COGNITION AND BEHAVIOUR
A Prospective Study of Alcohol Expectancies and Self-Efficacy as Predictors of Young Adolescent Alcohol Misuse

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(Received 25 October 2010; in revised form 15 December 2010; accepted 4 January 2011)

Abstract — Aims: To test the relative contribution of two key Social Learning Theory constructs, alcohol expectancies (AEs) and drinking refusal self-efficacy (DRSE), in predicting early adolescent drinking behavior and examine the possible mediational role of DRSE over AE. Methods: High school students (N = 192, mean age 14) were administered measures assessing AE (Drinking Expectancy Questionnaire—Adolescent version; DEQ-A), DRSE (Drinking Refusal Self-Efficacy Questionnaire—Revised Adolescent version; DRSEQ-RA) and indices of alcohol consumption and problem drinking. Age, gender, peer drinking, tobacco use and positive and negative behavioral characteristics were included in the statistical models as known predictors of alcohol misuse. Subjects were followed up at 12 months, with 88.5% retention. Results: Initial confirmatory factor analyses verified factor structures of the DEQ-A and DRSEQ-RA. Prospective structural models controlling for Time 1 drinking behavior, age, gender, peer alcohol use, tobacco use and behavior problems identified that DRSE but not AE was associated with problem drinking 12-month post-initial assessment. DRSE mediated AE in predicting problem drinking. Conclusion: Results suggest that DRSE is a more salient cognitive construct than AE in early adolescence alcohol use. In this age group, prevention and treatment strategies that build refusal self-efficacy may be more effective than strategies that challenge AEs.

INTRODUCTION

Misuse of alcohol contributes to a significant, modifiable proportion of morbidity and mortality risk in young people. Adolescence is a key developmental period during which time the trajectory of alcohol use increases significantly (Australian Institute of Health and Welfare, 2008; Johnston et al., 2008). Early alcohol use is a strong predictor of young adult alcohol-related injury and assault (Kypri et al., 2009), alcohol dependence and other mental health problems in adulthood (Palmer et al., 2009). Understanding the mechanisms for early onset alcohol use and escalation of drinking over time are critical in designing effective and appropriately timed prevention programs.

On the basis of Social Learning Theory (Bandura, 1977, 1982), two constructs of outcome expectancy and self-efficacy are central to the initiation and maintenance of human behavior. Outcome expectancies are the perceived desirable consequences of engaging in certain behavior; self-efficacy refers to an individual’s belief in their capacity to successfully or unsuccessfully regulate this behavior. In alcohol research, contemporary social cognitive models of alcohol have largely focused on the construct of alcohol expectancy (AE; Jones et al., 2001; Young and Oei, 1993). AEs are defined as ‘if-then’ contingencies; i.e. if alcohol is consumed, then certain behavioral and affective consequences follow (Goldman, 2002). Expectations of alcohol consumption develop in childhood, often vicariously, before the onset of actual drinking (Zucker et al., 2008). High positive AEs predict alcohol use and alcohol problems (Cameron et al., 2003), and show consistent associations with problem drinking behavior in young adults (Ham and Hope, 2003) and within families with an alcohol-dependent parent (Shen et al., 2001). Problem drinking is also associated with negative AEs (e.g. Jones and McMahon, 1994; McMahon et al., 1994; Young and Oei, 1993) resulting in more recent AE scales including negative outcomes. Negative AEs can also be learnt vicariously. For example, Wiers et al. (1998) found that elementary school-aged children who had grown up in alcoholic families had stronger negative AEs than children from non-alcoholic families.

Bandura (1982, 2006) identifies self-efficacy beliefs as the foundation of human agency, and potentially a higher order cognitive mechanism associated with behavioral choice. Despite this, comparatively little research has been conducted on drinking refusal self-efficacy (DRSE) beliefs, defined as situational confidence in refusing alcohol, in adolescence (Young and Oei, 1993). DRSE research has almost exclusively been undertaken within adult alcohol use disorder populations and is associated with both current and future adult drinking behavior (Skutle, 1999) and post-treatment abstinence (Greenfield et al., 2000; Maisto et al., 2000; Young et al., 2010). DRSE is associated with alcohol use in non-clinical samples studied (e.g. Young et al., 2007). Prospective research is needed to more definitely clarify the role of DRSE in the acquisition and maintenance of drinking behavior in early adolescence.

Theoretical reviews (Bandura, 1982, 1999; Young and Oei, 1993) and cross-sectional empirical studies (Connor et al., 2000, 2007; Engels et al., 2005; Gullo et al., 2010; Young et al., 2006) point to AE as being potentially mediated by DRSE in the prediction of problem drinking. Longitudinal studies that have combined AE and DRSE have focused on older (early 20s) undergraduates. One study found that both AE and DRSE predicted diary measured alcohol consumption over 1 month (Young and Oei, 2000), and a second study showed that both constructs predicted binge drinking 3 months later (Blume et al., 2003).

Given the strength of peer group influences (Haller et al., 2010; Hawkins et al., 1992), exposure to alcohol use by peer...
groups seems likely to increase the risk by reducing DRSE and elevating AE relevant to social contexts. Consistent with this, longitudinal research shows that offers of drug use predict reduced refusal self-efficacy 1 year later (Ellickson and Hays, 1992). Additionally, delinquency and tobacco use are consistently and strongly associated with adolescent alcohol abuse (Dierker et al., 2006; Hawkins et al., 1992). Conservative models that attempt to partition out the relative contribution of AE and DRSE should include measurement of these factors.

The present study is the first known test of the relative contribution of AE and DRSE to the longitudinal prediction of drinking behavior in an early-adolescent sample. We focused on this age group because it is the developmental period when alcohol use and heavy drinking escalates rapidly (Johnston et al., 2006). We tested a structural model of AE and DRSE that accounted for the autocorrelation of baseline drinking behavior and exposure to peer alcohol use, behavioral difficulties, tobacco, age and gender. On the basis of the known role of AEs in the prediction of adolescent alcohol use and the likelihood that DRSE is implicated in the powerful influences of peer groups, the hypotheses were that: (a) both high AE and low DRSE would predict drinking behavior over time, and (b) DRSE would mediate the significant relationship between AE and drinking behavior. These effects were predicted to be present above that of known predictors of adolescent drinking.

SAMPLE

Participants of the study at baseline (Time 1) were 192 students (mean age = 13.8, SD = 0.5) attending three secondary schools in Brisbane, Australia. One hundred and seven participants (55.7%) were female. Parental ethnic backgrounds of the students were primarily Australian (65%) and European (20%). Students were followed up 12 months (Time 2) via a unique identifying code. At that time, 170 students completed surveys (88.5% retention).

MEASURES

Alcohol consumption

Participants were asked to report on both the quantity and frequency of their alcohol consumption, to capture the full range of problem drinking behavior (Rehm, 1998). Quantity of alcohol consumption was assessed in this study by the self-reported item asking how much alcohol students consume on an average drinking occasion (Connor et al., 2000; Young et al., 2006). Participants were asked to report the type of alcoholic beverage and drinking vessel (e.g. three pre-mixed cans of spirits). Responses were then converted to standard drinks by the investigators. This method was designed to more accurately capture standardized alcohol consumption in this adolescent group. Frequency of alcohol consumption was measured by asking participants to report how many days during the month they consumed alcohol (0–30 days).

Harmful alcohol use

Harmful alcohol use was measured using the Alcohol Use Disorders Identification Test (AUDIT, Saunders et al., 1993). The AUDIT is composed of 10 items that are designed to assess harmful alcohol consumption. Items of the AUDIT are summed to yield a total score, where higher scores indicate a stronger likelihood of hazardous alcohol consumption. In the present study, Items 3–9 were summed to provide a total score. Items 1 and 2, relating to frequency and quantity of alcohol use, were omitted because of likely multi-collinearity with the adolescent-targeted Alcohol Consumption measures. [Item 10 was removed as 97% of participants responded ‘Never’ - see RESULTS section]. Studies have confirmed the utility of the AUDIT in adolescent populations as a means of identifying risky and harmful alcohol consumption (Cook et al., 2005; Knight et al., 2003). Internal reliability was 0.87.

Strengths and Difficulties Questionnaire

Psychological adjustment factors were investigated using the self-report version of the Strengths and Difficulties Questionnaire (SDQ, Goodman et al., 1998; Goodman, 2001), a brief 25-item scale that assesses behavioral and mental health problems of young people aged between 11 and 16 years. There are five subscales that measure conduct problems, hyperactivity-inattention, peer problems, emotional symptoms and prosocial behavior. Two higher order scales are then generated: Difficulties (sum of subscales minus prosocial scale) and Strengths (Prosocial). Internal reliability was 0.77 for the Difficulties scale and 0.65 for the Strength scale.

Peer alcohol use

Peer factors were measured through an item asking about the number of friends who reportedly used alcohol (1–2, 3–5, 6–9, 10+). This item was based on Bahr et al. (2005).

Tobacco use

Recent tobacco use was defined by tobacco smoking in the past 12 months (yes/no).

AEs and DRSE

Positive and negative AEs were measured using the Drinking Expectancy Questionnaire—Adolescent version (DEQ-A, Oei et al., submitted). The 24-item DEQ-A was developed with a sample of 2020 Australian adolescents. It has four subscales: two measuring positive alcohol expectancy: Increased Confidence, and Tension Reduction; and two measuring negative expectancy: Cognitive and Motor Impairment, and Negative Mood. Adolescents rate the extent to which they agree with each item (1 = strongly agree; 5 = strongly disagree) using a five-point Likert scale. In the current sample, Cronbach’s alpha coefficients of the subscales ranged from 0.87 to 0.93.

DRSE was investigated using the Drinking Refusal Self-Efficacy Questionnaire—Revised Adolescent version (DRSEQ-RA, Young et al., 2007). The DRSEQ-RA is a 19-item measure that assesses adolescents’ beliefs in their ability to resist alcohol under various circumstances and in different situations. It has three subscales: Social Pressure, Emotional Relief and Opportunistic. Higher scores on a six-point Likert scale reflect higher DRSE beliefs. Internal reliability of the subscales in the current sample ranged from 0.92 to 0.97.
PROCEDURE

Following ethical clearance, four secondary schools were invited to participate in the study, three of which expressed interest. Information sheets and consent forms were distributed to Grade 9 students at each school. As a condition of institutional human ethics clearance, active consent was obtained from Grade 9 students and their parents/guardians. At Time 1, researchers administered questionnaires within a 60-min class period. Using a unique identifying code, participants were followed up 12 months later. Confidentiality was assured during both administrations. Questionnaires were returned directly to researchers and placed in a sealed envelope. Students were advised on the information sheet and reminded verbally prior to each assessment that ethical protocol ensured teaching staff would not have access to completed questionnaires. Under conditions of anonymity and confidentiality, adolescents’ reports of substance use are valid and reliable (Babor et al., 2000).

RESULTS

Descriptive data for the sample at Time 1 and Time 2 are presented in Table 1. Consumption data were compared with recent national survey findings (clearance to access the 2007 National [Australian] Drug Strategy Household Survey data was previously granted. Abstinence rates in 14 year olds in the general population were compared with abstinence rates in the current sample at baseline). The abstinence rate in the current sample at baseline (62%) compared with that in the current study (43%). Prior to testing the hypothesized structural model, the measurement models for the DEQ-A and DRSEQ-RA were examined, with values of $\chi^2$ between 1.00 and 3.00 indicative of acceptable fit (Carmine and McIver, 1981). The comparative fit index (CFI) and root-mean-square error of approximation (RMSEA) were also examined (Bentler, 2007). A CFI ≥0.95 and RMSEA ≤0.06 suggest ‘good’ fit, while a CFI ≥0.90 and RMSEA ≤0.10 suggest ‘acceptable’ fit (Browne and Cudeck, 1993; Hu and Bentler, 1999). Additionally, the Akaike Information Criterion (AIC) was also used to assist model comparison (Akaike, 1987). The AIC has no conventional cutoff. Instead, smaller values indicate that a model is more parsimonious and provides a better fit to the data.

Each of the 24 items on the DEQ-A contained some missing data, but no item had >5% missing (range: 3.1–4.7%). Missing data were imputed using Full Information Maximum Likelihood (FIML) estimation, an optimal method for dealing with missing data in longitudinal designs (Graham, 2009). The DEQ-A hypothesized measurement model included Increased Confidence/Social Enhancement as a latent variable with seven items, Cognitive and Motor Impairment as a latent variable with seven items, Tension Reduction as a latent variable with six items and Negative Mood as a latent variable with four items. All latent variables were allowed to covary with each other.

The hypothesized measurement model provided an overall ‘acceptable-to-poor’ fit to the data (Table 2, Model 1). Post hoc model modifications were then conducted to improve the fit of the model. As a result, Items 18 (Cognitive and Motor Impairment) was removed from the model.

Table 2. Fit indices for DEQ-A confirmatory factor analyses (N = 192)

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$ (df)</th>
<th>$\chi^2$/df</th>
<th>CFI</th>
<th>RMSEA</th>
<th>AIC</th>
<th>ΔAIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hypothesized measurement model</td>
<td>668.33* (246)</td>
<td>2.72</td>
<td>0.87</td>
<td>0.10</td>
<td>824.33</td>
<td></td>
</tr>
<tr>
<td>2. Revised hypothesized measurement model</td>
<td>444.83* (184)</td>
<td>2.42</td>
<td>0.90</td>
<td>0.09</td>
<td>580.83</td>
<td></td>
</tr>
<tr>
<td>3. Cognitive and Motor Impairment and Negative Mood combined</td>
<td>605.63* (186)</td>
<td>3.26</td>
<td>0.84</td>
<td>0.11</td>
<td>737.63</td>
<td></td>
</tr>
<tr>
<td>Difference between Model 1 and Model 2</td>
<td>2.72</td>
<td>0.33</td>
<td>0.90</td>
<td>0.09</td>
<td>243.50</td>
<td></td>
</tr>
<tr>
<td>Difference between Model 2 and Model 3</td>
<td>90.05</td>
<td>0.49</td>
<td>0.98</td>
<td>0.05</td>
<td>156.80</td>
<td></td>
</tr>
<tr>
<td>Difference between Model 2 and Model 4</td>
<td>72.31</td>
<td>0.39</td>
<td>0.99</td>
<td>0.04</td>
<td>272.68</td>
<td></td>
</tr>
</tbody>
</table>

CFI, comparative fit index; RMSEA, root-mean-square error of approximation; AIC, Akaike Information Criterion. $*P < 0.05$. 

1. Hypothesized measurement model
2. Revised hypothesized measurement model
3. Cognitive and Motor Impairment and Negative Mood combined
4. Difference between Model 1 and Model 2
5. Difference between Model 2 and Model 3
6. Difference between Model 2 and Model 4
Impairment factor: ‘Think less clearly’), 19 (Tension Reduction factor: ‘Am hopeful about future’) and 23 (Increased Confidence factor: ‘Easier to express feelings’) were removed based on item loadings. Additionally, a residual covariance between Cognitive and Motor Impairment and Negative Mood was specified. This is theoretically plausible as these two factors relate to negative outcomes from drinking. The revised measurement model provided an overall acceptable fit to the data (Table 2, Model 2) and AIC scores suggested that it provided a better fit than the original DEQ-A measurement model.

As shown in Fig. 1, the four latent factors accounted for a large amount of variance in their respective indicators ($R^2 = 0.42$–0.78). Due to the relatively high covariance between Cognitive and Motor Impairment and Negative Mood, the trimmed model was compared with a non-hypothesized alternative in which these factors were collapsed into a single Negative AEs factor. This alternative model had a poor fit to the data (see Table 2, Model 3) and AIC scores suggested the revised hypothesized model provided a better fit. Additionally, a second non-hypothesized alternative model was tested in which Increased Confidence/Social Enhancement and Tension Reduction were also collapsed into a Positive AEs factor. This model was also found to provide a poor fit to the data (see Table 2, Model 4) and AIC scores suggested that the revised hypothesized model provided a better fit. Taken together, these findings support the trimmed, hypothesized model (Table 2, Model 2).

**DRSEQ-RA measurement model**

Each of the 19 items on the DRSEQ-RA contained some missing data (range: 5.2–6.3%). Missing data were imputed using FIML estimation (Graham, 2009). The DRSEQ-RA hypothesized measurement model included Social Pressure...
self-efficacy as a latent variable with five items, Emotional Relief self-efficacy as a latent variable with seven items and Opportunistic self-efficacy as a latent variable with seven items. All latent variables were specified as indicators of a higher order DRSE variable.

The hypothesized measurement model provided an overall 'acceptable-to-poor' fit to the data (Table 3, Model 1). Post hoc model modifications were then conducted to improve the fit of the model. As a result, Items 18 (Emotional Relief factor: ‘Feel nervous’), 1 (Opportunistic factor: ‘Watching television’) and 2 (Emotional Relief factor: ‘When angry’) were removed based on item loadings. Additionally, several items with significantly skewed distributions were transformed (Kline, 2005) and a residual covariance between Item 14 (‘Finished playing sport’) and 17 (‘First arrive home’) was specified.

The revised measurement model provided an overall acceptable fit to the data (Table 3, Model 2), and AIC scores suggested that it provided a better fit than the original hypothesized DEQ-A measurement model. As shown in Fig. 2, the

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$ (df)</th>
<th>$\chi^2$/df</th>
<th>CFI</th>
<th>RMSEA</th>
<th>AIC</th>
<th>$\Delta$AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hypothesized measurement model</td>
<td>635.29* (149)</td>
<td>4.26</td>
<td>0.87</td>
<td>0.13</td>
<td>755.29</td>
<td></td>
</tr>
<tr>
<td>2. Revised hypothesized measurement model</td>
<td>257.06* (100)</td>
<td>2.57</td>
<td>0.94</td>
<td>0.09</td>
<td>361.06</td>
<td></td>
</tr>
<tr>
<td>3. Emotional Relief and Social Pressure subdomains combined</td>
<td>627.20* (102)</td>
<td>6.15</td>
<td>0.80</td>
<td>0.16</td>
<td>727.20</td>
<td></td>
</tr>
<tr>
<td>4. Emotional Relief and Opportunistic subdomains combined</td>
<td>376.09* (102)</td>
<td>3.69</td>
<td>0.90</td>
<td>0.12</td>
<td>476.09</td>
<td></td>
</tr>
</tbody>
</table>

CFI, comparative fit index; RMSEA, root-mean-square error of approximation; AIC, Akaike Information Criterion.

*P < 0.05.

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**Fig. 2.** DRSEQ-RA measurement model.
three latent factors accounted for a moderate-to-large amount of variance in their respective indicators \( (R^2 = 0.27-0.88) \). Emotional Relief was highly related to both the Social Pressure (standardized coefficient = 0.64, \( P < 0.001 \)) and Opportunistic subdomains (standardized coefficient = 0.80, \( P < 0.001 \)). Therefore, the hypothesized model was compared with two alternatives: one in which the Emotional Relief items were specified to load onto Social Pressure, and one in which they were specified to load onto Opportunistic self-efficacy. Both alternative models showed a poor fit to the data (see Table 3, Model 3 and 4) and the difference in AIC scores suggested that the model in which these factors remained separate provided a better fit to the data. Taken together, these findings support the revised hypothesized model (Table 3, Model 2).

**Prospective structural model**

The hypothesized structural model included AEs, DRSE and T1 Alcohol Use predicting T2 Alcohol Use. Age, gender, peer alcohol use, past-year tobacco use, SDQ total Difficulties and SDQ Prosocial (measured at Time 1) were also included in the model as covariates with direct paths to all other variables. Table 1 provides Time 1 and Time 2 descriptive data. Several cross-sectional predictions were made. At Time 1, AEs were hypothesized to predict DRSE and T1 Alcohol Use. DRSE was hypothesized to predict T1 Alcohol Use. Item 10 from the AUDIT was removed because of lack of variance (97% of participants responded ‘Never’ at T2). As noted in the Methods, AUDIT Items 1 and 2, measuring frequency and quantity of alcohol use, were removed (a priori) because of suspected multi-collinearity with the Alcohol Consumption measures. These modifications did reduce multi-collinearity and improved model fit. Additionally, T1 and T2 residual variances of the Alcohol Use indicators were allowed to covary, where significant (Smith et al., 1995), and are not shown in Fig. 3 for clarity of exposition. The DRSEQ-RA Opportunistic subscale was log-transformed to correct for severe skewness, and the residual variances between DEQ-A Negative Mood and DEQ-A Tension Reduction were allowed to covary to improve overall model fit. This was considered acceptable given the focus on structural pathways, and this is theoretically plausible as this association likely reflects the influence of internalizing symptoms.
The hypothesized model provided an acceptable fit to the data (see Table 4, Model 1). As shown in Fig. 3, only T1 DRSE predicted T2 Alcohol Use (unstandardized coefficient = −0.16, \( P = 0.01 \)). The model accounted for 63.5% of variance in T2 Alcohol Use. While AE did not contribute unique variance to the prediction of future alcohol use, it was significantly related to concurrent alcohol use at Time 1 (unstandardized coefficient = 0.07, \( P = 0.04 \)), with low scores on the negative DEQ-A subscales and high scores on the positive subscales associated with heavier drinking. By contrast, while DRSE significantly predicted future alcohol use, it was not significantly related to concurrent alcohol use at Time 1 (unstandardized coefficient = −0.01, \( P = 0.81 \)).

With respect to the covariates, peer drinking (standardized coefficient = 0.32, \( P < 0.001 \)), age (standardized coefficient = 0.20, \( P < 0.001 \)), past-year tobacco use (standardized coefficient = 0.43, \( P < 0.001 \)) and SDQ Difficulties (standardized coefficient = 0.11, \( P = 0.05 \)) predicted significantly greater T1 Alcohol Use. Peer drinking (standardized coefficient = −1.9, \( P = 0.01 \)) and SDQ Difficulties (standardized coefficient = −2.3, \( P = 0.003 \)) also predicted lower T1 DRSE. With regard to future drinking, peer drinking (standardized coefficient = 0.32, \( P < 0.001 \)) and past-year tobacco use (standardized coefficient = 0.36, \( P < 0.001 \)) were the only covariates to predict T2 Alcohol Use.

The possibility of mediation was also explored. First, the hypothesized model was re-run with DRSE omitted. This model showed acceptable fit to the data (see Table 4, Model 2). More importantly, it also revealed, consistent with previous research, that AEs significantly predicted T2 Alcohol Use after controlling for T1 Alcohol Use and age, gender, peer alcohol use, SDQ total Difficulties, SDQ Procial and past-year tobacco use (unstandardized coefficient = 0.12, \( P = 0.03 \)). This suggests possible mediation through DRSE. Therefore, mediation was formally tested by comparing the fit of the original hypothesized model, specifying a path from AEs to T2 Alcohol Use, with that of one in which the path was constrained to zero (Holmebeck, 1997). A \( \chi^2 \) difference test was not significant (see Table 4), suggesting that the mediation model provided a better fit to the data. This is consistent with the negligible change in the AIC index; that is, the results suggest that the effect of AEs on T2 Alcohol Use is fully mediated by DRSE (standardized indirect effect = 0.12).

**DISCUSSION**

This is the first published study to prospectively examine the concurrent role of two key social cognitive constructs (Bandura, 1982, 2006), AE and DRSE (Baldwin et al., 1993; Bandura, 1999), in predicting the extent of problem drinking in 14 and 15-year-old students. Conservative structural models were tested that accounted for important risk factors and the autocorrelation of drinking behavior over time. The validities of the adolescent-specific DEQ (DEQ-A) and DRSEQ (DRSEQ-RA) factor structures were verified in this early-adolescent sample prior to model testing.

The key finding of this study was that low DRSE mediated high AE in predicting the development of problem drinking 12-month post-initial assessment. AE did not directly predict drinking at 12 months, and only became significant when DRSE was omitted from the model. Previous research has consistently reported a direct relationship between AE and problem drinking in young adult (e.g. Connor et al., 2000; Young and Knight, 1989) and alcohol-dependent samples (Connor et al., 2007). The current study, in a younger, school-based sample, identified that DRSE plays a more direct role in predicting future drinking problems. Lower confidence in resisting alcohol in specific contexts, rather than their expectation of desirable consequences arising from drinking, appears to be a more direct predictor of emergent alcohol misuse in early adolescence. However, our results are also consistent with the notion that high AEs may undermine refusal self-efficacy, by making alcohol use appear more rewarding (Gullo et al., 2010).

Unexpectedly, alcohol consumption at Time 1 did not predict problem drinking at the 12-month follow-up. This is likely due to its shared variance with peer drinking and concurrent tobacco use, both of which were significantly related to concurrent and future drinking. Extensive evidence demonstrates early initiation of alcohol/tobacco use and associations with substance-using peers predict problem drinking in adolescents (Nash et al., 2005; Zucker et al., 2008). The results of the current study provide additional support for the etiological relevance of early initiation of substance use and peer behavior in the development of future alcohol problems in teenagers.

The finding that DRSE was a more direct predictor of problem drinking longitudinally than AE has potential implications for alcohol-related intervention in this age group. Teaching adolescents to ‘say no’ to peer pressure has been a longstanding and well-evaluated component of many school-based drug education programs. These prevention programs, based on social competence training, have reported some reductions short term in consumption but are considered insufficient by themselves to prevent substance-related problems (Toumbourou et al., 2007). Prevention programs embedded within curriculums that aim to influence skills development (e.g. increasing DRSE) in addition to improving substance use knowledge (e.g. modifying individual normative alcohol expectations) are likely to be more effective than drug use education alone (e.g. Botvin et al., 1995;
Botvin, 2000; Faggiano et al., 2005). For example, young adolescents often overestimate alcohol consumption of their peers, and school-based programs, which include social norm information that aim to modify these beliefs, have empirical support (e.g. Konro and Toomey, 2002). Where social resistance skill development has been targeted in the context of adolescent prevention programs, higher DRSE skills are associated with a slower rate of alcohol use (Scheier et al., 1999).

This study does carry limitations that impact on interpretation. The Australian sample consisted of three Catholic schools, and cannot be considered representative of all young adolescents. The percentage of students consuming alcohol was higher than Australian national statistics. Data were obtained through self-report only, although the measurement of drinking data using multiple observed variables represented as a latent construct is considered by Midanik et al. (2007) as a measurement strength, particularly in longitudinal studies. Finally, a longer follow-up period would have been desirable, utilizing multiple measurement points. This may have allowed critical developmental periods to be identified and the temporal sequencing of these salient cognitive constructs to be further clarified.

The key contribution of this study was that DRSE was found to mediate the relationship between AE and emergent alcohol misuse in early adolescence, consistent with Social Learning Theory. In terms of individual contributions, self-efficacy was a more direct predictor than AE within this age group. These findings are more robust when one considers the conservative model tested accounted for baseline alcohol use and a range of other known risk factors.

**Funding** — This study was supported through a University of Queensland Early Career Researcher Grant (Connor) and the Graeme Wood Foundation.

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