The association between intended drinking contexts and alcohol expectancies in college students: A daily diary study

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Abstract

Background: Because of the role alcohol outcome expectancies play in subsequent drinking, it is important to understand factors that can shape alcohol expectancies to guide intervention efforts. This study examined among college students whether intended social contexts for drinking were associated with positive and negative alcohol expectancies at the daily-level.

Methods: Participants included in analyses were 323 students, ages 18 to 24 years, enrolled at a 4-year university in the Pacific Northwest. At four 2-week measurement bursts across one year, participants were asked each afternoon to report whether they planned to drink alcohol later that day. If so, they were further asked how much they intended to drink, whether they plan to drink alone or with others, whether they plan to drink at home or bar/party, and their positive and negative expectancies of alcohol use that evening.

Results: A total of 2953 person-day observations from planned drinking days were used. Results from linear mixed models, adjusted for covariates including intended number of drinks, showed that students reported greater positive alcohol expectancies on days when they intended to drink with others vs. alone and intended to drink at a bar or party vs. at home. For negative expectancies, only intended drinking with others showed a statistically significant association.

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Conclusion: This study suggests that contextual factors may shape college students' expectancies about effects of alcohol at the daily-level. Intended drinking contexts may be important to address in event-level interventions to reduce high-risk drinking in young adults.

Keywords

alcohol; alcohol expectancies; drinking contexts; college students; daily diary

1. Background

Alcohol expectancies, or beliefs regarding effects of alcohol consumption (Fromme et al., 1993; Jones et al., 2001; Monk & Heim, 2013), may influence an individual's decision to engage in high-risk drinking (Wiers et al., 2002) and are a promising intervention target to reduce high-risk drinking occasions. Both positive (e.g., increased sociability, stress reduction) and negative expectancies (e.g., having a hangover, becoming aggressive) have been linked with frequency, quantity, and consequences of alcohol use (e.g., Geisner et al., 2017; Patrick et al., 2016). Further, alcohol expectancies can vary within individuals over time. Benitez and Goldman (2019) observed daily-level variability in positive alcohol expectancies and found that increased positive expectancies were related to greater drinking. Lee and colleagues (2015) also documented between- and within-person variability in daily positive and negative alcohol expectancies among college students, as well as finding daily-level associations between alcohol expectancies and drinking outcomes, such that on days with higher positive or negative alcohol expectancies than average, more drinks were consumed and more positive drinking consequences were reported (Lee et al., 2018; Patrick et al., 2016). Thus, if alcohol expectancies earlier in the day can influence alcohol use, it would be important to identify factors that shape in-the-moment expectancies.

One possible factor is drinking context. Prior research has documented differences in high-risk drinking outcomes by whether the individual drank alone versus with others (e.g., Keough et al., 2018), as well as the location of alcohol use (e.g., drinking at home, drinking at a bar; Creswell, 2020). Further, Wall and colleagues (2001) found that students were more likely to endorse positive alcohol expectancies when they were drinking in a bar relative to when they were drinking in a lab. In a study of Mexican American college students, positive social and physical alcohol expectancies were related to drinking in more social settings, but not in more private settings (Zamboanga, 2005). Ham and colleagues (2013) showed that students reported fewer positive and negative expectancies and less value of expectancies in the negative coping drinking context than in the convivial or personal-intimate contexts.

As research in alcohol expectancies moves forward, it would be useful to know if *intended* drinking contexts are related to positive and negative alcohol expectancies at the daily-level as this may have implications for possible tailored intervention messaging. Such research should also account for intended quantity of drinks because studies have shown associations between intended number of drinks and actual use as well as positive and negative consequences (Cooke et al., 2016; Fairlie et al, 2019; Lauher et al., 2020). Thus, in a sample of college students, the present study examines whether intended drinking contexts (e.g.,

alone versus social, at home versus in a bar) are associated with positive or negative alcohol expectancies on days with intended drinking above and beyond intended number of drinks.

2. Material and Methods

2.1 Participants and Procedures

Study participants included first- through third-year college students ages 18–24 from a large public university in the Pacific Northwest of the United States. Across five academic quarters, 3,210 young adult college students were randomly selected from the university registrar's list and invited to participate. Students meeting eligibility criteria (i.e., drinking 2 or more days per week in the past month, owning a mobile phone with a service contract, and agreeing to receive text messages) were invited to complete an online baseline survey. After completing the survey, students were scheduled to meet with research staff at study offices to provide informed consent, ask questions, and review protocols for the daily study. See [ANONYMOUS] for additional details about sampling and study procedures involving the telephone survey and compensation. This study was approved by the university's Institutional Review Board.

A total of 352 students met criteria and completed the training session. These students then completed four two-week bursts of daily assessments across one year. Three assessments were conducted each day, including one assessment in the morning (9am-12pm), one in the afternoon (4–6pm), and one in the evening (9 pm-12 am). Daily assessments were conducted by automated telephone survey. During each reporting window, students received a text message reminder about the survey window and then students called a study phone number. Participants could earn up to $100 at each measurement burst depending on number of assessments completed. Data for the present manuscript comes from afternoon survey, the only daily survey when alcohol expectancies and intended drinking contexts were assessed. Of 19,712 possible afternoon surveys, a total of 14,248 (72.3%) were completed.

2.2 Measures

Daily Positive and Negative Alcohol expectancies.—Each afternoon students were asked to report how likely they would feel or do 13 different things if they were to drink that evening. The 13 items corresponded to different positive (e.g., feel more relaxed) and negative (e.g., have a hangover) effects of alcohol (Lee et al., 2015). Response options ranged from 1 (very unlikely) to 9 (very likely). The mean of the 6 positive and 7 negative expectancies items, respectively, were computed to create one daily positive and one daily negative expectancy score. See online supplemental table 1 for a list of the specific items and their distributions. Generalizability coefficients, analogous to Cronbach's alpha in a multilevel framework, for expectancies were .91 and .79 for positive at the between- and within-person level, respectively, and .92 and .87 for negative.

Intended number of drinks.—Each afternoon, students were asked whether they were planning to drink that evening (yes, no, or unsure) and, if yes, students were then asked how many drinks they thought they would have.

Intended drinking contexts.—If they planned to drink, students were asked 1) with whom they plan to drink (alone, with others, or unsure) and 2) where they plan to drink (at home, at a bar or party, or somewhere else).

2.3. Analytic plan

Linear mixed effects models were used for analyses. Because of the focus on intended contexts and expectancies, analyses were restricted to data from planned drinking days. Intended drinking contexts were specified as dummy variables where "drinking alone" was the reference category for the social context and "drinking with others" and "unsure" were the other categories; and "drinking at home" was the reference for the drinking location context and "drinking at a bar or party" and "drinking somewhere else" were the other categories. Thus, in the example of intended social context, direct comparisons were made between drinking with others and drinking alone, and between unsure and drinking alone. For each outcome, we ran separate models for intended drinking social context, intended drinking location, and intended number of drinks as primary covariates of interest (Models 1–3) and then a model including the three intentions predictors together (Model 4). Each of the intentions were treated as time-varying covariates. In order to disentangle between- and within-person effects, for each intention covariate we included a time-fixed version of the covariate that reflected the participant's overall level during study (e.g., proportion of days with intentions to drink with others). For intended number of drinks, we calculated the participant's mean number of intended drinks across all days.

All models included covariates for sex (0: male; 1: female), fraternity or sorority membership (0: non-member; 1: member), weekend (0: Sunday through Wednesday; 1: Thursday thru Saturday), study measurement burst period (1 to 4), and study day number within the burst (1 to 14). The intercept and effect of day number were allowed to vary across individuals. Analyses were run using R statistical software version 3.5.1 with the "lme4" package used for mixed effects models.

3. Results

3.1. Descriptive characteristics.

Analyses included 323 individuals and a total of 2953 observations from days of planned drinking. Online supplemental table 2 shows distributions of key study variables in the sample. Of note, on the vast majority of intended drinking days, participants planned to drink with others (94.9%). Participants planned to drink alone on 4.4% of days, and on 0.8% of days they did not know. In regards to drinking location, on 59.2% of intended drinking days participants planned to drink at a bar or party, on 31.5% of days they planned to drink at home, and on 9.3% of days were somewhere else. The correlation between positive and negative expectancies across all days was moderate ($r = .35$).

3.2. Positive alcohol expectancies.

Unconditional models showed good within-person relative to between-person variability in positive expectancies across daily observations (Intraclass Correlation Coefficient [ICC] = .46). In models with and without adjustment for the other intended drinking context and

intended number of drinks variables (Table 1), positive alcohol expectancies were higher (i.e., rated as more likely to occur) on days in which an individual reported intending to drink with others (vs. drinking alone), intending to drink at a bar or party (vs. at home), and intending to drink a greater number of drinks (all p-values <.001).

3.3. Negative alcohol expectancies.

Negative expectancies also showed good within-person variability relative to between-person variability over time (ICC = .46). As shown in Table 2, we found statistically significant associations of daily-level intention to drink at a bar or party (vs. at home) and intended number of drinks with negative expectancies in models with and without adjustment for other daily-level level intentions. Daily-level intention to drink with others (vs. alone) was only significantly associated with negative expectancies in a model without the other intention variables (i.e., Model 1).

4. Discussion

This study found that intended drinking context was associated with expectations of same-day positive and negative effects from alcohol. Students reported greater positive alcohol expectancies on days when they intended to drink with others (compared to alone) and on days when they intended to drink at a bar or party (compared to at home). Positive alcohol expectancies seemed to correspond to social aspects of drinking; that is, if students planned to drink in a social atmosphere, such as a bar or party or with other people, students reported greater positive expectancies. For negative alcohol expectancies, only intentions to drink at a bar or party (compared to home) showed a significant association. Thus, it is possible that planned drinking contexts—whether social or location—may shape one's beliefs about the expected effects of drinking later that day beyond number of intended drinks.

Results may point to important intervention strategies, such as use of web-based and mobile health (mHealth) approaches to challenge alcohol expectancies and high-risk drinking (Dennhardt & Murphy, 2013; Patrick et al., 2014; Tanner-Smith & Lipsey, 2015; Wood et al., 2007). There may be utility for real-time interventions targeting individuals if they plan to drink with others, or at a bar or party. It is notable that intentions to drink at a bar or party were associated with both same day positive and negative expectancies above and beyond how much the individual intended to drink. It may be particularly important, then, to develop interventions targeting young adults when they plan to drink at these locations.

In this study, the vast majority of planned drinking occasions were to occur with others rather than alone. This may not be surprising given that young adults often report social motives for alcohol use (Cooper, 1994; Kuntsche et al., 2005). According to the Transitions Catalyst Model (Schulenberg & Maggs, 2002), drinking may be used to facilitate social goals (e.g., establishing friendships and/or dating relationships) during the transition to adulthood. Although study findings showed greater positive expectancies later in the day among those who intended to drink with others vs. alone, there still may be risks of drinking alone including mental health problems and disordered use (Fleming et al, in press; Mason, Stevens, & Fleming, 2020). Future daily diary research over multiple bursts could assess

how changes in intended and actual drinking alone over time may be associated with patterns of expectancies, motives, and drinking patterns.

Despite strengths of this study, including the daily design, there were important limitations to consider. This sample only included college students and may not be representative of young adults more broadly. Measures of intended drinking contexts did not parse out specific social and location contexts (e.g., with whom participants planned to drink, bar vs. party). Further, other types of specific contexts (e.g., special events like birthdays, sporting events) and people with whom individuals drank (e.g., friends, romantic partners) were not assessed, and should be considered in future studies. For the intended social context variable, there was little variability with only 4% of intended drinking days being alone. Despite this, we were able to detect a statistically significant association of intending to drink with others and positive expectancies. While the alcohol expectancy measure is validated, more specific types of expectancy subscales, such as expectancies about sociability or mood, were not captured. Finally, analyses treated the negative and positive expectancy subscales as independent outcomes; however, there may be shared variance between the two that was not accounted for.

This study showed daily within-person associations between intended drinking contexts and expectancies about positive and negative effects of alcohol. Where and with whom an individual intends to drink may play an important role in shaping beliefs about how alcohol may yield positive and negative effects later that day. It may be important then to consider how to intervene with individuals on days when they plan to drink in these contexts.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Role of funding sources

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Highlights

- This study examined daily associations between intended drinking contexts and alcohol expectancies.

- Intended drinking at bars or parties was associated with positive and negative expectancies.

- Intended drinking with others vs. alone was associated with negative expectancies.

- Results may have implications for tailored messages for certain planned drinking contexts.

Table 1.

Results from mixed effects models for positive expectancies.

Covariate	Model 1			Model 2			Model 3			Model 4		
	b	95% CI	p	b	95% CI	p	b	95% CI	p	b	95% CI	p
Intercept	4.86	3.98, 5.74	<0.001	6.22	5.95, 6.50	<0.001	5.54	5.19, 5.9	<0.001	4.30	3.42, 5.18	<0.001
Time-fixed covariates												
% days intended drinking with others	1.05	0.09, 2.02	0.032	--	--	--	--	--	--	1.07	0.12, 2.03	0.029
% days intended drinking at bar or party	--	--	--	0.01	-0.39, 0.40	0.973	--	--	--	-0.12	-0.51, 0.27	0.560
Average intended number of drinks	--	--	--	--	--	--	0.01	-0.05, 0.06	0.813	0.12	0.07, 0.18	<0.001
Fraternity/sorority member	0.07	-0.15, 0.29	0.553	0.12	-0.1, 0.35	0.286	-0.07	-0.28, 0.14	0.521	-0.14	-0.37, 0.10	0.260
Female sex	0.19	-0.03, 0.41	0.086	0.17	-0.06, 0.40	0.160	0.51	0.30, 0.72	<0.001	0.36	0.12, 0.60	0.004
Time-varying covariates												
Intended social context												
Alone (ref)	--	--	--	--	--	--	--	--	--	--	--	--
With others	0.62	0.44, 0.8	<0.001	--	--	--	--	--	--	0.42	0.24, 0.60	<0.001
Don't know	0.03	-0.40, 0.46	0.896	--	--	--	--	--	--	-0.10	-0.52, 0.32	0.636
Intended location												
Home (ref)	--	--	--	--	--	--	--	--	--	--	--	--
Bar or party	--	--	--	0.35	0.25, 0.44	<0.001	--	--	--	0.21	0.11, 0.30	<0.001
Somewhere else	--	--	--	0.15	0.01, 0.29	0.032	--	--	--	0.07	-0.07, 0.20	0.331
Intended number of drinks	--	--	--	--	--	--	0.13	0.12, 0.15	<0.001	0.11	0.09, 0.13	<0.001
Weekend	0.17	0.10, 0.24	<0.001	0.16	0.09, 0.23	<0.001	0.08	0.01, 0.14	0.023	0.06	-0.01, 0.14	0.077
Study day number	-0.01	-0.02, 0.00	0.005	-0.01	-0.02, 0.00	0.003	-0.01	-0.02, 0.00	0.002	-0.01	-0.02, 0.00	0.003
Measurement burst	-0.21	-0.24, -0.18	<0.001	-0.21	-0.24, -0.18	<0.001	-0.16	-0.19, -0.14	<0.001	-0.17	-0.2, -0.14	<0.001

Table 2.

Results from mixed effects models for negative expectancies.

Covariate	Model 1			Model 2			Model 3			Model 4		
	b	95% CI	p	b	95% CI	p	B	95% CI	p	b	95% CI	p
Intercept	3.06	2.19, 3.93	<0.001	3.09	2.81, 3.36	<0.001	2.08	1.74, 2.41	<0.001	2.18	1.35, 3.02	<0.001
Time-fixed covariates												
% days intended drinking with others	−0.07	−1.03, 0.88	0.883	--	--	--	--	--	--	−0.11	−1.01, 0.80	0.819
% days intended drinking at bar or party	--	--	--	0.10	−0.28, 0.48	0.610	--	--	--	0.07	−0.30, 0.44	0.714
Average intended number of drinks	--	--	--	--	--	--	−0.02	−0.07, 0.03	0.381	0.00	−0.06, 0.06	0.983
Fraternity/sorority member	0.25	0.03, 0.46	0.029	0.19	−0.03, 0.40	0.098	0.00	−0.20, 0.20	0.981	−0.07	−0.29, 0.15	0.526
Female sex	0.01	−0.2, 0.23	0.908	−0.09	−0.32, 0.13	0.410	0.32	0.12, 0.52	0.002	0.23	0.00, 0.46	0.052
Time-varying covariates												
Intended social context												
Alone (ref)	--	--	--	--	--	--	--	--	--	--	--	--
With others	0.32	0.14, 0.49	<0.001	--	--	--	--	--	--	0.01	−0.15, 0.17	0.914
Don't know	−0.03	−0.45, 0.38	0.869	--	--	--	--	--	--	−0.19	−0.57, 0.19	0.328
Intended location												
Home (ref)	--	--	--	--	--	--	--	--	--	--	--	--
Bar or party	--	--	--	0.42	0.33, 0.51	<0.001	--	--	--	0.26	0.17, 0.34	<0.001
Somewhere else	--	--	--	0.14	0.01, 0.27	0.041	--	--	--	0.07	−0.05, 0.19	0.247
Intended number of drinks	--	--	--	--	--	--	0.21	0.20, 0.22	<0.001	0.18	0.17, 0.20	<0.001
Weekend	0.27	0.20, 0.34	<0.001	0.24	0.17, 0.31	<0.001	0.11	0.05, 0.17	<0.001	0.10	0.04, 0.16	0.002
Study day number	−0.02	−0.03, −0.01	<0.001	−0.02	−0.03, −0.01	<0.001	−0.02	−0.03, −0.01	<0.001	−0.02	−0.03, −0.01	<0.001
Measurement burst	−0.09	−0.12, −0.06	<0.001	−0.09	−0.12, −0.06	<0.001	0.00	−0.03, 0.02	0.799	−0.03	−0.06, −0.01	0.019