



# Normative perceptions and past-year consequences as predictors of subjective evaluations and weekly drinking behavior



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## HIGHLIGHTS

- Examined learning-based predictors of drinking behavior and consequence evaluations
- Consequence norms were positively associated with drinking behavior and evaluations.
- Past consequences were positively associated with drinking behavior and evaluations.
- Evaluations predicted drinking behavior after controlling learning-based predictors.

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## ABSTRACT

Problem drinking during the college years continues to be an important area of study. Subjective evaluations of consequences have recently been demonstrated to predict future drinking behavior; however, what predicts those evaluations is yet unknown. Social Learning Theory (SLT) provides a guiding framework in this study. Primary aims are to investigate whether individual differences in past experience with alcohol consequences and normative perceptions of alcohol consequences predict subjective evaluations (i.e., the extent to which consequences are perceived as negative, aversive, or severe) and weekly drinking behavior. We also test whether evaluations mediate the influence of past consequences and norms on weekly drinking behavior. Following a baseline assessment, participants ( $N = 96$  regularly drinking college students, 52% female) completed ten weekly web-based surveys on previous week alcohol use, consequences, and subjective evaluations of those consequences. A series of hierarchical linear models were used to test hypotheses. Most mediational pathways were not supported – weekly level evaluations do not appear to fully explain the effect of norms or past experience on weekly level drinking behavior. However, results demonstrated that normative perceptions of and past experience with consequences were associated with both weekly drinking behavior and subjective evaluations, and evaluations remained significant predictors of alcohol use behavior after accounting for these important between-person influences. Findings support the importance placed by SLT on cognition in drinking behavior, and suggest that norms for consequences and subjective evaluations may be appropriate targets of intervention in college students.

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## 1. Introduction

College students have been identified as a group at risk for heavy alcohol use and associated problems (e.g., Hingson, Zha, & Weitzman, 2009; SAMHSA, 2012). While for some students, heavy drinking persists and even escalates beyond the college years, for others, heavy drinking resolves naturalistically over time (Littlefield, Sher, & Wood,

2010; O'Malley, 2004/2005). Elucidation of predictors of the maintenance of versus naturalistic change in alcohol misuse can provide keys to improving interventions, by isolating appropriate targets.

The experience of negative consequences from drinking is one important catalyst for motivation to change (e.g., Barnett, Goldstein, Murphy, Colby, & Monti, 2006; Barnett et al., 2003; Morgan, White, & Mun, 2008; Read, Merrill, Kahler, & Strong, 2007). Yet, it may not be the consequences themselves but rather the subjective evaluation of those consequences (i.e., the extent to which they are perceived as negative, aversive, and/or severe) that leads to behavioral change. In recent years, subjective evaluations have been found to be associated with drinking behavior (Gaher & Simons, 2007; Mallett, Bachrach, & Turrisi, 2008; Merrill, Read, & Barnett, 2013; Patrick & Maggs, 2011). However, little is known about what predicts those subjective

*Abbreviations:* SLT, social learning theory; HLM, hierarchical linear modeling; ICC, intraclass correlation; IV, independent variable; DV, dependent variable.

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evaluations, or whether they mediate the impact of individual difference variables on drinking behavior.

Social Learning Theory (SLT, Bandura, 1969, 1986; Maisto, Carey, & Bradizza, 1999) provides a unifying framework that guides the present study. SLT suggests that alcohol use is a behavior learned both through personal experience and vicariously (through interactions with the social environment), while also highlighting the mechanistic role of cognitions, or interpretations of these learning experiences, in the determination of behavioral outcomes. The goal of the present study was to test SLT-based direct effects of individual-level difference variables related to personal learning (past experience with consequences) and vicarious learning (normative perceptions of consequences) on alcohol use behavior. We also aimed to test indirect effects of these two variables (by way of influence on one's more proximal cognitive subjective evaluations of consequences) on alcohol use behavior.

### 1.1. Learning-based predictors of drinking behavior

#### 1.1.1. Normative perceptions of consequences

SLT suggests that normative perceptions of drinking behavior represent one socio-environmental factor that results in the vicarious learning of one's own drinking behavior (Maisto et al., 1999). Likewise, the theory of normative conduct (Cialdini, Reno, & Kallgren, 1990) posits that an individual's behavior is influenced by perceptions about the behavior of others. Descriptive norms refer to how typical or common a person believes drinking behavior is in his or her peer group (Larimer, Turner, Mallett, & Geisner, 2004). Though much of the extant literature focuses on descriptive norms for alcohol use, norms for alcohol consequences also may guide behavior. Perceptions of alcohol consequences as normative may influence drinking and interfere with naturalistic change by providing a justification for one's own drinking patterns, or by serving as a model of normative alcohol use behavior to which students attempt to conform (Caldwell, 2002). Few studies have examined whether higher normative perceptions of consequences are associated with higher levels of one's own alcohol use and consequences (e.g., Lee, Geisner, Patrick, & Neighbors, 2010; Lewis, 2005), and no studies to our knowledge have examined the potential mechanisms of this association.

#### 1.1.2. Prior experience with alcohol consequences

SLT (Maisto et al., 1999), as well as learning theory more broadly (e.g., Vogel-Sprott & Fillmore, 1999) posit a role for personal learning of alcohol information in the prediction of alcohol use behavior. Current drinking behavior may be a result of either reinforcement or punishment that has occurred through previous experience with alcohol consequences. While some research suggests that previous negative consequences should prompt an individual to change (Apodaca & Schermer, 2001; Vik, Culbertson, & Sellers, 2000), other research suggests that those with more drinking experience may be less likely to change or to express interest in changing (Barnett et al., 2002; Barnett et al., 2003; Blume, Schmaling, & Marlatt, 2006; Lewis, 2005; McCarthy, Pedersen, & Leuty, 2005; Read, Wardell, & Bachrach, 2012; Read et al., 2007; Thombs & Briddick, 2000). Yet again, mechanisms underlying this effect are left untested.

### 1.2. Proximal predictors of drinking behavior: subjective evaluations of alcohol consequences

Cognitive appraisal of alcohol-related consequences, rather than the consequences themselves, may be an active mechanism of change. Subjective evaluation of consequences vary both between- and within-individuals (Mallett et al., 2008; Merrill et al., 2013; Patrick & Maggs, 2011), and have been shown to be associated with readiness to change (Barnett et al., 2002, 2003, 2006; Park, 2004; Ramsey et al., 2000) and retrospective reports of drinking (Gaher & Simons, 2007; Mallett et al., 2008). More recent studies have examined prospective associations

between subjective evaluations and drinking behavior, demonstrating that personal evaluation of consequences predict alcohol use (Lee, Geisner, et al., 2010) and consequences (Patrick & Maggs, 2011) over time. Recently, Merrill et al. (2013) demonstrated that experiencing a consequence that was subjectively worse than other consequences experienced previously by that same individual was associated with decreases in drinking the next week. While evidence is building that evaluations of consequences predict short-term changes in drinking behavior, questions regarding the individual difference factors that may predict more negative evaluations, and whether evaluations may mediate effects of such individual differences on drinking behavior, are left unanswered.

### 1.3. Influences of learning based predictors on evaluations

#### 1.3.1. Normative perceptions of consequences

Individual differences in normative perceptions may be one factor that influences subjective evaluations. An individual who perceives that alcohol consequences are uncommon among friends may be more likely to evaluate a recently experienced consequence of his or her own as severe, and may in turn be more likely to change his/her drinking behavior. Zamboanga, Schwartz, Ham, Jarvis, and Olthuis (2009) demonstrated in a sample of adolescents that higher norms for alcohol use were associated with less negative evaluations of alcohol's effects. In addition, Lee, Geisner, et al. (2010) reported a bivariate correlation indicating that higher perceived frequency of consequences in the typical student was associated with less negative evaluations of consequences. Norms may interfere with change in drinking behavior indirectly, such that believing consequences are less normative may be associated with viewing personal consequences more negatively, which in turn may result in decreased alcohol use behavior. This has yet to be tested.

#### 1.3.2. Past experience with consequences

Like norms, prior experience with alcohol also may influence drinking behavior indirectly, through subjective evaluations. While the literature is mixed, with one recent study demonstrating that more experience with consequences was associated with rating consequences of alcohol as more bothersome (White & Ray, 2013), some research suggests that more past experience with drinking behavior is associated with viewing consequences as less bothersome or important (Barnett et al., 2006; Patrick & Maggs, 2008). A student who has little experience with consequences, when encountering consequences, may perceive them more negatively, be more affected by them, and be highly motivated to avoid further consequences (Barnett et al., 2006). We might expect to see reductions in such a student's subsequent drinking behavior.

### 1.4. The present study

According to SLT, both vicarious and personal learning are important, and cognitive factors are the putative mechanism involved in associations between more distal factors and behavioral outcomes. While normative perceptions of and prior experience with consequences may affect students' future drinking behavior across time, both theory and research support that these individual difference variables may also influence subjective evaluations of consequences. Thus, their effects on drinking behavior may be mediated by such evaluations. The present study extends previous prospective research on subjective evaluations (Merrill et al., 2013; Patrick & Maggs, 2011) in several ways. First, we examine two potential learning-based, between-person predictors (i.e., consequence norms, past experience) of both drinking behavior (alcohol use, consequences) and subjective evaluations. We also test multilevel mediational pathways from these between-person predictors, to weekly within-person associations between subjective evaluations and alcohol use behavior. In addition, whereas Merrill

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