

Associations between normative influences and adult alcohol use

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Background: Despite evidence showing that normative influences can impact excessive alcohol use, the mechanisms underlying such influences on drinking intention and behaviour are not well documented. We examined the extent to which the effect of perceived prevalence on drinking intention, which in turn affects alcohol use, will be strengthened by perceived approval and benefits.

Methods: A non-probability convenience sample of 617 adult drinkers (aged 18+) in the UK was selected to participate in online survey. Structural equation modeling tested hypothesised relationships between perceived prevalence and drinking intention, which was moderated by perceived approval and perceived benefits.

Results: A third of adults thought that they engage in excessive drinking. Those who thought that they drink regularly were just over two-thirds whereas about a third were occasional drinkers. Majority of respondents, around three-quarters said they most commonly drink with their partner, friends or family members. Independent paths from perceived prevalence, perceived approval and benefits significantly affected adults' intention to drink, which in turn affected drinking behaviour. Injunctive norms heightened the relationship between descriptive norms and intention to drink.

Conclusions: Our results suggest that adults might be drinking excessively because of greater perceptions of prevalence and approval. Interventions aimed at reducing alcohol use patterns among adults would benefit from including normative influences to help reduce drinking norms, particularly among young adults with low education.

Keywords — Normative influences, excessive drinking, adult alcohol use.

1. Introduction

The health burden of excessive alcohol consumption is well documented (Kaner et al., 2018, Patrick et al., 2017). Although several policies addressing excessive alcohol consumption exist, binge drinking remains a significant cause of preventable deaths in several jurisdictions, with a greater global cost to health than for tobacco (World Health Organisation (WHO), 2014). Heavy drinking is typically associated with multiple adverse health and social consequences such as unintentional injuries, violence, unintended pregnancy, and cardiovascular disease, with an estimated 2.3 million deaths per annum (Brewer & Swahn, 2005; Naimi et al., 2003, OECD, 2017). According to the Office for National Statistics (2017), prevalence among adults in the UK has fallen from 64.2% in 2005 to 56.9% in 2016 (WHO, 2017). Nonetheless, the UK is among the worst countries in the world for binge drinking (WHO, 2017). Altogether 28 per cent of adults in the UK are heavy drinkers, which is about twice as much as the global average. Evidence suggests that most alcohol related harm are not attributable to severe alcohol dependence but due to excessive drinkers who consume beyond the recommended drinking levels (Kaner et al., 2018). Among young adults, social cognitive factors such as perceived norms, motives and outcome expectancies are established predictors of excessive alcohol consumption (Neighbors et al., 2007; Rimal & Real, 2005). It is not surprising that effective interventions include normative perceptions such as descriptive and injunctive norms of alcohol use, which have been found to predict not only intention to use but also drinking behaviour. Little is known however about the mechanisms underlying the association between normative beliefs and outcome expectancies as predictors of alcohol use among adult population in the UK. This study is aimed to determine the association between perceived norms and outcome expectancies on intention to use alcohol among those from different socio-demographic groups, to inform health intervention development.

One group of particular interest is those from low social groups, who consistently report higher rates of alcohol use (Wallace et al., 2002; Hurcombe et al., 2010). As a consequence of the chronic high risk of this group, it is important to understand the normative environment for alcohol use among these groups. Given their heightened risk, further research is needed to examine the relationship between descriptive norms and outcome expectancies on alcohol use within this population.

1.1 Normative mechanisms on alcohol consumption

Several interventions such as self-efficacy, fear-based and normative approaches have been used to reduce substance abuse and heavy drinking especially among young people (Bruvold, 1993; Dieterich et al., 2013; Hill et al., 2017). Increasingly, normative interventions are being used mainly because of the impressive emerging data on reduction in substance use and other problem behaviours (McAlaney et al., 2011; Bewick et al., 2013; Dieterich et al., 2013). Past research shows that normative perceptions shape behaviours mainly because of the rewards associated with conforming to the referent group behaviour and punishment for non-compliance (Dejong et al., 2006). Individuals tend to conform to erroneously perceived group norms as they wish to or feel pressured to follow imaginary peers (Perkins, 2003). For instance, studies have shown that young people tend to overestimate the permissiveness of peer attitudes and undesirable behaviour (descriptive norm) such as alcohol and tobacco use, or underestimate the extent to which peers engage in healthy behaviour (Bewick et al., 2013). Available data show that individuals use their perceptions of peer norms as a standard (approved behaviour – injunctive norm) against which to compare their own behaviours (Larimer et al., 2001; Neighbors et al., 2008).

Efforts to better understand the mechanisms of normative approaches have led to the conceptualisation of the Theory of Normative Social Behaviour (TNSB; Rimal & Real, 2005).

The TNSB model suggests that influence of descriptive norms on behavioural intentions is moderated by injunctive norms, outcome expectancies and group identity. Rimal and Real (2005) defined outcome expectancies as beliefs that ones' behaviour will lead to a certain outcome. The authors noted that normative mechanisms might amplify the effects of descriptive norms on behaviours. Therefore, to understand the mechanism underlying heavy drinking, this study examines the effects of normative constructs (i.e. injunctive and descriptive norms) and outcome expectancies on adult alcohol use. We examine the effect of outcome expectancies rather than group identity on account that the former is a robust predictor of alcohol use than the later (Zamboanga et al., 2006). We propose that higher positive outcome expectancies will not only directly increase alcohol use but will also increase the relationship between descriptive norms and alcohol consumption, particularly among those from low social groups.

1.2 Outcome Expectancies

1.2.1 Benefits to Self

Rimal and Real (2005) proposed that three main aspects of outcome expectancies (i.e. benefits to the self, benefits to others, and anticipatory socialization), could moderate the relationship between descriptive norms and behavioural intentions (Rimal & Real, 2005). Benefits to self refer to the extent to which an individual perceives that a behaviour will lead to personal benefits. Research has found that alcohol use outcome expectancies of benefits to oneself include mood enhancement, relaxation, and stress reduction (Peele & Brodsky, 2000; Boys et al., 1999). Likewise, benefits to self has been found to moderate the relationship between descriptive norms and behavioural intentions to use alcohol (Rimal & Real, 2005).

1.2.2 Benefits to Others

The extent to which individuals perceive that others benefit from the behaviour can also influence their behaviour. For instance, perceptions that there are high levels of descriptive norms may be understood as evidence that others are benefitting from the behaviour. Consequently, individuals may engage in the behaviour in order not to deprive themselves of the outcome benefits for themselves (Kahneman & Tversky, 1984). Evidence shows that benefits to others, which is derived from perceptions that other people are deriving the same benefits may influence individuals to act (e.g., to reduce stress or boredom). Additionally, perceptions of benefits to others have been found to influence intentions to use alcohol although this depended on removing benefits to self from the model. We did not include benefits to others in our study because this construct was empirically weak.

Based on the forgoing conceptualisation, we hypothesize that descriptive norms, injunctive norms and outcome expectancies (benefits to self and anticipatory socialisation) would be positively related to drinking intention, which in turn would affect alcohol consumption. In addition, we hypothesize that outcome expectancies and injunctive norms would moderate the relationship between descriptive norms and drinking intention, which in turn would affect alcohol consumption. Specifically, we propose that the effect of descriptive norms on drinking intention will be strongest for adults with high positive outcome expectancies for use, and as pro-drinking injunctive norms become greater (see fig 1).

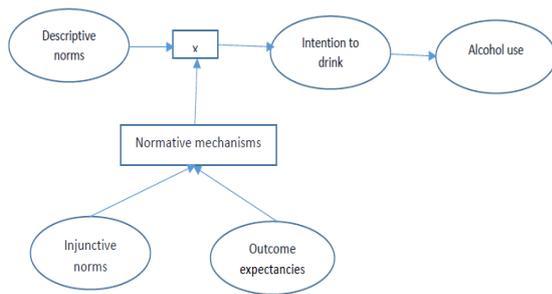


Fig 1. Extended model of the theory of normative social behaviour

2. Method

2.1 Sample

A non-probability convenience sample of 617 adult drinkers in the UK participated in an online survey. Participants were first phoned to seek their consent to take part in the study. Those who agreed to participate were emailed and asked to click on a web link to complete the questionnaire online. Upon completion, participants were asked to return the questionnaire by clicking on submit. To maintain anonymity, no personally identifiable questions were included in the survey instrument. The entire survey took approximately 15 minutes to complete. Of the 900 surveys emailed to participants, 617 (68.6%) were returned. The study was approved by the Research Ethics Board at the Nottingham Trent University.

2.2 Measures

Descriptive norms. Participants' perception about the prevalence of alcohol consumption was measured using three questions. Respondents were asked to indicate how many drinks a friend consumes when he or she 'goes to a bar', 'has friends over to his or her apartment for drinks', and 'goes to a party'. All responses were recorded on a 5-point scale, ranging from zero drinks to more than six drinks. Descriptive norms for this construct was calculated as the average of the three responses, with Cronbach's alpha (α) = .76.

Injunctive norms. Three questions asked participants the extent to which they think that their reference groups (closest friends, family members or work colleagues) will approve or disapprove of their excessive drinking, i.e. 'drinking until you get drunk' measured social approval. Responses ranged from strongly agree to strongly disagree. Injunctive norm was computed as the average of the three responses (α = .74).

Perceived Benefits (to oneself). Using a 5-point Likert scale, four questions (drinking alcohol with work colleagues, friends and family members is rewarding, pleasurable, enjoyable, and fun) measured *benefits to oneself* (α = .71).

Anticipatory socialization. One question was used via 5-point Likert scale to measure the extent to which drinking alcohol is a way to socialize with others.

Intention to use. Three items were used to measure intention to consume alcohol with all items dichotomised to determine drinkers' intention to consume in a week or over a month.

Alcohol use. Three items measured participants' alcohol consumption. These were dichotomised to determine how often they drink alcohol, whether they have ever drunk more than 5 drinks in a sitting, and whether they think they drink too much.

Covariates. Control variables used were age, sex, ethnicity and education. We categorised age, ethnicity and education variables into binary variables to allow for multi-group analyses.

2.3 Analyses

Descriptive statistics revealed sample distribution of key variables of interest. Normality among variables was found to be acceptable. Dichotomous variables were also considered appropriate for maximum likelihood estimation in structural equation modeling (SEM) as the split was < 90:10. Model fit was performed using comparative fit index (CFI), Tucker Lewis index (TLI), incremental fit index (IFI) and root mean square error of approximation (RMSEA) (Hoyle, 1995; Anderson & Gerbing, 1998). Values > 0.90 on the CFI, TLI and IFI and < 0.06 on the RMSEA indicate good fit (Hoyle, 1995). Prior to testing the structural models, the viability of our proposed model was tested using confirmatory factor analysis (Joreskog & Sorbom, 1997). This confirmed the overall fit of the measurement model which revealed good fit ($\chi^2 = 152.825$, $df = 71$, $P < 0.001$, $CFI = 0.96$, $IFI = 0.96$, $TLI = 0.95$, $RMSEA = 0.043$) in accordance with the usual conventions (Fornell & Larcker, 1981). Structural equation modeling tested the hypothesised model followed by invariance test which was performed via multi-group analyses to examine whether there were variations by level of education, ethnicity and age.

3. Results

3.1 Descriptive statistics

Preliminary analyses showed that sample distribution by gender was nearly balanced, with 52% females and 47% males. Just under half of the participants were aged 18 to 34 years. A third of adults thought that they engage in excessive drinking. The proportion of those who thought that they drink regularly were just over two-thirds whereas about a third were occasional drinkers. Majority of respondents, around three-quarters, said they most commonly drink with their partner, friends or family members. Most participants (i.e. just under two-thirds) indicated that their usual drink of choice was wine or cider. Around a third said their usual choice of drink was beer or ale.

Injunctive norms responses revealed that a little over 80% of participants thought their closest friends, family members, work colleagues and those whose opinion they value will approve of drinking until they get drunk. Descriptive norms responses depicted that around 60% thought that their friends drink more than six drinks when he or she 'goes to a bar', 'has friends over to his or her apartment for drinks' or 'goes to a party'. Overall, perceived benefits responses showed that about two-thirds thought drinking alcohol with work colleagues and friends is fun and rewarding. Approximately 30% said drinking alcohol with colleagues and friends is a way of socialising.

3.2 Reliability and SEM

Reliability test was performed to examine internal consistency of the items used. Cronbach alpha of 0.71 or more were obtained for all the constructs. Convergent reliability (CR) and average variance extracted (AVE) were used to check construct reliabilities (Fornell & Larcker, 1981). The findings provided support for CR and AVE since the values obtained exceeded the recommended levels of 0.7 for CR and 0.5 for AVE. As shown in table 1, SEM analyses of the hypothesised model revealed that independent paths from perceived prevalence (PP),

perceived approval (PA) and perceived benefits (PB) significantly affected adults' intention to drink (PP (B)= .503, p-value < 0.001; PA(B)=.396, p-value < .0001; and PB (B) = .121, p-value < .031). More so, injunctive norms interacted with descriptive norms to increase intention to drink (B = .595, p-value =.01). No significant associations were found between anticipatory socialisation and intention (AS (B) = .011, p-value > 0.5). Model fit indices showed good overall fit ($\chi^2 = 3049.343$, $df = 230$, p-value < 0.001, CFI = 0.93, IFI = 0.92, TLI = 0.94, RMSEA = 0.04). Hence anticipatory socialisation was removed from the model in subsequent analyses.

Table 1 Hypothesised model of normative influences on drinking intention and use

Paths	Standardised Regression estimates	P-value
Perceived Prevalence (PP) → Intent	.503	.001
Perceived Approval (PA) → Intent	.396	.001
Perceived Benefits (PB) → Intent	.121	.031
Anticipatory Socialisation (AS) → Intent	.011	.212
Intent → Behaviour	.412	.010
PP x PA → Intent	.495	.001
PP x PB → Intent	.031	.456

We found that perceived drinking prevalence explained about 8% of the variance in intention to consume alcohol after controlling for gender and age of consumption. Perceived approval explained 12% of the variance in intention to drink alcohol, and perceived benefits explained 7% of the variability in intention to drink alcohol. Overall, the inclusion of these normative mechanisms explained 37% of the variance in drinking intention. Thus, the addition of these mechanisms in our conceptualization of normative influences improved the predictive ability of our model. With the inclusion of these mechanisms, we were able to explain 53% of the variance in alcohol consumption.

Multi-group analysis examined the invariance of structural models by education, ethnicity and age respectively. Results of a chi-squared difference test ($\Delta \chi^2 = 265.58$, $df=77$, $P < 0.01$) by level of education indicated that the unconstrained model fit the data significantly better. This revealed that there are significant differences by education. Following this, an invariance test examined all path coefficients between groups. This showed further significant differences between the paths from perceived prevalence to intention to drink by education. Hence, those with low level of education are more likely to use alcohol than those with high education ($\Delta \chi^2 = 177.87$, $df = 46$, $P < 0.01$). Invariance test by age showed that the structural model revealed that perceived prevalence and perceived approval of younger people (aged 18-34 years) affected their intention to drink greater than their older counterparts ($\Delta \chi^2 = 117.14$, $df = 32$, p-value < 0.01). Similarly, multi-group analysis performed by ethnicity showed chi-squared difference test ($\Delta \chi^2 = 167.03$, $df = 59$, p-value < 0.01). This indicated that the unconstrained model fit the data significantly better. Further analysis by respective paths showed significant differences between the path from perceived prevalence to intention to drink. For all multi-group tests performed, none of the paths between intention to drink and consumption were significant.

4. Discussion

Despite studies showing that normative influences can affect excessive alcohol use, the mechanisms underlying such influences on drinking intention and behaviour are not well documented (Rimal, 2008). We evaluated the extent to which the association between

descriptive norms and drinking intention, which might in turn affect alcohol use would be positively strengthened by injunctive norms and outcome expectancies. We found that independent paths from perceived prevalence and perceived approval significantly affected adults' intention to drink, and this in turn affected drinking behaviour. Our findings are consistent with previous research which suggests that individuals tend to conform to erroneously perceived group norms (Rimal et al., 2005; Larimer et al., 2004). Indeed, a significant strength of normative intervention is its utility in correcting pluralistic ignorance (i.e., misperceived norms that drinking in reference groups is greater than it is), and to effectively reduce deviant behaviours such as risky drinking (Perkins, 2003; Mahalik, Burns, & Syzdek, 2007). As such if appropriate measures are not in place, such beliefs can influence individuals' drinking intention and behaviour.

Our finding that perceived approval interacted with perceived prevalence to influence intention to drink suggests that an individual's drinking intentions will be strengthened if he or she perceived stronger approval by significant others. The results provide strong support for interventions with the goal of reducing risky drinking to employ both descriptive and injunctive norm strategies, as only few interventions have done so to date (Read & Carey, 2015). The effect of benefits to oneself was found to influence intentions to drink alcohol. Nonetheless, perceived socialisation had no effect on drinking intention. The findings suggest that perhaps adults who intend to consume alcohol believe that the benefits they derive from drinking are of greater importance to them than that obtained from socialising with others. The result gives credence to the literature on optimistic bias (Weinstein, 1989), which proposes that individuals tend to view themselves relative to others as being less vulnerable.

Other notable findings were socio-demographic variations. We found that those in the low education strata had greater perceived drinking prevalence which affected their intention to drink than those from high education group. Our finding suggests that the effects of perceptions of drinking prevalence on intention are stronger among those with low education than their counterparts with high education. We also found that those from Black and Asian backgrounds had greater perceptions of prevalence which led to positive intention to drink than their European, American and Australian counterparts. Although studies have shown higher drinking prevalence among Blacks and Asian groups, it is not clear why this is so. Further research is needed to unravel whether these groups are also from low income backgrounds. Finally, the study showed that perceptions of prevalence was stronger among younger populations (aged 18-34) which led to greater intentions to drink than their older counterparts. The findings seem to suggest that younger people are more prone to drink than older people, especially when they have greater perceptions of drinking prevalence.

Our study is not without caveats. Use of self-report drinking intention and consumption may be under-reported or over-reported if drinkers merely agree with the question asked. Hence the validity and reliability of these results may be questionable. Moreover, it was not possible to make causal inferences because cross-sectional data was used. Suffice to say that the survey was conducted in a country which has some form of drinking regulation and therefore perceptions of prevalence, approval and benefits to oneself may be even more higher in countries without any regulation.

4.1 Conclusion and implication

Our results suggest that adults might be drinking excessively because of greater perceptions of prevalence and approval. Likewise, our findings that younger adults are more likely to drink because of heightened perceived prevalence show that significant others' drinking habits seem to have greater influence on them. Health messages that aim to encourage responsible drinking might benefit from incorporating messages that can disseminate a threefold message—that most adults (especially young adults) do not drink excessively, that their colleagues and family members do not approve of excessive drinking, and that most of them derive significant benefits from responsible drinking. Essentially, public health efforts that aim to make drinking more expensive to drink excessively should also consider rectifying normative misperceptions among younger people by designing programmes that employ the link between benefits to self, perceived prevalence, approval and drinking intention to improve adults' health.

It is worthy of note that our study supports the need for proper understanding of the factors that drive people to use alcohol, especially as this is a cross-sectional study. Cohort data is needed to inform health advocates and policy makers to develop requisite programmes to reduce heavy drinking. Nonetheless, interventions that are aimed at evaluating alcohol use patterns among individuals would benefit from including normative influences to help curtail drinking norms that drive excessive consumption. Given the significant influence of perceived benefits and normative perceptions on drinking intention reported in our study, campaigns should acknowledge adults' extant beliefs about benefits and drinking norms, and incorporate messages that can disseminate comprehensive messages to alter alcohol consumption.

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