Enhancement motives moderate the relationship between high-arousal positive moods and drinking quantity: Evidence from a 22-day experience sampling study

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Abstract

Introduction and Aims. *Individuals who consume alcohol may be distinguished by their drinking motives. Enhancement motives involve drinking to enhance positive moods. Research on the moderating effect of enhancement motives on the within-person relation between daily positive mood and drinking has not differentiated between high- (e.g. hyper) and low-arousal (e.g. cheerful) positive moods. The present study addressed this limitation. We hypothesised that enhancement motives would positively moderate the relationship between mid-afternoon high-arousal positive mood and evening drinking.* ***Design and Methods.*** *Using a palm pilot-based experience sampling design, 143 undergraduate drinkers answered daily surveys assessing positive mood (mid-afternoon) and drinks (evening) for 22 consecutive days.* ***Results.*** *As hypothesised, enhancement motives strengthened the relation between high-arousal positive moods and drinking. Upon closer examination, the mood-drinking slope for those high in enhancement motives was unexpectedly flat, whereas the mood-drinking slope for those low in enhancement motives was negative.* ***Discussion and Conclusions.*** *We demonstrated that high enhancement-motivated drinkers exhibit a high, stable drinking level, regardless of the intensity of their high-arousal positive mood. In contrast, low enhancement-motivated drinkers decrease their drinking when in a high-arousal positive mood state. Clinicians may be able to help reduce heavy alcohol consumption in enhancement-motivated drinkers by teaching them to reduce their drinking when in a high-arousal positive mood state.* [Gautreau C, Sherry S, Battista S, Goldstein A, Stewart S. Enhancement motives moderate the relationship between high-arousal positive moods and drinking quantity: Evidence from a 22-day experience sampling study. *Drug Alcohol Rev* 2015;34:595–602]

Key words: drinking motive, enhancement motive, positive mood, arousal, experience sampling.

Introduction

Alcohol consumption is conceptualised along a continuum from those who do not drink at all to those who drink in large quantities (i.e. heavy drinking) [1]. Heavy drinking is common in undergraduates (41–49% of undergraduates reported heavy drinking) [2]. Heavy drinking negatively impacts physical and psychological health [3] and is associated with poor academic performance [4]. Thus, it is important to understand factors contributing to undergraduate heavy drinking.

Motivational models of drinking

Models of drinking motives attempt to understand reasons why people drink. One influential motivational model [5] posits four distinct motives, which are defined by crossing two dimensions: reinforcement valence (positive or negative) and source of desired effect (internal or external). Internal drinking motives include enhancement motives (positively reinforced, drinking to increase positive affect) and coping motives (negatively reinforced, drinking to reduce/avoid

negative affect). External drinking motives include social motives (positively reinforced, drinking to affiliate) and conformity motives (negatively reinforced, drinking to avoid peer rejection) [5]. In the present study, when we refer to a motive, we refer to elevated scores for that particular motive (e.g. enhancement-motivated drinkers refer to those with elevated scores for enhancement motivations). Internal motives are positively associated with drinking frequency, levels and problems [5]. Enhancement motives are most robustly predictive of heavy drinking, whereas coping motives are most robustly predictive of alcohol-related problems [6,7]. That is not to say that enhancement motives are unrelated to alcohol-related problems. Heavy drinking itself is related to many negative consequences of alcohol use (e.g. passing out, memory lapses, regretful sexual activity, difficulties in school) [8]. In sum, the risky drinking patterns and negative consequences related to enhancement motives make it an important internal motive to study in undergraduates.

Enhancement motives and positive mood

Theoretically, the decision to drink is emotionally driven for internal drinking motives [5]. For external drinking motives, the decision to drink is driven by social factors [5]. Among internal motives, enhancement-motivated drinkers drink to regulate positive emotions, whereas coping-motivated drinkers drink to regulate negative emotions [9]. In laboratory studies, positive mood has been shown to activate alcohol-related cognitions and drinking behaviour among enhancement-motivated drinkers. One study assessed processing of alcohol-related words in enhancement-motivated drinkers using a primed Stroop task [10]. Enhancement-motivated drinkers showed greater semantic activation of alcohol-related words following exposure to positive than negative mood primes. Another study found similar results using an alcohol Stroop task following mood induction. Enhancement-motivated drinkers showed greater alcohol processing following positive mood induction [11]. There was also no change in alcohol processing following negative mood induction for enhancement-motivated drinkers. Enhancement-motivated male undergraduates also drank more alcohol on a lab-based taste test than coping-motivated male undergraduates, but only following positive mood induction [12]. In sum, positive, but not negative, moods appear to activate drinking cognitions, and positive moods may act as an antecedent of drinking behaviour for enhancement-motivated drinkers.

Within versus between designs

Prior lab-based studies are limited in that they involve between-person designs. Although between-person designs tell us that, on average, higher positive moods are associated with greater drinking in enhancement-motivated drinkers, they fail to tell us if a high enhancement-motivated drinker drinks more on days he or she experiences more positive mood. Within-person designs allow us to answer such questions.

One previous study used a within-person design and experience sampling methods to examine moderating effects of enhancement motives on daily relations of positive mood and drinking in undergraduates [13]. Daily positive moods and enhancement motives interacted to predict daily drinking at home. Individuals high in enhancement motives drank more at home on days they experienced positive moods, while no such pattern was found for those low in enhancement motives [13]. Surprisingly, daily positive moods and enhancement motives did not interact to predict daily drinking away from home. Although enhancement-motivated drinkers are motivated to drink to increase internal, positive moods, evidence suggests they are more likely to do so in the presence of others [5]. This incongruence between theory and research warrants a closer look at positive mood-drinking associations in enhancement-motivated drinkers.

Research indicates it is important to assess both valence (positive/negative) and arousal (high/low) dimensions of mood in alcohol research [14]. Heavy drinkers appear to implicitly associate alcohol with arousal [15], raising the possibility that enhancement motives may moderate the within-person relation between positive mood and drinking only for high-arousal positive mood states. Given the extraverted nature of enhancement-motivated drinkers [16], we would expect them to drink in response to high-arousal positive moods. Perhaps enhancement motives did not consistently moderate the relationship between daily drinking and positive moods [13] because the researchers confounded high- and low-arousal positive moods. Our study seeks to examine moderating effects of enhancement motives on daily high-arousal positive mood and drinking.

Hypotheses

We tested enhancement motives as a moderator of the within-person relation between afternoon positive mood and evening drinking. Mid-afternoon was chosen for mood ratings to capture mood prior to when undergraduates typically begin drinking [17]. We hypothesised high enhancement-motivated drinkers would show a within-person increase in evening drinking as mid-afternoon high-arousal positive mood increased, while low enhancement-motivated drinkers would not show a within-person increase in evening drinking as mid-afternoon high-arousal positive mood increased.

We also hypothesised that between persons, high enhancement-motivated drinkers would show greater evening drinking on average than low enhancement-motivated drinkers, but only on days characterised by greater levels of high-arousal positive mood.

We controlled for gender and age, as both are associated with drinking quantity [12,18]. We also controlled for other motives to test the unique contribution of enhancement motives. Finally, we controlled for alcohol problems and baseline high and low-arousal positive mood.

Method

Participants

Eligible participants were those who drank on ≥4 separate occasions within the 30 days before participation, ensuring they were sufficiently frequent drinkers to be likely to drink during the 22-day experience sampling period; 175 participants were recruited; 32 were omitted from analyses for: failing to complete baseline measures ($n = 1$), failing to complete any daily measures ($n = 25$) or failing to consume alcohol during participation ($n = 6$). The final sample included 143 participants with a mean age of 20.78 years (SD = 3.36). Most were women (73.7%) and Caucasian (84.8%).

Measures

Baseline measures. Drinking motives. The 28-item Modified Drinking Motives Questionnaire-Revised (M-DMQ-R) [19] assessed five drinking motives: enhancement, coping with depression, coping with anxiety, conformity and social. Participants rated items on a 6-point scale from 0 (*almost never/never*) to 5 (*almost always/always*). Research supports the M-DMQ-R's psychometric properties [19].

Alcohol problems. The 23-item Rutgers Alcohol Problem Index (RAPI) [20], assessing alcohol-related problems in the past 6 months, was included to control for baseline alcohol problems. Participants rated items (e.g. 'went to work or school drunk') on a 5-point scale from 0 (never) to 4 (10 or more times). Items were scored dichotomously, reflecting whether or not participants endorsed each statement. Then the number of endorsed items was tallied (0–23 range). Studies support the reliability and validity of this measure and scoring method [21].

Daily measures. Positive mood. Given the absence of a verbal scale separating high and low arousal, and a need for a brief scale in a daily diary context, we developed a Likert-type scale using 10 positive mood terms (see Table 1) from the Positive and Negative Affect

Table 1. *Factor loadings for daily positive affect items*

	Factor loadings		
Item	Low arousal	High arousal	Communalities
Happy	**0.89**	−0.03	0.77
Glad	**0.87**	0.00	0.76
Pleased	**0.87**	−0.08	0.68
Cheerful	**0.81**	0.04	0.69
Exhilarated	−0.06	**0.86**	0.68
Hyper	−0.08	**0.84**	0.64
Euphoric	0.04	**0.75**	0.60
Excited	**0.50**	**0.40**	0.64
Lively	**0.43**	**0.49**	0.65
Energetic	**0.40**	**0.51**	0.64

Oblimin with Kaiser normalisation was used as the rotation method. Item scores for mid-afternoon mood were aggregated across reporting days. Factor loadings ≥0.40 were considered salient loadings and are bolded. Cross-loading items were eliminated from scoring of the mood scales. The same pattern of factor loadings for positive affect items was found using a maximum likelihood approach to factor extraction.

Schedule (5 terms; e.g. excited) [22] and the Mood Circumplex (5 terms; e.g. pleased) [23]. Negative mood was assessed, but not analysed. Participants rated items on a scale from 0 (*not at all*) to 5 (*extremely*). Studies support the reliability and validity of the scales from which the items were drawn [13].

Drinking. Participants indicated the number of alcoholic drinks consumed, defined as one bottle of beer, one cooler, one 4 oz. glass of wine or one shot/mixed drink containing 1 oz. hard liquor. Participants gave a running total of number of drinks consumed for the whole evening each time they were paged. The maximum number of drinks was capped at six in analyses to reduce skew [see Grant *et al.* 24]. Because drink quantity is a non-arbitrary measure, capping drink quantity was chosen over transforming data. This allowed drink quantity levels to convey meaning within analyses [25]. In total, 176/1986 (i.e. 9.86%) observations were capped at six. Overall, eight participants drank more than six drinks on average across all drinking occasions. A series of *t*-tests indicated participants who, on average, drank more than six drinks on a given occasion were not significantly different ($P > 0.05$) on study variables (i.e. drinking motives, alcohol-related problems, gender, age, average high- and low-arousal positive moods) from those who, on average, drank six or less drinks on a given occasion.

Procedure

Our study was approved by a university ethics board. Undergraduates responded to ads around campus and

were also recruited from the Psychology Department participation pool for a study on 'daily health and daily activities'. Participants completed informed consent and a baseline assessment (i.e. demographics, M-DMQ-R and RAPI) in the lab. They were instructed on use of a personal data assistant before taking the device home for 22 days. Mood was assessed twice daily (morning and mid-afternoon). However, in line with the hypotheses, only mid-afternoon mood was analysed. Mid-afternoon mood was assessed daily between 2 pm and 4 pm and evening drinking was assessed six times daily between 4 pm and 4 am. Personal data assistants beeped at random times during the specified 2 h windows between 2 pm and 4 am, indicating a survey was available for completion. Participants were informed they were not expected to answer beeps when they were sleeping. Participants received weekly email reminders to complete their daily questionnaires. After 22 days, participants returned to the lab for debriefing and compensation. Other experience sampling studies used a 21-day time frame [13]. We had to sample for 22 days to get the 12–4 am samples for the evening of day 21. We made use of the additional data on day 22 as well.

Data analytic plan

Hierarchical linear modelling (HLM) [26] tested moderating effects of between-person variables (e.g. drinking motives) on within-person associations (e.g. daily high-arousal positive mood and drinking quantity).

Results

Preliminary analyses

Little's missing completely at random test [27] assessed patterns in missing data. Missing data were missing completely at random, as suggested by a non-significant missing completely at random test, $\chi^2(7, n = 3718) = 6.12, P > 0.05$ [27]. Estimates in HLM are weighted such that participants with fewer daily entries have less influence than those with more daily entries [26]; thus, we did not exclude participants from the analyses based on missing data.

Principal components analysis (PCA) was used to explore the factor structure of our new positive mood scale (see Table 1). Ten averaged positive mood items were created for each participant by collapsing across all reporting days. These averaged positive mood items were entered into the PCA. Two factors with eigenvalues greater than 1.00 were extracted [28]. Oblimin with Kaiser normalisation was used as the rotation method. The two-factor solution explained 68.73% of variance. Factors were strongly intercorrelated ($r = 0.54$). Seven positive mood items

showed salient loadings on only one factor: three high and four low arousal. The three items that cross-loaded on both factors were not included in scoring. Subscales were calculated by summing the relevant item scores: three for the high-arousal and four for the low-arousal subscales. Alpha reliabilities were calculated for these two mood subscales on three different days representing the beginning (day 2; $n = 122$), middle (day 9; $n = 94$) and end (day 16; $n = 81$) of the experience sampling [24]. Acceptable-to-excellent internal consistencies were obtained ($\alpha = 0.75$, 0.77 and 0.75 for high-arousal positive mood; $\alpha = 0.82$, 0.91 and 0.90 for low-arousal positive mood, respectively).

There were 1986 usable entries (i.e. both a mid-afternoon mood report and a drinking report) out of a possible 3146 entries (63%), which also included evenings where zero drinks were reported. Of these entries, 40.5% ($n = 804$) were drinking days. On drinking days, participants consumed a mean of 3.37 drinks (SD = 2.02). Daily reporting ranged from 11.3% ($n = 225$) of reporting on Mondays to 26.2% ($n = 521$) on Saturdays. Drinking levels varied by day of the week, with greatest drinking occurring on Friday (M = 2.06 drinks, SD = 2.35) and the least on Tuesday (M = 0.69 drinks, SD = 1.50) evenings.

Table 2 displays descriptive statistics and bivariate correlations. Alpha reliabilities for between-person variables (e.g. drinking motives and alcohol problems) were good, ranging from 0.71 to 0.94. Enhancement motives were positively correlated with the other drinking motives and with drinking problems, and negatively correlated with age. Averaged high-arousal positive mood was positively correlated with averaged drinking quantity and negatively correlated with age. Averaged high-arousal positive mood and averaged drinking quantity were positively correlated with drinking problems.

Multilevel analysis

Drinking motive moderation of mood-drinking associations. Evening drinking was entered as the outcome variable and modelled as a function of mid-afternoon high- and low-arousal positive mood. The intercept, low-arousal positive mood and high-arousal positive mood were entered into the model as predictors and were person centred. Six day-of-the-week dummy variables (Wednesday through Monday) were created to control for day-of-the-week effects. These dummy variables were created in comparison with Tuesday (the evening with the least drinking) [24] and modelled as fixed effects. Level-1 within-person predictors were regressed onto level-2 between-person variables (i.e. drinking motives, age, gender, alcohol problems, and averaged high- and low-arousal positive mood; see

Table 2. *Descriptive statistics and bivariate correlations*

Variable	M	SD	α	2	3	4	5	6	7	8	9	10	11
1. Gender	73.7%[a]	—	—	−0.08	0.03	0.10	−0.03	−0.04	−0.04	−0.01	0.12	−0.11	−0.03
2. Age	20.78	3.36	—	—	−0.01	0.09	−0.29***	0.10	0.16*	−0.10	−0.08	−0.18*	0.00
3. Social	2.01	0.70	0.71	—	—	0.42***	0.55***	0.30***	0.56***	0.42***	−0.13	0.07	0.24**
4. Conformity	0.29	0.42	0.73	—	—	—	0.32***	0.29***	0.38***	0.32***	−0.15	−0.01	0.13
5. Enhancement	1.76	0.97	0.84	—	—	—	—	0.26***	0.42***	0.46***	−0.03	0.10	0.15
6. Coping depression	0.31	0.52	0.92	—	—	—	—	—	0.60***	0.47***	−0.22**	−0.02	0.10
7. Coping anxiety	0.85	0.78	0.73	—	—	—	—	—	—	0.40***	−0.21*	−0.09	0.09
8. Alcohol problems	8.83	5.48	0.89	—	—	—	—	—	—	—	0.05	0.29***	0.25**
9. Low-arousal PM	1.65	0.66	0.94	—	—	—	—	—	—	—	—	0.51***	0.03
10. High-arousal PM	0.69	0.53	0.85	—	—	—	—	—	—	—	—	—	0.26**
11. Drinks	1.47	1.26	—	—	—	—	—	—	—	—	—	—	—

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$. [a]Percentage of participants who were female. Person-level means were used in the hierarchical linear modelling analyses. Gender was coded so that women = +1 and men = −1. Means for drinking motives and positive mood scores were calculated using averages of component items for each subscale. PM, positive mood.

Table 3. *Prediction of daily mood–alcohol use intercept and slopes by gender, drinking motives and alcohol-related problems*

			Daily mood-drinking slope models			
	Intercept model (average daily drinking)		Low-arousal positive mood-drinking		High-arousal positive mood-drinking	
Predictor	Coefficient	SE	Coefficient	SE	Coefficient	SE
Intercept	−0.25	0.17	0.11*	0.05	−0.04	0.08
Age	0.03	0.04	−0.01	0.02	0.01	0.03
Gender	−0.11	0.17	0.08	0.06	−0.10	0.08
Social	0.49	0.33	0.05	0.11	−0.09	0.12
Conformity	0.38	0.42	−0.05	0.11	0.02	0.15
Enhancement	−0.16	0.24	−0.01	0.06	0.17*	0.07
Coping depression	0.25	0.33	0.04	0.15	0.03	0.23
Coping anxiety	−0.58*	0.26	0.08	0.10	−0.15	0.11
Low-arousal PM	−0.16	0.28	0.37	0.12	0.37**	0.12
High-arousal PM	0.17	0.31	−0.22	0.17	−0.22	0.17
Alcohol problems	0.05	0.04	−0.01	0.01	0.01	0.02

*$P < 0.05$; **$P < 0.01$; ***$P < 0.001$. The outcome variable is the daily sum of alcoholic beverages consumed, capped at six drinks. The population-average model is reported. Gender was coded so that women = +1 and men = −1. PM, positive mood.

Table 3). Predictor variables in the level-2 model were grand mean centred (except for gender). Only interactions relevant to study hypotheses are described. As hypothesised, the regression coefficient was significant and positive ($γ = 0.17$, SE = 0.07, $P = 0.02$) for the moderation of the high-arousal positive mood and evening drinking relation by enhancement motives. Enhancement motives did not moderate the relationship between low-arousal positive mood and evening drinking ($γ = −0.01$, SE = 0.06, $P = 0.82$).

Simple slopes. Simple slopes analysis tested the direction of significance for the moderation of the hypothesised high-arousal positive mood and evening drinking relation by enhancement motives. When relatively strong enhancement motives (M + 1 SD) were entered in the model, unexpectedly, the average level-1 high-arousal positive mood-drinking partial slope was not statistically different from 0 ($γ = 0.02$, SE = 0.16, $P = 0.91$). However, when relatively weak enhancement motives (M − 1 SD) were entered in the model, the average level-1 high-arousal positive mood-drinking partial slope was significantly negative ($γ = −0.48$, SE = 0.23, $P = 0.04$; see Figure 1).

Discussion

The present study aimed to examine the moderating effect of enhancement motives on the daily
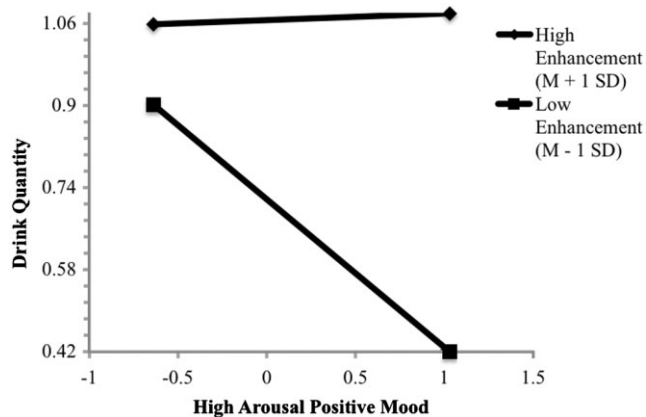
Figure 1. *The cross-level interaction of enhancement motives and mid-afternoon high-arousal positive mood on evening drinking. This graphical representation of the high-arousal positive mood-drinking slopes was created using data points of the regression equation in HLM 7.0. HLM, hierarchical linear modelling.*

within-person associations between high-arousal positive mood and drinking quantity. Results partially confirmed our hypothesis. High enhancement-motivated drinkers drank more than low enhancement-motivated drinkers only at greater levels of high-arousal positive mood (see Figure 1). Surprisingly though, high enhancement-motivated drinkers did not increase their own drinking in response to high-arousal positive mood. Results instead suggest low enhancement-motivated drinkers refrained from heavier drinking on days when they were in a high-arousal positive mood state. In contrast to low enhancement-motivated drinkers, high enhancement-motivated drinkers failed to decrease their drinking on days when they were experiencing greater levels of high-arousal positive mood.

Our results suggesting that high enhancement-motivated drinkers drink more than others when in a high-arousal positive mood state are consistent with Stroop studies showing greater activation of alcohol cognitions following positive mood induction for enhancement-motivated than coping-motivated drinkers [10,11]. We used a more ecologically valid experience sampling approach and obtained similar results to those of a lab-based alcohol taste test where enhancement-motivated males drank more than coping-motivated males following positive mood induction [12].

Our results complement a previous experience sampling study on the moderating effect of enhancement motives on the within-person relation of positive mood and drinking [13]. This study showed enhancement motives positively moderated the relationship between daily positive mood and daily drinks at home [13]. Our study builds on this study by suggesting enhancement

motives positively moderate the relationship between daily positive moods involving high-arousal and drinking. Unexpectedly, this moderating effect involved a flat slope between high-arousal positive mood and drinking for strong enhancement motives and a negative slope for weak enhancement motives. Although unexpected, this same pattern of moderation of within-person mood-drinking relations by drinking motives was found using a different methodology (i.e. end of day reporting of previous evening's drinking) and with a different drinking motive and mood state (i.e. coping motives and negative mood) [24]. For example, the slope of the within-person relation of daily anxious mood and drinking was shown to be flat among high coping-with-anxiety drinkers and negative among low coping-with-anxiety drinkers [24].

We found low enhancement-motivated drinkers drink less as high-arousal positive mood states increase. Lower enhancement-motivated drinkers may find strong positive arousal sufficient in that they do not wish to enhance further (thus refraining from alcohol use when in a high-arousal positive mood state). Biologically, alcohol (during the ascending limb of the blood alcohol curve) and high-arousal positive moods are associated with sympathetic nervous system stimulation [29–31]. Thus, it is also possible that low enhancement-motivated drinkers may attempt to avoid or escape such stimulating states, finding them aversive. If this is the case, low enhancement-motivated drinkers might be engaging in activities to reduce arousal (e.g. relaxation) rather than drinking when they find themselves in a high-arousal positive mood state. In contrast, if they are not drinking because arousal is sufficient, they might be doing anything but arousing activities. It is also possible that low enhancement-motivated drinkers regulate high-arousal positive moods via other, healthier means than through heavy drinking (e.g. exercise). Research is needed to explore these possibilities.

We showed high enhancement drinkers drink more on average than low enhancement drinkers only when experiencing positive mood, as did another experience sampling study [13]. Unexpectedly, high enhancement-motivated drinkers did not increase drinking after experiencing high-arousal positive moods. Our results demonstrate higher enhancement-motivated drinkers, unlike low enhancement-motivated drinkers, fail to down-regulate their drinking when in a positive high-arousal mood state. Their self-reports [32] that they drink more when in positive mood states is partly correct—they drink more than others when in high-arousal positive moods; however, as our results show, this is not the only time they drink. Our unexpected results, therefore, reflects a difference between within-person and between-person designs. The previously mentioned experience sampling study [13] showed

high enhancement-motivated drinkers drink more on days when they are in a positive mood. One possible explanation for the discrepancy with our study is the prior study used a larger proportion of men in their sample, and prior lab-based work has shown that positive mood induction only increases drinking among high enhancement-motivated males [12]. Future experience sampling studies should consider testing gender differences in the moderating effects of enhancement motives on the within-person relation of daily high-arousal positive mood to evening drinking.

Limitations and future directions

Our response rate was relatively low. Future studies might use additional strategies for enhancing compliance (e.g. using a shorter timeframe or reducing the number of surveys per day). Our sample was also predominantly female, Caucasian and undergraduate, raising questions about the generalisability of our results. Our positive mood measure was novel. However, the conceptual distinction between high- and low-arousal positive mood was supported through factor analysis, and the internal consistencies were all acceptable to excellent, providing evidence of the measure's reliability and validity. Daily mood was reported once daily in the mid-afternoon. We were not able, with our data, to examine other potential timeframes like mood immediately prior to drinking. A pattern more consistent with our hypothesis might emerge if moods immediately prior to drinking were measured. Our study did not assess whether moods changed in response to drinking. A daily diary study recently found enhancement-motivated drinkers to derive more pleasure from drinking than others [7]. However, they did not look at high-arousal versus low-arousal positive mood in response to drinking. Therefore, future research should look at changes in high-arousal positive mood in response to drinking and whether enhancement motives moderate the relationship between drinking and high-arousal positive mood effects from drinking.

Clinical implications

Targeted interventions are effective in prevention and early intervention for young drinkers [33]. Our results have implications for targeted interventions with enhancement-motivated drinkers. Decreased drinking in low enhancement-motivated drinkers in response to high-arousal positive mood states may represent a more adaptive mood-drinking relationship. Our study suggests high enhancement-motivated drinkers may benefit from learning how to decrease, rather than maintain, their drinking quantity as their high-arousal

positive mood increases. Clinicians could help achieve this by assisting high enhancement-motivated drinkers to identify these mood states and find adaptive substitutions for drinking when they experience high-arousal positive moods.

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