



# Alcohol expectancies and drinking motives in college drinkers: Mediating effects on the relationship between generalized anxiety and heavy drinking in negative-affect situations

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## ABSTRACT

The current study tested the hypotheses that drinking to cope motives and alcohol expectancies of tension- and worry-reduction mediate the relationship between generalized anxiety (GA) and negative-affect heavy drinking in a cross-sectional sample of 782 college drinkers. As expected, structural equation modeling results indicated that alcohol expectancies mediated the relationship between GA and drinking to cope motives, and drinking to cope motives mediated the relationship between alcohol expectancies and heavy drinking in negative-affect situations. Unexpectedly, drinking to cope motives also mediated the relationship between GA and negative-affect heavy drinking. The model predicting negative-affect heavy drinking was tested in subsamples of 413 hazardous and 366 nonhazardous drinkers and did not differ structurally; however, omnibus measurement of model indirect effects was stronger for hazardous than nonhazardous drinkers. Finally, the results of a similar post-hoc model to predict general problem drinking support the specificity of the interrelationships among GA, cognitive mediators and to negative-affect drinking. These results inform cognitive-behavioral theories and interventions for comorbid GA and alcohol use problems.

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## 1. Introduction

Generalized anxiety disorder (GAD) is characterized cognitively by excessive and uncontrollable worry and physiologically by anxiety symptoms such as muscle tension (American Psychiatric Association, 2000). Conceptually, individuals may drink to potentially reduce these troublesome symptoms, and GAD has been found to co-occur frequently with alcohol use disorders (AUD) among alcoholics in treatment (Kushner, Sher, & Beitman, 1990). However, early GAD-AUD research with inpatient alcoholics showed mixed results of GAD elevating the risk of AUD development (Kushner et al., 1990; Stein, 2001). Because alcohol withdrawal symptoms may mimic GAD symptoms, distinguishing these alcohol and anxiety symptoms is difficult in severely alcohol-dependent individuals undergoing detoxification. One approach to clarifying the relationship between generalized anxiety (GA) and alcohol use is to examine this relationship in a nonclinical population, with individuals who report a wide range of GA severity and alcohol use problems and who are unlikely to experience alcohol withdrawal that would mimic GA symptoms at the time of assessment.

An examination of the cognitive mechanisms that may mediate the relationship between generalized anxiety and alcohol use in negative-affect situations can inform the theoretical conceptualization of the

GAD-AUD comorbidity. The existing literature suggests that alcohol expectancies (beliefs on projected consequences of drinking alcohol) and drinking motives (reasons for drinking alcohol) are good candidates for such an investigation on cognitive mediators. Further, because approximately 40–60% of undergraduates are hazardous drinkers, individuals whose drinking patterns include both heavy drinking episodes and negative alcohol consequences (Kypri, Saunders, & Gallagher, 2003; Schmitt, 2003; Tran, Anthenelli, Smith, Corcoran, & Rofey, 2004), an investigation of cognitive mechanisms in a college sample is important for reducing hazardous drinking on college campuses.

### 1.1. Comorbidity of generalized anxiety disorder and alcohol use disorders

Among individuals with GAD, the twelve-month prevalence of co-occurring AUD is 15%; further, the odds of having GAD among individuals with alcohol dependence is three times more likely than the odds of having GAD among individuals without alcohol dependence (Grant et al., 2004). Consistent with findings indicating that anxiety problems generally begin before alcohol problems (Kushner et al., 1990), a recent study found that in 64% of comorbid cases, GAD preceded AUD (Brown, Campbell, Lehman, Grisham, & Mancill, 2001). Further, comorbid GAD-AUD diagnoses are associated with more significant impairment than either disorder alone (Burns & Teesson, 2002; Stein, 2001).

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### 1.2. Negative-affect heavy drinking

Negative affect, including anxiety, sadness, anger and other negative emotional states (Watson, Clark, & Tellegen, 1988), has strong motivational consequences that trigger behavioral and cognitive efforts directed at managing, lessening, or eliminating the source of these aversive affective states (Carver & Scheier, 1990; Srull & Wyer, 1986). In an examination of substance-abusing women, Stewart, Samoluk, Conrod, Pihl, and Dongier (2000) found that frequent heavy drinking is often reported in negative-affect situations. In experimental studies manipulating mood states, induction of negative affect has been found to increase the endorsement of positive alcohol expectancies, which may lead an individual to consider alcohol use as an appealing coping strategy (Goldsmith, 2008; Hufford, 2001). Further, individuals with high GA have been found to report greater levels of self-reported anxiety symptoms in reaction to an experimental negative mood induction than those with low GA (Goldsmith, 2008; Mennin, Heimberg, Turk, & Fresco, 2005), suggesting that an examination of GA and negative affect situations may be fruitful. Thus, individuals who experience negative affect in the form of GA may hold alcohol expectancies for reducing their excessive worry and tension and then drink heavily to cope when in negative-affect situations.

### 1.3. Alcohol expectancies

An examination of drinking behavior in individuals with GA should logically examine tension- and worry-reduction alcohol expectancies that are directly related to beliefs that alcohol will reduce both physiological (e.g., muscle tension, pain, sleep difficulties) and cognitive (e.g., worries regarding health, safety, school/work) features of GA, respectively. Tension-reduction alcohol expectancies have been shown to be the most powerful predictor of hazardous drinking in college students, relative to six other alcohol expectancies (Brown, 1985). Further, hazardous drinkers have been found to endorse tension-reduction alcohol expectancies more than nonhazardous drinkers (Brown, 1985; Schmitt, 2003). Thus, drinkers who hold tension-reduction alcohol expectancies may be at risk for early problematic drinking, and these expectancies may play a factor in the transition from nonproblematic to abusive drinking behavior patterns (Brown, 1985). Similar to tension-reduction alcohol expectancies, worry-reduction alcohol expectancies have been associated with an increased frequency of negative-affect heavy drinking in college students (Tran, Smith, & Angkaw, 2005).

Outcome expectancies, or the expected consequences of a behavior (e.g., alcohol expectancies), are an essential determinant of the possibility that an individual will engage in the purposive behavior (Weiner, 1989). According to this motivational theory, individuals will drink to cope only to the extent that they hold expectancies that alcohol will reduce their negative affect (Cooper, Frone, Russell, & Mudar, 1995; Cooper, Russell, & George, 1988). Research has supported the notion that alcohol expectancies causally precede the motivated use of alcohol, serving as direct predictors of drinking motives (Cooper et al., 1995; Leigh, 1990).

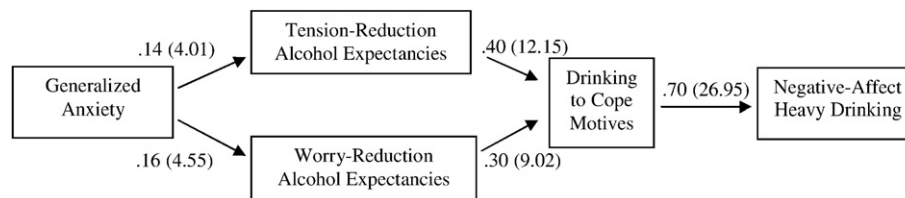
### 1.4. Drinking to cope motives

Drinking motives refer to the extent to which an individual drinks to achieve a desired effect and are considered to be more proximal and diagnostic than alcohol expectancies (Cooper, 1994). An important motive underlying alcohol use is the desire to control affective states through drinking (Cooper et al., 1995). Relative to other drinking motives, individuals who drink to cope with negative affect hold more solitary drinking practices and report significantly more drinking problems (Cooper et al., 1995; Cooper, Russell, Skinner, & Windle, 1992). Conceptualized as a reactive process, drinking to cope motives is theorized to be predicted by negative affect (Cooper et al., 1995). Because negative emotions are more strongly motivating than positive emotions (Carver & Scheier, 1990; Srull & Wyer, 1986), individuals who are motivated to drink to cope with negative affect may become psychologically dependent, requiring alcohol to cope with the negative emotions generated by everyday life (Cooper et al., 1995).

Drinking to cope motives have been associated with the presence of a formal DSM-IV diagnosis of alcohol use disorder and may have an etiological role in the development of AUD (Carpenter & Hasin, 1998a, b, 1999; Noordsy et al., 1991). Motives of drinking to cope with negative affect have been found to occur more often in drinkers who reported experiencing negative alcohol consequences and having an alcohol treatment history (Carey & Carey, 1995; Connors, O'Farrell, & Cui, 1990). Several studies have found direct effects of drinking to cope motives on drinking problems after controlling for participants' levels of alcohol consumption (Cooper et al., 1988; Cooper et al., 1992; Cooper, 1994; Polich & Orvis, 1979). Further, drinking to cope motives has been found to be common among students in college (Park & Levenson, 2002), which is a time when many individuals begin forming their possibly problematic drinking habits.

## 2. The current study

The existing empirical data from epidemiological studies show that GA is associated with heavy drinking. To date, however, research explicitly investigating the mechanisms linking these variables has been limited. Prior findings may illuminate the cognitive factors underlying the connection between GA and alcohol use, based on research showing that negative affect is related to both positive alcohol expectancies and drinking to cope motives. Moreover, tension- and worry-reduction alcohol expectancies are related to heavy drinking in negative affect situations. Based on these findings, we proposed a model to explain the relationship between GA and negative-affect drinking. As Fig. 1 shows, alcohol expectancies and drinking motives are hypothesized as cognitive mechanisms that sequentially lead to negative-affect heavy drinking in individuals with elevated GA. An individual with GA may hold tension- and worry-reduction alcohol expectancies for lessening the physiological and cognitive manifestations of GA, respectively. Holding these expectancies for reducing their GA symptoms, the individual with GA may then feel motivated to drink to cope with their negative affect. Finally, these drinking motives may lead to heavy drinking in negative-affect



**Fig. 1.** Hypothesized mediation model of observed relations among variables. Error terms for tension-reduction and worry-reduction alcohol expectancies were allowed to covary. The numerical values represent standardized path coefficients (i.e., beta weights) with the z-score in parentheses. All paths were significant,  $p < .05$ .

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