Published in final edited form as:

Addict Behav. 2012 January ; 37(1): 115–118. doi:10.1016/j.addbeh.2011.07.006.

Effects of Mood and Urgency on Activation of General and Specific Alcohol Expectancies

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Abstract

We tested the interaction of a mood manipulation with positive and negative urgency on activation of general and specific alcohol expectancies. In Study 1, high negative urgency was associated with increased positive-alcohol IAT scores following a negative mood induction, $F(1, 93) = 5.71$, $p < .01$. In Study 2, high positive and negative urgency were associated with faster ETASK reaction times for global positive and tension reduction expectancies. These associations did not differ across mood conditions or expectancy subtypes. Our results suggest that positive and negative urgency are associated with increased activation of general, positive alcohol cognitions, rather than mood-specific subtypes.

Keywords

alcohol expectancy; implicit cognition; mood; impulsivity; urgency

1. Introduction

Alcohol expectancies can be defined as learned associations between alcohol use and likely outcomes of use (Goldman, Darkes, & Del Boca, 1999). These include, in part, the affective outcomes individuals expect as a result of drinking. Activation of mood-specific expectancies (e.g., tension reduction, global positive) may be one mechanism by which mood leads to alcohol use. However, there is mixed evidence for a main effect of mood on expectancy activation, suggesting a need to take potential moderators into account (see Birch, Stewart, & Zack, 2006, for a review). Research to date has focused primarily on alcohol motives, finding that mood-specific subtypes of motives moderate the effect of experimentally manipulated mood on activation of general and mood-specific alcohol expectancies (Birch et al., 2004; Birch et al., 2008).

Positive and negative urgency are personality factors associated with impulsive behaviors when in a positive and negative mood state, respectively (Cyders & Smith, 2008). Since these dispositions are mood-specific, they may also be related to activation of mood-specific expectancy subtypes. In support of this notion, one study found that experimentally manipulated positive mood interacted with positive urgency to increase ad lib alcohol consumption (Cyders et al., 2010). However, this study was not designed to test whether this

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effect was explained by expectancy activation, and the relative importance of negative urgency was not examined.

In two studies, we tested the effect of positive and negative urgency on activation of general and specific alcohol expectancies following a mood manipulation. Study 1 tested whether individual differences in positive or negative urgency would activate general, positive, alcohol associations following an experimental mood manipulation. We hypothesized that high positive and negative urgency would be related to increased positive alcohol associations following a positive or negative mood manipulation, respectively. Differences in positive and negative urgency were not expected to be related to increased negative alcohol associations. Study 2 tested whether differences in positive or negative urgency would interact with positive or negative mood states, respectively, to activate mood-specific alcohol expectancy subtypes. We hypothesized that high positive urgency would be related to increased activation of positive alcohol expectancies following a positive mood manipulation and high negative urgency would be related to increased expectancies for negative mood reduction following a negative mood manipulation.

2. Study 1

2.1. Method

2.1.1. Participants—Participants ($N = 97$; 66% women; 72% Caucasian) were recruited through an email advertisement to students and were paid ten dollars for their participation.

2.1.2. Measures

2.1.2.1. Demographics: Age, sex, ethnicity, grade in school, past month drinking, and other demographic information was collected.

2.1.2.2. Positive and negative urgency: The UPPS-P impulsive behavior scale (Lynam, Smith, Whiteside, & Cyders, 2006) assessed positive and negative urgency and other impulsivity traits with 59 4-point Likert-type items. Both urgency subscales showed high internal consistency ($\alpha = .87, .94$).

2.1.2.3. Alcohol Expectancy Questionnaire: The 68-item AEQ (Brown, Goldman, Inn, & Anderson, 1980; Goldman, Greenbaum, & Darkes, 1997) assessed alcohol expectancy endorsement unrelated to mood manipulation. AEQ subscales have been found to have moderate to good internal consistency reliability (α s from .67 to .87).

2.1.2.4. Implicit Association Test: The Implicit Association Test (IAT: Greenwald, McGee, & Schwartz, 1998) is an indirect measure of the association between *attributes* (e.g., positive, negative) and *targets* (e.g., flowers, insects). A modified IAT modeled after previous studies (Jajodia & Earleywine, 2003) assessed activation of positive and negative alcohol associations with positive, negative, and neutral attributes and alcohol-related targets (see Table 1). The positive-alcohol IAT compared reaction time (RT) when positive or neutral attributes were paired with alcohol, and the negative-alcohol IAT compared RT when negative or neutral attributes were paired with alcohol. Each participant completed both the positive-alcohol and negative-alcohol IAT and the attribute pairings were counterbalanced. Recommended procedures for data cleaning and improved scoring of the IAT were followed (Greenwald, Nosek, & Banaji, 2003). This IAT has shown good internal consistency and discriminant validity (McCarthy & Thompsen, 2006).

2.1.2.5. Visual analogue scales (VAS): Participants rate their current mood state on four positive mood (*cheerful, happy, glad, and pleased*) and three negative mood (*sad, depressed,*

and blue) scales by drawing a line on a continuum ranging from 0, labeled “not at all,” to 100, labeled “extremely.” Positive and negative ratings were averaged.

2.1.2.6. Mood manipulation procedures: Positive and negative mood states were manipulated with slides and mood-congruent music (Goodwin and Sher, 1993). Twenty slides from the International Affective Picture System (IAPS; Greenwald, Cook, & Lang, 1989; Lang, Ohman, & Vaitl, 1988) were used in each mood condition. Each slide appeared on the screen for about 30 seconds. Four additional alcohol picture slides appeared for 15 seconds each. The IAPS slides have 9 point normative ratings for valence and arousal. Slide valence differed by mood condition (7.58 positive, 3.41 negative), and arousal was matched across conditions. Music selections were nonverbal classical pieces (e.g., Nevsky’s *Russia Under the Mongolian Yoke* for negative, Handel’s *Water Music* for positive).

2.1.3. Procedure—Participants were randomly assigned to mood condition (i.e., positive or negative). Informed consent was obtained, and participants completed a baseline VAS, the mood manipulation, post-mood manipulation VAS, the IAT, and post-IAT VAS. Participants also completed questionnaire measures on a laboratory computer.

2.2 Results

2.2.1. Manipulation check—Between groups comparisons showed that baseline positive and negative VAS ratings were not significantly different ($ps = .93; .68$), but were significantly different in the expected direction post mood induction (positive, $t[95] = 5.58$, $p < .001$, $d = 1.14$; negative, $t[95] = -5.76$, $p < .001$, $d = -1.18$).

2.2.2. Mood and urgency effects on IAT performance—Analysis of Covariance (ANCOVA) was used to test the effect of mood (positive, negative) and *positive urgency* on positive-alcohol IAT. The main effects and interaction of mood state and positive urgency on positive-alcohol IAT were not significant. Next, we tested the effect of mood and *negative urgency* on positive-alcohol IAT. The main effect of negative urgency was not significant, $p = .29$. A significant main effect of mood on positive-alcohol IAT ($F[1, 93] = 4.59$, $p < .05$) was qualified by a significant interaction between negative urgency and mood condition on positive-alcohol IAT ($F[1, 93] = 5.71$, $p < .05$). Probing this interaction revealed that the relationship of negative urgency with positive-alcohol IAT differed between mood conditions ($r = -.17$ in positive mood condition, $r = .28$ in negative mood condition; see Figure 1). Individuals high in negative urgency and in the negative mood condition had increased positive implicit associations about alcohol. This interaction was still significant after controlling for participant sex, past month drinking, and positive explicit alcohol expectancies, $F(1,89) = 6.04$, $p < .05$. In contrast, mood did not interact with positive or negative urgency to increase negative-alcohol IAT score ($ps = .32, .17$).

3. Study 2

3.1. Method

3.1.1. Participants—Participants ($N = 107$; 59% women; 90% Caucasian) were recruited through introductory psychology classes and received course credit for their participation.

3.1.2. Measures

3.1.2.1. Questionnaires: All self-report measures used in Study 2 were the same as those used in Study 1.

3.1.2.2. Expectancy Accessibility Task (ETASK): Activation of specific alcohol expectancy subtypes was assessed with a version of the ETASK (Fazio, Sanbonmatsu,

Powell, & Kardes, 1986). Items from the global positive and tension reduction subscales of the AEQ (Goldman, et al., 1997) were presented on a computer screen, and participants indicated whether the expectancy applied to them by hitting the “yes” or “no” keys on the keyboard as fast as possible. The speed of the participant’s RT is thought to reflect the degree to which that expectancy is activated in memory, with faster RTs being related to increased activation. Consistent with previous research, only “yes” responses were included in the analysis (Palfai, Monti, Colby, & Rohsenow, 1997; Read & Curtin, 2007).

3.1.3. Procedure—Protocols were similar to Study 1, with the ETASK replacing the IAT. However, instead of completing the questionnaires in the lab, participants were given a URL link to complete the questionnaires online.

3.2. Results

3.2.1. Manipulation check—Between groups comparisons showed that positive and negative VAS ratings were not significantly different at baseline ($p = .93, .91$), but were significantly different in the expected direction post mood induction (positive, $t [86] = 3.64, p < .01, d = .79$; negative, $t [86] = -3.41, p < .01, d = -.74$).

3.2.2. Mood and urgency effects on ETASK performance—Six outlying data points (i.e., above 10,000 ms) and one participant with 37.5% of their responses below 300 ms were dropped before mean RTs were computed for the AEQ subscales.

The main effect of positive urgency on global positive expectancy RTs was significant ($F[1, 84] = 3.37, p < .05$, one tailed) as was the effect of positive urgency on tension reduction expectancy RTs ($F[1,86] = 6.04, p < .05$). The main effect of negative urgency on tension reduction expectancy RTs was significant ($F[1,86] = 9.75, p < .001$) as was the main effect of negative urgency on global positive expectancy RTs ($F[1,84] = 3.26, p < .05$, one tailed). There were no significant main effects of mood on global positive or tension reduction expectancy RTs. All mood by urgency interactions were nonsignificant.

4. General Discussion

Our results suggest that the combination of high negative urgency with negative mood may lead to increased activation of general, positive, implicit alcohol expectancies. Individuals who are predisposed to act rashly in response to negative mood may experience heightened activation of positive alcohol expectancies in memory when experiencing negative mood, which in turn can influence their decision to drink alcohol. Our results provide support for the first link in this potential causal chain.

Specificity of this interaction effect on alcohol expectancy subtypes was not found. Positive and negative urgency were associated with increased activation of both global positive and tension reduction expectancy subtypes. Individuals who have a tendency to act rashly in response to positive or negative mood states may experience heightened priming of general, positive alcohol expectancies, and this effect may not differentially activate specific expectancy content domains.

Interpretation of our findings should be understood in light of limitations. A variety of implicit methods for assessing activation of alcohol expectancies exist, but what exactly they are measuring is unclear (De Houwer, 2006), and their comparative utility is not well understood. Our conclusions would be bolstered by replication using other methods.

Laboratory-induced positive moods are quite different from the type of positive mood elicited in social situations. Some researchers have suggested that positive mood

manipulations are more accurately conceptualized as mood-sustaining neutral mood manipulations (Goodwin & Sher, 1993; Hufford, 2001). Others suggest that, in addition to valence, level of arousal is an important element of urgency's influence on impulsive behavior (Cyders and Smith, 2008). If arousal is a component of how positive mood influences impulsive behaviors, an important direction for future research is to manipulate arousal level in addition to valence.

Highlights

- Interaction of mood and urgency on activation of alcohol expectancies.
- Two studies test activation of general and mood-specific expectancy subtypes.
- Positive and negative urgency increase activation of general alcohol expectancies.
- Negative urgency and negative mood interact to activate positive expectancies.

Acknowledgments

This research was supported in part by a grant (T32 AA13526) from the National Institute of Alcohol Abuse and Alcoholism.

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Figure 1.
Positive-alcohol IAT difference score as a function of negative urgency and mood condition in Study 1.

Table 1

Implicit Association Test Word List.

Alcohol	Mammals	Negative ^a	Neutral ^a	Positive ^b	Neutral ^b
vodka	goat	dangerous	elaborate	happy	basic
rum	sheep	sick	tall	attractive	historical
whiskey	rabbit	angry	daily	sociable	brown
beer	donkey	mean	compact	confident	stationary
gin	elephant	depressed	related	sexy	steep
tequila	llama	unhappy	digital	relaxed	sandy

^a Negative and neutral words paired.

^b Positive and neutral words paired.