



Categories of alcohol outcome expectancies and their relationships to alcohol related consequences



Arthur W. Blume*, Brady L. Guttu

Department of Psychology, Washington State University, USA

ARTICLE INFO

Article history:

Received 26 March 2015

Received in revised form 28 April 2015

Accepted 28 April 2015

Available online 30 April 2015

Keywords:

Alcohol related consequences

Positive expectancies

Young adults

ABSTRACT

Extensive research has generally supported a significant and positive relationship of positive outcome expectancies with the amount of alcohol consumed among young adult drinkers, a group generally considered at high risk. Researchers have also naturally been interested in the relationships between these beliefs about drinking and the negative consequences experienced among those who abuse alcohol. Interestingly, those studies found significant positive associations of the number of alcohol outcome expectancies with drinking related consequences, independent of the amount of alcohol being consumed, suggesting that some consequences may be a function of beliefs rather than chemical effects. In addition, there has been evidence that age related differences may exist in the experience of positive outcome expectancies and their associations with consumption. One area that has not been examined is how different categories of alcohol outcome expectancies may be associated with different types of consequences among young adults. Young adults between ages 18–30 were assessed for different categories of alcohol outcome expectancies as well as different types of alcohol consequences. Study hypotheses were partially supported in that specific categories of expectancies were significantly associated with different types of consequences in multiple regression models, but not in the pattern that was predicted from a review of the literature. Expectancies with themes of personal power were consistently found to be significantly and positively associated with various types of consequences after controlling for alcohol consumption. The paper discusses the clinical relevance of these findings with regard to young adult drinkers.

© 2015 The Authors. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Alcohol outcome expectancies are beliefs held by drinkers about the perceived outcomes of drinking. Positive outcome expectancies are beliefs by drinkers that alcohol use will contribute to pleasant outcomes and may in some way be beneficial to the drinker. A large body of research has been dedicated to how alcohol outcome expectancies, especially positive expectancies, may be associated with subsequent drinking behavior. In those studies, researchers have found that when drinkers had greater numbers of alcohol outcome expectancies those beliefs were significantly and generally consistently associated with subsequent alcohol consumption for adolescents and adults, especially with more proximal use (Cable & Sacker, 2008; Jones, Corbin, & Fromme, 2001; Patrick, Wray-Lake, Finlay, & Maggs, 2010; Reich, Ariele, Darkes, & Goldman, 2012; Sher, Wood, Wood, & Raskin, 1996). Alcohol outcome expectancies have also been associated with subsequent binge drinking episodes among a young adult sample (Blume, Schmalzing, & Marlatt, 2003).

Other studies have investigated the potential associations of different categories of alcohol outcome expectancies with subsequent drinking behavior. One study found that drinking-induced alcohol outcome expectancies with themes of euphoria and social enhancement were significantly associated with subsequent binge alcohol use among young adult university students (Leeman, Toll, Taylor, & Volpicelli, 2009). Another study also found age related differences in how alcohol outcome expectancies may be associated with subsequent alcohol consumption. In addition, that same study found evidence that alcohol outcome expectancies centered on themes of enhancing sexuality and social relationships were significantly associated with subsequent alcohol consumption among young adults. The authors concluded that future studies should account for age related differences and the potential impact of different categories of alcohol outcome expectancies (Pabst, Baumeister, & Kraus, 2010).

Other studies have examined whether alcohol outcome expectancies may have direct relationships with alcohol related consequences independent of consumption. These studies have found that greater numbers of positive alcohol outcome expectancies have been associated with greater numbers of negative consequences independent of level of consumption in cross sectional and longitudinal studies (Blume & Blume, 2014; Blume, Lostutter, Schmalzing, & Marlatt, 2003). Alcohol

* Corresponding author at: Clinical Psychology, Washington State University, 14204 NE Salmon Creek Avenue, Vancouver, WA 98642, USA.

E-mail address: art.blume@vancouver.wsu.edu (A.W. Blume).

outcome expectancies seem to not only have a direct association with subsequent consumption, but also a potential direct association with subsequent consequences unaccounted for by consumption alone. This body of research suggests that further knowledge concerning these relationships would be particularly helpful to define the scope of interventions, particularly expectancy challenges, for clients who abuse substances. One area that remains unexamined is the relationship of particular categories of alcohol outcome expectancies with particular types of consequences.

Since particular categories of alcohol outcome expectancies have been significantly associated with subsequent consumption, it would be natural to assume that particular patterns of alcohol outcome expectancies might be significantly associated with particular types of consequences independent of consumption. In addition, since researchers have found differences in alcohol outcome expectancy patterns by age group that were associated with subsequent drinking, one might also assume that analyzing alcohol outcome patterns for particular age groups might also be significantly associated with particular types of alcohol related consequences. For example, since one study found significant associations of euphoria and social enhancement expectancies with binge alcohol use among university students (Leeman et al., 2009), and another study found that sexual and social relationship enhancement expectancies were significantly associated with subsequent alcohol consumption among young adults (Pabst et al., 2010), it stands to reason that similar categories of alcohol outcome expectancies might also be associated with particular types of consequences experienced by young adults independent of their alcohol consumption.

The current study recruited young adults in an effort to examine the relationships between specific categories of alcohol outcome expectancies and types of alcohol related consequences. Young adults are a group at particular risk for experiencing alcohol related consequences and developmentally are at a critical juncture where alcohol abuse risk is high (Maggs & Schulenberg, 2004; Monti, Tevyaw, & Borsari, 2004). To begin with, we expected that previous research linking alcohol outcome expectancies with consequences independent of level of consumption would be supported by the results of the current study. Secondly, given the results of previous research concerning alcohol outcome expectancies and subsequent alcohol consumption among young adults, it was logical to hypothesize that expectancies associated with positive global outcomes as well as sexual and social enhancements would be significantly associated with different types of consequences. On the other hand, the investigators also were aware that particular categories of alcohol outcome expectancies might be more closely aligned with similar types of consequences, such as social enhancement expectancies with interpersonal consequences and physical enhancement expectancies with physical consequences. The following study was conducted to examine these hypothesized relationships more closely.

2. Method

2.1. Participants

A non-random sample of 85 participants was included in the study. Inclusion criteria included self-reported regular drinking of alcohol regularly (defined as drinking at least once a week over the course of the last month) and being between the ages of 18–30. Additionally, participants were excluded if exhibiting signs of psychosis, difficulties thinking, or conditions that might impact the ability to respond thoughtfully to questionnaires.

2.2. Measures

Demographic data including age and gender were collected from participants. Gender was used as a covariate in subsequent analyses.

The Alcohol Expectancy Questionnaire ($\alpha = .84$; AEQ; Brown, Christiansen, & Goldman, 1987) is a 90 item self-report assessment that explores the extent to which moderate amounts of alcohol (defined as “a few drinks” or “a couple of drinks”) produce a specified outcome. Factor analysis identified six scale scores: (1) global positive changes (broad and encompassing positive effects from drinking), (2) increased social assertiveness (enhancement of sociality), (3) arousal and aggression (enhancement of personal power), (4) relaxation and tension reduction (alcohol consumption as a means of relaxation and remedy for tension), (5) physical and social pleasure (alcohol's facilitation and enhancement of pleasure in a physical and social context), and (6) sexual enhancement (alcohol facilitating and enhancing sexual interaction), (Brown et al., 1987). The six scale scores were the independent variables of interest in the study.

The Drinker Inventory of Consequences-Recent ($\alpha = .94$; DrInC-R; Miller, Tonigan, & Longabaugh, 1995) is a self-report assessment of drinking related consequences over the previous 90 days consisting of 50 test items. Items are classified according to five different subscales: (1) physical consequences (adverse physical changes from drinking), (2) intrapersonal consequences (subjective perceptions of within person changes), (3) social responsibility consequences (interfering with obligations), (4) interpersonal consequences (social relationships), and (5) impulse control consequences (impulsive consumption; Miller et al., 1995). The five subscales were used as dependent variables in the study.

The Steady Pattern Chart of Form 90 (Miller, 1996) is an assessment of alcohol consumption that utilizes a timeline follow-back with anchors approach. A total consumption score was derived from combining the typical and episodic drinking patterns occurring over the 90 day period. These scores were utilized to function as a covariate and serve as a control variable for level of consumption during analyses.

2.3. Procedure

After receiving IRB approval for the research, participants aged 18–30 were recruited in the community. They were invited after preliminary phone contact to come to the lab of the first author, and if they met study criteria, provided informed consent, followed by their demographic data (age and gender). They were then asked to complete the following assessments in the following order in the lab of the first author: AEQ, Steady Pattern Chart, and DrInC-R. Participants were compensated with a \$20 gift card for completing the survey questionnaires and thanked for their time.

3. Results

Participants were young adults with a mean sample age of 22.29 years ($SD = 3.26$). The majority of those selected were male ($N = 51, 60.0\%$) and college students ($N = 59, 69\%$). Age and student status did not significantly differ by gender. The internal consistency of the study measures of interest was excellent (AEQ $\alpha = .934$ and DrInC-R $\alpha = .931$). The participants reported mean AEQ scale scores of 8.47 ($SD = 4.29$) for global positive changes, 7.85 ($SD = 1.30$) for physical and social pleasure, 7.59 ($SD = 2.26$) for increased social assertiveness, 6.27 ($SD = 1.98$) for relaxation and tension reduction, and 4.84 ($SD = 1.85$) for arousal and aggression. DrInC-R mean scale scores were 5.54 ($SD = 3.38$) for physical consequences, 4.44 ($SD = 3.81$) for intrapersonal consequences, 3.74 ($SD = 3.09$) for interpersonal consequences, 3.92 ($SD = 3.34$) for social responsibility consequences, and 5.47 ($SD = 3.93$) for impulse control consequences.

Forced simultaneous entry multiple linear regression analyses were used to test the hypotheses of the study. The first analysis examined the relationship of AEQ scale scores with DrInC-R physical consequences scores (see Table 1) and found that the full model was statistically significant ($R^2 = .58$; $F(8, 76) = 12.99$; $p < .001$). The AEQ scale scores accounted for statistically significant variance (6%) of DrInC-R physical

Table 1
AEQ scale scores and DrInC-R physical consequences (N = 85).

Predictor variable(s)	Betas	t	95% C.I.
Gender	-.052	-0.66	-1.419 to .711
SP total consumption	.691	8.23**	.009 to .015
AEQ global positive	-.169	-1.52	-.309 to .042
AEQ social assertiveness	.083	0.83	-.173 to .421
AEQ arousal and aggression	.355	3.18**	.243 to 1.054
AEQ relaxation	-.043	-0.48	-.378 to .231
AEQ pleasure	-.045	-0.52	-.568 to .729
AEQ sexual enhancement	-.092	-0.92	-.537 to .553

Notes: $R^2 = .58$; $F(8, 76) = 12.99$; $p < .001$ for the full model. Durban–Watson = 2.03. Betas, t values, and 95% confidence intervals listed are for the full model.

* $p < .05$.

** $p < .01$.

consequences scores after controlling for gender and consumption. Further examination of the individual variables within the model revealed that AEQ arousal and aggression scores were the only AEQ scale scores to be significantly associated with physical consequences scores.

The second analysis examined the relationship of AEQ scale scores with intrapersonal consequences scores from the DrInC-R (see Table 2) and found that the full model was statistically significant ($R^2 = .44$; $F(8, 76) = 7.42$; $p < .001$). The AEQ scale scores accounted for statistically significant variance (11%) of DrInC-R intrapersonal consequences scores after controlling for gender and consumption. Upon further examination, arousal and aggression scores were the only AEQ scale scores to be significantly associated with intrapersonal consequences scores.

The third regression analysis examined the relationship of AEQ scale scores with DrInC-R interpersonal consequences scores (see Table 3) and found that the full model was statistically significant ($R^2 = .39$; $F(8, 76) = 6.15$; $p < .001$). The AEQ scale scores accounted for statistically significant variance (5%) of DrInC-R interpersonal consequences scores after controlling for gender and consumption. Arousal and aggression scores were again the only AEQ scale scores to be significantly associated with interpersonal consequences scores.

The fourth multiple regression analysis examined the relationship of AEQ scale scores with DrInC-R social assertiveness consequences scores (see Table 4) and found that the full model was statistically significant ($R^2 = .44$; $F(8, 76) = 7.52$; $p < .001$). The AEQ scale scores accounted for statistically significant variance (5%) of DrInC-R social assertiveness consequences scores after controlling for gender and consumption. Arousal and aggression scores were again the only AEQ scale scores to be significantly associated with social assertiveness scores.

The final regression analysis examined the relationship of AEQ scale scores with DrInC-R impulse control consequences scores (see Table 5) and found that the full model was statistically significant ($R^2 = .36$; $F(8, 76) = 5.36$; $p < .001$). Within the model, only total consumption scores

Table 2
AEQ scale scores and DrInC-R intrapersonal consequences (N = 85).

Predictor variable(s)	Betas	t	95% C.I.
Gender	-.098	-1.09	-2.142 to .626
SP total consumption	.526	5.43**	.006 to .014
AEQ global positive	-.092	-0.71	-.309 to .146
AEQ social assertiveness	-.125	-1.09	-.596 to .175
AEQ arousal and aggression	.444	3.45**	.387 to 1.441
AEQ relaxation	-.147	-1.43	-.679 to .112
AEQ pleasure	.052	0.52	-.433 to .729
AEQ sexual enhancement	-.026	-0.22	-.532 to .425

Notes: $R^2 = .44$; $F(8, 76) = 7.42$; $p < .001$ for the full model. Durban–Watson = 1.77. Betas, t values, and 95% confidence intervals listed are for the full model.

* $p < .05$.

** $p < .01$.

Table 3
AEQ scale scores and DrInC-R interpersonal consequences (N = 85).

Predictor variable(s)	Betas	t	95% C.I.
Gender	-.108	-1.16	-1.845 to .488
SP total consumption	.518	5.15**	.005 to .011
AEQ global positive	-.030	-0.23	-.214 to .170
AEQ social assertiveness	-.003	-0.03	-.329 to .321
AEQ arousal and aggression	.279	2.09*	.022 to .911
AEQ relaxation	-.009	-0.08	-.347 to .320
AEQ pleasure	.037	0.35	-.406 to .581
AEQ sexual enhancement	-.073	-0.60	-.525 to .281

Notes: $R^2 = .39$; $F(8, 76) = 6.15$; $p < .001$ for the full model. Durban–Watson = 1.85. Betas, t values, and 95% confidence intervals listed are for the full model.

* $p < .05$.

** $p < .01$.

were significantly associated with impulse control scores. No AEQ variables were found to have a significant association with impulse control consequences.

4. Discussion

The study results partially supported the hypotheses guiding the study. Specific categories of alcohol outcome expectancies were significantly associated with four classes of consequences. However, the pattern of significant results was not aligned with study hypotheses. The pattern of significant results did not include the AEQ scale scores of global positive, sexual enhancement, or social enhancement as might be predicted from previous research. In addition, the pattern of results did not necessarily align well with similar types of consequences (social enhancement expectancies with interpersonal consequences, for example).

However, interestingly, AEQ arousal and aggression scores were significantly associated with four out of five types of alcohol related consequences: physical, intrapersonal, interpersonal, and social responsibility. To understand the results, it might be helpful to examine the items within this scale. Nine items constituted the scale: (1) alcohol makes me feel flushed, (2) feel powerful and able to influence others, (3) feel easier to pick a fight, (4) feel permitted to forget problems, (5) argue more forcefully, (6) able to be more humorous, (7) feel more outspoken and opinionated, (8) makes females more aggressive, and (9) feel more aroused or physiologically excited. To rephrase, expectancies in this category include beliefs that alcohol will make the respondent feel warm, powerful and influential, more aggressive, more carefree, more assertive, more likeable, and perhaps even smarter, more attractive, and physically good. In a broad sense, these items do align in some ways with positive euphoric expected outcomes including sexual and social enhancements. However, personal power and control also seem to be common themes across the items.

Table 4
AEQ scale scores and DrInC-R social responsibility consequences (N = 85).

Predictor variable(s)	Betas	t	95% C.I.
Gender	-.007	-0.08	-1.258 to 1.158
SP total consumption	.479	4.96**	.005 to .011
AEQ global positive	.104	0.81	-.118 to .280
AEQ social assertiveness	.110	0.96	-.174 to .499
AEQ arousal and aggression	.288	2.25*	.059 to .980
AEQ relaxation	-.138	-1.34	-.578 to .113
AEQ pleasure	.018	0.18	-.466 to .557
AEQ sexual enhancement	-.090	-0.78	-.581 to .255

Notes: $R^2 = .44$; $F(8, 76) = 7.52$; $p < .001$ for the full model. Durban–Watson = 1.80. Betas, t values, and 95% confidence intervals listed are for the full model.

* $p < .05$.

** $p < .01$.

Table 5
AEQ scale scores and DrInC-R impulse control consequences (N = 85).

Predictor variable(s)	Betas	t	95% C.I.
Gender	.117	1.22	-.587 to .916
SP total consumption	.491	4.75**	.006 to .014
AEQ global positive	.027	0.20	-.226 to .276
AEQ social assertiveness	-.004	-0.04	-.432 to .416
AEQ arousal and aggression	.214	1.56	-.126 to 1.035
AEQ relaxation	-.069	-0.63	-.573 to .297
AEQ pleasure	-.047	-0.44	-.786 to .503
AEQ sexual enhancement	.057	0.46	-.405 to .647

Notes: $R^2 = .36$; $F(8, 76) = 5.36$; $p < .001$ for the full model. Durban-Watson = 2.35. Betas, t values, and 95% confidence intervals listed are for the full model.

* $p < .05$.

** $p < .01$.

Interestingly, Kuntsche, Knibbe, Gmel, and Engels (2005) found in their review of young adult drinking motives that enhancement motives may be associated with heavy alcohol consumption. Perhaps alcohol outcome expectancies associated with power and control contributed to risky drinking motives. Developmentally speaking, young adulthood is a time of seeking personal control and power. Holding these types of alcohol related outcome expectancies may reflect a distortion of the need for personal power and control related to developmental processes. In addition, excessive beliefs in personal power and control may contribute to risk-taking behavior commonly associated with alcohol related consequences among young adults (e.g., Kelly et al., 2005). Therefore, one potential clinical intervention may be to address those developmental needs for personal power and control in more constructive ways divorced from consuming alcohol.

Alternatively, the AEQ arousal and aggression scale items may reflect alcohol outcome expectancies that have a theme of seeking out another identity when drinking, perhaps out of discomfort with personal self-concepts. One study found evidence that alcohol outcome expectancies related to sociability were positively associated with subsequent sociability self-concepts among young adults (Hicks, Schlegel, Friedman, & McCarthy, 2009), so it is also possible that alcohol outcome expectancies related to personal power and control may be associated with a subsequent enhanced sense of self.

If the findings of this study are supported in subsequent research, they may suggest that clinical interventions focus on alcohol expectancies associated with enhancement of power and control that may be associated with physical, intrapersonal, interpersonal, and social responsibility types of consequences among young adults. These data may suggest that expectancy challenges in particular focus on expectancies related to personal power and control, and that adjunct therapeutic strategies may be used to enhance one's self-concept in activities that do not involve consuming alcohol.

Interestingly, the pattern of results found for physical, intrapersonal, interpersonal, and social responsibility consequences did not hold for impulse control related consequences. Since no category of alcohol outcome expectancies were found to be significantly associated with impulse control consequences, these types of consequences may be at some level fundamentally different than the other four types assessed by the DrInC-R. For example, impulse control problems often suggest psychiatric comorbidity (e.g., Rogers, Moeller, Swann, & Clark, 2010), which was not accounted for in this particular study, and certainly comorbidity may have contributed to impulse control related drinking consequences. Further research is needed to understand how alcohol expectancies may be associated with impulsive control related consequences.

Limitations of the study should be noted. The study examined cross sectional relationships. A longitudinal study would be helpful to examine how these relationships may function over time. However, researchers have found that the predictive power of alcohol outcome expectancies for subsequent behavior is better proximally rather than

distally (Patrick et al., 2010; Sher et al., 1996). As mentioned, comorbidity data were not collected in this study, so future studies may wish to account for that potential confound. The sample size was also modest and therefore results should be interpreted with caution, although the Durbin-Watson statistics for the five analyses (see Tables 1–5) did not raise any serious concerns. Since the sample was restricted to adults aged 18–30, the results cannot be reliably generalized to other age groups. Finally, the study examined positive outcome expectancies and not negative outcome expectancies. Future research may want to examine both types of expectancies.

However, even when accounting for the potential shortcomings, the study provides evidence that specific types of alcohol outcome expectancies may be associated with specific types of consequences. Furthermore, there may be age related differences in those patterns that may be important to consider when developing clinical intervention strategies. For young adult drinkers, interventions centered on addressing issues related to personal power may be most helpful. More research in the area is certainly warranted.

References

- Blume, A.W., & Blume, A.K. (2014). Alcohol outcome expectancies and consequences: Do people think themselves into and out of consequences? In C. Pracana (Ed.), *Psychological applications & developments* (pp. 17–23). Lisbon: In Science Press.
- Blume, A.W., Lostutter, T.W., Schmalig, K.B., & Marlatt, G. (2003a). Beliefs about drinking behavior predict drinking consequences. *Journal of Psychoactive Drugs*, 35(3), 395–399. <http://dx.doi.org/10.1080/02791072.2003.10400025>.
- Blume, A.W., Schmalig, K.B., & Marlatt, A.G. (2003b). Predictors of change in binge drinking over a 3-month period. *Addictive Behaviors*, 28(5), 1007–1012. [http://dx.doi.org/10.1016/S0306-4603\(01\)00287-8](http://dx.doi.org/10.1016/S0306-4603(01)00287-8).
- Brown, S.A., Christiansen, B.A., & Goldman, M.S. (1987). The alcohol expectancy questionnaire: An instrument for the assessment of adolescent and adult alcohol expectancies. *Journal of Studies on Alcohol*, 48(5), 483–491.
- Cable, N., & Sacker, A. (2008). Typologies of alcohol consumption in adolescence: Predictors and adult outcomes. *Alcohol & Alcoholism*, 43(1), 81–90.
- Hicks, J.A., Schlegel, R.J., Friedman, R.S., & McCarthy, D.M. (2009). Alcohol primes, expectancies, and the working self-concept. *Psychology of Addictive Behaviors*, 23(3), 534–538. <http://dx.doi.org/10.1037/a0016259>.
- Jones, B.T., Corbin, W., & Fromme, K. (2001). A review of expectancy theory and alcohol consumption. *Addiction*, 96(1), 57–72. <http://dx.doi.org/10.1080/09652140020016969>.
- Kelly, T.M., Donovan, J.E., Cornelius, J.R., Bukstein, O.G., Delbridge, T.R., & Kinnane, J.M. (2005). Alcohol use disorder symptoms and risk-taking behavior as predictors of alcohol-related medical events among young adults treated in emergency departments. *Addictive Behaviors*, 30(9), 1674–1689. <http://dx.doi.org/10.1016/j.addbeh.2005.07.005>.
- Kuntsche, E., Knibbe, R., Gmel, G., & Engels, R. (2005). Why do young people drink? A review of drinking motives. *Clinical Psychology Review*, 25(7), 841–861. <http://dx.doi.org/10.1016/j.cpr.2005.06.002>.
- Leeman, R.F., Toll, B.A., Taylor, L.A., & Volpicelli, J.R. (2009). Alcohol-induced disinhibition expectancies and impaired control as protective predictors of problem drinking in undergraduates. *Psychology of Addictive Behaviors*, 23(4), 553–563.
- Maggs, J.L., & Schulenberg, J.E. (2004). Trajectories of alcohol use during the transition to adulthood. *Alcohol Research & Health*, 28(4), 195–201.
- Miller, W.R. (1996). Form 90: A structured interview for drinking and related behaviors. In M.E. Mattson (Ed.), *Project MATCH Monograph Series*. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism.
- Miller, W.R., Tonigan, J.S., & Longabaugh, R. (1995). Drinker inventory of consequences: An instrument for assessing adverse consequences of alcohol abuse. In M.E. Mattson (Ed.), *Project MATCH Monograph Series*. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism.
- Monti, P.M., Tevyaw, T.O., & Borsari, B. (2004). Drinking among young adults: Screening, brief intervention, and outcome. *Alcohol Research & Health*, 28(4), 236–244.
- Pabst, A., Baumeister, S.E., & Kraus, L. (2010). Alcohol-expectancy dimensions and alcohol consumption at different ages in the general population. *Journal of Studies on Alcohol and Drugs*, 71(1), 46–53.
- Patrick, M.E., Wray-Lake, L., Finlay, A.K., & Maggs, J.L. (2010). The long arm of expectancies: Adolescent alcohol expectancies predict adult alcohol use. *Alcohol and Alcoholism*, 45(1), 17–24. <http://dx.doi.org/10.1093/alcalc/agg066>.
- Reich, R.R., Ariel, I., Darkes, J., & Goldman, M.S. (2012). What do you mean “drunk”? Convergent validation of multiple methods of mapping alcohol expectancy memory networks. *Psychology of Addictive Behaviors*, 26(3), 406–413.
- Rogers, R.D., Moeller, F.G., Swann, A.C., & Clark, L. (2010). Recent research on impulsivity in individuals with drug use and mental health disorders: Implications for alcoholism. *Alcoholism: Clinical and Experimental Research*, 34(8), 1319–1333.
- Sher, K.J., Wood, M.D., Wood, P.K., & Raskin, G. (1996). Alcohol outcome expectancies and alcohol use: A latent variable cross-lagged panel study. *Journal of Abnormal Psychology*, 105(4), 561–574.