POLICY

Peer-Group and Price Influence Students Drinking along with Planned Behaviour

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(Received 27 July 2007; first review notified 30 September 2007; in revised form 25 March 2008; accepted 7 April 2008; advance access publication 29 April 2008)

Abstract — Aims: To examine the theory of planned behaviour (TPB), as a framework for explaining binge drinking among young adults. Methods: One hundred and seventy-eight students in a cross-sectional design study completed self-report questionnaires examining attitudes to drinking, intention to drink and drinking behaviour in university. Binge drinking was defined for females (and males) as consuming ‘four (males—five) or more pints of beer/glasses of wine/measures of spirits’ in a single session. Results: Drinking alcohol was common; 39.6% of males and 35.9% of females reported binge drinking. The TPB explained 7% of the variance in intention to drink. Overall, 43% of the variance in intention, 83% of the variance in total weekly consumption and 44% of the variance in binge drinking was explained. The frequency of drinking and the drinking behaviour of friends significantly predicted intention to drink and binge drinking, respectively. Binge drinkers were influenced by peers and social-situational factors. Pressure to drink was greater for males; undergraduates were influenced by the size of the drinking group, ‘special offer’ prices, and the availability of alcohol. Conclusions: The TPB appeared to be a weak predictor of student drinking but this may be a result of how constructs were measured. With friends’ drinking behaviour emerging as a significant predictor of alcohol consumption, interventions seeking to reduce excessive drinking should target the role of peers and the university environment in which drinking occurs.

INTRODUCTION

Binge drinking is a major health concern and the negative problems associated with it are well documented (Wechsler et al., 1994, 1995b). University students in particular are known to indulge in drinking behaviour increasingly regarded as problematic (Ham and Hope, 2003). An early study of 7000 students at North American Universities reported that 95% used alcohol (Wechsler and McFadden, 1976). Subsequent research from other countries has also identified a high proportion of university students regularly engaging in excessive drinking behaviour (Schlegel et al., 1992; Webb et al., 1998; Weitzman et al., 2003).

In studying the drinking behaviour of students in the USA, Wechsler and Austin (1998) identified ‘binge drinking’ (five or more drinks consumed in a row for males and four or more for females) to be ‘by far the single most serious public health concern confronting American Colleges’ (p. 57). The five/four definition of binge drinking (Wechsler and Nelson, 2001) is widely acknowledged with several national studies in the USA reporting that, on average, two out of five university students were binge drinkers (Wechsler and Austin, 1998; Wechsler et al., 1994).

A recent European study on the characteristics of binge drinkers concluded that males were more likely to binge drink and that peer pressure was one of the strongest influencing factors (Kuntsche et al., 2004). Similar findings have been reported for UK undergraduates with one in two male students binge drinking and regularly exceeding the levels of their peers in the general population (Gill, 2002). Research in this area has consistently focussed on undergraduates however there appears to be a dearth of literature attributed to the drinking habits of their postgraduate counterparts. Findings from the US suggest binge-drinking peaks around the age of 20–22 and students display a more gradual reduction to moderate levels of drinking throughout the later years in college (Weingardt et al., 1998). Exam pressures in particular are thought to be the main reason for students drinking less in the final year (Hunnay, 1998).

Research has identified social context of drinking and peer influence as risk factors for problematic student drinking (Ham and Hope, 2003) while factors inherent to health behaviour models have also been implicated in the prediction, explanation and understanding of alcohol use (Armitage and Conner, 2001).

One such model, the theory of planned behaviour (TPB) (Ajzen, 1985, 1991) has been successfully applied to the understanding and prediction of a range of health behaviours (Conner and Armitage, 1998). TPB posits behaviour as a function of intention, determined by three factors: Attitude, Subjective Norm and Perceived Behavioural Control (PBC). A review of the field (Conner and Armitage, 1998) found the TPB accounted for 39% of the variance in intentions and 27% of the variance in behaviour, leading to the conclusion that the TPB was indeed useful for studying behaviours (see Conner and Sparks, 2005, for a comprehensive review of the model).

The TPB has been applied to student alcohol consumption in a number of studies (Armitage et al., 1999; Johnston and White, 2003; McMillan and Conner, 2003; Murgraff et al., 2001). Schlegel et al. (1992) used the theory as a basis for examining predictors of intentions to get drunk and reported support for the ability of TPB components to distinguish between controlled drinkers and those with less control. Norman Bennett and Lewis (1998) reported the TPB accounted for 29% of the variance in the frequency of binge drinking among undergraduates while results from a study by Cooke et al. (2006) showed that TPB variables accounted for 58% of the variance in intentions to binge drink. Attitude and self-efficacy emerged as significant independent predictors in the study by Norman and Conner (2006) with the TPB explaining 74% of the variance in intentions to binge drink.

Despite the significance attributed to student alcohol consumption, a large portion of current research has failed to adequately address the influence of the university environment...
(Dowdall and Wechsler, 2002). Notwithstanding, environmental factors such as drinking in large groups (Demers et al., 2002), drinking where peers pressure exhibits itself (Baer, 1994) and drinking with friends (Beck et al., 1995) have all been associated with problematic consumption. In one study of over 10,000 students at 188 institutions, alcohol availability at low prices was significantly associated with binge drinking rates on campus (Kuo et al., 2003). Ordering rounds when drinking and the group size are also viewed as important factors for drinking more (Van de Goor et al., 1990).

The principal aim of this study was to evaluate the TPB as a framework for understanding binge drinking among university students. However, to date, there remains a paucity of literature addressing binge-drinking behaviour particularly among UK students. We have found only one study using both groups with no differences reported between undergraduates and postgraduates for factors predicting binge drinking (Clapp et al., 2003).

Six hypotheses were tested: (1) Attitude, Subjective Norm and Perceived Behavioural Control predict intention to drink; (2) intention to drink predicts total weekly alcohol consumption, (3) intention to drink predicts binge drinking; (4) alcohol consumption will be influenced by peer pressure and this will be different for males and females; (5) binge drinking is influenced by social-situational factors and (6) social-situational factors will influence alcohol consumption across university status and this will be different for undergraduates and postgraduates.

METHODS

Participants and procedure
The sample comprised 90 (50.6%) undergraduate and 88 postgraduate students from UCL, London, UK. One hundred and seventy-eight self-report questionnaires were distributed to students in the university restaurant, library and while moving around campus. Students were offered a brief outline of the study and completed questionnaires on the spot. Data collection was conducted from May until July. An information sheet explaining the purpose of the study and including the right to refuse participation accompanied all questionnaires. A response rate of 100% was achieved. The university ethics committee granted approval and participants provided consent.

Measures
The questionnaire included demographic items, drinking measures and constructs of the TPB, developed in line with established recommendations (Ajzen and Fishbein, 1980). Alcohol consumption was calculated using the following measurements converted into units: 1 pint = 2 units, 1 standard glass of wine or 1 measure of spirits = 1.5 units. The equivalent self-reported measures of beer, wine and spirits consumed in a typical week were converted into units consumed per week and compared with recommended levels to assess unsafe drinking practices. We examined binge drinking using a 7-point Likert scale ranging from 1 to 7 with the question: Please indicate the number of drinks you consume in a typical episode, one drink to more than seven drinks. A drink was defined as a pint of beer, a standard glass of wine or a measure of spirits. We defined ‘binge drinking’ in females as consuming ‘four or more pints of beer/glasses of wine/measures of spirits’ in a single session and for males, consuming ‘five or more pints of beer/glasses of wine/measures of spirits’, in a single session (Wechsler and Austin, 1998). (Pilot questionnaires indicated students were familiar with the five–four measure and aware of standard measurements for alcoholic drinks.)

Drinking behaviour of friends was measured by three items (e.g. Please indicate approximately the number of times your friends at university drink alcohol in a typical week, never to more than four times a week on a scale from 0 to 5). Attitude towards drinking was measured by five adjective pairs measured on a 7-point Likert scale ranging from 1 to 7 e.g. ‘I think drinking alcohol in a typical week would be unpleasant/pleasant, unenjoyable/enjoyable, safe/unsafe, unfavourable/favourable and good/bad’. Good internal reliability was reported with Cronbach’s α of 0.87.

Subjective norm towards drinking alcohol was measured with eight items on a 7-point Likert scale ranging from 1 to 7. Two referent sets—family and friends—considered to be the most influential on student drinking behaviour were included (e.g. ‘My friends would approve of me drinking: strongly disagree/strongly agree’, ‘My family think that for me to drink is: very unacceptable/very acceptable’). Analysis found good internal reliability with Cronbach’s α of 0.81.

Perceived behavioural control (PBC) towards alcohol consumption was measured with four items on a 7-point Likert scale ranging from 1 to 7, e.g. ‘Whether I drink alcohol is largely under my control’: strongly disagree/strongly agree. Internal reliability reported a Cronbach’s α of 0.75.

Intention to drink alcohol was measured by asking participants to indicate how many pints of beer, glasses of wine and measures of spirits they intended to consume in the coming week and then converting this number to units.

Peer influence: measured using four items on a 7-point Likert scale ranging from 1 to 7: e.g. ‘My friends would encourage me to drink the same number of drinks in a session as they do: strongly disagree/strongly agree and I would have the same number of drinks in an episode as my friends if they believed that is what I should do: strongly disagree / strongly agree’. Social-situational factors were measured with six items on a 7-point Likert scale ranging from 1 to 7, e.g. ‘When I drink with friends, we normally buy drinks in ‘rounds’: strongly disagree/strongly agree’. I would drink more than usual when drinks are on “special offer” prices: strongly disagree / strongly agree’.

Statistical analysis
All analysis was performed using Statistical Package for Social Sciences (SPSS Version 11.0) with multiple linear regression analysis used to examine the application of variables to the prediction of students drinking behaviour. On the basis of tests for normality, Mann–Whitney tests for groups were conducted to analyse peer and social-situational influence across gender, university status and binge drinking status.

Power analysis
A power analysis was performed to calculate study sample size. 86% power was found to detect $r^2$ of 0.1 or greater using 10
predictor variables with a significance level of 0.05 and effect size of 0.25 for 178 participants.

RESULTS

64.4% of undergraduates were male and 47.7% of postgraduates were female. The mean age of participants was 23 years (SD = 3.87; range = 18–47 years) and the sample was predominantly white (72.3%).

The means, standard deviations and inter-correlations between variables under consideration are presented in Table 1. Overall, 11.8% (n = 21) of students questioned abstained from alcohol, 39.6% of males and 35.9% of females. 33.9% consumed four to five drinks in an episode. As can be seen in Table 1, intention to drink was correlated with the TPB constructs so that strong intentions to drink were associated with a positive attitude towards drinking, the perception of social pressure to drink and perceived control over drinking. A strong correlation was also found between participant intention to drink alcohol and the frequency of drinking alcohol. Intention was also strongly correlated with binge-drinking behaviour and the drinking behaviour of friends. Thus, strong intentions to drink were associated with the number of drinks friends had in a single episode and the frequency with which friends drank in a week.

Predicting intention to drink

A linear regression was conducted with the independent variables entered in three steps: (1) gender, university status; (2) frequency of drinking and (3) subjective norm, PBC and attitude. By entering the variables in this way we were able to assess the predictive ability of the TPB variables while controlling for the effects of gender and university status as well as the added predictive validity of frequency of drinking.

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Note: *P > 0.05 (two-tailed), **P < 0.01 (two-tailed), N = 176.

Status: university status (postgraduate/undergraduate), Freq: frequency of drinking, Int: intention to drink, Total: total weekly alcohol consumption, Binge: binge drinking status, Fr-Freq: number of times friends drink per week, Fr-dr: number of drinks friends have per episode, Peer: peer influence, Social: social situational influence.

The model explained ~43% of the variance in intention (see Table 2). Gender and university status entered at the 1st step predicted 11% of the variance in intention (Adj $R^2 = 0.105$, $F = 9.29$, $df = 2$, 140, $P < 0.001$). Frequency of drinking accounted for a further 25% of the variance at step 2 (Adj $R^2 = 0.36$, $F = 27.55$, $df = 3$, 139, $P < 0.001$). TPB variables, attitude, subjective norm and PBC explained a further 7% of the variance in intention when entered at the third step (Adj $R^2 = 0.43$, $F = 18.60$, $df = 6$, 136, $P < 0.001$).

Predicting total weekly alcohol consumption

Table 3 illustrates the variables that were entered at each step of the multiple regression analysis, including beta weights and the proportion of variables explained. The independent variables were entered in four blocks: (1) gender, university status; (2) frequency of drinking; (3) frequency of friends drinking, number of drinks friends had an episode; (4) intention and PBC. Entering the variables like this, we could control for the effects of gender and status on consumption while assessing the contribution of frequency of drinking and drinking behaviour of friends. Entering TPB variables at the final step allowed us to control for the variables entered previously and to examine the additional predictive utility of intention and PBC. Overall, the model explained 84% of variance in total weekly consumption. 10% of the variance was explained by gender and university status at step 1 (Adj $R^2 = 0.10$, $F = 8.84$, $df = 2$, 136, $P < 0.001$) with frequency of drinking accounting for a further 25%
of the variance at step 2 (Adj $R^2 = 0.35, F = 25.99, df = 3, 135, P < 0.001$). At the third step, the number of drinks a friend has in an episode and the frequency of friends drinking explained a further 12% of the variance (Adj $R^2 = 0.47, F = 25.60, df = 5, 133, P < 0.001$). Intention and PBC were entered into the regression at the fourth and final step, explaining an additional 36% of the variance (Adj $R^2 = 0.84, F = 103.14, df = 7, 131, P < 0.001$).

**Predicting binge-drinking behaviour**

Table 4 illustrates the variables entered at each step of the multiple regression analysis, including beta weights and the proportion of variables explained by each. At the first step we controlled for gender and status and followed this by assessing the predictive utility of friends drinking on binge-drinking behaviour. Finally we entered the TPB variables of intention and PBC to examine their ability to predict binge drinking in students while controlling for the factors entered at steps 1 and 2. Gender and University Status explained 2% of the variance. At step 2, the number of drinks friends had in an episode and the number of times friends drink in a week explained an additional 36% of the variance (Adj $R^2 = 0.38, F = 21.66, df = 4, 132, P < 0.001$), with both variables emerging as significant independent predictors of binge drinking in students. Intention and PBC were entered at the third and final step to assess their contribution to binge drinking. These TPB variables explained an additional 7% of the variance (Adj $R^2 = 0.43, F = 18.30, df = 6, 130, P < 0.001$) with all six variables accounting for 43% of the variance in binge-drinking behaviour overall.

**Peers influence on drinking behaviour**

Mann–Whitney tests of independent groups were conducted to examine the influence of peers on drinking behaviour. Comparing male and female students, significant differences were reported for all measures of peer influence. Overall, males reported greater influence from friends to drink alcohol than females. Males were more likely to have the same drinks as friends if friends believed they should ($U = 1840.000, P < 0.001$), tried to have the same drinks as friends ($U = 1944.000, P < 0.001$), were encouraged by friends to drink the same as they did ($U = 2273.500, P < 0.05$) and were expected to drink the same number of drinks as their friends did ($U = 2352.000, P < 0.05$). Significantly influenced by peers, binge drinkers were found to have the same number of drinks as friends ($U = 1951.500, P < 0.01$) and drink the same, if friends believed that is what they should do ($U = 1968.500, P < 0.01$); however, friends encouragement to drink ($U = 2740.500, P > 0.05$) or expectations to drink ($U = 2815.500, P > 0.05$) did not significantly influence consumption.

**Social-situational influence on drinking behaviour**

Mann–Whitney tests of independent groups were conducted to examine the role of social-situational factors on binge drinking. Findings revealed that binge drinkers were more likely than non-binge drinkers to buy drinks in rounds ($U = 2210.500, P < 0.05$) and to drink more when drinks were at a ‘special offer’ price ($U = 1677.500, P < 0.001$). The size of the drinking group also influenced the behaviour of binge drinkers ($U = 1762.000, P < 0.001$) and this group reported that being around campus influenced how much they drank ($U = 2061.000, P < 0.01$) and that socializing around campus typically involved drinking ($U = 1840.500, P < 0.001$). Social-situational factors influenced the drinking behaviour of undergraduates who reported drinking more than usual when drinks were on special ($U = 1899.500, P < 0.001$) and drinking more often when alcohol was available ($U = 1926.500, P < 0.001$). For undergraduates, consumption was largely determined by the size of the drinking group ($U = 2129.500, P < 0.05$), whilst socializing around campus typically involved drinking ($U = 2529.000, P < 0.05$) and being on campus influenced the quantity of alcohol consumed ($N = 2145.500, P < 0.05$).

**DISCUSSION**

Binge drinking rates were comparable to those reported by Perkins (2002), however, significantly less than the 64.4% for males reported by Norman et al., (1998). The difference we observed may have been the result of students being approached around exam time. A comparable 32.6% of male drinkers and 30.2% of female drinkers regularly exceeded recommended safe weekly drinking limits. This pattern is also supported by higher levels of binge drinking found elsewhere (Pickard et al., 2000) and may be evidence of an emerging pattern of excessive use, particularly among young women.

Overall, support for the TPB was relatively weak in explaining intention to drink and binge-drinking behaviour, however, a stronger prediction was found for total weekly consumption. This lack of support may be explained to some extent, by the measurement of TPB constructs. Most TPB studies adopt a
measure of intention extremity (e.g. ‘I definitely intend to drink; I intend not to drink in the coming week’), however, given that the assessment of intention to use alcohol at different quantities is often important, we decided to employ a non-standard measure of intention to determine quantity consumed. This measurement has previously reported promising results in the literature (McMillan and Conner, 2003), however, its use in the current study may have weakened the findings. Attitude and subjective norm predicted intention to use alcohol, however, PBC was not significant. Despite being regarded as the weakest element of the TPB (Armitage and Conner, 2001) subjective norm was our strongest predictor of intention, in line with previous research on the role of this construct (O’Callaghan et al., 1997).

The inclusion of friends and family as sole normative influences is not new (Marcoux and Shope, 1997), however, examining both groups separately may have permitted a more meaningful interpretation of the role of subjective norm given that drinking experiences could have developed at home and been shaped by family prior to university. Our results demonstrate that perceived pressure from friends and family is a significant and independent predictor of behavioural intentions. Indeed, it has been argued that while attitudes may be important for behaviours performed in private, subjective norms may be more important for those behaviours performed in public (Ajzen and Fishbein, 1980).

We found frequency of drinking significantly predicted intention to drink alcohol. A more recent study examined past behaviour as the frequency of drinking sessions per week, reporting significant additional variance in both intentions and binge-drinking behaviour (Norman and Conner, 2006). In the present study, the predictive power of frequency of drinking suggests that consumption of alcohol may play such a large part in student life that it has essentially become an automated process motivated entirely by the previous drinking experience. Indeed, research examining students drinking history has found high school binge drinking significantly predicted binge drinking at university (Wechsler et al., 1995a).

Behavioural intentions significantly predicted 36% of the variance in total weekly consumption, however, PBC was not significant suggesting that weekly consumption was under volitional control and performed at will (Ajzen 1985). With 60% of males and 65% of females considered non-binge drinkers who already expressed a high degree of control over their drinking, any contribution by PBC to the prediction of alcohol use may not therefore be meaningful. A similar measure to PBC, called self-efficacy and reported in previous research also failed to predict drinking behaviour in university students (Armitage et al., 1999; Johnston and White, 2003).

Number of drinks that friends have in an episode and friends’ frequency of drinking significantly predicted total weekly consumption which is not surprising given their influential role in a student’s university life. By implementing a more robust measure of PBC, to include measures of self-efficacy and perceived control, as in the Norman and Conner (2006) study, we may have improved the predictive ability of PBC with an examination of both the ease and the confidence in performing the behaviour resulting in a stronger measurement. It may be that participants did not consider their behaviour to be problematic, but rather, to be effectively within their control. Perhaps, our measure did not accurately reflect control over this behaviour and a wider evaluation of behavioural control to include these additional measures might therefore be useful.

We found that intention, friend’s drinks per episode, and friend’s frequency of drinking, significantly predicted binge drinking. An earlier examination of the relationship between students and their peers concluded students started to binge drink in college ‘because others were doing it’ while ‘fitting in’ was given as another important reason (Weitzman et al., 2003). We found males were significantly more influenced on every aspect of peer pressure, confirming earlier work in which peer exposure was significantly related to excessive consumption in male students (Borsari and Carey, 2001). While binge drinkers tried to drink the same and usually did have the same to drink as friends, this was neither encouraged nor expected, suggesting binge drinking may be less about direct pressure and more related to gaining acceptance and social approval from peers (Farber et al., 1980). Such influence appears to reflect a need to be part of a social group rather than a pressure to conform. However, examining the influence of peer’s and friend’s separately might have been preferable given the degree of salience and specificity of each to participants (Borsari and Carey, 2001).

Drinking more when alcohol is at a ‘special offer’ price, drinking in a group, alcohol availability and the influence of campus encouraged alcohol consumption, confirming earlier findings by Ham and Hope (2003). Current efforts to reduce alcohol consumption tend to focus on behavioural change, however, developing strategies that address specific practices such as ‘alcohol promotion’ and alcohol availability may be more beneficial (Kuo et al., 2003). With the previous research by Weitzman and colleagues (2003) indicating low price alcohol, alcohol accessibility and greater peer influence are significant predictors of binge drinking among students, interventions addressing the environmental approach to binge drinking in balance with a more normative approach are needed.

**Limitations and future directions**

This study adds to a growing body of research examining factors predicting alcohol use in university students, however, there are a number of limitations. Firstly the use of self-report measures opens up the data to possible bias through participants responding in a socially desirable manner. Therefore employing observational techniques or using peers as informants may be useful in revealing the qualities of the drinking environment that directly influence drinking behaviour (Van de Goor et al., 1990). A second limitation is that with the study conducted around exam time, heavier users of alcohol may have been under-represented in the sample. A third limitation is that the cross-sectional design of the study does not permit causal relationships to be established.

The present study could be extended to explore past behaviour further, as previous research has shown this variable to be typically the strongest predictor of intention and behaviour (Ajzen, 1991; Conner and Armitage, 1998). Examining normative pressures may also be useful, given the strength of subjective norms and the role of friends’ drinking in the present research. A future challenge for the research in this field involves developing interventions and alcohol programs that make use of normative influence and promote responsible consumption (O’Callaghan et al., 1997) through emphasizing the negative effects of alcohol. Through placing greater significance on
directing health promotion towards informing on the positive consequences of ‘light’ drinking, we may be able to effectively encourage students to enjoy themselves without binge drinking (Cooke et al., 2006).

Examining social situational factors as well as the individual aspect of drinking behaviour is important, such is the influence of each on alcohol consumption and the belief that programs focussing exclusively on either are capable of only limited success (Demers et al., 2002). Future research should therefore seek to determine the relationship between situational factors (such as special promotions, drinking rounds, etc.) and their influence on drinking among university students and may also benefit from examining the composition of the drinking group given influential role of females in overall alcohol consumption (Boyd et al., 2005).

In conclusion, the study informs our understanding of binge drinking among students and supports the view that friends’ drinking behaviour and the environment contribute to this. Therefore interventions aimed at curtailing binge drinking should not only target the role of peers but also those situations in which drinking occurs.

REFERENCES

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