consistently been found to have an independent effect on intentions (e.g., Grube et al., 1986; Sheeran & Orbell, 1999). It is possible to conclude that a distinction between informational and injunctive norms should be made. The role of descriptive norms identified in the prediction of intentions supports earlier work (i.e., Conner & McMillan, 1999; DeVries et al., 1995; Terry & Hogg, 1996) that has identified the importance of the impact of (salient) others' attitudes and/or behaviours on self-reported intentions. Drinking intentions seemed to be motivated both by the expectancy of gaining social approval or disapproval, as well as the information about other people's attitudes and behaviour. Group attitude had a negative beta and a strong positive correlation with intentions, suggesting the presence of a suppressor variable. These results highlight the impact between normative influences and behavioural intentions. They also emphasise the importance of groups and friends, as well as the direct social pressures from friends and peers, in providing normative information that adolescents draw upon when making decisions. These findings concur with other TPB-based research that suggests a range of social influences serve as important determinants of adolescent behavioural intentions (e.g., Rivis & Sheeran, 2004).

It was expected that perceived group norms of a behaviourally relevant referent group would predict intentions to drink alcohol, but only among those who identified strongly with the relevant reference group (e.g., Astrom & Rise, 2001; Terry & Hogg, 1996; Terry et al., 1999). Results showed that none of these interaction terms were significant. One explanation for this is that the reference to a general group of friends and peers in the present study may constitute a weak salience manipulation (Astrom & Rise, 2001). Blanz and Aufderheide (1999) argue that instead of asking participants about their level of belonging and identification with a group of friends, a more specific measure asking participants about their belonging to friends who perform the behaviour should be utilised. Additionally, more recent evidence suggests that that the influences of group norms on behaviour are not necessarily dependent on the strength of identification; it has been found that group norms predict behavioural intentions irrespective of level of identification (e.g., Johnston & White, 2003).

The current study has a number of strengths, including a sample that was representative of school-going adolescents within South Yorkshire. In addition, there is a large body of evidence supporting the TPB model in predicting adult intentions and behaviour, but there is less work that supports the use of the model in predicting adolescent intentions and behaviours. There is also a paucity of work investigating the role of social influences in the adolescent population, when it can be argued the model incorporating social influences would have the most impact.

In summary, it has been shown that behavioural choices are influenced by a complex system of factors. The research highlights the need for a multifaceted approach incorporating attitudinal, normative, self-efficacy and social influence approach when designing programmes to reduce alcohol consumption.

Chapter 4

Examining the Effects of a Brief Web-Based Intervention to Reduce Alcohol Consumption Amongst UK University Undergraduates

4.1 Overview

It has been previously discussed that drinking amongst young people in on the increase. The study by Webb et al. (1996) and the review by Gil (2002) have indicated that over 50% of the university undergraduate population are exceeding sensible drinking levels. Finding ways to reduce this level of alcohol misuse can have implications for public health. Yet, attempts to promote sensible drinking have typically relied on social skills training and providing information and these have had limited success (Foxcroft, Lister-Sharp, & Lowe, 1997), even though a wide range of interventions have been identified in the literature as being effective in reducing alcohol consumption in general and amongst heavy drinkers. It can be argued that most university students fall into the alcohol misuse category (Gill, 2002).

Over recent years there has been a marked increase in utilising brief interventions in reducing alcohol consumption amongst a number of treatment and non-treatment populations. The World Health Organisation has identified alcohol as a key area for prevention with considerable scope for secondary prevention strategies such as early and brief interventions. There is no standard definition of a brief intervention – interventions can range from a short conversation with a health professional to a number of sessions of motivational interviewing. Brief interventions are short sessions aimed at alcohol consumption that can be utilised with individuals at any point on the continuum of drug use, abuse or dependence. Brief interventions are targeted at people drinking excessively but not yet experiencing major problems from their consumption. There is a large body of evidence supporting the efficacy of brief interventions, indicating that they are extremely cost-effective and have a substantial capacity to prevent the development or escalation of alcohol

problems (Roche & Freeman, 2003). There is a strong evidence base for the effectiveness of brief interventions; extensive research has revealed that minimal and brief treatments targeted at excessive drinkers in health care settings can result in significant reductions in alcohol consumption (Bien, Miller, & Tonigan, 1993).

One intervention approach attracting an increasing amount of attention is that of providing personalised feedback. Brief personalised feedback intervention programmes focus on an individual's alcohol consumption and provide personalised risk level and alcohol related information (Larimer, Cronce, Lee, & Kilmer, 2004/2005; Saunders, Kypri, Walters, Leforge, & Larimer 2004; Walters & Neighbors, 2005),

The review by Walters and Neighbors (2005) on the efficacy of feedback interventions found that 11 of the 13 studies (77%) reviewed showed a reduction of drinking behaviour as compared to a control or comparison control group. Some studies (e.g., Dimeff et al., 1999) have used a feedback message alongside motivational interviewing techniques to reduce participants' alcohol consumption. Studies of this type have provided feedback in the form of personal consumption information, perceived norms and other risk factors. Results from studies examining the efficacy of feedback interventions have generally found self-reported reductions in drinking behaviour at six weeks (Borsari & Carey, 2001) and at a 24-month follow-up (Marlatt et al., 1998). Borsari and Carey (2000) randomised heavy drinking students to either a single motivational interview with feedback or a no-treatment control condition. At six weeks, participants who received the intervention reduced their drinking from 17.57 to 11.40 drinks per week (DPW), while participants in the control group reduced their drinking from 18.45 to 15.78 DPW. In a longer follow-up study, Marlatt et al. (1998) randomised at-risk college students to receive an individual motivational session with feedback or an assessment group only. At a 24-month follow-up students in the intervention group showed greater reductions in use, fewer alcohol related problems and fewer symptoms of alcohol dependence, as compared to the control group (3.6 drinks per occasion vs. 4.0 drinks per occasion, respectively).

Some studies have examined feedback as an adjunct to an individual or group interview, whereas some studies, albeit few, have investigated feedback as the primary intervention tool. Agostinelli et al., (1995) found mean reductions of 7.9 DPW for the intervention group, compared with mean reductions of 0.5 DPW for the control group, using a mailed feedback population norm intervention. In a similar study, Collins et al., (2002) found comparable results at a 6-week follow-up, but not at a 6-month follow-up. Testing the efficacy of a computerised normative feedback methodology, Neighbors et al. (2004) found that at 6-month follow-up participants in the intervention group reported a 3.41 DPW reduction in drinking relative to control participants (0.90 DPW reduction). It is evident that feedback, whether stand-alone or as part of a wider intervention strategy, can facilitate the reduction of drinking behaviour; it would be useful to ascertain if interventions can be effective without the additional individual or group sessions.

Most of the research performed in behaviour change interventions has utilised feedback in conjunction with an individual or group session motivational strategy. Several researchers have tested this hypothesis; for example, Walters (2000) compared mailed feedback to feedback discussed in a group setting. Participants were either randomised to a group session that integrated feedback, a mailed feedback session only or assessment only. Participants in the group condition attended a class consisting of educational, attitudinal and skills-based approaches to promote responsible drinking. Participants assigned to the feedback condition were mailed personalised information about the quantity and frequency of their consumption, peak weekly and monthly blood alcohol content levels, as well as other information about personal risk factors. Results were encouraging at a 6-week follow-up; those in the mailed feedback condition reported the largest mean reduction in alcohol consumption (13.8 DPW) compared with mean reductions in the group condition (6.35 DPW) and mean reductions in the control condition (0.36 DPW). The efficacy of the feedback only condition provides hope for the utilisation of inexpensive and quick interventions that can be targeted at a large number of drinkers, at least within the student population.

Although brief interventions have been traditionally delivered through more conventional face-to face (e.g., Borsari & Carey, 2000; Humphreys & Klaw, 2001) and postal mail methods (e.g., Agostinelli et al., 1995; Collins et al., 2002; Walters et al., 2000), they have more recently been delivered electronically via computer programmes (e.g., Matano, Futa, Wanet, Mussman, & Leung., 2000; Neighbors et al., 2004) and the Internet (e.g., Cunningham, Humphreys, & Koshi-Jannes, 2000; Davies, Kirsch, & Lewis, 2004; Kypri, Saunders, & Gallagher, 2003; Saitz et al., 2004). Traditional methods of providing personalised feedback are limited in comparison with electronic media. Using the Internet allows for the ability to reach a large audience in a cost effective manner (White, 2006), can offer participants privacy and anonymity through the ability of users to access the intervention at times and in locations that suit their needs, and is flexible in its ability to provide automated and tailored information (Moyer & Finney, 2004). A point to be considered from the findings from the research in the area is that the mode of delivery has an impact on the efficacy of these interventions. Examining the work of Walters (2000), it would appear that using a delivery style that encourages privacy and confidentiality promotes greater effects. Many empirical studies have disseminated this information via mailed feedback, and this has been shown to be efficacious. However, given the rapidly expanding access to and familiarity with computers and Internet resources, it can be suggested that implementing alternative strategies can reach a large number of students quickly and in a cost-effective manner. Over the past two decades, particularly within the smoking cessation arena, the advancement in computer technology has contributed to the development of computer-based programmes that provide individualised or individually tailored interventions to motivate behavioural change. Kypri (2002) examined the acceptability of brief interventions amongst students using focus groups. It was reported that hazardous drinkers expressed reluctance to discuss their drinking with doctors or other health professionals, but expressed interest in electronic assessment and feedback about their drinking. In a survey among a random sample of university students (N = 1,564), electronic sampling and brief intervention were found to be the most popular of several intervention strategies (Kypri et al., 2003). A recent review of web-based alcohol interventions conducted by Bewick et al. (2008) concluded that current

evidence of the effectiveness of using brief interventions via the Internet is promising, but inconsistent and that further controlled trials are needed to investigate their efficacy. Web-based assessment has many advantages over a health practitioner system: it involves little or no contact, it can be conducted anonymously, assessed without limitations with distance and most importantly it is non-intrusive.

4.1.1 Criticisms Surrounding Brief Interventions

It has been shown, repeatedly, that brief interventions for hazardous drinking are effective; however, there are several limitations with this form of research. These problems range from the duration of the intervention (how brief is brief?), and what are the moderators of efficacy (Saunders et al., 2004). There are so many differing definitions for the term *brief*. For example, Babor (1994) terms one contact as *minimal*, one to three sessions as *brief*, five to seven sessions as *moderate*, and eight or more sessions as *intensive*. However, what is considered to be a brief intervention in one study is considered to be an intensive intervention in another study (Jonson, Hermansson, Ronnberg, Gyllenhammar, & Forsberg, 1995). Alcohol Concern (2002) states that a brief intervention can range from 5-10 minutes of information and advice to 2-3 sessions of motivational interviewing or counselling. However, some brief interventions have been shorter, having receipt of a feedback sheet sent via the post (Walters, 2000). There is no standard definition of what is considered to be brief, with the above definitions going under a general rubric. This flags an interesting issue for the researcher in as much as how brief can an intervention be to still remain effective?

Finally, an extra consideration that has been pointed out by Saunders et al. (2004) is the examination of for whom the intervention works. They posed the question "For whom do these interventions work best..." (p. 328). The process of identifying mechanisms of action is a common part of biological research but is less common in health behaviour research (Baranowski, Anderson, & Carmack, 1998). When considering moderators of efficacy, results from a meta-analysis (Moyer et al., 2002) have shown no differences between gender and age for drinking behaviour. The most

consistently evaluated moderator has been gender. Across several studies, feedback appears to be equally effective for men and women. Aside from gender, there have been a number of additional moderators tested. It has been found, with a few exceptions, that feedback works regardless of individual characteristics. Feedback has been shown to be effective in reducing alcohol consumption despite family history of alcohol problems, history of conduct disorder, motivation to change, and desire to avoid risks (Larimer, Irvine, Kilmer, & Marlatt, 1997; Marlatt et al., 1998). In the literature, there is a dearth of attention paid to the extent to which brief interventions may be differentially efficacious with different subgroups or among those having different personal characteristics. These variables can be seen as the social cognitive components that could have an impact on the effectiveness of the intervention in reducing alcohol use. Previous research has found that individual differences variables do not have an impact on the effectiveness of brief interventions for reduction of alcohol; however, it is possible that social cognitive variables may act as effect-modifiers.

4.1.2 Evaluating the brief feedback intervention using the augmented TPB

In Chapter one it was described how despite the plethora of research carried out examining the effectiveness of interventions surrounding drug misuse, only a handful has evaluated the mechanisms of change (Botvin & Griffin, 2004). This also occurs in the literature assessing the brief interventions for alcohol misuse. The effect of brief intervention is estimated to be a 24% reduction in alcohol consumption (Freemantle et al., 1993). Miller and Wilbourne (2002) carried out a large-scale study in which they undertook a methodological analysis of 361 clinical trials of treatments for individuals with alcohol problems to gather information on treatment outcome. The study concluded that brief interventions had a 68% positive outcome. Examining the effectiveness of brief interventions amongst non-treatment populations, a meta-analysis by Moyer et al. (2002) concluded that among non-treatment populations (omitting alcohol dependent participants), brief interventions had a statistically significant medium effect size that was evident up to 12 months from the time of intervention. Although it is encouraging that brief interventions are showing efficacy, there is a call for interventions to expand on the assessment of programme effectiveness by

exploring mechanisms for efficacy. Few studies have assessed how different variables are influenced by brief interventions (e.g., Saunders et al., 2004). Some reviews of the brief intervention literature have suggested that men are more likely than women to respond to brief interventions (Anderson, 1993; Bien et al., 1993). The meta-analysis by Moyer et al. (2002) revealed that gender did not moderate the effectiveness of brief intervention outcomes, but the level of dependency for alcohol were moderators associated with differential intervention response. Another study performed by Walton et al. (2008) assessed hypothesised moderators, such as stage of change, self-efficacy and attribution of injury to alcohol, when examining a brief alcohol intervention in the emergency department. The sample consisted on 575 at-risk drinkers aged 19 and older, randomly assigned to brief intervention condition or control. Overall, participants who reported higher levels of efficacy had lower weekly consumption, whereas those with higher readiness to change had greater weekly consumption. Additionally, those participants who attributed their injury to alcohol, and who received advice, had significantly lower levels of average weekly alcohol consumption and less frequent heavy drinking from baseline to 12-month follow-up than those who attributed their injury to alcohol but did not get advice. The study highlighted how assessing moderators of change can augment intervention effectiveness.

There has been little research that has assessed moderators in intervention efficacy in the alcohol field. The majority of moderators to date (e.g., gender) are less amenable to change than the TPB variables. Assessing moderators in intervention research is necessary to help augment the effectiveness of the intervention. This exploratory moderator analysis intends to demonstrate that the intervention works better for specific participants with differential social cognitions towards the behaviour of drinking to get drunk.

4.1.3 Overview and Hypotheses

The effects of brief interventions have been encouraging, but there are still questions that remain to be answered, e.g., moderators of efficacy, timing, subtleties of content and presentation mode and style. The purpose of the present study is to build on the existing literature (e.g., Borsari & Carey,

2001; Marlatt et al., 1998) by examining the efficacy of a brief intervention delivered via a web-based methodology directed at university undergraduates. The intervention is a very brief and content limited, providing personal feedback using a physiological calculation to inform students of behavioural and physiological information pertaining to their drinking level. It attempts to address some of the questions surrounding brief interventions, such as the moderation effects of various psychosocial variables (attitudes, subjective norms, prototypes, descriptive norms, perceived control and intentions).

It is predicted that (i) a web-based brief personalised feedback intervention will reduce the amount of alcohol units consumed over a one-month period, and (ii) psychological variables as measured by the TPB, descriptive norms, prototype perceptions and past behaviour will moderate the effects of the intervention on behaviour, such that the brief intervention will have more impact on alcohol reduction for those participants with positive attitudes, subjective norms, perceptions of control, descriptive norms, prototype perceptions and higher past behaviour.

4.2 Method

4.2.1 Design

The study employed an experimental design to explore the effect of a brief feedback intervention on university undergraduates' alcohol use. Participants were given pre-intervention measures using the augmented TPB variables reported in Chapter 2 (Time 1); 1-month later, participants were asked for their drinking behaviour (Time 2) and randomly allocated to conditions (feedback vs. no feedback); at 1-month after Time 2 (Time 3) behaviour was measured.

4.2.2 Participants

Those participants who took part in Study 1 were emailed and asked to participate further in the intervention. The sample consisted of 789 undergraduates, 34% male and 66% female. The age of the participants ranged from 18-30 years (M = 18.30 years, SD = 1.58 years). The participants were in the 1st, 2nd and 3rd year of a degree course at the University of Sheffield (40.6%, 30.4% and 28.2%, respectively). The majority of the sample reported they were White British (84.3%); the rest

of the sample reported being other White (7.1%), Mixed (2.8%), Asian (3.2%) or Black (2.1%). The amount of units consumed per week ranged from 0 - 120 units. The post-test consisted of 599 participants, an attrition rate of 26%.

4.2.3 Measures

The survey instrument, used at Time 1 (see Chapter 2), was based on an augmented Theory of Planned Behaviour, including variables from the PWM (Gibbons & Gerrard, 1995), descriptive norms adapted from Terry and Hogg (1996), and group identity variables (Brown et al., 1986)[2]. The Time 1 questionnaire (see Appendix A) was used as a tool to evaluate intervention efficacy. It measured students' attitudes, subjective norms, perceived behavioural control (perceived control and self-efficacy), intentions, descriptive norms (group attitude and behavioural), prototype perception and similarity, and past behaviour. The Time 2 and 3 questionnaires (see Appendix B), each distributed approximately 1-month apart, included a frequency by quantity behavioural index (see below).

4.2.1.1 Behaviour

Behaviour was measured by using a frequency by quantity index. The first asked participants to report "On average, how often did you drink to get drunk in the past month?" The second item asked participants "On average, how many units did you consume when you were drinking to get drunk?" For each respondent the two scores were multiplied together and divided by 4.34 to obtain units per week.

4.2.4 Intervention

The personalised feedback was devised around the individual's blood alcohol concentration (BAC). BAC is the amount of alcohol present in the blood when consuming alcohol. It is calculated by determining how many milligrams of alcohol are present in 100 millilitres of blood. The basic formula for estimating a person's BAC derives from the work done by Widmark (1932). The bases for the calculations are the established facts that alcohol distributes itself in the total water of the

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[2] A full description of the measures can be found in Chapter 2.

body, and that it is disposed of primarily by metabolism in the liver. The procedure takes in to account the amount of body water in males and females, and the range of metabolic rates to be found in the population. It should be understood that the values offer an estimate because the BAC is calculated based on average values. The values estimated will be correct for most individuals sharing characteristics placed into the population, but may be greater or lesser depending on individual factors of which we do not have knowledge.

To calculate BAC the participants provided information on their weight, gender, types and amount of alcohol and hours consuming alcohol on a typical night out:

BAC = pos ((1882.82 / WG* A) – 0.17H)

Where:

Pos = Replaces the negative value with a zero

1882.82 = Constant

0.17 = Decline per hour of metabolism

W = Weight (Lbs)

G = Gender (Males = .58 & Females = .49)[3]

A = Amount alcohol consumed (fluid ounces)

H = Amount of hours consuming alcohol

The equation above provided a BAC calculation for the participants, and depending on condition the participants either received feedback or no feedback. The feedback reported depended upon the effects physiologically and behaviourally of specific BAC levels. Effects of BAC levels were

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[3] The procedure takes into consideration the basic physiological fact that alcohol distributes itself in the total water of the body. Males and females have different amounts of body weight as water. On average, males have 58% of their total body weight as water and females have 49% of their total body weight as water (Widmark, 1932). To find the amount of water in an individual of a given weight, one multiples the body weight by the gender percentage.

obtained from AddictionInfo.org (2005). The individuals received different feedback; the feedback they obtained was dependent on their BAC level. Each participant inputted their personal details and subsequently received their BAC level. In addition to their BAC level, the intervention group also received a corresponding paragraph detailing physiological and behavioural consequences in relation to their BAC.

Participants in both the experimental and control group of the study were asked to input the information highlighted above in a table (see Appendix E). Once the information was collated a BAC level was produced, using Widmarks (1934) equation for all participants. The experimental group and the control group differed in that the former received the information concerning physiological and behavioural consequences of drinking alcohol (presented in Table 4.1) if their personal BAC level fell in-between specific BAC parameters. Participants in the control condition were presented with a following statement:

> "*WHEN YOU GO OUT WHAT IS THE MOST THAT YOU TYPICALLY DRINK WHEN YOU GET DRUNK.* Below is a table that will provide you with your personalised Blood Alcohol Concentration (BAC) estimate. The calculator provides an estimate of an individual's blood alcohol content based on the quantity of beverages consumed, the alcohol percentage in each drink, the person's weight, gender, and time spent consuming the drink". Please fill in the following table.

Once the table (see Appendix D) was filled in with the appropriate information, the participant was given a BAC level. For example, a 168-pound male who drank 10 pints over the course of six hours would receive a BAC level of .110g. This participant would receive no further information.

Similarly, participants in the experimental condition were presented with the following statement:

> "*WHEN YOU GO OUT WHAT IS THE MOST THAT YOU TYPICALLY DRINK WHEN YOU GET DRUNK.* Below is a table

that will provide you with your personalised Blood Alcohol Concentration (BAC) estimate. The calculator provides an estimate of an individual's blood alcohol content based on the quantity of beverages consumed, the alcohol percentage in each drink, the person's weight, gender, and time spent consuming the drink. The calculator will give you personalised feedback on your average night drinking, the effects on your body and the behaviour your friends put up with". Please fill in the following table.

Once the table (see Appendix D) was filled in with the appropriate information, the participant was provided with a BAC level and personalised feedback. For example, a 150-pound female who drank two glasses of wine, three shots of spirits and one alco-pop over the course of four hours would receive a BAC level of 0.07g. In addition to the BAC level, the participant would receive feedback corresponding to the range of BAC parameters documented in Table 4.1. For example, a BAC level of 0.07g would result in the personalised feedback consisting of the following information:

> "Having a blood alcohol concentration at this level indicates that physically your level of alertness will be lowered, you will begin to demonstrate sensory motor impairment and your reasoning and judgement will be impaired. The behavioural characteristics that you show to others around you may include exaggerated behaviours, poor decision-making and poor reasoning in conversation"

Table 4.1. Showing BAC levels and Effects on Behaviour and the Body.

BAC	Physical Effects	Behaviour
.01-.04	No overt effects	Mood intensified
	Slight feeling of muscle relaxation	Inhibitions slightly loosened
	Slight mood elevation	Mood euphoria, sociability and talkativeness
.05-.09	Level of alertness lowered	Exaggerated behaviours
	Beginning of sensory motor impairment	Poor decision-making
	Reasoning and judgment impaired	Poor reasoning in conversation

.10-.14	Reaction time significantly slowed Sensory impairment (taste, touch, smell Vision and hearing) Short-term memory loss	Loud talking Cannot focus well unexplained bruises Repetitive conversation
.15-.24	Blurred vision Lack of motor skills Sedation	Reacts slowly to requests Difficultly in standing/staggering May become more aggressive Passing out
.25-.24	Increased pain threshold Impaired consciousness Disorientation Decreased muscular coordination Loss of motor functions Depressed or abolished reflexes Impairment of circulation and respiration	Urinating on one's self Slurred speech Exaggerated emotional states Cannot talk or move
.35+	Unconsciousness Deep coma Heartbeat and respiration slowed down drastically	Non-responsive

4.2.4 Procedure

At Time 1, a web-survey was emailed out to all students in the 1st, 2nd and 3rd years at the University of Sheffield. Those students who provided their email addresses were emailed a month later and asked to indicate their self-reported drinking behaviour (Time 2). The students were instructed to fill in the questionnaire and at the end of the questionnaire the students were randomly allocated to a feedback or no feedback condition. To obtain the BAC reading, students inputted a number of facts pertaining to their physiology and drinking behaviour. Participants were asked to indicate their gender, their weight (in either Lbs or Kgs), the amount and type of beverages they consumed and the time (in hours) they consumed the drink on a typical night out. They were then asked to click on a button that calculated their BAC; all participants received their BAC percentage. However,

depending on the experimental group the participants were randomly allocated to, half received personalised feedback, which was based on descriptions derived from a BAC percentage (generated using Widmark's calculation, 1932). The descriptions were obtained from AddictionInfo.org (2005). The other half received no feedback. One month later the students who responded to the Time 2 survey and who left their email address were contacted and asked questions relating to their drinking behaviour over the past month, via a frequency by quantity index (Time 3).

4.3 Results

4.3.1 Randomisation Check and Attrition Bias

A MANOVA established that there were no significant differences between the experimental and control groups on the Time 1 measures, $F(10, 778) = .610$, $p = .806$. These findings indicate that prior to the intervention individuals had similar cognitions concerning drinking alcohol. However, examining the differences between Time 2 responders and non-responders, highlighted a significant difference on pre-intervention measures, $F(10, 778) = 2.36$, $p = .009$. These findings indicate the need for an Intention-to-Treat analysis.

4.3.2 Changes in Alcohol Consumption

The alcohol measure scores were analysed in a 2 x 2 mixed measures analysis of variance, with Time (Time 2 vs. Time 3) as a within-participant factor and intervention (control vs. experimental) as a between-participant factor and behaviour (i.e., units per week) as the repeated measures dependent variable. The analysis revealed significant main effect for Time ($F(1, 787) = 18.32$, $p < .001$, $\eta^2 = .02$); however, there was a non-significant main effect for intervention ($F(1, 787) = .34$, $p = .86$, $\eta^2 = .00$). There was a significant Time by intervention interaction, $F(1, 787) = 33.71$, $p < .001$, $\eta^2 = .03$. As shown in Figure 1, the intervention group reduced their drinking at Time 3. In contrast, there was little change in the control group at Time 3. At Time 2 it was established that the intervention group ($n = 434$) reduced their drinking from 16.69 to 15.83 units per week, whilst the control group ($n = 355$) remained relatively unchanged with mean values of 16.33 to 16.44 units per week.

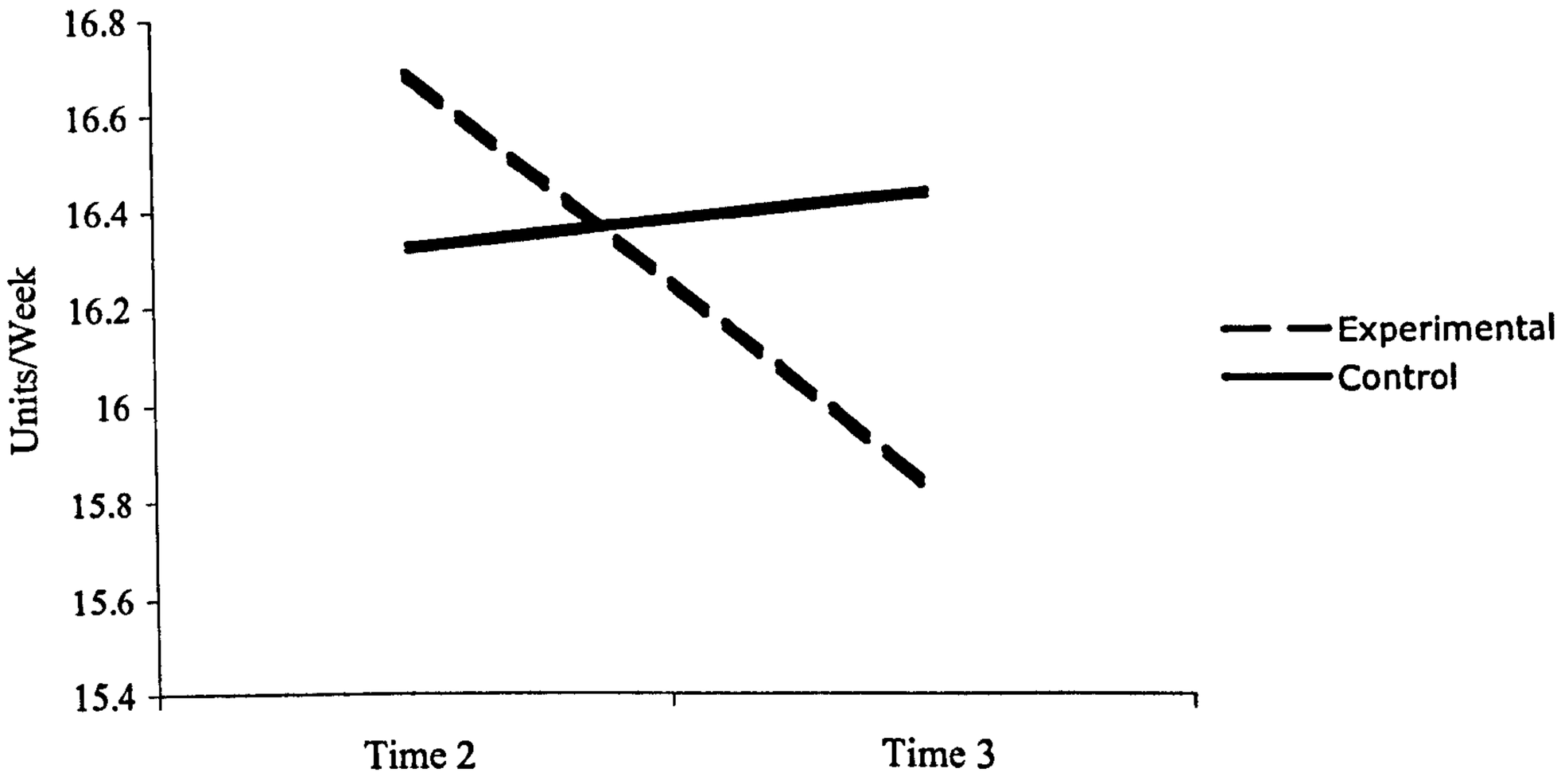

Figure 4.1. Weekly alcohol consumption (in units) for experimental and control groups at Time 2 and Time 3.

Post hoc analyses revealed there was no significant difference between the control group and experimental group at Time 2, $F(1,787) = .15, p = .70$, or Time 3, $F(1,787) = .47, p = .45$. However, when baseline scores were controlled for there was a significant difference between the control group and the experimental group at the one-month follow-up (Time 2), $F(1,787) = 34.24, p < .001$. Examining the data using paired samples t-tests revealed that there were significant differences between Time 2 and Time 3 scores, $t(433) = 6.57, p < .001$ for the experimental group. In contrast, there were no significant differences between Time 2 and Time 3 scores for the control group, $t(354) = -1.29, p = .20$.

4.3.3 Moderator Analysis

Moderated (linear) regression analysis was employed to test the moderation hypothesis. Variables were standardised to minimise problems of multicollinearity (Aiken & West, 1991). The dependent variable was change in drinking behaviour between Time 2 and Time 3. The augmented TPB was utilised to test for any moderating effects between condition and behaviour change. The analyses

revealed that none of the TPB variables, prototypes or descriptive norm variables moderated the relationship between condition and behaviour change (See Table 4.2). However, the condition by past behaviour interaction term was significant.

A simple slopes analysis was utilised to decompose the interaction (Aiken & West, 1991). The regression lines for condition were examined at three levels of the moderator (past behaviour): the mean level, one standard deviation above the mean, and one standard deviation below the mean. Simple slopes analysis revealed that when past behaviour was low or moderate the experimental condition had little effect on behaviour change (B = 0.87, p = .47 and B = 1.04, p = .15, respectively). However, among those participants who reported high alcohol consumption in the past, the experimental condition had a significant effect on behaviour (B = 1.68, p = .04), such that the behaviour of participants in the control condition remained unchanged, whereas participants in the feedback condition reduced their alcohol consumption. In sum, findings from the analysis indicate that, when participants reported drinking less, feedback marginally increased their alcohol consumption. However, as the BAC messages become more forceful, moderate drinkers decreased their drinking a little, whilst heavy drinkers decreased their drinking by more units per week.

Table 4.2. Summary of moderated regression analyses predicting behaviour change.

Variables	B	SE	β
Condition	1.04	.18	.16***
Attitude (ATT)	8.16E-02	.07	.03
Condition*ATT	-1.14E-02	.14	-.00
Condition	1.05	.18	.16***
Subjective Norms (SN)	6.42E-02	.06	.03
Condition*SN	.12	.12	.03

Condition	1.05	.18	.16***
Perceived Control (PC)	-8.95E-02	.08	-.03
Condition*PC	-.224	.16	-.04
Condition	1.04	.18	.16***
Self-Efficacy (SE)	2.89E-02	.07	.01
Condition*SE	5.055E-02	.15	.01
Condition	-1.04	.18	.16***
Descriptive Norms Behavioural (DNBE)	-.17	.07	-.07*
Condition*DNBE	4.40E-02	.13	.01
Condition	-1.05	.18	.16***
Descriptive Norm Attitudes (DNATT)	-.10	.06	-.05
Condition*DNATT	-4.53E-02	.12	-.01
Condition	-1.04	.18	.16***
Prototype Evaluation (PE)	-9.21E-03	.00	-.07*
Condition*PE	2.60E-03	.01	.01
Condition	-1.175	.215	.16***
Prototype Similarity (PS)	-.14	.05	-.08*
Condition*PS	.11	.10	.04
Condition	-1.04	.18	.16***
Past behaviour (PB)	-3.82E-02	.01	-.19***

Condition*PB	3.41E-02	.01	.09**
Condition	1.05	.17	.16***
Intentions(INT)	9.36E-02	.04	.06
Condition*INT	.11	.08	.04

*p<.05, **p<.01, ***p<.001

4.4 Discussion

The aims of present study were (i) to assess the effect of a very brief content limited intervention to reduce alcohol use among University undergraduates and (ii) to examine potential moderators of the effect of the intervention. The results revealed that undergraduates who received a brief intervention showed significant reductions in the number of units they consumed in comparison with students in a no-treatment condition. Students in the intervention condition decreased their alcohol consumption by almost 1 unit per week, whereas the control group slightly increased their alcohol consumption. Previous studies that have utilised a stand alone feedback method as their primary intervention tool, have reported mean reductions of 7.9 DPW (drinks per week) for the intervention group (Agostinelli et al., 1995). Similarly, Neighbors et al. (2004) reported a 3.41 DPW reduction in their intervention group. Although the results do not show the similar levels of decreased consumption as in previous studies (i.e., Neighbors et al., 2004; Walters, 2000), the data still revealed a significant effect. The present research supports the contention that brief interventions can have an effect on reducing alcohol consumption. These results are consistent with earlier findings showing that preventive interventions are effective in reducing drinking within a college student population (e.g., Borsari & Carey, 2001; Marlatt et al., 1998). The research conducted by Neighbors et al. (2004) focused on a stand alone computerised personalised normative intervention, and reported efficacious results. The study similar to the present study utilises one form of feedback via a web-based methodology; however, the study by Neighbors et al. focused on normative information, whereas the present study examined the role of physiological and behavioural

information acquired from BAC. This could offer an explanation for the lower reduction rates in comparison with other studies, including the work by Neighbors et al.

As noted, the intervention did not have the same magnitude of effect as previous brief interventions; this could be due to utilising the Intention-to-Treat analysis. An Intention-to-Treat analysis is a strategy for the analysis of randomised studies that compares participants in the groups to which they were originally randomly assigned; it includes all participants regardless of whether or not they withdrew from the study (Fisher et al., 1990). Using such a strategy could have generated underestimations of the effects since the majority of the sample is assumed to have not changed their behaviour between Time 2 and Time 3. The participants who dropped out in the present study were treated as if they never changed their alcohol consumption from Time 2 to Time 3, thus underestimating the effects of the intervention. Conversely, effectiveness of a trial may be overestimated if an Intention-to-Treat analysis is not done. Previous research that has not employed an Intention-to-Treat analysis in their analyses may show over inflated effects. This could explain how previous research within this area (e.g., Neighbors et al., 2004; Walters, 2000) produced greater differences in alcohol consumption for the experimental groups. Additionally, the majority of previous research has used samples of undergraduates that were assessed as hazardous drinkers. However, the present study has examined all forms of drinkers. Differentiating the distinct types of drinkers into high, moderate and low consumers revealed that the intervention had greater impact for the high level consumers. If the present study reported the effects on heavier drinkers only, the result would be comparative to previous studies. Also, previous studies have typically utilised feedback in conjunction with some form of motivational interviewing (e.g., Agostinelli et al., 1995; Collins et al., 2002). In contrast, the present research employed a content limited intervention. It is possible that additional components are needed to generate greater effects. However, examining the results from previous research, it would seem that across all intervention types participants generally report a reduction in drinking from 3 DPW to 14 DPW. There is no clear distinction between stand alone intervention effects and multiple intervention effects.

There is little known of the effective ingredients of brief interventions. Saunders et al. (2004) remarked on a number of interesting questions concerning the details of brief interventions. They recognised that brief interventions do have an impact on hazardous drinkers but they suggested that research should begin to examine the length, content and the moderators that bring about brief intervention efficacy. There have been a number of empirical studies in the alcohol brief intervention arena that use varying lengths of duration to define *brief*. Within the literature the term *brief* covers a range of interventions lasting from one five-minute interaction to several 45-minute sessions (Saunders et al., 2004). Additionally, few studies have examined the reasons behind the effectiveness of brief interventions. It would be beneficial to identify for whom these interventions work. Previous research has assessed a range of potential moderators including gender and age (Moyer et al., 2002) and individual differences (Larimer et al., 1997). The present research expanded the work by examining the impact of social cognitive variables. The data revealed that cognitions, as measured via the augmented TPB, did not moderate the effect of the intervention on behaviour change. However, it was revealed that those participants who reported that they previously drank more units per week made larger changes to their behaviour than those participants who drank moderate or lower levels of alcohol. The findings imply that although the intervention appears to work regardless of the participant's attitudes and beliefs, the heavier the drinker, the more impact that the intervention can have. This finding supports the evidence (Saunders et al., 2004) that brief interventions, targeted at more hazardous undergraduate drinkers, can have an impact on behaviour regardless of differing levels of psychosocial variables. This is an encouraging finding as it supports the contention that brief interventions are effective among most groups.

A significant strength of the study was the naturalistic setting of the intervention. Previous studies of brief interventions for university students have occurred in artificial conditions, e.g., undergraduate psychology classes (Walters et al., 2000), such that results may generalise poorly to the settings in which brief interventions could be delivered in a sustainable manner.

There are various ways in which the study could be improved. First, it would be advantageous to have a longer follow-up, and second, to measure cognitions at follow-up so that possible mediation effects could be investigated. Third, the drinking outcome measure was self-reported. Although the accuracy of self-reported drinking and other drug use has been the subject of debate, there is good evidence supporting the reliability and validity of self-report measures among college students and adolescents (Johnston & O'Malley, 1985; Johnston et al., 2001). This last point merits discussion, as it has been the topic of debate for decades.

Research emanating from the social sciences is typically marked by its reliance on self-report data as a principal way of measuring and describing the prevalence of many behaviours, including alcohol use. Given that self-report is the principal technique to gain information on a specific behaviour, many argue that the validity of such a technique is questionable, with self-reports not providing accurate data. These validity debates have spurred a number of researchers to produce literature reviews on the subject, with the conclusion that generally speaking self-reports are valid and reliable (e.g., Babor, Steinberg, Anton, & Del Boca, 2000; Midanik, 1988; Morgan, 1997; Poikolaninem, Podkeltnova, & Alho, 2002).

Midanik (1988) reviewed a large number of studies that attempted to validate collateral reports of alcohol use (e.g., from friends, spouses an employers), official records (e.g., arrests and hospitalisation data), alcohol sales data and observational data. It was concluded that although most validation studies indicate that self-reports are basically valid, variation does occur, and certain forms yield more variability. For example, reports of recent consumption are more easily validated than longer-term patterns of use. Babor et al. (2000) examined discrepancies between self-reported drinking, biologic markers and the reports of collateral informants amongst patients attending a clinical trial for alcohol treatment. Findings demonstrated that in clinical trials, biochemical tests, or collateral informants did not add to the accuracy of self-report measures. In a review of the methodological issues involved in substance use self-report, Morgan (1997), made the following conclusion: self-reports of substance use are as reliable and valid as most other behaviours,

anonymity and confidentiality are sufficient conditions for enhancing validity, and other measures (e.g., collateral reports) cannot be assumed to be automatically more valid than self-reports. Although there is a lack of perfect correspondence between verbal reports and other methods in the literature (e.g., Poilkolaninem et al., 2002), reviewers have generally concluded that, for most research purposes, self-reports of drinking show adequate reliability and validity.

In conclusion, the present research adds to the growing literature showing that brief interventions can be effective in reducing alcohol consumption among undergraduates. The present study revealed that personalised information obtained from BAC is an important element in the efficacy of brief interventions and provides empirical justification for its inclusion. Future studies should compare additional feedback components to other intervention components to separate the 'wheat' from the 'chaff' in multicomponent interventions. The present results are encouraging as they highlight the efficacy of a brief content-limited intervention, particularly for those categorised as heavier drinkers. This is particularly pertinent amongst a population group where health-related habits formed during this period may be difficult to change in later life (Stuart-Brown et al., 2000).

Chapter 5

Reducing Adolescent Alcohol Consumption: A Brief Interactive Intervention

5.1 Introduction

The previous chapter examined young people at the legal age of drinking. However, drinking is a behaviour that typically begins in adolescence. In the UK, young people's alcohol consumption is considered an important social and health problem, one that is a focus of government strategy and intervention. Most individuals have their first drink of alcohol during their early teenage years (Baer, Kivlahan, & Matlatt, 1995). Findings from government statistics show that adolescents aged 11 – 15 are drinking more often, and the prevalence of drinking alcohol in the previous week had risen from 21% in 1998 and 1999 to 25% in 2003 (ONS, 2004). As reviewed in Chapter 1, evidence suggests that drinking is widespread among adolescents and that alcohol consumption increases throughout the teenage years. Clearly, adolescents could benefit from early prevention of high risk drinking behaviour.

Drinking in young people is a continuing concern; however, this population is most amenable to change, and most accessible to education and prevention initiatives (Loveday, Oei, & Young, 2001). Early programmes have focussed on information and education about the effects of drugs to promote prevention. This approach assumed knowledge of harmful effects would lead to rational choices to avoid drug taking. Most recent evidence has shown that social influence based approaches are the most successful methods of producing changes in alcohol related behaviour (Tobler et al., 2001).

Social influences to use alcohol, including peer pressure, have been identified as important and persuasive factors in alcohol misuse (Hawkins, Catalano, & Miller, 1992). Therefore, a goal of many adolescent substance abuse prevention programmes has been to enhance the ability of young people to refuse offers of alcohol and other drugs. This social influence approach teaches young people skills with which to resist the social pressures to use such substances. Previous research

indicates that interventions that target the social skills of adolescents are potentially effective tools in the prevention and treatment of drug abuse in a variety of settings (Botvin, 1985; Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Ellickson et al., 1993). Many of these interventions use a 'social influence' approach in helping adolescents resist peer pressure to use drugs and to handle social situations that put them at risk. There have been a plethora of programmes tested over the 1980s and 1990s, which have incorporated social skills training (e.g., Botvin et al., 1990; Jones, Sheridan & Binns, 1993 - see Chapter 1 for a review).

The three major components of social influence approaches are psychological inoculation, normative influences and resistance/competency skills training. The research in the present Chapter deals with the efficacy of resistance/competency skills training. The social resistance programme aspect of the social influence approach assumes that adolescents begin to use drugs largely because they lack the confidence, or skills to resist social influences. Therefore, an important aspect of this approach is providing students with the skills to resist pro-drug social influences from peers. The common elements of such programmes are to teach students to recognise high-risk situations and to practise refusal skills training.

Considerable research has been conducted testing social influences approaches (e.g., Donaldson et al., 1994; Luepker, Johnson, Murray, & Pechacek, 1983; Sussman, Dent, Stacy, & Craig, 1998). In a comprehensive review of social influence studies, Hansen (1992) reported that the majority of prevention studies (63%) had produced reductions in drug use behaviour, while many of those not demonstrating prevention effects lacked adequate statistical power (Botvin, 2004). Competence enhancement approaches also borrow elements from the social influence model. Results from studies utilising competence enhancement along with the social influence approach have demonstrated an impact on alcohol use (e.g., Botvin, Baker, Renick, Filazzola, & Botvin, 1984; Botvin et al., 1990a; Botvin et al., 1995; Pentz, 1983). Results from these studies have demonstrated a reduction in behaviour, with effects that are reasonably durable. For example, Botvin et al. (1995) tested the efficacy of their LST programmes on 6000 7th graders (12 year olds)

from 56 public schools in the USA and reported on lower smoking, alcohol, and marijuana use among intervention students relative to controls at the end of 12th grade (17 year olds). Students attending schools randomly assigned to the prevention programme attended 15 sessions in the 7th grade (12 year olds), 10 booster sessions in the 8th grade (13 year olds) and 5 booster sessions in the 9th grade (14 year olds). The prevalence of smoking, alcohol use and illicit drug use for the students in the prevention condition schools was 44% lower than for controls.

A key feature of social influence programmes is that they are interactive. Interactive programmes provide contact and communication opportunities for the exchange of ideas among participants and encourage the learning of drug refusal skills. Examining alcohol use, Tobler et al. (2000) reported that interactive programmes, whether alcohol specific or targeting general substance use, are equally effective in reducing alcohol use. Alcohol use is a social behaviour for adolescents and may be more amenable to the interpersonal skills development and the exchange of ideas typical of interactive programmes. However, the programmes are generally costly, lengthy and difficult to structure within the UK school curriculum. Reducing the cost, complexity and length of these interventions is important, and moving towards the design and testing of brief cost-effective interventions that can be easily incorporated into the school curriculum is necessary. A primary element of the above interventions is that they last over a number of sessions (lasting months) and often include booster sessions. This places a lot of strain on the school curriculum in terms of time and resources. Finding effective, shorter interventions would be advantageous.

An approach that has been gaining a lot of popularity and exploration within the adult population is the effect of brief interventions for substance use and misuse. In contrast to the adult treatment field, brief interventions have not yet made significant inroads in the adolescent substance use field. Several researchers have adapted the brief intervention model for application with teenagers. For instance, Aubrey (1988) used a motivational interviewing technique as part of a single treatment and feedback session for adolescents about to start drug treatment. Adolescents who received the treatment, at 6-month follow-up, had attended more treatment sessions and

reported a reduction in heavy substance use as compared to those receiving treatment as usual. Bresli, Li, Salao-Jarvie, Tupher, and Ittig-Deland (2002) compared the effects of a 4-session motivationally based intervention to a psycho-educational control group with adolescent drug abusers. At 6-month follow-up, outcome results indicated significantly greater reductions for the brief intervention group in terms of alcohol and other drug use consequences, and an increased confidence to limit intake in high-risk situations. McCambridge and Strang (2004) compared a one-hour motivational interview session to 'education-as-usual' control condition. In comparison to the control group, those randomly assigned to motivational interviewing reduced their use of tobacco, alcohol and cannabis.

The number of studies that have assessed the impact of brief interventions in adolescence is scant; however findings indicate that they are successful. The majority of empirical studies within this area have been conducted in the USA and are not as applicable to UK policy or practice, mostly focussing on abstinence rather than reduction. Currently, within the UK there are no empirical studies that assess the effectiveness of such interventions, particularly utilising the social influence approach. The present study aims to correct that limitation by examining the effects of a brief one-session intervention utilising a social influence approach to the reduction of alcohol use.

5.1.1 Evaluating the Intervention Using the Augmented TPB

As previously mentioned many alcohol intervention studies focus on the efficacy of an intervention in relation to its impact on alcohol use. However, there is increasingly a requirement that researchers investigating intervention studies expand their work and examine their effects on hypothesised mediating variables. For example, it is useful to know if knowledge, social norms, resistance skills, or beliefs are responsible for an observed intervention effect (Judd & Kenny, 1981: MacKinnon, 1994). However, there has been little work in this area. Across the few studies that examined mediational processes, social influences have emerged as mediators of beneficial drug prevention effects (Botvin et al., 1999; Donaldson et al., 1994; Ellickson et al., 1993; Hansen, 1992), For example, social norms among friends and beliefs about the benefits of drug use mediated

programme effects on cigarette, alcohol and marijuana use, 1 year after a social influences-based intervention was delivered (MacKinnon et al., 1991). Changes in anti-drug attitudes and beliefs have also contributed to programme effects on drug use among youth (Botvin et al., 1994). Perceived prevalence and acceptability of drug use, but not resistance skills, were mediators of an alcohol prevention programme (Donaldson el al., 1994). Overall, these studies suggest that social pressure, such as that conveyed through peer norms, was a primary pathway to prevent drug use. Eisen et al. (2002) examined a number of potential mediators that included behavioural intention, social influences and interpersonal perceptions and self-efficacy around drug use refusal. The researchers hypothesised that the intervention programme would strengthen students' behavioural intentions not to use drugs, increase their sense of self-efficacy about their ability to refuse drugs and decrease perceptions that using drugs makes it easier to fit in. Findings revealed that significant treatment effects were found for increasing students' sense of self-efficacy about being able to refuse offers of alcohol in a variety of situations.

5.1.2 Overview and Hypotheses

The present study intends to test the efficacy of a social influence approach intervention using resistance skills training. Interventions that utilise the social influence approach teaching resistance skills to young people are not without their limitations. It can be viewed from the studies above that much of the empirical research suffers from methodological concerns – study design, problems with attrition, no information on hypothesised mediating variables and the extent to which changes in these variables lead to changes in drug use behaviour. The present study intends to correct some of those limitations by conducting a study that randomly allocates participants to control and intervention conditions. Intention – to – Treat analysis will be performed on participants lost to follow-up. The research will also examine whether the augmented TPB variables would potentially mediate the effect of the intervention on alcohol consumption.

Another limitation that can be noted from the empirical research within the area of alcohol consumption is that prevention programmes based on social influence approach consist of a bundle

of strategies. The present study will examine the use of one element of the social influence approach - resistance skills training, based on the finding of Shope et al. (1993) that adolescents with the ability to refuse alcohol offers engaged in less alcohol use and misuse and were less susceptible to peer pressure.

In a review of published research on the efficacy of the social influence approach between 1980 and 1990, Hansen (1992) stated that adolescents' substance misuse programmes require the target groups (adolescents) to pinpoint the social situation relevant to substance use, and provide the most effective social response for each situation. Research on related types of social behaviour suggests that it is imperative to establish the social validity of skills (Kazdin, 1976) before including them in a social skills training programme. The effectiveness of resistance skills training in preventing adolescent substance use requires that we pinpoint the social situations relevant to adolescents with regard to substance use and the most effective social responses for each situation. The present study will allow adolescents to generate their own situations and strategies that are specific to them.

It is predicted that (i) a brief interactive social influence based intervention will reduce alcohol consumption amongst adolescents compared with those in the control group at a one-month and six-month follow-up, and (ii) the interactive social influence based intervention will impact on health-related cognitions, as measured by the TPB, PWM and descriptive norms; these variables will be act as hypothesised mediators of intervention efficacy.

5.2 Method

5.2.1 Design and Structure of the Study

The present study employed a mixed measures design. The study involved several stages. At baseline participants completed a questionnaire measuring the augmented TPB and past behaviour. At Time 1, one month later, participants completed a short questionnaire ascertaining their drinking behaviour and randomly allocated to experimental or control conditions. At Time 2, one month post-intervention, participants completed the full questionnaire measuring the augmented TPB, past

behaviour and drinking behaviour. At Time 3, 6-month post-intervention, participants reported on their drinking behaviour.

5.2.2 Participants

One of the schools that participated in Study 2 was approached and asked to participate in the intervention, post-test and 6-month follow-up. The baseline sample consisted of 647 adolescents. The Time 1 sample (pre-intervention) consisted of 550 adolescents from a secondary school in South Yorkshire, 258 male and 292 female. The age of the participants ranged from 11-16 years (M = 13.59 years, SD = 1.49 years). The participants were in year groups 7 to 11. At the one-month follow-up (Time 2) the sample consisted of 397 participants, an attrition rate of 28%, and at Time 3 (6-months intervention) the sample consisted of 484, an attrition rate of 12%. Therefore, an Intention-to-Treat analysis was utilised.

5.2.3 Measures

The survey instrument used at Baseline and Time 2 (see Appendix C) was based on an augmented TPB (Aizen & Fishbein, 1980), including variables from the PWM (Gibbons & Gerrard, 1995), descriptive norms, adapted from Terry et al. (1996), and group identity (Brown et al., 1986). It measured adolescents' attitudes, subjective norms, perceived behavioural control (perceived control and self-efficacy), intentions, descriptive norms (group attitude and behavioural norms), prototype perceptions (evaluation and similarity) and past behaviour[4].

5.2.3.1 Drinking Behaviour

The Time 1, 2 and 3 questionnaires asked participants about their self-reported drinking behaviour. Behaviour was measured by asking participants: "How many times did drink alcohol in the last month?" A second question asked participants "When did you last have a drink of alcohol?" Responses included: during the last week; one to four weeks ago; one to six months ago; more than six months ago; and never had a drink. Those individuals who reported they never had a drink were excluded from the analyses.

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[4] For a detailed description of the measures, refer to Chapter 3.

5.2.4 Intervention

The intervention (see Appendix F) was a brief interactive intervention based on the social influence approach, with the aim of reducing alcohol consumption among adolescents. The intervention group received the intervention during PSHE lessons. The control group attended normal PSHE lessons, where pupils discussed and learned about a variety of social and health issues. Participants completed pre-intervention measures at Baseline (one-month prior to the intervention), which included the augmented Theory of Planned Behaviour variables, and at Time 1 (immediately before the intervention) , which included the self-report drinking behaviour measure. Following administration of the Time 1 questionnaire, participants were randomly allocated to conditions (intervention vs. no intervention). Participants were then followed up at 1-month (Time 2) and 6-months (Time 3).

Prior to the delivery of the intervention a detailed lesson plan was drawn up (see Appendix F) and distributed to the learning mentors[5] employed at the school. A week before the intervention was due to be delivered, the researcher met with the learning mentors to answer any questions that they had concerning the intervention, and to talk through delivery of the programme. The main aim of the meeting was to talk about the learning outcomes of the programmes which were: consider social situations where the pressure to drink alcohol presents itself and identify strategies to resist such pressure; to give pupils the opportunity to discuss perceived concerns with using these strategies and contribute to a group discussion on such issues. Mentors rather than teachers delivered the intervention as it was felt, by the teachers, that pupils perceived mentors as more closely related to them, and that generally pupils felt more comfortable in confiding in mentors than teachers.

These learning outcomes were achieved through a detailed structured programme. Firstly, the mentors were asked to start the programme by asking pupils if they ever felt under pressure to drink alcohol. Preceding this step, pupils were arranged into groups of five, handed out sheets and asked

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[5] The school employs learning mentors as peer educators who run the PSHE (Personal Social and Health Education) lessons.

to come up with as many different situations as possible in which they may feel under pressure to drink alcohol. After this task was complete, the mentor asked each group to give one example of a situation and ask the remaining groups if they came up with that same situation. The situations were summarised by the mentor before moving on to the next task. The next task asked pupils to generate what strategies they would use in the different situations if they did not want to drink alcohol. Following that task, the mentors went around the different groups asking them to give one strategy; each of the strategies was summarised in relation to what was the commonest strategy for each situation. The final tasks of the intervention involved the participants performing a role-play and becoming involved in a group discussion. The role-plays involved participants starting with the commonest situation and choosing a strategy to deal with the situation, and acting out the situation and strategies. The participants worked their way through the various situations and strategies. Finally, the lesson was ended with a group discussion discussing the perceived ease of using particular strategies in the situations generated, if they learnt any new ways of refusing alcohol and whether they would use those strategies when they felt under pressure to drink alcohol. The whole lesson lasted 40 minutes. A lot of interventions surrounding substance misuse typically last over many sessions, even brief interventions targeted at this age group typically extend over 2 sessions. The current intervention is very brief in comparison to previous work examining alcohol reduction.

5.2.5 Procedure

At Baseline, one month prior to the delivery of the intervention, participants were distributed questionnaires, which measured Theory of Planned Behaviour variables, Social Influence variables, PWM variables and past behaviour. At Baseline, 647 pupils from the school completed the questionnaire. Immediately before the intervention at Time 1, all pupils involved in the intervention and those in the control group were asked to report their self-reported drinking behaviour in the last month.

The intervention group consisted of 250 pupils. Fifty pupils from each year group were randomly selected and allocated to the intervention. The mentors took groups of 25 pupils at a time,

and got them involved in discussions and role-plays. The control group consisted of 300 pupils - those participants received no intervention.

Follow-up questionnaires were distributed to those who received the intervention. One-month following the intervention (Time 2), a questionnaire containing the same items measured at Baseline, including a behaviour measure, was distributed to pupils. At Time 3 (6-months post-intervention) a final questionnaire was distributed to pupils measuring self-reported drinking behaviour.

5.3 Results

5.3.1 Representativeness, Randomisation Checks and Attrition Bias

Eighty-six percent of the Baseline sample (N = 647) could be contacted to take part in the intervention at Time 1 (N = 550). To ensure that the sample was representative the Time 1 responses of participants who participated in the intervention (N = 550) were compared with those who did not (N = 97). A MANOVA was conducted on the variables: attitude, subjective norm, perceived behavioural control, self-efficacy, intention, past behaviour, age, gender, descriptive norms, group identity, prototype characteristics, prototype similarity and willingness, and showed no difference between the two groups ($F(14, 631) = .95, p = .16$). This finding suggests that there is good reason to believe that the participants who remained in the study are representative of the original sample.

Similar analyses were conducted to ensure that randomisation of participants to the experimental (N = 250) and control condition (N = 300) was successful. A MANOVA comparing the two groups revealed that there were no significant differences on cognition measures or on the behavioural measure at Time 2 ($F(15, 534) = .78, p = .09$)

To check for attrition bias following the intervention a MANOVA was conducted to examine if there were any significant differences between Time 3 responders and non-responders on cognition measures at Baseline. The MANOVA revealed no difference between the two groups on the Baseline measures and demographics ($F(14, 632) = 1.62, p = .66$). An additional MANOVA

was performed to compare Time 3 participants and non-participants on Time 1 measures of behaviour, age and gender of participants. The MANOVA was significant ($F(3, 546) = 6.34$, $p < .001$). Univariate analysis revealed that participants who responded at both Time points reported drinking alcohol more than those who did not participate at Time 3, $F(1, 549) = 15.17$, $p < .001$ ($M = 3.62$, $SD = 4.20$ vs. $M = 2.08$, $SD = 3.79$, respectively). In addition, participants who responded at both Time points were older ($M = 13.70$, $SD = 4.15$) than those participants who responded at Time 1 only ($M = 13.21$, $SD = 1.87$) ($F(1, 549) = 10.46$, $p = .01$). A MANOVA was also performed to ascertain if there were any significant differences between Time 3 responders and non-responders on the Time 1 measures. The MANOVA was non-significant, $F(3, 546) = 2.48$, $p = .07$. These findings indicate a need to conduct an Intention-to-Treat analysis

5.3.2 Descriptive Statistics

Table 5.1 displays the means and standard deviations for self-reported drinking behaviour between conditions for the three behaviour time points.

Table 5.1. The means and standard deviations of self-reported drinking behaviour by condition at the 3 time points.

	Time 1	Time 2	Time 3
	M (*SD*)	*M* (*SD*)	*M* (*SD*)
Control group	4.55 (4.65)	5.17 (4.26)	3.65 (4.20)
Intervention group	4.44 (4.66)	4.19 (4.28)	4.10 (4.24)

Note. At baseline self-reported drinking behaviour was not assessed. Time 1 behaviour refers to pre-intervention, Time 2 behaviour refers to one-month post intervention and Time 3 behaviour was measured six-months post-intervention.

Table 5.2 displays the means, standard deviations and alphas for the Time 2 questionnaire, which examined the TPB, descriptive norms, group identity and prototype perception variables. All the test variable scores measured in the Time 2 questionnaire were above the midpoint. However, attitudes ($M = 2.64$), prototype evaluation ($M = 2.60$), group attitude ($M = 2.88$) and intention ($M = 2.77$) were generally modest, with means close to the scale midpoints. Participants reported high perceived control ($M = 3.37$) towards drinking and high group identity ($M = 3.96$).

Table 5.2. The means, standard deviations and alphas for TPB, descriptive norms, group identity and prototype perception variables.

	M (*SD*)	α
Intention	2.73 (1.28)	.83
Willingness	2.93 (1.17)	.77
Attitude	2.64 (0.91)	.79
Subjective Norm	2.90 (1.04)	.80
Perceived Control	3.47 (1.19)	.86
Self-efficacy	3.12 (1.15)	.83
Behavioural Norm	3.00 (1.09)	.80
Group Attitude	2.88 (0.91)	.85
Group Identity	3.96 (1.02)	.82
Prototype Similarity	3.01 (0.75)	.78
Prototype Evaluation	2.60 (1.09)	.73

5.3.3 Impact of Intervention

5.3.3.1 Impact of intervention on drinking behaviour at Time 2 (1-month follow-up)

All those participants who indicated that they never had a drink were excluded from the analysis (*N* = 182). General Linear Model (GLM) procedures were used for the analysis. The Time 2 behaviour score was evaluated as an outcome measure by using an analysis of covariance (ANCOVA). Condition (intervention vs. no intervention) was specified as a fixed between subjects factor, Time 1 scores were entered as the covariate, and Time 2 behaviour scores as the dependent variable.

The ANCOVA used to evaluate group differences on Time 2 behaviour was significant, $F(1,365) = 8.62, p = .004, \eta^2 = .02$. Planned contrasts (simple and controlling for baseline behaviour scores) were used to clarify where differences between the two levels of the between-factor at follow-up. Planned contrasts revealed that there were significant differences on drinking scores between the control and intervention group at Time 2, $t(365) = 2.94$, $p = .004$. Thus alcohol consumption was significantly lower in the intervention group compared to the control group at Time 2– by an average of 0.98 drinks per month .

5.3.1.2 Impact of intervention on behaviour at Time 3 (6-month follow-up)

All those participants who indicated that they never drank of alcohol at Time 3 were excluded from the analysis ($N = 71$). Similar to the analysis performed in the previous section, General Linear Model (GLM) procedures were used for the analysis. The Time 3 behaviour score was evaluated as an outcome measure by using an analysis of covariance (ANCOVA). Condition (intervention vs. no intervention) was specified as a fixed between subject factor, baseline Time 1 scores were entered as the covariate, and Time 3 behaviour scores as the dependent variable.

The ANCOVA used to evaluate group differences on Time 3 behaviour was not significant, $F(1,476) = 1.32, p = .25, \eta^2 = .00$. Thus the intervention did not produce any significant differences between the groups at the 6-month follow-up.

5.3.1.3 Impact of intervention on cognitions at Time 2 (1-month follow-up)

The data were analysed by running a series of 2 x 2 mixed measure ANOVAs to examine if there were any significant effects of Time and condition on the TPB variables, descriptive norms and group identity variables, and Prototype Willingness Model variables assessed at Baseline (one-month prior to intervention) and Time 2 (one-month post-intervention). No significant effects were found.

5.4 Discussion

Adolescent drinking and other drug use remain a public health concern in the UK. Alcohol use among adolescents is widespread, even though drinking is illegal for people under the age of 18. The purpose of this investigation was to examine whether a brief interactive intervention based on the social influence approach reduced adolescent alcohol use at 1– and 6–month follow-up. The study also sought to ascertain if there were any changes in adolescent alcohol cognitions at 1-month follow-up.

The sample consisted of school-going adolescents randomly assigned to either the experimental group, consisting of the social skills intervention, or a no treatment group. The intervention was hypothesised to (i) reduce the number of occasions drinking and (ii) reduce

favourable attitudes towards drinking. In summary, participants in the intervention group reported drinking significantly less than participants in the control group post-intervention. The control group also showed a more marked increase in frequency of drinking at the first follow-up assessment. However, there was no longer term impact on drinking at the 6-month follow-up.

The brief intervention was designed to teach students cognitive skills for building self-esteem, effective communication, making better decisions, as well as behavioural skills for resisting social influences. The focus of this approach was on increasing students' awareness of the kinds of pressures to drink that they would likely encounter in an effort to "inoculate" them against these pressures. In line with previous research on adolescent alcohol behaviours, the present study supports the efficacy for social skills interventions (e.g., Botvin, 1986; Flay, 1985; Hansen, St. Lawrence, & Christoff, 1988; McBride et al., 2004). However, the effectiveness of the intervention tested in the present study was only apparent at one-month follow-up. At six months, the two groups did not differ in their drinking behaviour. Many well-designed and well-implemented school-based drug prevention interventions have shown initially encouraging behaviour effects that dissipated with time (e.g., Ellickson et al., 1993).

The present study therefore offers support for the efficacy of brief interventions among adolescents, at least in the short-term. For the past few decades there has been a plethora of evidence that supports the practice of brief interventions for the reduction of alcohol consumption in hazardous but not dependent drinkers. Few empirical studies have examined the efficacy of brief interventions in the adolescent population. Research that has examined the effectiveness of brief interventions among adolescents has generally shown efficacious results in the short-term but not on medium term reductions in drinking (e.g., Werch et al., 1996a; Werch et al., 1996b; Werch et al., 2001). Generally these programmes used shorter versions of larger scale intervention programmes, with the majority of interventions spanning several sessions and incorporating a consultation with health professionals. One programme lasted only 50 minutes utilising an interactive personalised feedback paradigm (D'Amico & Fromme, 2002). However, no brief interventions have been

evaluated that have incorporated the interactive skills-based theory. Findings from this brief 40-minute intervention are therefore encouraging and deserve further investigation.

Findings from the 6-month follow-up were less encouraging. As it can be observed from the results, the significant difference between the intervention and control groups in alcohol consumption at Time 2, was not evident at Time 3. . This could be explained due to the briefness of the intervention and the need for booster sessions. Research examining the efficacy of alcohol or drug misuse programmes (e.g., Botvin et al., 1995; Botvin et al., 1984; Botvin et al., 1990a, 1990b; Pentz, 1983) usually delivers the intervention over many sessions in the form of booster sessions. The present intervention did not use booster sessions and it could be suggested that brief interventions need supplementary lessons to ensure their effectiveness. Botvin and colleagues (1995) have tested this supposition and found that booster sessions are associated with longer intervention effects. Additionally, the failure of the intervention to produce significant effects in the long-term could be possibly explained by the 'critical situations' having been more appropriate to the upcoming Christmas festivities than 'summer time' (Time 3) and potentially explaining the drop-off in drinking in the control group.

Additionally, the findings did not support the hypothesis that the intervention would have an impact on the cognitions as tested by the augmented TPB. The intervention utilised in the present study was designed around the evidence-base on what was considered to be efficacious. The intervention was not a TPB intervention, potentially explaining the lack of impact the intervention had on cognitions as measured by the augmented TPB. It was expected that the intervention would specifically have an impact on subjective norm variables and perceived behavioural control variables. However, the intervention revealed no effect on these outcome variables. From the handful of studies examining potential mediational mechanisms (i.e., Bell, Ellickson, & Harrison, 1993; Botvin et al., 1992; Donaldson et al., 1994; MacKinnon et al., 1994), some have produced unexpected results. For example, MacKinnon et al. (1994) examined mediation with a 10-session social influence based programme that included elements of normative education and social

competence training. Significant programme effects were obtained in the direction predicted for the drug use outcome measures, drug use intentions, perceived positive drug consequences, communication skills, and friends' reactions to drug use. However, no programme effects were found for drug resistance skills or normative expectations for peer drug use – the variables expected to be affected, as these are the major theoretical underpinnings of social influence based programmes. The intervention presented in this chapter could be tapping into other constructs, such as self-confidence to resist peer pressure, assertiveness or even locus of control. Other studies (e.g., Botvin et al., 1992, 1994, 1999) have examined the impact of the intervention on mediating variables, with findings indicating that the same social influence based programmes have significant effects on several hypothesised mediators (e.g., knowledge and attitudes, assertiveness, refusal skills, risk-taking, locus of control, social anxiety, decision-making and problem-solving). However, not all studies have found significant prevention effects for all of these variables; understanding the reason for lack of consistency in the impact of the intervention on these variables from study to study is an area that warrants future research. Although the present research examines the impact of the intervention on hypothesised mediators, an important component in prevention studies, it is clear that additional research is needed in this area.

A recent meta-analysis (i.e., Moyer et al., 2002) has shown that brief interventions are effective in both treatment seeking and non-treatment seeking populations. However, empirical work has generally examined young and older adults and the hypothesis that brief interventions are effective among adolescent populations has had little attention (Monti, et al., 1999); although a recent systematic review conducted by Tait and Hulse (2003) examined 8 studies that impacted on alcohol consumption and found that brief interventions are efficacious among adolescents. However, the interventions that were included in the review predominantly incorporated motivational interviewing. In contrast, the present study sought to deliver a brief intervention focussing on resistance skills using the social influence paradigm. Results from the study reveal that adolescents appear to benefit from this type of brief intervention. It has been well established that programmes that incorporate social skills training either through social influence approach (e.g.,

Shrope & Colleagues, 1992, 1993) or the competency programmes (e.g., Botvin & Colleagues, 1991, 1993, 1995) show the efficaciousness of these programmes, both in the short and long term. The present study failed to show any long-term effects. Nevertheless the current findings provide prima-facie evidence that brief interventions can buffer the effects of social influences to consume alcohol, at least in the short-term.

The limitations of the study should be noted. Those students whose parents failed to return the consent form or denied consent cannot be assumed to similar to those students with more compliant parents. One potential methodological limitation is the use of self-reports of alcohol use. Although this may introduce bias into the results, other investigations have reported good correlations between self-reporting and actual use (Benson & Holmberg, 1985). In addition, there may be concerns over the reliability of the behaviour measure used in the present study. Due to the limitations documented in the literature (Wechsler & Kuo., 2000), the original survey sought to use multiple measures of drinking behaviour that included a retrospective diary asking participants to indicate the types and amounts of drinks they consumed on an average weekly basis. Unfortunately, this question was not completed by the majority of the sample and was therefore excluded from the analysis. As a result it was necessary to use a single-item measure of drinking behaviour.

The time period students were asked to report their drinking behaviour for coincided with the Christmas season, which is socially accepted period for heavy drinking. This may suggest that the programme encouraged adolescents to limit their alcohol intake in socially pressured drinking situations, which has been documented to be a primary relapse trigger for drinking (Spooner, Mattick, & Howard, 1996).

The intervention developed and delivered for the purposes of the present study was a brief intervention and was found to buffer social pressures to consume alcohol in the short-term, but not the long-term. However, as it consisted of one 40-minute lesson the length of the intervention must be taken into consideration. Future work could look at extending the intervention or adding booster sessions - evidence exists indicating that booster sessions may help maintain or even enhance

intervention effects (i.e., Botvin, et al., 1990). In conclusion, brief interventions such as the one tested in the present study may produce short-term effects, which without adequate booster sessions (or ongoing intervention) are likely to erode over time.

Chapter 6

General Discussion

6.1 Introduction

The present thesis sought to explore two main themes. The first surrounded the expansion of the TPB to the understanding of drinking in two separate populations. The first population examined undergraduates, whilst the latter examined the role of the augmented TPB to the understanding of drinking amongst school-going adolescents. The second theme of the present thesis was to explore the role of brief interventions in the reduction of drinking amongst those groups and evaluate those interventions by using the components of the augmented TPB. Over recent years, brief interventions have been gaining support within the alcohol literature, particularly for hazardous rather than dependent drinkers.

The previous chapters have reviewed the research on alcohol consumption and interventions amongst undergraduates and adolescents. The previous chapters have also reported empirical work undertaken for this thesis. The research conducted here was in response to the recent concerns over the increase of alcohol consumption within our society and over the age that young people initiate drinking. The aim of the interventions in the thesis is to take a reduction approach rather than an abstinence approach to drinking alcohol.

6.2 The TPB and Alcohol Consumption

The TPB is a well-validated model for prediction of many health behaviours. There has been little work that has examined this model in relation to drinking alcohol. However, empirical research that has utilised the model has shown that it has good predictive utility (e.g., Johnston & White, 2003; Norman et al., 1998; Norman & Conner, 2006). In general results from those previous studies have demonstrated that subjective norms are a poor predictor of intentions to drink alcohol. This weak link between subjective norms and intentions has been one that has caused debates over whether the

component should be included in the model (e.g., Blue, 1995; Godin, 1993; Godin & Kok, 1996) or if conceptualisations of social influences should be expanded (e.g., Armitage & Conner, 2001; Rivis & Sheeran, 2004). The social influence component of the TPB is conceptualised as perceived pressure from significant others to perform the target behaviour. It has been argued that this conceptualisation is inconsistent with the widely accepted or implied rules of how group members behave. One purpose of this thesis was to widen the definition to include social psychological definitions of social influences. It was felt that this was pertinent particularly for the population under examination and the target behaviour of this population – alcohol consumption. Youthful drinking is often a performance in front of an audience of associates and others, staking a claim to a valued identity, and expressing solidarity in a group or marking off social boundaries (Room, 1994). The present thesis expanded social influences by including descriptive norms, group identity and prototype perceptions in both populations.

6.1.1 The TPB and Alcohol Consumption amongst Undergraduates

The first study in the thesis examined an augmented TPB to include the wider conceptualisations of social influences. The chapter described a study in which the TPB was used as a theoretical framework to examine the influence of different social cognitive factors on undergraduates' intentions to drink alcohol and the extent to which those factors predicted future drinking behaviour. It was hypothesised that incorporating wider conceptualisations of the social norms approach to include descriptive norms, group identity and prototype perceptions would provide a better understanding of behavioural intentions and behaviour surrounding drinking alcohol. It was also hypothesised that past behaviour would act as a moderator between intentions and behaviour. The study was web-based and included students from a UK University (N=1383). Findings from the research revealed that the TPB explained 66% of the variance in drinking intentions and 41% of the variance in behaviour. This result compares favourably to meta-analyses of the TPB across behaviours (e.g., Armitage & Conner, 2001; Godin & Kok, 1996), supporting the application of the TPB to 'drinking to get drunk' intentions. Attitude emerged as the strongest predictor of intentions;

this finding remained throughout the models, demonstrating the importance of attitudes as an indirect predictor of behaviour via intentions.

The role of PBC has been questioned, and it has been debated that PBC would be better conceptualised to include separate but related levels of control, for example, internal (self-efficacy) and external (perceived control). Self-efficacy, a component of Bandura's (1986, 2000) Social Cognitive Theory, refers to a person's internal capability to carry out behaviour, whereas it is believed that perceived control from Ajzen's (1999) TPB refers to the external limitations of any actions that might be undertaken. The research in the present thesis tested both constructs on 'drinking to get drunk' intentions. Findings revealed that both constructs emerged as significant, albeit weak, predictors of intentions; however, the direction of this prediction differed depending on the construct. Self-efficacy emerged as a positive predictor of intentions, indicating that those who felt that it would be relatively easy to drink to get drunk (i.e., high self-efficacy) were more likely to intend to do so. In contrast, perceived control emerged as a negative predictor of intentions, indicating that those who felt that they had relatively low control over whether or not to drink to get drunk (i.e., low perceived control) were more likely to intend to do so. Such results suggest the necessity of incorporating self-efficacy as an additional predictor of intentions in the model and provides further support for Bandura's (1997, 1982) contention that people's willingness to engage in a particular course of action will be influenced by their perceptions of their personal ability to do so. The negative impact of perceived control is inconsistent with findings in relation to the prediction of a variety of other health behaviours. However, results from empirical studies examining alcohol consumption amongst young people tend to find a negative relationship between perceived control and alcohol-related intentions (Conner et al., 1999; Norman et al., 2007; Norman & Conner, 2006). This is not surprising as experiences at University are typically characterised by social pressures to drink alcohol (Thombs, 2000). An interesting finding is the relationship that perceived control had with behaviour. Results from the research showed that perceived control had a negative direct impact on the prediction of behaviour, again indicating that low perceptions of control are associated with alcohol use behaviour.

Extending the model to include descriptive norms and group identity increased the amount of variance explained in intentions by 3%; again this is comparable to a recent meta-analysis (Rivis & Sheeran, 2004) reporting on the validation of expanding the social influences elements of the model to include descriptive norms (group attitude and behavioural norm). However, in the final model, when factoring in prototype perceptions and past behaviour, descriptive norms and group identity still emerged as significant predictors of intention. This is in support of previous research where behavioural norms have consistently been found to have an independent effect on intentions (Conner & McMillan, 1999; Conner et al., 1996; DeVries et al., 1995; Grube et al., 1986, Sheeran & Orbell, 1999). However, in contrast there has been inconsistent support for the addition of group attitude. Indeed, the beta coefficient for this variable was larger than that for subjective norms in the regression, indicating that expanding the conceptualisation of social influences to encapsulate wider definitions of social influence may be sagacious. The study also examined the moderating impact of group identity on descriptive norms and intentions. The hypothesis sought to test the social identity approach that people who define themselves strongly with a group will have a stronger descriptive norm – intention relationship. This proposition has been supported in previous research (e.g., Terry & Hogg, 1996, 1999). The theory suggests that the relationship should be weaker among people who do not wish to define themselves in terms of the group norm. The findings from the study do not support the theory that group identification moderates the relationship between descriptive norms and intentions. A possible explanation of this is that the measures within the questionnaire made reference to general friends and peers; this probably constituted a weak salience manipulation (Anstrom & Rise, 2001). Future research should focus on making reference to friends and peers who participate in the behaviour. Descriptive norms and group identity did not directly influence behaviour, only indirectly via intentions.

Prototype perceptions were also shown to increase the variance explained in drinking intentions; prototype similarity was a significant predictor whereas prototype evaluation did not emerge as a significant predictor. According to PWM theory prototype perceptions should influence behaviour through their relationship with behavioural willingness, not behavioural intentions.

Results from the present study do not support this contention; prototype similarity influenced behaviour directly and indirectly via intentions, though weakly. This finding supports earlier research on social images, which suggest that prototype similarity and acquiring the characteristics of the prototype for their own self-images are goals for young people when they engage in health-related behaviours (e.g., Barton et al., 1982; Chassin et al., 1981). The finding that prototype similarity is predictive of intentions is consistent with previous work (Norman et al., 2003; Rivis & Sheeran, 2003; Rivis et al., 2006). The demonstration that prototype perceptions positively predict intentions and behaviour suggests that people's identification with prototypes is important in motivating health-related decisions. Alosie-Young and Henningan (1996) outline two mechanisms that might account for the impact of prototype similarity on alcohol intentions and behaviour. Firstly, they propose that it may reflect self-consistency motivations, i.e. young people may engage in drinking alcohol because their self-image is similar to the typical drinker. Second, it may reflect self-enhancement motivations, i.e., young people may engage in alcohol drinking because they value the image of the typical drinker more positively than their own image. Future work could examine the impact of self-image on drinking intentions and behaviour.

Past behaviour increased the variance in intention by 2%, whilst adding past behaviour to the regression equation led to a large increase in the amount of variance explained (22%) in behaviour. This finding indicates that past behaviour has an important position both as a predictor of intention and particularly as a direct predictor of future behaviour. This result adds to the large body of evidence already published demonstrating an impact of past behaviour on both intention and behaviour (Conner et al., 1999; Eagly & Chaiken, 1993). In line with Triandis' (1977) model, it was predicted that as past behaviour scores increased, the strength of the relationship between intention and future behaviour would weaken. The results from Study 1 demonstrated that as past behaviour increased the relationship between intention and future behaviour also increased. Previous research has shown that the addition of past behaviour was found to have a direct effect on future drinking over and above the influence of the TPB variables (Godin et al., 1993; Norman & Smith, 1995; Valois et al., 1988), and it is expected that as the level of past behaviour increases, and

as there is a strong habitual component to behaviour, cognitive processes are weakened. Sutton (1994) suggests that habitual behaviours can be sub-divided into routines that require self-reminders to maintain the behaviour thus provoking conscious thought; this could explain the stronger link between intention and behaviour as frequency of past behaviour increases.

6.1.2 The TPB and Alcohol Consumption amongst Adolescents

There were two main strands of the third chapter of the thesis: First, to apply an augmented version of the TPB to the prediction of drinking behaviour among adolescents, and second, to test whether behavioural intention or behavioural willingness better predicted drinking behaviour for this cohort. The TPB has been used as a model to predict health behaviour in a number of populations, but little work has examined the effectiveness of the model as a predictive tool in adolescent populations to predict drinking behaviour. In addition, there have been debates over the role of intention in the prediction of health related behaviour amongst adolescents (i.e., Albarracin et al., 2001; Sheeran & Orbell, 1998; Webb & Sheeran, 2006). Although it is generally accepted that intentions act as a primary motivation to behaviour, when adolescents are asked if they intend to engage in health risk behaviours, they generally say no, but given the opportunity some of them do. This has led researchers to examine different pathways to behaviour initiation. Gibbons et al. (1998) tested the PWM model in a number of differing risky behaviour situations.

Study 3 consisted of 1280 adolescents from two schools in the South Yorkshire region and 936 students from the same schools at a one month follow-up. The results from the study showed that again the TPB proved to be a good predictor of intention, explaining 76% of the variance and 24% of the variance in behaviour; again this shows good predictive validity of the TPB variables on drinking intentions for this cohort. All variables with the exception of perceived control emerged as significant predictors of drinking intention. From the results it was found that self-efficacy emerged as a significant predictor of intention, whereas perceived control did not predict intention or behaviour.

The weak relationship between subjective norm and intention across a wide variety of behaviours has led some researchers to conclude that intentions are influenced primarily by personal factors and that social influences have little importance in relation to health behaviours (Godin, 1993; Godin & Kok, 1996). The evidence presented in this thesis does not support this view. Extending the model to include descriptive norms and group identity increased the variance in intentions by 1%. This is a modest increment in the prediction of intentions. The surprising finding was that group attitude had a negative beta in predicting intentions, suggesting that adolescents report having greater intentions to perform drinking behaviour if their friends do not hold favourable attitudes for the behaviour. However, assessing the correlation between group attitude and intentions produces a strong positive correlation, indicating suppressor effects. Once again, findings from the study do not support the theory that group identification moderates the relationship between descriptive norms and intentions; this finding was found in Study 2 with the older cohort. Once again the reference group used in the study was generic; specifying friends and peers who drank alcohol may have demonstrated the moderating role of group identity between descriptive norms and intentions.

Prototype perceptions were also shown to increase the variance explained in drinking intentions by modest amounts; prototype similarity was a significant predictor whereas prototype evaluation did not emerge as a significant predictor. Once again this is a similar finding to the results in Study 2. Prototype similarity was positively related to intentions and behaviour but prototype evaluation failed to produce significant associations. Few studies have found prototype perceptions to be related to behaviour; however, the two studies contained within this thesis have shown the relative importance of this variable to both the prediction of intentions and behaviour.

The addition of past behaviour increased the variance explained in intentions significantly by 3%, and the variance in behaviour by 4% (after the inclusion of the other variables). Similar to Study 2, this finding indicates that past behaviour has an important position both as a predictor of intention and particularly as a direct predictor of future behaviour.

Acting on intentions is one pathway, but willingness reacts via a differing pathway – reacting to a situation in which the opportunity to engage in a risk behaviour has occurred. The research in Chapter 3 sought to test if willingness was a better predictor of behaviour than intentions. This hypothesis was tested in Study 2. Firstly the integrated model was regressed on willingness and it was found that the model explained less variance on the willingness variable than the intentions variable. It was also demonstrated that willingness fared slightly less well in the prediction of behaviour. Findings showed that regressing both intentions and willingness on behaviour led to intentions being significant and not willingness. It would seem from the results that intentions are a superior predictor of behaviour than willingness. This is in contradiction to the observation that adolescents have no intentions to perform risk behaviour but generally end up doing so. This has led researchers to hypothesise that an additional pathway is in operation - willingness (Gibbons et al., 1996). In testing this proposition it was found that age did moderate the relationship between intentions – behaviour and willingness – behaviour. The findings showed that for younger adolescents willingness was a better predictor of behaviour, and for the older adolescents intentions better predicted behaviour. This demonstrates support for the theory that young people's health–risk behaviour can be understood in terms of their willingness to perform that behaviour under risk conducive circumstances.

6.2 Extending the TPB to Include Further Sources of Social Influences

The present research in the thesis was partially motivated by the lack of attention to the role of social influences in relation to young people's health behaviour. The studies contained within the first two chapters assessed the importance of extending a well-validated model to include wider conceptualisations of social influences. The weak relationship between subjective norms and intentions has been criticised as not having an influential role in the prediction of health behaviours. The evidence presented in the thesis does not support this view; rather it supports the argument that the conceptualisation of social influences in the TPB is too narrow (*cf.* Armitage & Conner, 2001).

The finding that group norms were predictive of intentions and behaviour provided continued support for their role in connection with the TPB (*cf.* Rivis & Sheeran, 2004). In Studies 1 and 2 descriptive norms remained a predictor of intentions once past behaviour was entered into the model. Some researchers have suggested that past behaviour might drive perceptions of the norm. For example, people who engage in risky behaviours tend to overestimate the percentage of other people who perform those behaviours - the "false consensus effect" (Ross, Greene & House, 1977), suggesting that the predictive power of descriptive norms might diminish once past behaviour was controlled. The present research did not assess this hypothesis.

One of the most interesting findings surrounded the predictive utility of prototype perceptions on both intentions and behaviour. According to Gibbons and Gerrard (1995, 1997) prototypes should influence behaviour through their relationship with behavioural willingness. According to the PWM model, prototype perceptions should not affect intentions to engage in health-risk behaviours because people do not want to identify with such prototypes. This was not supported by the present findings. Prototype perceptions, specifically prototype similarity, influenced behaviour both directly and through their relationship with intentions. These findings accord with earlier research on social images, which suggested that prototype similarity and acquiring the characteristics of the prototype for their own self-images are *goals* for young people when they engage in health-related behaviour (Chassin, Presson, Sherman, Corty & Olskavsky, 1981). Chassin et al. (1981) investigated traits and characteristics that adolescents believe are possessed by smokers. They found that perceptions of smoking models were generally negative; subjects who smoked were likely to have self-concepts that were consistent with characteristics of a stereotypical smoker. Chassin et al. also found that drinking tended to be part of the ideal self-concept of smokers and that non-smokers whose self-concept matched the characteristics of a typical smoker reported planning to smoke in the future. Among young people who have a favourable impression of drinker images, or who identify with those images, social images may represent "positive goal states" or desired self (Higgins 1996). However, the characteristics

endorsed by the sample in Study 1 of the typical drinker reflected social attributes rather than health attributes (e.g., outgoing and fun-loving).

The demonstration that prototype similarity positively predicted intentions and behaviour (Studies 1 & 2) suggests that the performance of health-related behaviours is an important way in which young people and adolescents may develop their identity (Erikson, 1950) and enhance their self-esteem (Aloise–Young & Hennigan, 1996). For example, Sharp and Getz (1996) have shown that the ultimate goal of impression management is self-esteem enhancement, and using alcohol may enable rewards such as friendship and popularity to be obtained, which enhances self-esteem.

6.3 Brief Interventions

The second major theme of the research was to investigate the effects of brief interventions on the reduction of alcohol consumption amongst the two populations. Research has shown that few interventions based on the TPB have shown success (Hardman et al., 2002); the aim of the research contained within this thesis was to extrapolate from the literature the elements from various interventions that have been successful and combine them to design brief cost-effective interventions for the reduction of alcohol consumption. Over recent years there has been an increase in the amount of research that examines the efficacy of brief interventions. There are 70 studies reported in the literature that test the efficacy of brief interventions for the reduction of alcohol and alcohol-related harm. These studies have been primarily conducted in Western Europe and North America. Reviews of the efficacy of these interventions have shown them to be effective, at least for non-problem drinkers, cost-effective, and have a substantial capacity to prevent the development or escalation of alcohol problems (Roche & Freeman, 2003). A large number of empirical studies has examined brief interventions. However, the majority of the research in this area has centred on college students in the USA. The results from those studies have been encouraging; it has been shown consistently that brief interventions are effective in reducing the amount of alcohol that people consume. In the undergraduate population within the UK, there has been little work that has evaluated the effectiveness of such interventions. Study 4 examined the effect of targeted feedback

– an approach that offers tailored information based on general personal physiological and behavioural characteristics. The research examined how information pertaining to BAC readings, providing information on physiological and behavioural characteristics, impacted on average weekly alcohol unit consumption.

There has been little empirical work examining the effectiveness of brief interventions on adolescents. Moreover, most of this work has been conducted in the USA, rendering it less applicable to UK policy or practice. In addition, it has tended to focus on abstinence rather than reduction. In adolescent populations, the majority of interventions have been programmes that last over several months and sometimes years, focussing on a number of differing elements and often including booster sessions. Reviews of the literature have generally identified the effectiveness of interactive interventions utilising a social competency approach as being effective in both the short-term and long-term. To date, there has been no empirical evidence that has transferred the interactive intervention paradigm to the area of brief interventions. The next two studies contained within the thesis examined the efficacy of brief interventions amongst the two populations of interest; undergraduates and adolescents.

6.3.1 Brief Interventions amongst Undergraduates

Drinking alcohol at University appears to be an acceptable part of the social process, with 50% of this population exceeding sensible drinking levels (Gil, 2002). Within recent years there has been a marked increase in the utilisation of brief interventions in the attempt to reduce the level of consumption in this population group. Results from primary studies and from review studies generally show that this type of intervention is efficacious. There are many differing techniques that have been incorporated into the brief intervention assemblage (e.g., motivational interviewing, normative feedback, personalised feedback). There has been little work that has examined the role of feedback as a stand-alone intervention. Walters (2000) examined the role of personalised feedback only to reduce alcohol consumption amongst college students and found it to be effective. The personalised feedback only intervention group was measured against a group receiving

additional interventions (i.e., educational, attitudinal and skills-based approaches); results showed that the feedback-only intervention group saw a greater reduction in the number of alcohol units in comparison with the other group – providing encouraging results.

Study 4 aimed to examine the efficacy of a brief, web-based intervention using targeted feedback to a number of University undergraduates. Participants from Study 1 were contacted to report their drinking behaviour (N=1244). Immediately after reporting on their drinking behaviour over the last month they were asked to fill in a table asking for their weight, gender, types and amount of alcohol, and hours consuming alcohol. This information gave the participants a BAC reading, calculated using the Widmark (1932) equation, with corresponding physiological and behavioural effects on their body. Results from the intervention showed it to be effective. Undergraduates who received the brief intervention showed significant reductions in the amount of units (almost one unit per week) they consumed in comparison with students in the no-treatment control group. This once again is an encouraging finding for the efficacy of brief intervention within the alcohol literature.

A secondary hypothesis was to look at for whom the interventions worked. One of the criticisms of brief interventions is that little work has been done to examine the effective ingredients of these tools. Study 4 utilised the responses measuring the augmented TPB variables from participants in Study 1 as moderators. It was found that none of the variables used in Study 1 moderated the relationship between intervention and behaviour, with the exception of past behaviour. Those participants who reported that they previously drank more units per week made larger changes to their behaviour than those who drank moderately or lower levels of alcohol. This implies that the intervention had more of an impact on heavier drinkers. This finding shows that this particular intervention targeted at the more hazardous drinker is more effective. The delivery of the intervention was via a web-based medium targeting a large number of people in a quick and cost effective manner; however the follow-up for the intervention was over a one month period. Further research needs to be conducted to test the efficacy of such interventions over longer time periods.

6.3.2 Brief Interventions amongst Adolescents

The final study within the thesis sought to examine a brief interactive intervention amongst adolescents. Examining the literature it was established that interactive interventions were seen as the most effective in reducing drug misuse in school-going adolescents. Interventions published within the literature generally lasted over a number of weeks. Running these programmes is usually time consuming and very costly. This highlights the need to assess brief interventions that can be easily incorporated into the UK national curriculum. It has previously been mentioned that brief interventions have been gaining increasing levels of popularity in the young adult substance misuse literature. Empirical work in the adolescent literature is scant; however the small amount of work reports on the efficacious nature of brief interventions in this age group. Study 4 attempts to pull together two fractions of evidence – interactive interventions incorporating a social competency and brief interventions – to test the efficacy of the intervention to the reduction of alcohol in school going adolescents.

Findings showed that participants in the intervention group reported drinking less alcohol at one month follow-up than those in the control group. Although a modest result, it shows that brief interventions are effective, and the result is especially robust given that an Intention-to-Treat analysis was utilised on the sample. However, examining the efficacy of the intervention at the 6-month follow-up revealed that there was no significant difference between the drinking behaviour of participants in the intervention and control groups. Thus, the intervention did not have a longer-term impact on drinking among adolescents. Findings also revealed that there were no significant differences on the cognition measures between the intervention and control groups. The intervention tested was not based on the TPB variables or on the additional variables added to the model. Since the intervention did not tap into those variables it is not totally unexpected that the intervention did not have a significant impact. The intervention looked at social competency skills and future research should examine the impact of programmes that utilise the social competency framework on variables that measure confidence to resist alcohol.

The measures employed were all self-reported. This is almost unavoidable and for behaviours such as drinking it is unusual to collect objective measures. Reviews of published TPB studies (e.g., Armitage & Conner, 2001) have indicated that the TPB significantly predicted objectively observed behaviours, although the level of prediction was lower than for self-report measures. Indeed, the single measure utilised for the adolescent sample was not ideal, but this was unavoidable.

6.4 Implications for further study

The data collected within this thesis suggest there are several worthwhile areas for future research. Chapter 2 and Chapter 3 highlighted the importance of social influence variables in relation to drinking behaviour and the need to develop measurement of group norms and identity measures in young people particularly for drinking behaviours. Norms and social influences were found to play an important and central role in behaviour prediction. In both studies descriptive norms had a larger coefficient in the prediction of intention and behaviour than did subjective norm; this suggests that observing the behaviour of others may be of greater importance in health-related decision making than social pressure from others. Additionally, the finding that prototype perceptions act as an indirect and a direct predictor for behaviour warrants further research. Specifically, examination of the processes by which prototype similarity influences young people's health behaviours would be useful. For example, Gibbons and Gerrard (1997) argued that prototypes are influential because of the greater "social orientation" of adolescents and young adults. Thus, people's ability to self-monitor (Synder, 1994) and the frequency with which they compare themselves with others might usefully be examined as potential moderators of the relationship between prototypes and behaviour. A number of studies (e.g., Rivis & Sheeran, 2003; Rivis et al., 2006), including the two studies in this thesis, have now demonstrated that prototype perceptions have direct effects on behaviour. This finding may indicate that changing prototypes might therefore have an effect on behaviour; this could potentially have an impact on behaviour change interventions.

Study 3 and Study 4 examined the impact of two brief interventions on the reduction of alcohol consumption. Due to the lack of evidence demonstrating the efficacy of utilising TPB interventions for behaviour change (Hardeman et al., 2002), the studies examined the effectiveness of designing and developing brief interventions based on programmes that demonstrated utility. Although the interventions were not designed using the TPB, the interventions contained elements that tapped into the TPB constructs. It is therefore perhaps most important to test the TPB as a model to implement behavioural change in this domain.

The findings within the thesis have direct implications for future prevention interventions. The findings from Chapter 4 have direct implications for brief personalised feedback interventions. This intervention demonstrated that past behaviour acted as a moderator between the intervention and outcome measure. The findings revealed that the intervention had more of an impact on reducing alcohol consumption for those individuals that reported they drank more. The use of brief interactive interventions in the field of adolescents was a relatively untested intervention prior to this thesis. However, the data are encouraging; although the change in behaviour was minuscule, there was a slight reduction in drinking scores. Further research is required to test long-term efficacy, the impact of adding more intervention components, and the impact of booster sessions.

6.5 Conclusions

The aims of the thesis were to focus on understanding the antecedents of drinking behaviour in two cohorts, examine the efficacy of ever increasing popular brief interventions and to extend the scope of previous research within the drinking literature from a correlational and experimental perspective. However, several limitations should be noted. All the data for each of the studies were dependent on self-report measures, which require some caution in interpretation despite strong evidence that self-reported substance use has good reliability and validity (Johnston & O'Malley, 1985).

Other limitations include generalisability and short follow-up periods. The major issue surrounds the generalisability of the samples. The majority of intervention studies examining

alcohol reduction have been conducted in North America or New Zealand. The research consisted of samples composed of undergraduates from one university and adolescents from two schools within one UK town. It is not clear how these types of interventions can be successfully generalised to other UK settings. Further research is therefore required to demonstrate the generalisability of these interventions is similar in UK settings. Another limitation is the short post-test follow-ups. Drinking behaviours change slowly and one-year follow-up measures are suggested to be preferential (Carroll, 1997).

Despite the limitations of the research, the findings from the studies demonstrate the TPB to be a robust model of health behaviour prediction. Chapter 2 extended the literature by trialling an augmented TPB model, across the University undergraduate network, to include variables that are pertinent to that population – social influence factors. Results show persuasive evidence in extending the theory to include wider conceptualisations of social influences for the prediction of intentions. The research also demonstrated the importance of past behaviour to the prediction of behaviour. In particular, how the level of past behaviour increases the relationship between intentions and behaviour.

Chapter 3 of the thesis tested the augmented model in the adolescent cohort, and found support for the hypothesis that intention better predicts behaviour for older adolescents and willingness appears to predict drinking behaviour for younger adolescents. However, overall intentions appear to be a better predictor of behaviour than willingness. There has been scant research using the TPB in the adolescent drinking literature, and the results from the research would show that the model has good predictive utility within this population, which requires further exploration.

Chapters 4 and 5 sought to examine the effects of brief interventions amongst those cohorts. Chapter 4 examined feedback delivered via the Internet; results showed that this type of intervention was effective at reducing alcohol by a very small amount, at least at a 1-month follow-up. There were no current published studies that demonstrated the effectiveness of a web-based

intervention consisting of BAC feedback. Chapter 5 aimed to bring together the effective elements of interventions as detailed through reviews in the literature. Reviews from the literature have demonstrated that interactive interventions are effective, interventions based on the social influences approach are effective and that brief interventions are effective. The results from Chapter 5 demonstrated that designing an intervention around those three elements showed promise at least at a 1-month follow-up; however, results from the 6-month follow-up did not show the longer-term effects of the intervention. However, the impact of the intention to reduce alcohol consumption at the 1-month follow-up was very small. This highlights the need for future work to look at extending the intervention, both in the components and length.

The samples that were used in this thesis consisted of young people, which the Government has aimed to target for interventions. The results from the studies reveal the need to revise the TPB in line with the population under study and extend the model to incorporate better conceptualisations of the social influence component. The interventional aspect of the research demonstrates the utility of brief interventions, but future work should explore longer follow-ups, the influence of incorporating booster sessions and variables that explain why and how the interventions work.

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Survey on Student Drinking

This survey has been designed to assess your views on drinking and the factors that may influence those views. The information obtained from this questionnaire will provide insight into student drinking. You have the right to withdraw at any point during the questionnaire, and your responses will be entirely anonymous and confidential. The questionnaire should take no longer than 10 minutes to complete.

The survey is being coordinated by Catherine Quigley. Please do not hesitate to contact me if you have any queries.

If you wish to continue, please tick the box below.

NEXT
(start questionnaire)

Drinking to get drunk in the next month would be...

	1	2	3	4	5	6	7	
Pleasant	○	○	○	○	○	○	○	Unpleasant
Unhealthy	○	○	○	○	○	○	○	Healthy
Harmful	○	○	○	○	○	○	○	Beneficial
Unsociable	○	○	○	○	○	○	○	Sociable
Negative	○	○	○	○	○	○	○	Positive
Unsatisfactory	○	○	○	○	○	○	○	Satisfactory
Useless	○	○	○	○	○	○	○	Useful

Most of my friends and peers think that drinking to get drunk in the next month would be...

	1	2	3	4	5	6	7	
Not enjoyable	○	○	○	○	○	○	○	Enjoyable

If I wanted to, I could easily drink to get drunk over the next month

	1	2	3	4	5	6	7	
Disagree	○	○	○	○	○	○	○	Agree

Most of my friends and peers would drink to get drunk

	1	2	3	4	5	6	7	
Disagree	○	○	○	○	○	○	○	Agree

Next

It is up to me whether or not I drink to get drunk over the next month

Disagree 1 2 3 4 5 6 7 Agree

Most people who are important to me think that I...

Should Not 1 2 3 4 5 6 7 Should

..drink to get drunk over the next month

Whether or not I drink to get drunk over the next month is under my contro

Disagree 1 2 3 4 5 6 7 Agree

I am in complete control whether or not I drink to get drunk over the next month

Agree 1 2 3 4 5 6 7 Disagree

Do you intend to drink to get drunk over the next month?

Definitely do not 1 2 3 4 5 6 7 Definitely do

How confident are you that you could drink to get drunk over the next month, if you wanted to

Very unsure 1 2 3 4 5 6 7 Very Sure

I intend to engage in drinking to get drunk in the next month

Definitely do not 1 2 3 4 5 6 7 Definitely do

Next

Most people who are important to me would...

Approve 1 2 3 4 5 6 7 Disapprove

...of me drinking to get drunk over the next month

If I wanted to, drinking to get drunk over the next month would be

Easy 1 2 3 4 5 6 7 Difficult

How much do you feel that you identify with your friends and peers?

Not at all 1 2 3 4 5 6 7 Very much

How much do you see yourself belonging to your group of friends and peers?

Not very much 1 2 3 4 5 6 7 Very much

How likely are you to drink to get drunk in the next month?

Very Likely 1 2 3 4 5 6 7 Very unlikely

Most of my friends and peers think that drinking to get drunk in the next month would be...

A good thing to do 1 2 3 4 5 6 7 A bad thing to do

How many of your friends would drink to get drunk

None 1 2 3 4 5 6 7 All

In general, how well do you feel that you fit into your group of friends and peers?

Very well 1 2 3 4 5 6 7 Not very well

How much do you feel strong ties with your friends and peers?

Very much 1 2 3 4 5 6 7 Not very much

Most of my friends and peers think that drinking to get drunk in the next month would be...

Not pleasant 1 2 3 4 5 6 7 Pleasant

Next

On average, how often would you say that you drank to get drunk in the past month?

The following question concerns your images of people. What we are interested in are your ideas about typical members of different groups. For example, we all have different ideas about what the typical movie stars are like, or what the typical grandmother is like. When asked, we could describe one of these images – we might say that the typical movie star is pretty or rich, or that the typical grandmother is sweet and frail. We are not saying that all movie stars or all grandmothers are exactly alike, but rather that many of them share certain characteristics.

Please think about the typical person who drinks to get drunk.
Please write down at least three characteristics that you think describes the type of person who drinks to get drunk.

Please provide a number between 0 and 100 (0 =extremely unfavourable, 100 =extremely favourable) to indicate your overall evaluation of the type of person who drinks to get drunk

My rating is

In general, how similar are you to the type of person who drinks to get drunk?

Very similar	1	2	3	4	5	6	7	Not at all similar

Do the characteristics that describe the type of person who drinks to get drunk also describe you?

Definitely no	1	2	3	4	5	6	7	Definitely yes

Next

Most of my friends and peers think that drinking to get drunk in the next month would be...

A bad idea 1 2 3 4 5 6 7 A good idea

PLEASE PROVIDE THE FOLLOWING INFORMATON BELOW FOR CODING PURPOSES AND POTENTIAL MATCHING OF FUTURE RESPONSES.

Please write the day of month on which your were born (e.g., 1st, 4th, 31st)

Please write in the first letter of your mother's first name (e.g., A, E, B)

Please write in the second letter of your surname (e.g., R, S, A)

If you would like to take part in future surveys, please provide your email address.

THANK YOU FOR TAKING PART IN THIS QUESTIONNARE.

FINISH

Appendix B: Study 1 (Time 2) and Study 3 (Time 3) Questionnaire

Dear Student,

A month ago you filled out a questionnaire examining student's views on drinking. I am contacting you again to ask you about your drinking over the last month. Below are a few questions, and I would appreciate you answering truthfully.

On average, how often did you drink to get drunk in the past month?

On average, how many units did you consume on each occasion when you were drinking to get drunk?

PLEASE PROVIDE THE FOLLOWING INFORMATION BELOW FOR CODING PURPOSES AND POTENTIAL MATCHING OF FUTURE RESPONSES.

Please write the day of month on which your were born (e.g., 1st, 4th, 31st)

Please write in the first letter of your mother's first name (e.g., A, E, B)

Please write in the second letter of your surname (e.g., R, S, A)

If you would like to take part in future surveys, please provide your email address.

THANK YOU FOR TAKING PART IN THIS QUESTIONNAIRE.

FINISH

University of Sheffield

Department of Psychology
Western Bank
Sheffield

A Study Examining Drinking Alcohol Among Young People

This questionnaire has been designed to study the alcohol drinking behaviour of young people aged from 11 years to 16 years around the Sheffield area. On the following pages there are a number of questions about alcohol, and your thoughts and feelings. Please read each one carefully, and answer the questions that follow. It is important that you answer as honestly and as truthfully as possible. **No-one else will know how you answered the questions.**

The answers that you give are private and secret. However, could you please provide the following information below for coding purposes and so we can match this questionnaire with future questionnaires.

Please write the first number of your birthday (e.g., If your birthday is the **3**rd April 1995, you will write **3**) ____

Please write the first letter of your mother's first name (e.g., **S**arah will be **S**) ____

Please write the second letter of your surname (e.g., S**m**ith will be **M**)

_____

Questions about you

1. What sex are you?
Boy ___ Girl ___

2. What age are you?
_____ years

3. How would you describe your ethnicity? (*Please tick **ONE** box that best describes your ethnicity*)

- ☐ White British
- ☐ White Irish
- ☐ Any other white background
- ☐ Mixed – White and Black Caribbean
- ☐ Mixed – White and Black African
- ☐ Mixed – White and Asian
- ☐ Any other mixed background
- ☐ Asian or Asian British – Indian
- ☐ Asian or Asian British - Pakistani
- ☐ Chinese
- ☐ Any other Asian background
- ☐ Black or Black British – Caribbean
- ☐ Black or Black British - African
- ☐ Any other Black background

4. Do you drink alcohol?
Yes ___
No ___

5. What age did you first try drinking alcohol (*even if it was just a sip)*?
____ years old

6. When did you last have a drink of alcohol? (*please tick **ONE** box*)

- ☐ During the last week
- ☐ One to four weeks ago
- ☐ One to six months ago
- ☐ More than six months ago
- ☐ Never had a drink

7. If you drink alcohol, in an average week how much alcohol would you usually have? Detail the types of drinks (i.e., beer, wine, spirits), types of containers (i.e., small glass, can, pint, single or double measure) and number of each of these drinks consumed. An example would be, **1 can of beer, 2 small glasses of wine and 1 bottle of Smirnoff Ice.**

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

Questions on your feelings and thoughts about alcohol.

Below is a list of questions on your thoughts about drinking alcohol in the next month. The teacher will read out each one and you will be asked to answer as honestly as you can by circling the number that best describes your feelings.

8. My friends think that drinking alcohol in the next month would be

Very Healthy	**A little Healthy**	**Not Sure**	**A little Unhealthy**	**Very Unhealthy**

9. Drinking alcohol in the next month would be…

Very Bad	**Bad**	**Not Sure**	**Good**	**Very Good**

10. Do you plan to drink alcohol in the next month?

Definitely Yes	**Yes**	**Not Sure**	**No**	**Definitely Not**

11. I will drink alcohol in the next month

Definitely Yes	**Yes**	**Not Sure**	**No**	**Definitely Not**

12. It is my decision whether or not I drink alcohol in the next month

Strongly Agree	**Agree**	**Not Sure**	**Disagree**	**Strongly Disagree**

13. Do most of your friends drink alcohol?

Definitely Yes	**Yes**	**Not Sure**	**No**	**Definitely Not**

14. My friends would…

Definitely Approve	**Maybe Approve**	**Not Sure**	**Maybe Disapprove**	**Definitely Disapprove**

…of me drinking alcohol in the next month

15. If I wanted to, I would find drinking alcohol in the next month…

Very Easy	**Easy**	**Not Sure**	**Hard**	**Very Hard**

16. Drinking alcohol in the next month would be…

Very Healthy	**Healthy**	**Not Sure**	**Unhealthy**	**Very Unhealthy**

17. How many of your friends drink alcohol?

None	**Few of Them**	**Not Sure**	**Most of Them**	**All**

18. My friends think that drinking alcohol in the next month would be…

A Very Bad Thing to do	**A Bad Thing to do**	**Not Sure**	**A Good Thing to do**	**A Very Good Thing to do**

19. How likely are you to drink alcohol in the next month?

Very Likely	**Likely**	**Not Sure**	**Unlikely**	**Very Unlikely**

20. My friends think that drinking alcohol in the next month would be …

Very Boring	**A Little Boring**	**Not Sure**	**A little Fun**	**Lots of Fun**

21. It is up to me whether or not I drink alcohol in the next month.

Definitely Agree	**Agree**	**Not Sure**	**Disagree**	**Definitely Disagre**

22. Drinking alcohol in the next month would be…

Lots of Fun	**Fun**	**Not Sure**	**Boring**	**Very Boring**

23. My friends think that drinking alcohol in the next month would be

Very Good	**Good**	**Not Sure**	**Bad**	**Very Good Bad**

24. My friends think that…

Definitely Should	**Should**	**Not Sure**	**Should Not**	**Definitely Should Not**

…drink alcohol in the next month

25. I am likely to drink alcohol in the next month

Definitely Yes	**Yes**	**Not Sure**	**No**	**Definitely Not**

26. In general, how well do you fit in with your friends?

Very Well	**Well**	**Quite a Bit**	**A little**	**Not Very Well**

27. If I wanted to, I could easily drink alcohol in the next month.

Definitely Yes	**Yes**	**Not Sure**	**No**	**Definitely Not**

The following questions are about what you think of people. For example, we all have ideas what the typical movie stars are like or what the typical grandmother is like. When asked, we might say that the typical movie star is pretty or rich, or that the typical grandmother is sweet. Please think about the typical person who drinks alcohol.

Please think for a minute about the type of person your age who drinks alcohol, and circle the word on each line, which you feel describes that person.

The type of person of my age who drinks alcohol is…

28.	**Very Popular**	**A little Popular**	**Not Sure**	**A little Unpopular**	**Very Unpopular**
29.	**Very Childish**	**A little Childish**	**Not Sure**	**A little Grown up**	**Very Grown up**
30.	**Very Cool**	**A little Cool**	**Not Sure**	**A little Uncool**	**Very Uncool**
31.	**Very Unattractive**	**A little Unattractive**	**Not Sure**	**A little Attractive**	**Very Attractive**

32.	**Very** Dull	**A little** Dull	**Not** Sure	**A little** Exciting	**Very** Exciting

33. In general, are you like the type of person who drinks alcohol?

Very much Alike	**A little Alike**	**Not Sure**	**A little Different**	**Very Different**

34. Do the words above that describe the type of person who drinks alcohol also describe you?

Definitely Yes	**Yes**	**Not Sure**	**No**	**Definitely Not**

35. How much do you feel you get on with your friends?

Not Very Much	**A little**	**Quite a Bit**	**A lot**	**Very Much**

36. How much do you see yourself belonging to your group of friends?

Not Very Much	**A little**	**Quite a Bit**	**A lot**	**Very Much**

"Suppose you were with some friends and one of them offered you a drink of alcohol. How likely is it you would do *EACH* of the following?"

37. Take it and try it

Very Likely	**Likely**	**Not Sure**	**Unlikely**	**Very Unlikely**

38. Tell them 'no thanks'

Very Likely	**Likely**	**Not Sure**	**Unlikely**	**Very Unlikely**

39. Leave the place

Very **Likely**	**Likely**	Not **Sure**	**Unlikely**	Very **Unlikely**

Thank you for completing this questionnaire, your responses will remain private and confidential.

University of Sheffield

Department of Psychology
Western Bank
Sheffield

A Study Examining Drinking Alcohol Among Young People

This questionnaire has been designed to study the alcohol drinking behaviour of young people aged from 11 years to 16 years around the Sheffield area. On the following pages there are a number of questions about alcohol, and your thoughts and feelings. Please read each one carefully, and answer the questions that follow. It is important that you answer as honestly and as truthfully as possible. **No-one else will know how you answered the questions.**

The answers that you give are private and secret. However, could you please provide the following information below for coding purposes and so we can match this questionnaire with future questionnaires.

Please write the first number of your birthday (e.g., If your birthday is the **3**rd April 1995, you will write **3**) ____

Please write the first letter of your mother's first name (e.g., **S**arah will be **S**) ____

Please write the second letter of your surname (e.g., S**m**ith will be **M**)

____

Questions about you

1. What sex are you?
Boy ___ Girl ___

2. What age are you?
_____ years

3. When did you last have a drink of alcohol? (*please tick **ONE** box*)

- ☐ During the last week
- ☐ One to four weeks ago
- ☐ One to six months ago
- ☐ More than six months ago
- ☐ Never had a drink

4. How many times did you drink alcohol in the past month?
_____ times

Appendix E: Study 3 Intervention (Experimental and Control)

Experimental Condition

WHEN YOU GO OUT WHAT IS THE MOST THAT YOU TYPICALLY DRINK WHEN YOU GET DRUNK

Below is a table that will provide you with your personalised Blood Alcohol Concentration (BAC) estimate. The calculator provides an estimate of an individual's blood alcohol content based on the quantity of beverages consumed, the alcohol percentage in each drink, the person's weight, gender, and time spent consuming the drink. The calculator will give you personalised feedback on your average night drinking, the effects on your body and the behaviour your friends put up with.

Please fill in the following table.

Pints of beer ☐	Glasses of wine ☐
Shots of spirits ☐	Bottles of Alco-pop ☐
Your Weight (in pounds) ☐ or Weight in Kilos ☐	Hours Consuming Alcohol ☐
Gender: Male ⊙ Female ○	Calculate Your BAC
BAC Percentage: ☐	
BAC Analysis:	

Control Condition

WHEN YOU GO OUT WHAT IS THE MOST THAT YOU TYPICALLY DRINK WHEN YOU GET DRUNK

Below is a table that will provide you with your personalised Blood Alcohol Concentration (BAC) estimate. The calculator provides an estimate of an individual's blood alcohol content based on the quantity of beverages consumed, the alcohol percentage in each drink, the person's weight, gender, and time spent consuming the drink.

Please fill in the following table.

Pints of beer ☐	Glasses of wine ☐
Shots of spirits ☐	Bottles of Alco-pop ☐
Your Weight (in pounds) ☐ or Weight in Kilos ☐	Hours Consuming Alcohol ☐
Gender: Male ⊙ Female ○	Calculate Your BAC
BAC Percentage: ☐	

Appendix F: Study 4 Intervention

The University Of Sheffield

Department Of Psychology.

Alcohol Refusal Education Skills for Secondary Schools

Learning Outcomes:

- Consider social dilemmas where the pressure to drink alcohol presents itself and come up with strategies to resist such pressure.
- Justify orally a personal opinion about such problems.
- Contribute to a group discussion on such issues.

Time	Activity
Start	Ask pupils if they have ever felt under pressure to drink alcohol. They may answer no, but remind them that it's a common teenage occurrence.
5 Mins	Organise pupils into groups of 5. Hand out the sheets provided. Ask the pupils to think of as many different situations that they may experience pressure to drink alcohol. Instruct the pupils to come up with as many ideas as possible and write down situations they feel, or may feel under pressure to drink alcohol on the sheets provided. • Pupils may not fully understand what to do, so provide them with examples, say things like at a party etc…
5 Mins	Go around the groups, one at a time, asking each group to give one example of a situation. Ask the other groups if they came up with the same situation – the situations need to be specific (e.g., they may reply at a party – you need to ask them what type of party, friends, family etc…). Keep a tally on the board of the different situations and how many groups came up with the same situation.
2 Mins	Summarise what is on the board, saying what seems to be the most common situation, the second most common situation and so on.
5 Mins	Ask the pupils what strategies they could use in the different situations if they didn't want to drink alcohol. In the same groups, instruct pupils to come up with as many ideas as possible and write down ways to deal with each situation in turn (i.e., If they don't want to drink, what sort of things can they say or do). Say to them that "For each situations mentioned earlier, what would be the best way to make sure that you don't drink alcohol – e.g., leave the situation etc…"

5 Mins	For each situation, go around the groups one at a time asking them to give one strategy. Ask the other groups if they came up with the same strategy. Keep a tally on the board of the different strategies and the amount of groups that came up with the same strategy.
2 Mins	Summarise what is on the board, saying what seems to be the most common strategy for each situation.
5 Mins	Within each group ask the pupils to perform a roleplay. Instruct the pupils to start with the most common situation and choose a strategy to deal with this situation. • Pick one of the pupils within each group to act as the one pressuring another pupil into having a drink of alcohol • Instruct the pupil being pressured to use one of the strategies • Instruct the remaining three pupils to observe the role play • Tell the groups to go around in pairs, so that everyone has a chance of playing the one pressuring as well as the one using the strategy. The pupils should work their way through the various situations and strategies.
Remaining Time	Have a group discussion with the whole class. Questions to concentrate on would be: 1. How hard/easy do they believe it would be to use the strategies on the various situations? 2. Have they learnt any new ways of refusing alcohol? 3. Would they use these strategies the next time they felt under pressure to drink?
End	Collect the sheets from the groups