

## THE ROLE OF ALCOHOL EXPECTANCY AND DRINKING REFUSAL SELF-EFFICACY BELIEFS IN UNIVERSITY STUDENT DRINKING

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**Abstract** — **Aims:** University student alcohol misuse is a considerable problem. Alcohol expectancy research has contributed significantly to our understanding of problem drinking in young adults. Most of this research has investigated positive expectancy alone. The current study utilized two measures of alcohol expectancy, the alcohol expectancy questionnaire (AEQ) and the drinking expectancy profile [consisting of the drinking expectancy questionnaire (DEQ) and the drinking refusal self-efficacy questionnaire] to predict severity of alcohol dependence, frequency of drinking, and the quantity of alcohol consumed per occasion. **Methods:** Measures of drinking behaviour and alcohol expectancy were completed by 174 undergraduate university students. **Results:** Positive alcohol expectancy factors accounted for significant variance in all three drinking indices, with the DEQ adding additional variance to AEQ scores on frequency and severity of alcohol dependence indices. Negative expectancy did not add incremental variance to the prediction of drinking behaviour in this sample. Drinking refusal self-efficacy and dependence beliefs added additional variance over positive and negative expectancies in the prediction of all three drinking parameters. **Conclusions:** Positive expectancy and drinking refusal self-efficacy were strongly related to university student drinking. The incorporation of expectancy as a means of informing prevention approaches in tertiary education shows promise.

### INTRODUCTION

Alcohol misuse amongst university students is a significant health problem (Ham and Hope, 2003; Jennison, 2004). Over the past decade responsible alcohol use has been promoted more widely on university campuses. However, binge drinking remains entrenched in this culture (Saunders *et al.*, 2004). Sound measurement of the motivation underlying the drinking of young adults is important in the development of effective safe drinking messages and prevention programmes.

Social cognitive theory (Bandura, 1977, 2003) has made a strong contribution to our understanding of the development of alcohol abuse and dependence (Wilson, 1987; Young and Oei, 1993; Goldman *et al.*, 1999). Social cognitive theory proposes that drinking behaviour is, in part, governed by outcome expectancies related to the perceived consequences of consuming alcohol. These expectancies, typically referred to as alcohol expectancies, are representations of alcohol related reinforcement. They represent 'if-then' contingencies that are hypothesized to reflect learned associations with alcohol. Alcohol expectancy domains include enhanced socialization, relaxation, altered cognition, sexual enhancement, assertion, and affective change. Alcohol expectancies show consistent associations with key drinking parameters (Young and Oei, 1993; Connor *et al.*, 2000). A handful of studies (Oei *et al.*, 1990a) have also provided empirical support for expectancies as causal influences on the drinking behaviour of young adults (Jones *et al.*, 2001).

Alcohol expectancies do not operate alone in influencing drinking behaviour; a second cognitive set, relating to self-efficacy judgments, has also been hypothesized as central (Young and Knight, 1989). Drinking refusal self-efficacy,

he situational confidence in resisting alcohol, is associated with consumption (Young and Knight, 1989; Skutle, 1999) and the ability to abstain or reduced consumption following treatment (Miller *et al.*, 1994; Goldbeck *et al.*, 1997; Greenfield *et al.*, 2000). Bandura (1977) asserts that the combination of both expectancy subsets is important in the acquisition, maintenance, and extinction of behaviour, including problem drinking (Baldwin *et al.*, 1993; Bandura, 1999; Connor *et al.*, 2000). There is support for the conceptual distinction between alcohol expectancy and drinking refusal self-efficacy with each construct adding unique variance to the prediction of drinking behaviour (Young and Oei, 1996; Williams *et al.*, 1998; Brown *et al.*, 1998). Furthermore, alcohol expectancy and drinking refusal self-efficacy account for incremental variance to that accounted for by other key cognitive constructs, such as drinking restraint (Connor *et al.*, 2000). In addition, drinking refusal self-efficacy is important in the development of drinking in young people (Vik *et al.*, 1999).

The most established instrument measuring alcohol expectancy is the alcohol expectancy questionnaire (AEQ) developed by Brown *et al.* (1980, 1987). The AEQ has sound reliability (Allen and Wilson, 2003) and is consistently related to drinking behaviour across a diverse array of samples, including young people (Cronin, 1997; Devine and Rosenberg, 2000). However, the adult AEQ does not assess negative expectancies of alcohol effects. It is clear that both negative and positive outcomes of drinking behaviour are associated with alcohol consumption (Faber *et al.*, 1980; Bauman, 1986; Jones and McMahon, 1992; Young and Oei, 1996). Negative consequences are relatively common in 'novice drinkers' and these expectancies may be particularly important in young people (Oesterle, *et al.*, 2004). The adult AEQ has been examined in conjunction with the negative AEQ (McMahon *et al.*, 1994) highlighting the need to capture both positive and negative expectancies (Devine and Rosenberg, 2000; Leigh and Stacy, 2004). The AEQ has also been examined in conjunction with other cognitive constructs

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such as self-efficacy (Brown, *et al.*, 1998, Vik, *et al.*, 1999), desire (Schulze and Jones, 2000), and reasons for drinking (Cronin, 1997) to more comprehensively examine the cognitions related to alcohol use.

As a means of assessing the two key cognitive constructs associated with the development of alcohol problems, alcohol expectancy and drinking refusal self-efficacy, the drinking expectancy profile (DEP) (Young and Oei, 1996) shows promise. In addition, given that drinking amongst young people is likely to be characterized by both positive and negative consequences the DEP has further potential within this population. The alcohol expectancy measure of the DEP, the drinking expectancy questionnaire (DEQ), is a 43-item self-report measure derived from Young and Knight (1989). It has five alcohol expectancy factors and a sixth factor, dependence, which contains statements relating to self-perception of addiction. The alcohol expectancy factors reflect positive consequences (for example, assertion) and a single factor measures negative outcomes (affective change). Subjective dependence is a broader construct than those subsumed by the five alcohol expectancy factors.

The DEQ was developed through a series of factor analyses on several independent samples to obtain a refined and psychometrically sound structure. All items were selected on the basis of only loading significantly on one factor. There is evidence from adolescent (Gaffney *et al.*, 1998), young adult (Williams *et al.*, 1998; Young and Oei, 2000), adult (Oei *et al.*, 1998; Lee *et al.*, 1999), and alcohol dependent samples to support the validity of the DEQ.

The second scale within the DEP, the drinking refusal self-efficacy questionnaire (DRSEQ) (Young *et al.*, 1991), is a 31-item self-report instrument designed to assess subjects' beliefs about their own ability to resist alcohol in certain situations or cue states. As with the development of the DEQ, scale items were selected on the basis of loading significantly on a single factor. The factor structure has been replicated in a recent confirmatory analysis (Oei *et al.*, 2005).

There are several currently available measures of expectancy that may assist in examining the reinforcing consequences of drinking in young adults. The current study examines in a university sample whether the DEQ adds additional variance to that accounted for by the AEQ. It was hypothesized that the DEQ would account for more variance in drinking behaviour than that accounted for by the AEQ, given the broader range of expectancies measured (both positive and negative) and the more explicit rules used to guide scale psychometric development. In particular the DEQ employed a precise process to generate expectancy items and sought to develop a cleaner factor structure. As the DEP measures both alcohol expectancy and drinking refusal self-efficacy, it was hypothesized that drinking refusal self-efficacy beliefs would account for additional variance over that accounted for by alcohol expectancy, as measured by either scale.

## MATERIALS AND METHODS

### *Subjects*

Subjects were 174 Faculty of Arts students enrolled in a first year psychology unit (59 males and 115 females). They were recruited from two Australian universities, one urban

and one regional. No selection criteria were employed other than their status as Arts students. There was a return rate of 72% across both universities. The ratio of male to female responses reflected the proportion of males to females enrolled in the target units. The sample was largely composed of young adults, and the mean ages of the males and females were 26.45 (SD = 12.43, range = 17–70) and 23.25 years (SD = 9.06, range = 17–57), respectively. Ethics approval was obtained from the University of Queensland (Protocol Number: B/81/Psychy/98).

### *Materials*

Undergraduate students were invited to participate in a survey of attitudes towards drinking. Participation in the study was voluntary, with questionnaires given out in normal teaching time. Measures were completed anonymously in a counterbalanced order. Psychometric scales used were the alcohol dependence scale (Skinner and Horn, 1984), the AEQ (Brown *et al.*, 1980, 1987), and the DEP (Young and Oei, 1996). Alcohol use was measured by retrospective reports of frequency of drinking (average number of drinking days per week, 0–7) and average quantity (or volume) of drinking (average number of standard drinks consumed per day; each drink contains 10 g of pure ethanol) which have been demonstrated to have sound validity (Leigh, 2000). Dawson and Room (2000) following a comprehensive review suggest that measurement should capture quantity of drinks per occasion rather than quantity consumed per day. In addition they suggest that frequency of drinking should not be asked in an open-ended manner but should have a pre-specified range in terms of times per week. The current study followed these recommendations. The quantity and frequency measures also included a definition of an Australian standard drink (10 g of absolute alcohol).

Owing to the central importance of the AEQ and the DEP they are both described in detail.

The AEQ (Brown *et al.*, 1980, 1987) measures positive alcohol expectancies and generates six factor scores. Respondents can answer each item in the positive or negative, reflecting agreement or disagreement with the statement. The factors (along with sample items) are as follows: global positive changes (e.g. 'I feel more creative after I've been drinking'); sexual enhancement (e.g. 'I often feel sexier after I've had a couple of drinks'); physical and social pleasure (e.g. 'some alcohol has a pleasant, cleansing, tingly taste'); increased social assertiveness (e.g. 'When I'm drinking, it's easier to open up and express my feelings'); relaxation and tension reduction (e.g. alcohol makes me worry less'); and arousal and power (e.g. 'I feel powerful when I drink, as if I can really influence others to do what I want'). Higher scores reflect stronger expectancies. The AEQ was developed on a non-clinical population; however, normative data are available. For example, there are normative data from a general adult sample ( $n = 440$ ) and a clinical sample ( $n = 410$ ) (Brown, *et al.*, 1987). Reliability (test-retest and internal consistency) and validity (predictive, concurrent, and post-dictive) analyses have been conducted and confirm the psychometric strengths of the measure (Allen and Wilson, 2003).

Part I of the DEP (Young and Oei, 1996), the DEQ, measures the self-reported thoughts, feelings, and beliefs about

the personal outcomes of drinking (Oei, *et al.*, 1990b) on a five-point scale with '1' indicating 'strongly disagree' and '5' reflecting 'strongly agree'. The DEQ contains six primary factors including assertion (e.g. 'I have more self confidence when drinking'); affective change (e.g. 'drinking makes me bad tempered'); sexual enhancement (e.g. 'I often feel sexier after I've been drinking'); cognitive change (e.g. 'drinking helps me be more mentally alert'); and tension reduction (e.g. 'I drink to relieve tension'). An additional expectancy, dependence (e.g. 'I drink alcohol because it is a habit'), relates to the outcomes of drinking in terms of perceived loss of control and as such is a broader construct than the other five factors. Higher scores on DEQ factors reflect stronger expectancies.

Part II of the DEP, the drinking refusal self-efficacy questionnaire, measures self-reported confidence in resisting drinking when exposed to specific drinking cues on a 6-point scale with '1' indicating 'I am very sure I would drink' and '6' reflecting 'I am very sure I would not drink'. The DRSEQ has three primary factors: social pressure self-efficacy (e.g. 'when I see others drinking'); emotional relief self-efficacy (e.g. 'when I am uptight'); and opportunistic self-efficacy (e.g. 'when I am watching TV'). Higher scores reflect stronger confidence in resisting alcohol.

The DEP was developed using a total sample of 2812 respondents (1336 Student, 698 Clinical, and 778 Community), with approximately equal numbers of males (1379) and females (1029). Test-retest reliability and internal consistency as well as content, criterion, and construct validities confirm the adequacy of the two component scales (Allen and Wilson, 2003).

## RESULTS

### *Descriptive statistics*

The means, standard deviations, and internal consistency of all scales employed are shown in Table 1. Table 1 indicates that the average number of drinks consumed per drinking session (>5) was consistent with a typical binge drinking pattern of this young adult sample (Nelson *et al.*, 2005). The internal consistency of all scales and sub-scales fall within acceptable ranges.

### *Relative predictive power*

To test the relative power of the AEQ and DEQ in predicting frequency of student drinking, quantity of Student drinking, and alcohol dependence scale scores (ADS), three hierarchical multiple regressions were employed following the method suggested by Licht (1995) and Cohen and Cohen (1983). This method is similar to that used in previous studies where more than one expectancy measure has been employed. These studies with adults (e.g. Devine and Rosenberg, 2000) or young people (Fromme and D'Amico, 2000) have also examined the relative contribution made by different expectancy measure scores to drinking behaviour.

Correlations between the measures to be entered at each step of the regression were examined as conceptually related constructs are likely to show statistical associations. This was the case with the current variables. The correlations

Table 1. Mean, standard deviation, and internal consistency of all composite scales

Measure	Mean	SD	Alpha
<b>AEQ</b>			
Global, positive changes	7.56	5.52	0.87
Enhanced sexual performance and experience	2.71	2.37	0.83
Physical and social pleasure	6.90	2.28	0.80
Increased social assertiveness	6.63	3.51	0.90
Relaxation and tension reduction	5.27	2.55	0.73
Arousal and power	3.98	2.18	0.63
<b>DEP</b>			
<b>DEQ</b>			
Assertion	34.31	6.79	0.87
Sexual enhancement	17.23	3.21	0.70
Cognitive change	8.05	2.30	0.76
Tension reduction	10.79	3.56	0.79
Affective change	25.90	7.01	0.81
Dependence	15.88	5.30	0.75
<b>DRSEQ</b>			
Social pressure	41.39	11.14	0.92
Emotional relief	49.68	11.61	0.96
Opportunistic	39.28	6.47	0.86
Alcohol dependence scale	6.64	7.19	0.91
Alcohol quantity	6.64	5.62	N/A
Drinking frequency	1.35	1.40	N/A

between the AEQ and DEQ positive expectancies ( $r = 0.65$ ,  $P < 0.001$ ) and the DEQ positive expectancies and the DEQ affective change factor were significant ( $r = 0.48$ ,  $P < 0.001$ ). The correlation between affective change factor scores and the AEQ was not significant ( $r = 0.02$ , NS), neither was the correlation between the affective change factor and the DRSEQ ( $r = 0.12$ , NS). The AEQ and the DRSEQ correlation ( $r = -0.37$ ,  $P = 0.001$ ) and the DEQ and DRSEQ ( $r = 0.47$ ,  $P = 0.001$ ) were both significant. Finally the correlations between dependence and AEQ total score ( $r = 0.46$ ,  $P < 0.001$ ), DEQ positive expectancies ( $r = 0.76$ ,  $P < 0.001$ ), affective change ( $r = 0.24$ ,  $P < 0.005$ ), and DRSEQ ( $r = -0.58$ ,  $P < 0.001$ ) were all significant

Entering these variables separately within a hierarchical multiple regression allowed identification of the shared and unique variance for each construct. In the current regression, the AEQ factor scores were entered first and the positive alcohol expectancy DEQ factor scores (of assertion, sexual enhancement, cognitive change, and tension reduction) second. These first two steps represent the examination of the predictive utility of positive expectancy in predicting drinking. The regression includes the addition of the negative alcohol expectancy DEQ affective change factor as the third step. The DRSEQ factors are entered fourth (social pressure, negative affect, and opportunistic), with the dependence factor score from the DEQ entered last. The dependence factor was entered last given the conceptually distinct nature of this expectancy domain (Young and Oei, 1996). Table 2 displays the results from the analyses.

### *Student drinking frequency*

The AEQ predicted 12.8% ( $R^2 = .128$ ,  $P < 0.01$ ) of the variance in frequency of student drinking. However, the DEQ positive expectancies provided an additional 19.1% ( $R^2$  change = 0.191,  $P < 0.01$ ) of variance above that related to the AEQ. The additional steps in the regression showed

Table 2. AEQ sub-scales and DEP sub-scales as predictors of frequency, quantity, and ADS

Measure	Frequency		Quantity		ADS	
	$R^2$	+R	$R^2$	+R	$R^2$	+R
Step 1 AEQ	0.128		0.128		0.300	
Step 2 AEQ + DEQ	0.319	0.191*	0.143	0.015 (ns)	0.389	0.089*
Step 3 AEQ + DEQ + affective change	0.320	0.001 (ns)	0.144	0.001 (ns)	0.400	0.011 (ns)
Step 4 AEQ + DEQ + affective change + DRSEQ	0.371	0.051*	0.203	0.059*	0.436	0.036**
Step 5 AEQ + DEQ + affective change + DRSEQ + dependence	0.415	0.044*	0.263	0.060*	0.491	0.055*

\*  $P < 0.01$  \*\*  $P < 0.05$  (ns), non-significant  $R^2$  change value.

no further significant variance obtained following entry of the affective change (negative expectancy) factor. However, the DRSEQ added a further 5.1% ( $R^2$  change = 0.051,  $P < 0.01$ ) over positive alcohol expectancy and the DEQ affective change factor. Lastly, the dependence sub-scale contributed an extra 4.4% ( $R^2$  change = 0.044,  $P < 0.01$ ) of variance.

#### Student drinking quantity

The AEQ predicted 12.8% ( $R^2 = 0.128$ ,  $P < 0.01$ ) of the variance towards quantity of student drinking with DEQ positive expectancies not accounting for additional variance over and above that related to the AEQ. Equally, the affective change factor did not provide any additional significant variance in addition to that associated with the AEQ. Again, the DRSEQ contributed a further 5.9% ( $R^2$  change = 0.059,  $P < 0.01$ ) over alcohol expectancy. The dependence factor added an extra 6% ( $R^2$  change = 0.060,  $P < 0.01$ ) of variance over and above the previous three steps.

#### Alcohol dependence scale (alcohol problems/dependence)

The AEQ factors predicted 30% ( $R^2 = .300$ ,  $P < 0.01$ ) of the variance towards alcohol dependence scale with the positive expectancies of the DEQ providing an additional 8.9% ( $R^2$  change = 0.089,  $P < 0.01$ ) of variance above the AEQ. No further increase in variance was evident following entry of the affective change factor; however, the DRSEQ contributed a further 3.6% ( $R^2$  change = 0.036,  $P < 0.05$ ) over alcohol expectancy. The dependence factor added an extra 5.5% ( $R^2$  change = 0.055,  $P < 0.01$ ) of variance above that attributed to the previous measures.

## DISCUSSION

Positive expectancies from both the DEQ and the AEQ were strongly associated with all three key drinking parameters (frequency, quantity, and alcohol dependence severity) in university students. The DEQ demonstrated better predictive value over the AEQ regarding drinking frequency and dependence severity scores but did not add any further variance to the prediction of quantity. The stronger prediction of positive expectancies as measured by the DEQ may reflect the scale being developed in Australia and New Zealand and therefore expressing more culturally consistent expectancies or the use

of more explicit psychometric rules in scale development (Young and Knight, 1989; Young and Oei, 1993).

The lack of predictive utility of negative expectancy in this group may be due to negative expectancies being more strongly related to drinking in those with less experience with alcohol than the sample studied (Dunn and Goldman, 1998) or those with established problems (Jones and McMahon, 1996). In this study the typical pattern of consumption reported by university students was binge drinking (Nelson *et al.*, 2005). The lack of negative expectancy effect may also reflect the negative expectancy domain of 'affective change' not fully tapping the range of negative expectancies that may be of relevance to this largely young adult group. A more broadly defined domain of negative expectancy has been associated with social drinking in a Scottish sample (McMahon and Jones, 1994). However, in a study of US college drinkers administered the AEQ-adolescent, the factor measuring negative expectancy, was the only expectancy domain not to show a significant difference between problem and non-problem drinkers (Lewis and O'Neill, 2000). Within the current group of university student drinkers both drinking refusal self-efficacy and subjective dependence added additional variance to positive expectancies in all three drinking variables. This illustrates the power of these beliefs, even within a non-clinical sample, and confirms the importance of self-efficacy as a crucial construct in social cognitive theory (Bandura, 1999).

In the current study, the variance accounted for in the quantity of student drinking was lower relative to the variance accounted for in the prediction of frequency and dependence. The strength of association between quantity of alcohol consumed and alcohol problems in non-clinical samples may be mediated more by other factors such as personality or comorbid psychopathology (Young *et al.*, 1991). This stronger association between expectancy measures and alcohol problems has the potential to guide the development of intervention programmes. College or university campuses are important sites for secondary prevention programmes (Roberts *et al.*, 2000). Amongst the current group of students, the DEP as a whole (consisting of the DEQ and DRSEQ) accounted for ~50% of the variance in dependence severity. The strength of this predictive relationship indicates that the scale is likely to be a useful addition to future university-based interventions that aim in reducing the extent of alcohol related harm.

The DEP may be a useful means of devising prevention programmes that embody these two keys sets of cognitions regarding alcohol held by university students. The current data indicate that a positive expectancy message communicating that there is risk associated with perceiving alcohol as a means of facilitating assertion, coping with worries, relieving stress, or enhancing sexual feelings may be of more relevance than emphasizing negative consequences. Combining positive expectancy elements with information about skills to bolster drinking refusal self-efficacy may form the basis of novel and effective mass targeted programmes to reduce alcohol related harm and binge drinking. In a university setting the use of internet based initiatives shows promise (Kyprilou *et al.*, 2003); however, given the noted stronger relationships between expectancy and frequency or dependence, than with quantity, an examination of additional ways of delivering these messages in the environments where students frequently consume alcohol may be more crucial. Media campaigns in these environments which feature peers successfully coping with resisting alcohol may increase self-efficacy via vicarious experience as a broader preventive strategy.

In addition, the multifactorial nature of the DEP may offer guidance in the design of individualized interventions based upon the expectancies endorsed (Marlatt and Witkiewitz, 2002), particularly regarding performance attainments relevant to reducing alcohol consumption. Focused direct skills training via university counselling services may be useful for students who need formal intervention. For example, it is well recognized that the transition to university can be stressful and socially challenging (Ham and Hope, 2003), and in those students who are experiencing these difficulties and reporting low self-efficacy in resisting alcohol in circumstances of anxiety or social pressure targeted programmes that examine stress management and social skills training may be important. These expectancies are commonly endorsed by university student problem drinkers, and low self-efficacy in resisting alcohol when experiencing negative affect is a particularly high-risk marker for alcohol problems.

Limitations in the current study included the selection of a sample that reported a limited range of negative consequences of drinking. As noted, the generalization of these data to non-Australian students may also be limited given that the expression of expectancies may be culturally bound (Young and Oei, 1993). However, these data do support the use of the AEQ and DEQ as sound measures of positive expectancy, and the DRSEQ as a sound measure of drinking refusal self-efficacy, in this group. The incorporation of both positive expectancy and drinking refusal self-efficacy has potential in the prevention and treatment of university student drinking problems.

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