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Alcohol Expectancies Longitudinally Predict Drinking and the Alcohol Myopia Effects of Relief, Self-Inflation, and Excess

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Abstract

Introduction—Alcohol myopia theory posits that alcohol consumption attenuates information processing capacity, and that expectancy beliefs together with intake level are responsible for experiences in myopic effects (relief, self-inflation, and excess).

Methods—Adults (N = 413) averaging 36.39 (SD = 13.02) years of age completed the Comprehensive Effects of Alcohol questionnaire at baseline, followed by alcohol use measures (frequency and quantity) and the Alcohol Myopia Scale one month later. Three structural equation models based on differing construct manifestations of alcohol expectancies served to longitudinally forecast alcohol use and myopia.

Results—In Model 1, overall expectancy predicted greater alcohol use and higher levels of all three myopic effects. In Model 2, specifying separate positive and negative expectancy factors, positive but not negative expectancy predicted greater use. Furthermore, positive expectancy and use explained higher myopic relief and higher self-inflation, whereas positive expectancy, negative expectancy, and use explained higher myopic excess. In Model 3, the seven specific expectancy subscales (sociability, tension reduction, liquid courage, sexuality, cognitive and behavioral impairment, risk and aggression, and self-perception) were simultaneously specified as predictors. Tension reduction expectancy, sexuality expectancy, and use contributed to higher myopic relief; sexuality expectancy and use explained higher myopic self-inflation; and risk and aggression expectancy and use accounted for higher myopic excess. Across all three predictive models, the total variance explained ranged from 12 to 19% for alcohol use, 50 to 51% for relief, 29 to 34% for self-inflation, and 32 to 35% for excess.

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Contributors

Andrew Lac designed the study, collected the data, and wrote the method and results section. Nathaniel Brack wrote the introduction and discussion sections. Both authors edited the entire paper and approve of the final manuscript.

Conflict of Interest

There are no conflicts of interest to declare.

Conclusions—Findings support that the type of alcohol myopia experienced is a concurrent function of self-fulfilling alcohol prophecies and drinking levels. The measurement manifestation of expectancy interpreted yielded different prevention implications.

Keywords

alcohol expectancies; alcohol myopia; alcohol; mediation; longitudinal

1. Introduction

Alcohol use is a risk factor for 60 different types of diseases and disabilities (World Health Organization, 2017) and responsible for more than double the societal cost of other psychoactive substances (Miller, Levy, Cohen, and Cox, 2006). Alcohol consumption is connected to a wide array of outcomes including positive mood (Fairbairn & Sayette, 2013), stress reduction and relaxation (Jackson, Knight, & Rafferty, 2010; Peele & Brodsky, 2000), drowsiness (Hogewoning et al., 2016), social and interpersonal problems (Read et al., 2008), sexual risk taking (Shuper, Joharchi, Irving, & Rehm, 2009), regrettable social behaviors (Dunne & Katz, 2015), fatal driving accidents (Center for Disease Control and Prevention, 2011), aggression and physical violence (Giancola, Duke, and Ritz 2011; Maldonado-Molina, Reingle, & Jennings, 2011; Foran & O'Leary, 2008), and suicide (Pompili et al. 2010). The current study combined alcohol expectancy theory and alcohol myopia theory into an integrative framework to understand how alcohol expectancies and use serve as risk factors for myopic consequences.

1.1 Alcohol Expectancies

Perhaps the earliest research conceptualization of expectancy broadly defined it as the ability to use information acquired at an earlier point in time to guide behavioral responses (Tolman, 1932), with the definition subsequently refined to describe stored schemas (mental templates) in memory that help to guide future actions (MacCorquodale &Meehl, 1953; Bolles 1972). As outcome expectancy is a pivotal component in social learning theory (Bandura, 1977), expectancy frameworks have since been adopted to studying alcohol behaviors (Jones, Corbin, & Fromme, 2001; Kouimtsidis, Stahl, West, & Drummond, 2014). Alcohol expectancy theory posits that people possess different beliefs about the effects of alcohol and that these perceptions prompt drinking decisions (Valdivia & Stewart, 2005). Drinking expectations vary across cultures and individuals (Shih, Miles, Tucker, Zhou, & D'Amico, 2012; Lee, Atkins, Cronce, Walter & Leigh, 2015) and are formed through direct and indirect experiences (Fromme, & D'amico, 2000).

The Comprehensive Effects of Alcohol Questionnaire (CEOA) is the most widely administered instrument to assess drinking expectancies (Fromme, Stoot, and Kaplan, 1993). The seven subscales could be classified into positive (sociability, tension reduction, liquid courage, and sexuality) and negative (cognitive and behavioral impairment, risk and aggression, and self-perception) expectancies. The CEOA questionnaire has been applied to investigate associations with alcohol outcomes. After simultaneously controlling for all seven CEOA subscales, higher risk and aggression expectation, higher sexual expectation, and lower self-perception expectation uniquely contributed to drinks per week in a sample of

undergraduate students (Ham, Stewart, & Norton, 2005). Positive expectancy is related to greater drinking, but negative expectancy to less drinking (Anthenien, Lembo, & Neighbors, 2017). Other research supports that positive expectancy explained number of drinks consumed, but both positive and negative expectancy factors explained greater alcohol-related consequences (Dunne, Freedlander, & Coleman, & Katz, 201). Most studies focus on the positive versus negative dimensions in cross-sectional designs, so testing the independent contributions of all seven specific subscales of the CEOA as antecedents of alcohol behaviors is relatively uncommon in the literature.

1.2 Alcohol Myopia Theory

Alcohol myopia theory (Steele & Josephs, 1990) postulates that alcohol possesses the psychoactive ability to compromise controlled attentional processing. The impairment of attentional and perceptual resources due to intoxication is responsible for three classes of myopia— *relief*, *self-inflation*, and *excess*—that translate into social-behavioral consequences ranging from relaxation to aggression (Giancola, Josephs, Parrott, &Duke, 2010; Steele & Josephs, 1990). Myopic relief represents the psychological and emotional freedom from distant problems after consumption. The myopic relief concept originated from the seminal ideas of the tension reduction hypothesis (Conger, 1956). Relief occurs due to focusing on the salient aspects of the present moment and temporary distraction from ruminations and worries after consumption (Fairbairn & Sayette, 2013; Steele & Josephs, 1990).

Myopic self-inflation occurs after drinking when feelings of self-doubt dissipate due to the attentional focus on desirable personal traits (while ignoring personal flaws) that could manifest as greater self-confidence. In an experiment demonstrating myopic self-inflation (Banaji & Steele, 1989), recipients of alcohol increased positive self-evaluations only for traits originally deemed personally important, but alcohol did not improve self-appraisals unless paired with preexisting positive thoughts about the self. Myopic excess arises if attention is on provoking and vexing stimuli that spur impulses, urges, and aggression at the expense of inhibition of these unacceptable responses during drinking occasions. Participants administered alcohol and forced to pay attention to the pain from electric shocks exhibited greater aggression than both a non-alcohol group focused on pain and another alcohol group distracted by a task (Zeichner, Pihl, Niaura, & Zacchia, 1982).

The Alcohol Myopia Scale (Lac and Berger, 2013) was developed to conceptualize and capture all three myopic effects in a measurement instrument. Alcohol use was found to correlate with greater tendency to encounter each of the three myopic effects in the scale validation study.

1.3 Current Study

A major tenet of alcohol myopia theory (Steele & Josephs, 1990) is that internal cues such as alcohol expectancies contextually guide the type of experiences and behaviors manifested after intake. Specifically, person-to-person differences in level of alcohol consumption are not sufficient to account for variations in myopic effects, as individuals consuming the same amount might exhibit disparate consequences (Steele & Josephs, 1990; Giancola, Josephs,

Parrot, & Duke, 2010). Accordingly, mental schemas about alcohol expectations serve as self-fulfilling prophecies that make people more susceptible to certain types of myopia upon drinking. The “dual-process model of the alcohol-behavior link” (Moss & Albery, 2009) attempts to connect expectancy theory and myopia theory and postulates that alcohol behaviors are a combined function of the preconsumption and consumption stages. This paradigm proposes that alcohol usage (consumption stage) impairs conscious cognitive processing capacity, so that the” habitual, automatic, and implicit” schemas stored in memory (preconsumption stage) trigger and guide behaviors upon consumption (Moss & Albery, 2009). In other words, due to alcohol’s ability to compromise effortful and controlled mental processes, expectations about alcohol prime the types of behavioral consequences manifested.

The present study tested mediational processes from alcohol expectancies to drinking to alcohol myopia, and builds upon previous research in several ways. First, the investigation simultaneously controlled for the unique statistical contributions of all seven specific alcohol expectancies in predicting alcohol use and all three myopia effects. Previous studies have neglected to comprehensively integrate all the main constructs from both theoretical frameworks into the same predictive model. For instance, prior alcohol expectancy investigations tend to test positive or negative expectancy only (Merill, Lopez-Vergara, Barnett, & Jackson, 2016), the two factors of positive versus negative expectancy (Anthenien & Gerbing, 2017), or only one or two specific expectancy subscales (e.g., liquid courage) while ignoring the other specific expectancy dimensions (Gilles, Turk, & Fresco, 2006; Wells et al., 2014). A possible rationale for the scarcity of research that simultaneously controls for all seven CEOA expectancy subscales is that each specific dimension is less likely to emerge as significant due to the competition in explicating variance in alcohol behaviors (Geisner, Rhew, Ramirez, Lewis, Larimer & Lee, 2017).

Second, the investigation pursued a longitudinal design (Crano, Brewer, & Lac, 2015; Lac, 2016) to test alcohol expectancies as risk antecedents of alcohol use and myopia. Most research focusing on alcohol expectancies have implemented cross-sectional designs. Furthermore, this was the first study to test the alcohol myopia scale longitudinally. A third innovation was the estimation and comparison of three theoretically competing predictive models differing in the construct embodiment of alcohol expectancy. The computation of the expectancy construct based on various measurement approaches identified in the literature should furnish insights regarding each model’s predictive validity on alcohol use and myopia.

2. Methods

2.1 Participants

The sample (N = 413) ranged in age from 18 to 79 years (M = 36.39, SD = 13.02). Gender distribution was 42.6% male and 57.4% female. Racial composition was 84.0% White, 6.3% Black, 3.9% Asian, 2.9% Latino, and 2.9% multi-racial.

2.2 Procedure

Participants were recruited from a crowdsourcing website, Mechanical Turk (MTurk). Data collected from this source tend to be more demographically diverse compared to standard undergraduate subject pools (Casler, Bickel, & Hackett, 2013; Paolacci, Chandler, & Ipeirotis, 2010) and furnish reliable and valid results comparable to in-person research (Buhrmester, Kwang, & Gosling, 2011; Paolacci et al., 2010). Participation was restricted to a 90% or higher approval rating on previously completed MTurk tasks to ensure adequate response quality (Peer, Vosgerau, & Acquisti, 2014) and residency in the United States given disparities in drinking patterns across countries (Balogun, Koyanagi, Stickley, Gilmour, & Shibuya, 2014).

Participants completed the web-based study at baseline (Time 1) and at the one-month follow-up (Time 2). Perl scripts for MTurk panel designs permitted longitudinal contact of participants (Berinsky, Huber, & Lenz, 2012). Alcohol expectancies were assessed in Time 1, and drinking behaviors and alcohol myopia in Time 2. The final sample (N = 413) completed measures in both administrations, with 186 that participated in a single round excluded from analyses. An institutional IRB approved the research protocols, and participants electronically provided consent on the first page of the web-based questionnaire.

2.3 Measures

2.3.1 Alcohol Expectancies—The Comprehensive Effects of Alcohol questionnaire (Fromme, Stoot, & Kaplan, 1993) measured the anticipated effects of alcohol intake. The questionnaire was developed by administering a preliminary pool of items and psychometrically refined with exploratory factor analysis. The original study validating the scale exhibited desirable internal consistency, test-retest reliabilities, and construct validities in a college student sample. Instructions asked participants to endorse the expected effects if they were under the influence of alcohol. The 38-item inventory consists of seven subscales: sociability (α = .92; e.g., “I would act sociable”), tension reduction (α = .88; e.g., “I would feel calm”), liquid courage (α = .89; e.g., “I would feel courageous”), sexuality (α = .87; e.g., “I would enjoy sex more”), cognitive and behavioral impairment (α = .88; e.g., “I would be clumsy”), risk and aggression (α = .87; e.g., “I would take risks”), and self-perception (α = .87; e.g., “I would feel moody”). The first four subscales could be categorized as positive expectancy (α = .94) and the last three subscales as negative expectancy (α = .90). Aggregating all the subscales represented overall expectancy (α = .92). Item response options ranged from 1 (*disagree*) to 4 (*agree*).

2.3.2 Alcohol Use—Frequency and quantity of drinking served as indicators of alcohol consumption (Bloomfield, Hope, & Kraus, 2013; Lahaut, Jansen, van de Mheen, & Garretsen, 2003), as applied in previous research (Breslow & Graubard, 2008; Lac & Donaldson, 2017). Instructions inquired about alcohol intake patterns during the past month (30 days). Frequency captured days of drinking (“In the past month, how many days did you drink alcohol?”) and quantity assessed drinks per occasion (“In the past month, how many drinks did you usually have each time you drank?”). Open-ended quantitative responses (α = .60) were entered.

2.3.3 Alcohol Myopia—The Alcohol Myopia Scale (Lac & Berger, 2013) measured myopic outcomes arising from alcohol use. Exploratory and confirmatory factor analysis involving separate adult samples corroborated the three-factor structure in the scale validation study. Reliabilities and discriminant, convergent, concurrent, and incremental validity have been demonstrated in that study. Instructions asked participants to endorse the extent that they encountered effects and experiences when drinking during the past 30 days. The 14-item scale tapped three myopic effects: relief (α = .95; e.g., "I became less stressed"), self-inflation (α = .96; e.g., "I liked myself better"), and excess (α = .94; e.g., "I acted in a more extreme way"). Response anchors ranged from 1 (*never*) to 7 (*always*).

2.4 Analytic Plan

Structural equation models were estimated with the EQS 6.3 software (Bentler & Wu, 2015). Measured variables ranged in skewness from −1.01 to 2.43. Based on guidelines for nonnormally distributed variables (Hoyle, 2012), models were estimated with robust maximum-likelihood (Bentler & Wu, 2015) to adjust fit indices and *p*-values based on the degree of departure from normality (Bentler & Dijkstra, 1985; Satorra & Bentler, 1994).

In all three models, expectancy beliefs were specified to longitudinally predict alcohol use (latent factor indicated by quantity and frequency of drinks) and the three myopia effects of relief, self-inflation, and excess (separate latent factor for each dimension). Furthermore, alcohol use was permitted to explain each of the myopia factors. In Model 1, the overall factor of alcohol expectancy served as the predictor. In Model 2, positive and negative expectancy as separate factors served as the antecedents. In Model 3, the seven specific expectancies simultaneously served as predictors. The trimming of nonsignificant predictive pathways produced parsimonious final models. Following recommendations for interpreting structural equation models (Anderson & Gerbing, 1988), the measurement component (factor loadings) was evaluated before the structural component (predictive relations). All tests were evaluated using a more conservative $p < .01$.

Robust fit indices helped to scrutinize model adequacy. A nonsignificant model chi-square test is desired, but the index is overly sensitive to sample size (Bollen, 1989). The CFI and NNFI (aka TLI) range from 0.00 to 1.00, with a higher value indicating desirable fit (Ullman, 2007; Ullman & Bentler, 2003). The RMSEA is appropriately sensitive in detecting model misspecifications, generates adequate information about model quality, and produces confidence intervals (MacCallum & Austin, 2000). A value below .05 indicates close fit, between .05 and .08 fair fit, between .08 and .10 mediocre fit, and above .10 poor fit (MacCallum, Browne, & Sugawara, 1996). The AIC balances parsimony in number of estimated parameters and goodness of fit, with a lower value signifying a superior model (Bentler & Wu, 2015).

3. Results

3.1 Model 1: Overall Expectancy

The model for overall expectancy to myopia generated acceptable fit indices, $\chi^2 = 919.65$, $df = 220$, $p < .01$, CFI = .91, NNFI = .90, RMSEA = .09 (90% CI: .08 to .09), AIC = 479.65.

Coefficients are presented in Figure 1. The nonsignificant factor loadings for cognitive and behavioral impairment and self-perception signified that these two items insufficiently represented global alcohol expectancy. All other loadings emerged as significant in the model. All factor-to-factor paths attained significance. Specifically, overall expectancy anticipated greater alcohol intake. Furthermore, overall expectancy and alcohol use contributed to higher myopic relief; overall expectancy and alcohol use explained higher myopic self-inflation; and overall expectancy and alcohol use prompted higher myopic excess.

3.2 Model 2: Positive and Negative Expectancy

The model with positive and negative expectancy as separate predictors of use and myopia was estimated, $\chi^2 = 747.60$, $df = 215$, $p < .01$, CFI = .94, NNFI = .92, RMSEA = .08 (90% CI: .07 to .08), AIC = 317.60. Trimming the nonsignificant predictive paths produced a parsimonious model with satisfactory fit indices, $\chi^2 = 750.61$, $df = 218$, $p < .01$, CFI = .94, NNFI = .92, RMSEA = .08 (90% CI: .07 to .08), AIC = 314.61. The robust chi-square difference test (Satorra & Bentler, 2001) revealed that the trimmed model was not significantly degraded compared to the original model, ns.

Figure 2 shows estimates for the final model. All items loadings in the latent factors attained significance. Moreover, only positive expectancy predicted greater alcohol intake. Positive expectancy and alcohol use explained higher myopic relief; positive expectancy and alcohol use explained higher myopic self-inflation; and positive expectancy, negative expectancy, and alcohol use explained higher myopic excess.

3.3 Model 3: Specific Expectancies

The seven specific alcohol expectancies were estimated as antecedents of alcohol use and myopia, $\chi^2 = 515.05$, $df = 182$, $p < .01$, CFI = .96, NNFI = .94, RMSEA = .07 (90% CI: .06 to .07), AIC = 151.05. Omitting the nonsignificant predictive paths rendered a satisfactory model, $\chi^2 = 552.82$, $df = 203$, $p < .01$, CFI = .96, NNFI = .95, RMSEA = .07 (90% CI: .06 to .07), AIC = 146.82. The robust chi-square difference test determined that the final model was not significantly degraded relative to the initial model, ns.

The final model is presented in Figure 3, and correlations involving alcohol expectancies are presented in Table 1. All factor loadings emerged as significant. Furthermore, higher tension reduction, lower cognitive and behavioral impairment, and higher risk and aggression expectancies forecasted greater alcohol use. Tension reduction expectancy, sexuality expectancy, and alcohol use contributed to higher myopic relief. Sexuality expectation and alcohol use anticipated higher myopic self-inflation. Risk and aggression expectancy and alcohol intake explicated higher myopic excess.

3.4 Mediational Tests

The pathways from the expectancy constructs to myopic outcomes appear to be mediated by alcohol use level in the models (Figures 1 to 3). Thus, tests of indirect effects for structural equation models (Bentler & Wu., 2015; Fox, 1985; Sobel, 1987) evaluted the plausibilty of

these mediational processes beyond chance. As presented in Table 2, all indirect effects from expectancies to use to myopia in the final models (Figures 1 to 3) attained significance.

4. Discussion

The study tested pathways involving alcohol expectancies, alcohol use, and alcohol myopia by examining a framework that integrated constructs from alcohol expectancy theory and alcohol myopia theory. Applying the "dual-process model of the alcohol-behavior link" (Moss & Albery, 2009), expectancies were posited to serve as perceptual mental filters that guide and foster alcohol consumption levels (Dunne & Katz, 2015; Morris & Albery, 2001) and the type of myopia experienced (Steele & Josephs, 1990). Belief expectations serving as antecedents of myopia could be understood through the cognitive process of attentional filtering, in which people see or experience what they believe, despite the intrinsic psychoactive properties of the substance (Noel, Heaton, & Brown, 2013).

In the model involving overall alcohol expectancy, findings show that alcohol use mediated the relations from expectancy to all three myopic effects. Specifically, higher general expectancy uniquely contributed to greater use and increased relief, self-inflation, and excess. This model supports alcohol myopia theory's individual differences proposition that preconceived drinking beliefs in conjunction with alcohol use can modify the type of outcomes experienced (Morris & Albery, 2001). A noteworthy finding is that alcohol use yielded a relatively weaker unique predictive path ($\beta = .27$) compared to overall ($\beta = .43$) expectancy in explaining myopic self-inflation, with the major implication that self-fulfilling prophecies about alcohol matter more than ingestion level in the manifestation of this ego-based myopic outcome.

In the model concerning positive versus negative expectancy, results show that positive but not negative expectancy anticipated greater alcohol intake, consistent with previous cross-sectional and longitudinal research (Jester, Wong, Cranford, Buu, Fitzgerald, & Zucker, 2015; Monk & Heim, 2013; Wardell & Read, 2013; Leigh, & Stacy, 1993). Positive compared to negative expectations tend to be a stronger predictor of alcohol intake because they are encoded and reinforced more immediately in memory following consumption, with the enhancement in retrieval more likely to compel later usage (Leigh & Stacy, 1993; Jones, Corbin, & Fromme, 2001). Prospective research involving a heavy drinking college sample instead found that greater levels of both positive and negative expectancy uniquely anticipated high-intensity consumption (Patrick, Cronce, Fairlie, Atkins, & Lee, 2016). A logical explanation is that problematic drinkers are less likely to be dissuaded from the habit of ingesting alcohol despite negative expectations formed from prior negative alcohol consequences (Ham & Hope, 2003; Patrick, Cronce, Fairlie, Atkins, & Lee). Furthermore, the current investigation reveals that, even after controlling for alcohol use, positive expectancy directly predicted higher myopic relief, self-inflation, and excess, whereas negative expectancy only directly forecasted higher myopic excess. The implication is that espousing the dichotomy of both higher positive and negative expectations should be necessary to invoke myopic excessiveness during drinking episodes. In the model incorporating all seven specific expectancies, higher tension reduction, higher risk and aggression, and lower cognitive and behavioral impairment expectancies uniquely

anticipated greater alcohol use, revealing that these specific self-fulfilling beliefs are the strongest risk antecedents of alcohol ingestion. The cognitive and behavioral impairment expectancy relation to avoidance of alcohol use is congruent with prior literature (Cludius, Stevens, Bantin, Gerlach, & Herman, 2013; Jones, Corbin, & Fromme, 2001). Moreover, the tension reduction expectation directly preceded alcohol use and myopic relief. The utilitarian purpose of managing stressors by reaching for the bottle to induce a state of relaxation and avoid distressing emotions is well documented (Baker et al., 2004; Gorka, Lieberman, Phan, & Shankman, 2016).

Furthermore, sexual expectancy and alcohol use directly predicted myopic relief and self-inflation. The sexuality expectancy to myopic self-inflation connection is addressed in research indicating that people drink alcohol to heighten personal appraisals of sexual arousal and engage in riskier sexual behaviors (Cooper, O'Hara, Martins, 2016; Sheldon, Carey, Cunningham, Johnson, & Carey, 2016). Sexual expectancy could serve as a compelling or impelling cue in producing either desirable or undesirable sexual outcomes (Morris & Albery, 2001). Although many expect alcohol to enhance sexual experiences, self-reported studies conclude that sexual encounters were less desirable for alcohol consumers compared to those who were sober during sex (Cooper, O'Hara, Martins, 2016). Risk and aggression expectation directly forecasted greater alcohol use and higher myopic excess. This same model found that sociability, liquid courage, and self-perception expectancies did not longitudinally precede alcohol use and myopia after controlling for other specific expectancies. Although a previous investigation obtained a positive association of sociability expectancy and alcohol use, that cross-sectional design did not control for the other specific expectations (Dunne & Katz, 2015).

The present research offers insights for alcohol programs and campaigns that seek to curtail alcohol use and adverse consequences via modification of people's alcohol expectations (Hittner, 1995; Fromme, et al., 1993; Jones, et al., 2001). The longitudinal pathways isolated in the current research could be applied to prevention efforts. For example, tension reduction and risk and aggression expectations predicted increased, but cognitive and behavioral impairment expectancy anticipated decreased, alcohol consumption. Although the tension reduction, sexuality, and risk and aggression expectancies each predicted myopia outcomes, prevention resources should be optimally focused on targeting the risk and aggression expectation to myopic excess connection. Myopic excessiveness has the most adverse societal impact and is a precursor to the disinhibition of socially unacceptable impulses such physical aggression and violence (Duke, Giancola, Morris, Holt, & Gunn, 2011; Steele & Josephs, 1990).

The testing of processes across two measurement intervals afforded examining the temporal precedence of events, but causal conclusions should be avoided. The administration of self-report measures might also present a limitation. Future research should test the connections of expectancies, usage, and myopia using shorter and longer temporal lags to corroborate the current findings. Results of this study based on a general adult sample should be extended and cross-validated with at-risk cohorts. Adolescents may evidence stronger relations from the expectancy predictors to myopic self-inflation or excess due to their higher risk for alcohol problems, whereas older adults may be more susceptible to experiencing myopic

relief. Given gender discrepancies in alcohol use and problems (Johnston, O'Malley, Bachman, & Schulenberg, 2012), some risk pathways identified in our research may be stronger for males than females. This is implicated by research indicating that sexual expectancies correlated with increased alcohol consumption for males but not females (Kidorf, Sherman, Johnson, and Bigelow, 1995). Moreover, individual differences such as personality traits (Costa & McCrae, 1995), could potentially serve as statistical moderators of pathways identified in the current research. That is, dispositional traits might represent internal cues that increase the vulnerability to some types of myopia experienced upon drinking (Davis, Hendershot, George, Norris, & Heiman, 2007), so moderator tests are warranted in future investigations.

5. Conclusions

Overall, findings caution that researchers should consider the particular approach to compute the expectancy construct, as different findings and implications might emerge. For example, in the positive versus negative expectancy model, the negative expectancy factor only explained excess but failed to predict use. Closer scrutiny of the model that comprehensively tested the specific expectancies revealed that the negative expectancy of risk and aggression significantly explained use and myopic excess. The predictive model involving the specific expectancies generated nuanced insights and challenged the simplistic notion that all types of positive and negative expectancies facilitate alcohol consequences. The study showed that expectancies contributed to myopia over and beyond intake levels, but results and implications varied depending on the predictive model interpreted.

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Highlights

- General alcohol expectancy longitudinally predicted alcohol use and all 3 myopic effects
- Positive expectancy predicted alcohol use, and myopic relief, self-inflation, and excess
- Negative expectancy predicted only myopic excess but not use or other myopic effects
- Among the 7 expectancies, 2 predicted relief, 1 predicted self-inflation, and 1 predicted excess
- Alcohol myopic experiences are a function of self-fulfilling alcohol prophecies and drinking levels

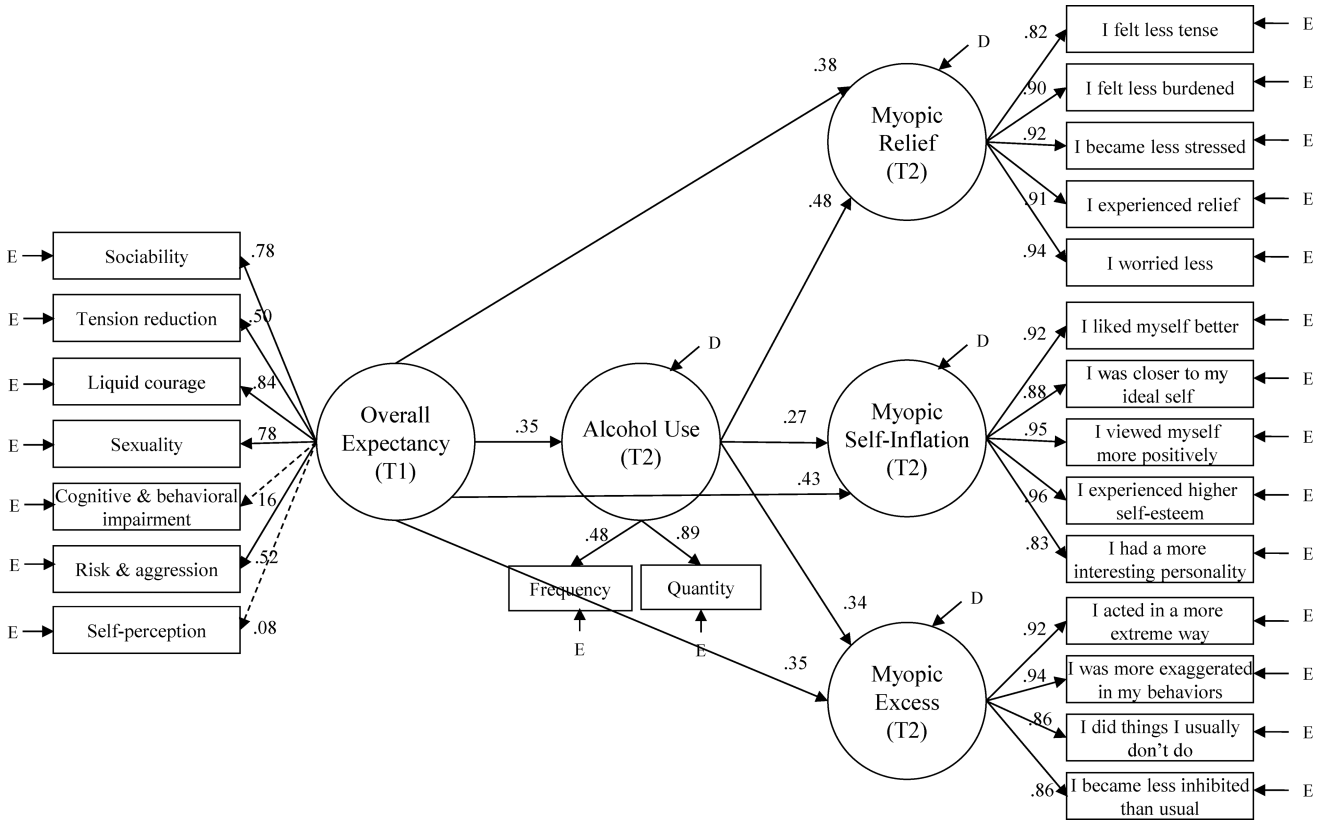

Figure 1.

Structural equation model of overall alcohol expectancy to use to myopia. Standardized coefficients next to bolded paths are significant at $p < .01$. For clarity, estimated but not displayed are disturbance correlations between relief and self-inflation ($r = .53$, $p < .01$), relief and excess ($r = .39$, $p < .01$), and self-inflation and excess ($r = .53$, $p < .01$). Total R^2 explained for alcohol use is .12, for relief is .50, for self-inflation is .34, and for excess is .32.

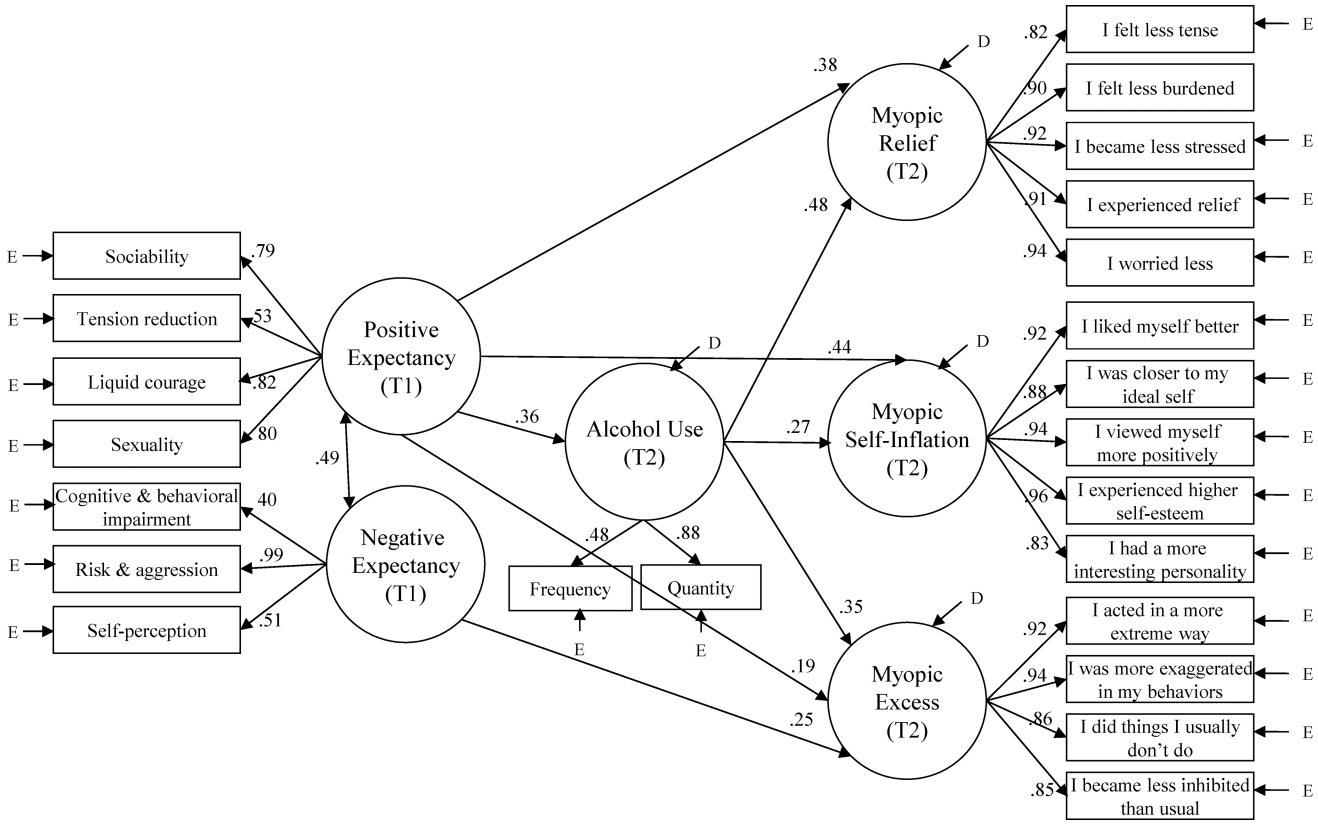

Figure 2.

Structural equation model positive and negative alcohol expectancy to use to myopia. Standardized coefficients next to bolded paths are significant at $p < .01$. For clarity, estimated but not displayed are disturbance correlations between relief and self-inflation ($r = .53$, $p < .01$), relief and excess ($r = .42$, $p < .01$), and self-inflation and excess ($r = .55$, $p < .01$). Total R^2 explained for alcohol use is .13, for relief is .51, for self-inflation is .34, and for excess is .35.

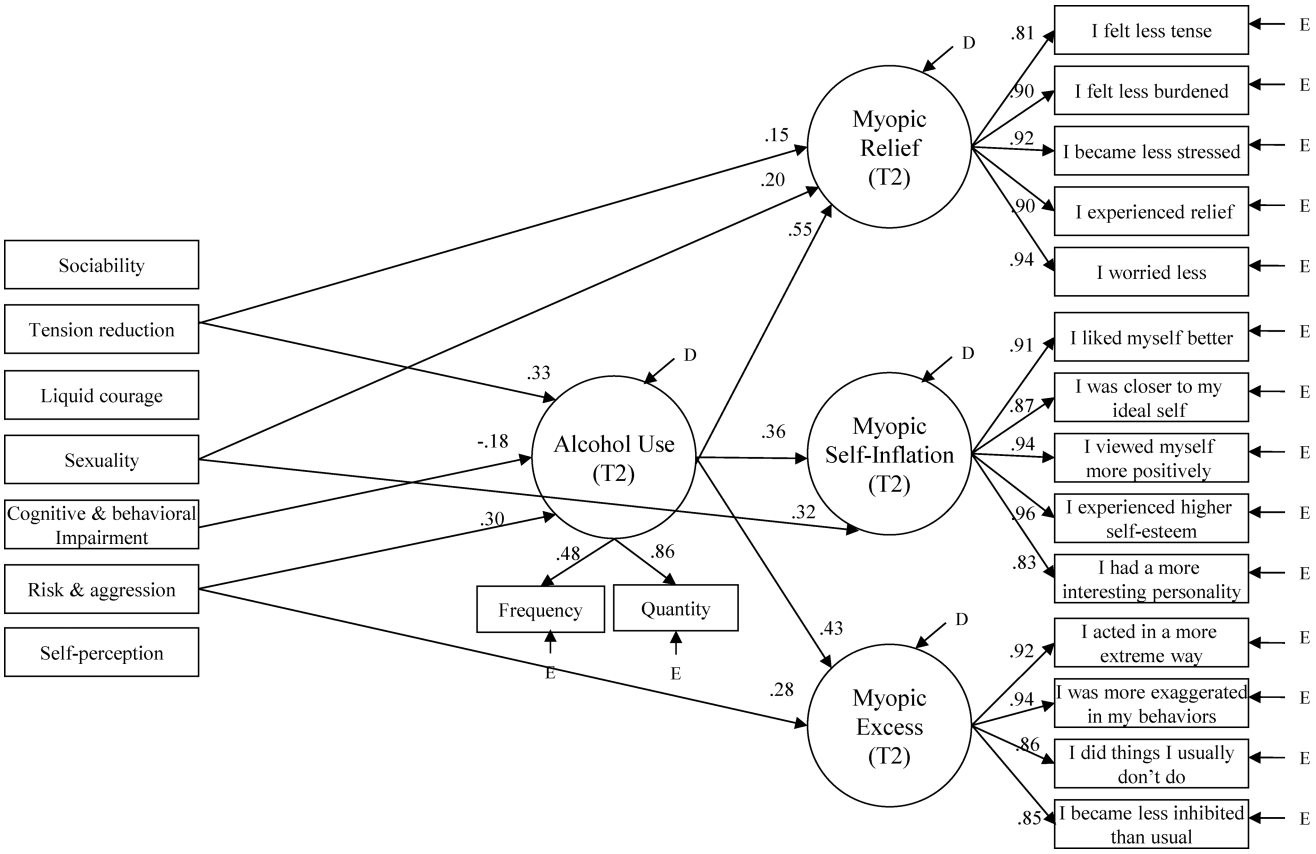

Figure 3.

Structural equation model of specific alcohol expectancies to use to myopia. Standardized coefficients next to bolded paths are significant at $p < .01$. For clarity, estimated but not displayed are disturbance correlations between relief and self-inflation ($r = .55$, $p < .01$), relief and excess ($r = .45$, $p < .01$), and self-inflation and excess ($r = .57$, $p < .01$). Correlations for the expectancy subscales in the model are displayed in Table 1. Total R^2 explained for alcohol use is .19, for relief is .50, for self-inflation is .29, and for excess is .32.

Table 1

Correlations of Specific Alcohol Expectancies for the Structural Equation Model in Figure 3

Specific Expectancy	1	2	3	4	5	6	7
1 Sociability							
2 Tension reduction	.53*						
3 Liquid courage	.66*	.36*					
4 Sexuality	.61*	.42*	.65*				
5 Cognitive & behavioral impairment	.13	−.05	.19	.00			
6 Risk & aggression	.32*	−.03	.54*	.41*	.40*		
7 Self-perception	−.07	−.23*	.14	.03	.42*	.51*	

*$p < .01$

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Table 2

Tests of Mediational (Indirect) Effects from Alcohol Expectancies to Use to Myopia in Figures 1 to 3

Figure	Expectancy Predictor	Myopic Outcome	Standardized Indirect Effect	*Z* test
1	Overall	Relief	.17	4.41*
1	Overall	Self-inflation	.10	3.64*
1	Overall	Excess	.12	3.93*
2	Positive	Relief	.18	4.49*
2	Positive	Self-inflation	.10	3.63*
2	Positive	Excess	.13	3.98*
3	Tension reduction	Relief	.18	5.04*
3	Cognitive & behavioral impairment	Relief	−.10	−3.01*
3	Risk & aggression	Relief	.16	4.54*
3	Tension reduction	Self-inflation	.12	4.50*
3	Cognitive & behavioral impairment	Self-inflation	−.07	−2.87*
3	Risk & aggression	Self-inflation	.11	4.08*
3	Tension reduction	Excess	.14	4.82*
3	Cognitive & behavioral impairment	Excess	−.08	−2.94*
3	Risk & aggression	Excess	.13	4.31*

* $p < .01$