Do alcohol expectancies become intoxicated outcomes? A test of social-learning theory in a naturalistic bar setting

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Abstract

According to social-learning theory, alcohol outcome expectancies (AOEs) are important motivators of drinking behavior that are reinforced, in part, as a result of one's direct experience with alcohol's intoxicating effects. To date, limited research has been conducted in naturalistic bar settings to examine the congruency between AOEs held prior to drinking and individuals' subjective perceptions of post-drinking outcomes. The present study was designed to fill this void. Fifty regular bar patrons (30 males and 20 females) participated. Prior to the initiation of the drinking episode, expected alcohol effects and associated valences were assessed using the Comprehensive Effects of Alcohol (CEOA) questionnaire [Fromme, Stroot, and Kaplan, (1993) 19]. At the conclusion of the drinking episode, all individuals completed the CEOA that was modified in order to assess their subjective alcohol-related outcomes. Overall, while individuals' intoxicated outcomes generally mirrored their pre-drinking AOEs, a lack of congruency was observed with respect to alcohol-related risk and aggression, such that participants reported feeling less aggressive and more disinclined to engage in risky behavior than they had expected as a result of consuming alcohol. As well, two presumably negative (i.e., behavioral impairment and self-perception) and one positive (i.e., liquid courage) alcohol-related outcomes were rated more favorably at the end of the drinking episode. Finally, a main effect for gender was found for specific AOEs. The implications of these findings for social-learning explanations of drinking behavior are discussed.
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1. Introduction

According to social-learning theory, drinking is a volitional, goal-directed behavior that lies along a continuum, ranging from abstinence to alcohol abuse. As such, the initiation, maintenance, and development of differential drinking patterns is assumed to be governed by similar learning principles (Abrams & Niaura, 1987; Bandura, 1969; Jones, Corbin, & Fromme, 2001; Maisto, Carey, & Bradizza, 1999; Marlatt & Gordon, 1985). Within this theoretical framework, individuals' expectations about the behavioral, affective, and cognitive effects of alcohol (alcohol outcome expectancies, AOEs) are considered to be critical determinants of differential consumption patterns. That is, as a result of indirect (i.e., modeling behaviors of parents and peers, alcohol use depicted in the media, etc.) and direct drinking experiences, individuals are thought to acquire specific AOEs that proximally influence behavioral decision-making concerning the use of alcohol.

Considerable evidence has accumulated that social-learning theory is a valid theoretical model for understanding drinking behavior. Researchers have found, for example, that AOEs are formed prior to individuals having consumed alcohol (e.g., see Christiansen, Goldman, & Inn, 1982; Dunn & Goldman, 1996; Miller, Smith, & Goldman, 1990), but with increasing age and intoxicating experiences, AOEs become more crystallized and refined (Dunn & Goldman, 1996; Rather & Goldman, 1994; Rather, Goldman, Roehrich, & Brannick, 1992). Cross-sectional and longitudinal studies have also consistently demonstrated that AOEs are reliable predictors of general consumption patterns among different age groups that lie at varying points along the drinking continuum (for recent reviews, see Goldman, Del Boca, & Darkes, 1999; Jones et al., 2001).

In keeping with the principle of reciprocal determinism (Bandura, 1969), it is additionally assumed that one's direct experience with alcohol, in part, reinforces AOEs, which, in turn, predict future drinking behavior (Maisto et al., 1999). To date, very few investigations have examined this hypothesis, and those studies that have been conducted have yielded equivocal findings. Specifically, evidence in support of the hypothesized reciprocal relationship between AOEs and *general* drinking patterns has been found among adolescents (Smith, Goldman, Greenbaum, & Christiansen, 1995) and college students (Sher, Wood, Wood, & Raskin, 1996) across 1-year assessment periods, but equivocal results have been obtained when longer time intervals have been employed (Sher et al., 1996; Stacy, Newcomb, & Bentler, 1991). To the extent that individuals are motivated to drink in order to realize their alcohol-related expectations and direct experience with alcohol's intoxicating effects presumably reinforce their existing beliefs about alcohol, it can be additionally hypothesized that congruency should exist between individuals' pre-drinking AOEs and intoxicated outcomes that result from an acute drinking episode. Surprisingly, however, empirical work concerning this hypothesis has been extremely limited. By examining individuals' pre-drinking AOEs and the alcohol-related affective, cognitive, and behavioral outcomes they experience in a naturalistic bar setting, the present study was designed to address this largely neglected area.

Conceptualizing AOEs as an individual difference variable that could potentially influence post-consumption subjective experiences, Sher (1985) investigated whether AOEs, the pharmacological effects of alcohol, and social influences exerted an impact on individuals'

alcohol-related outcomes. In this study, the pharmacological effects of alcohol (alcohol vs. placebo) and social drinking context (solitary vs. group consumption) were manipulated. Prior to the experimental phase, participants were categorized into high and low expectancy groups based on a median split that was performed on scores obtained from the Global Positive Transformation subscale of the Alcohol Expectancy Questionnaire (AEQ; Brown, Goldman, Inn, & Anderson, 1980). Questionnaires designed to assess mood and physical sensations were administered prior to and at the end of the drinking period, as well as at 30-minutes intervals during a 2-hour post-consumption observation period. Analyses conducted on post-drinking mood and physical sensation change scores revealed a complex pattern of results, whereby AOEs, the pharmacological effects of alcohol, and social setting exerted interactive effects on participants' post-drinking subjective experiences. These effects were, however, dependent on the specific affective and physical sensation examined, as well as the time at which post-consumption outcomes were assessed. Overall, Sher (1985) concluded that, while AOEs influenced participants' post-drinking affective states relatively early in the post-consumption observation period, their impact on participants' subjective intoxicated experiences "appeared to be short-lived" (p. 145).

Fromme and Dunn (1992) also investigated whether pre-existing AOEs influenced male college students' post-drinking subjective perceptions. In this study, moderate–heavy drinking, male college students were randomly assigned to one of eight experimental conditions in which social context (friendly vs. unfriendly social interaction), physical environment (simulated bar environment vs. a residence setting), and beverage content (alcohol vs. placebo) were manipulated. One month prior to the experimental phase, participants' AOEs were assessed using the Effects of Alcohol Scale (EAS; Southwick, Steele, Marlatt, & Lindell, 1981). Modified versions of the EAS were administered immediately prior to and following the experimental manipulations. Overall, discrepancies were observed between participants' pre-existing AOEs and post-drinking subjective perceptions. Specifically, individuals who drank in the company of unfriendly confederates expected more stimulation/perceived dominance and pleasurable disinhibition than they actually experienced. Subjects who drank with friendly confederates also experienced slightly less stimulation/perceived dominance than they expected. Finally, all subjects expected more behavioral impairment than they subjectively reported following beverage consumption.

Investigators have also examined whether individuals' self-statements concerning alcohol dependency change over the course of an acute drinking episode. For example, Oei and Pacey (1988) recruited individuals from the general population and, subsequently, examined changes in their alcohol-related cognitions over the course of a 40-minute drinking period in a naturalistic bar setting. In this study, participants completed a modified version of the Alcohol Self-Statements Questionnaire (ASQ; Oei & Young, 1987) which contained items that assessed alcohol-dependency (e.g., "I drink because it makes me forget everything"), alcohol nondependency (e.g., "I do not find it difficult to refuse a drink"), emotional functioning unrelated to alcohol use, and neutral information. The modified version of the ASQ was administered at least 6 hours prior to participants' arrival at their usual drinking setting, immediately preceding alcohol consumption, and twice during the course of the drinking episode. Participants were also classified as light or heavy social drinkers. Analyses

revealed a significant drinking group by time interaction such that, over the course of the drinking session, heavy drinkers' endorsements of alcohol-dependent statements increased, whereas the opposite was true for light drinkers. Similar findings regarding changes in drinkers' self-statements concerning alcohol dependency in naturalistic bar settings have been reported elsewhere (e.g., see Oei & Mewett, 1987; Oei & Young, 1987).

In general, then, research suggests that a lack of congruency exists between individuals' AOEs and their self-reported intoxicated outcomes following an acute drinking episode. This lack of support for the notion that post-drinking affective, behavioral, and cognitive outcomes should mirror pre-drinking AOEs may be due to a number of methodological factors. First, research that has employed measures used commonly to assess AOEs has been conducted in laboratory or simulated bar environments (e.g., see Fromme & Dunn, 1992; Sher, 1985), rather than naturalistic drinking contexts. Second, those investigations that have been carried out in naturalistic bar settings have focused on alcohol-related cognitions related to alcohol-dependency (Oei & Mewett, 1987; Oei & Pacey, 1988; Oei & Young, 1987) which are more exaggerated and extreme than those typically assessed in the alcohol expectancy literature. Third, investigations carried out in naturalistic bar settings have assessed changes in alcohol-related cognitions at multiple points during *ad lib* drinking, thus, potentially undermining the *in vivo* aspect of these studies. In short, additional research on the hypothesized congruency between pre- and post-consumption beliefs about alcohol is needed in bar settings in which *ad lib* consumption more closely approximates usual drinking behavior.

With these considerations in mind, the present study examined the congruency between adults' pre-drinking AOEs and post-drinking outcomes in a naturalistic bar setting following *ad lib* consumption. To the extent that AOEs are reinforced, in part, as a result of individuals' consumption of alcohol within an acute drinking episode, congruency between participants' pre-drinking AOEs and their subjective intoxicated outcomes was expected. As investigators have argued that the valence individuals attach to expected outcomes is also an important determinant of general drinking patterns (Fromme, Stroot, & Kaplan, 1993; Leigh, 1987; Stacy, Widaman, & Marlatt, 1990), and subjective evaluations of specific AOEs are more positive in the presence of naturalistic bar cues (Wall, McKee, Hinson, & Goldstein, 2001), the present investigation also examined the relationship between individuals' evaluations of pre- and post-drinking alcohol-related outcomes. Finally, because men and women differ with respect to their alcohol consumption patterns (McKee, Hinson, Wall, & Spriel, 1998; Mooney, Fromme, Kivlahan, & Marlatt, 1987; Thombs, 1993; Wall, Hinson, & McKee, 1998; Wall, Hinson, & McKee, 2000), and endorsement of specific AOEs (Mooney et al., 1987; Rohsenow, 1983; Thombs, 1993; Wall et al., 2000), gender differences were also examined.

2. Method

2.1. Subjects

Fifty (30 male and 20 female) regular patrons (mean age = 37.15, SD = 9.27) of a mid-size bar in a large urban city voluntarily participated. The majority of individuals were Caucasian

(60.4%), employed full-time (74%), and described themselves as being upper middle class (53.0%). Forty-two percent of participants were single, 34.0% were either married or involved in a common-law relationship, and 24.0% were either separated or divorced. Participants drank, on average, 28.14 ($SD = 22.55$) standard drinks (see below) a week over 4.12 ($SD = 2.65$) occasions. Those participants who drank on a weekly basis (92%) consumed, on average, 6.91 ($SD = 3.23$) alcoholic beverages per episode, with 85% being classified as binge drinkers (i.e., consuming at least five drinks per episode). The average number of weekly binge sessions reported was 2.85 ($SD = 2.32$). In spite of this overall high level of consumption, only four individuals (three men and one woman) reported having ever received treatment for alcohol. Some gender differences in typical weekly consumption patterns were observed with men, in comparison to women, reporting greater overall weekly consumption, $t(44) = 3.05$, $p < .01$, as well as a higher frequency of weekly drinking occasions, $t(44) = 3.45$, $p < .01$, and binge episodes, $t(44) = 2.74$, $p < .01$. Men and women did not differ significantly with respect to the average number of alcoholic beverages consumed per drinking episode, $t(44) = 0.56$, $p > .05$. The means and standard deviations for these measures, across gender, are presented in Table 1.

2.2. Materials

2.2.1. Drinking history

Participants' usual consumption of alcohol was assessed by asking them to indicate on a grid the number of standard drinks (i.e., a 12-ounce bottle of 5% alcohol by volume beer, a 5-ounce 12% alcohol by volume glass of wine, or 1.5-ounces 40% alcohol by volume of distilled spirits) they typically consumed each day of the week. This approach is similar to other grid methods used commonly in the literature (Miller, Westerberg, & Waldron, 1995).

2.2.2. AOEs and subjective intoxicated outcomes

AOEs were measured using the Comprehensive Effects of Alcohol (CEOA) questionnaire (Fromme et al., 1993). This instrument assesses four positive (Sociability, Tension Reduction, Sexuality, and Liquid Courage) and three negative (Risk/Aggression, Cognitive/Behavioral Impairment, and Self-Perception) AOEs, as well as subjective evaluations of expected outcomes. On this instrument, individuals are required to index expected outcomes of drinking on a four-point Likert scale (1 = *disagree*, 4 = *agree*), while subjective evaluations are assessed on a five-point Likert scale (1 = *bad*, 3 = *neutral*, 5 = *good*). Fromme et al. (1993)

Table 1
Mean (*SD*) scores on weekly drinking measures as a function of gender

Weekly drinking measure	Men ($n = 26$)	Women ($n = 20$)
Total weekly consumption *	38.5 (21.93)	20.30 (17.34)
Weekly drinking occasions *	5.46 (2.04)	3.20 (2.39)
Number weekly binge episodes *	3.62 (2.45)	1.85 (1.73)
Average drinks consumed/occasion	7.13 (3.47)	6.58 (2.89)

  * $p < .01$.

report adequate internal consistency, temporal stability, as well as criterion and construct validity for the CEOA.

For the purpose of the present experiment, pre-drinking AOEs were assessed using the standard CEOA instructions. Additionally, however, CEOA items were preceded by the stem, "I intend to consume _____ drinks while I am here. If I consume this amount of alcohol. . ." At the cessation of the drinking episode, participants were asked to respond to CEOA items on the basis of having consumed their self-reported number of alcoholic beverages. Specifically, CEOA items were preceded by the stem, "Now that I have consumed _____ drinks. . ."

2.2.3. Intended vs. actual alcohol consumed

Prior to drinking, participants were asked to indicate the number of drinks they intended to consume during the drinking episode. At the end of the drinking episode, actual consumption was assessed by two methods: (1) participants' self-report of the number of alcoholic drinks consumed and (2) computerized receipts of all alcoholic beverages purchased.

2.3. Procedure

Upon arrival at the bar, patrons were given a brief overview of the study and were invited to participate on a voluntary basis. Once participants had verbally verified that they had not consumed alcohol prior to arriving to the bar and written consent was obtained, the CEOA was administered. Additionally, participants completed a demographics form, the weekly drinking grid, and they were asked to indicate the number of alcoholic drinks they intended to consume. Patrons were then instructed to behave as they had originally planned. They were asked, however, to charge all beverages (alcoholic or otherwise) to an individual bar account and to inform the experimenter when they were finished drinking. At the end of the drinking episode, the modified CEOA was administered and participants were asked to report the number of alcoholic drinks they had consumed. Subsequently, participants paid their bills and the actual number of alcoholic drinks itemized on the computerized receipts was recorded. With the exception of obtaining pre- and post-consumption data, the experimenter did not interact with participants over the course of their drinking episodes. Data were collected Monday–Thursday after 1800 hours. All participants were verbally debriefed prior to leaving the drinking establishment.

3. Results

3.1. Intended vs. actual alcohol consumption

Overall, the correspondence between self-reported alcohol consumption and computerized bar records was quite good, yielding a significant correlation of .94 ($p < .001$). A significant correlation was also observed between individuals' intended and actual consumption ($r = .85$, $p < .001$). While participants intended to drink 3.82 ($SD = 2.67$) alcoholic beverages, the average number of drinks actually consumed (as determined by computerized, individual bar

receipts) was slightly higher ($M = 4.22$, $SD = 3.02$), but not significantly so, $t(49) = 1.79$, $p > .05$. For male and female participants, comparable, significant correlations were observed between the number of alcoholic beverages reportedly consumed and computerized bar records, as well as their intended and actual level of consumption. Female participants' average consumption did not exceed their original intentions (M's = 4.00 and 3.80 for intended vs. actual number of drinks consumed), $t(19) = 0.56$, $p > .05$, but male participants drank significantly more alcoholic beverages than they had intended (M's = 3.69 and 4.52 for intended vs. actual number of drinks consumed), $t(28) = 3.04$, $p < .01$. The average number of drinks men and women consumed during the drinking episode did not, however, differ significantly, $t(48) = 0.92$, $p > .05$. Ninety-six percent of participants drank in the company of others, with drinking groups ranging in size from 2 to 15 individuals.

3.2. Alcohol expectancies and intoxicated outcomes

In order to examine the hypothesized congruency between participants' pre-drinking AOEs and the alcohol-related outcomes they subjectively experienced at the end of the acute drinking episode, bivariate correlations were computed for pre- and post-consumption expectancy and valence ratings across the seven CEOA subscales. Correlations for the entire sample are shown in Table 2. As can be seen from Table 2, participants' pre-drinking AOEs and subjective intoxicated outcomes, as assessed by the seven CEOA subscales, were highly

Table 2
Mean (SE) expectancy and valence ratings, as well as bivariate correlations for the CEOA subscales obtained pre-drinking and post-drinking (collapsed across gender)

CEOA subscale	Pre-drinking	Post-drinking	r *
Expectancy ratings			
Sociability	2.70 (0.12)[a]	2.59 (0.14)[a]	.90
Tension Reduction	2.61 (0.11)[a]	2.63 (0.12)[a]	.65
Liquid Courage	2.16 (0.13)[a]	2.05 (0.12)[a]	.72
Sexuality	2.04 (0.12)[a]	2.01 (0.12)[a]	.81
Impairment	1.91 (0.10)[a]	1.78 (0.10)[a]	.77
Risk/Aggression	2.02 (0.12)[a]	1.80 (0.11)[b]	.73
Self-Perception	1.88 (0.10)[a]	1.76 (0.10)[a]	.74
Valence ratings			
Sociability	3.66 (0.09)[a]	3.69 (0.09)[a]	.84
Tension Reduction	3.61 (0.11)[a]	3.70 (0.10)[a]	.72
Liquid Courage	3.20 (0.11)[a]	3.40 (0.10)[b]	.73
Sexuality	3.33 (0.09)[a]	3.32 (0.10)[a]	.68
Impairment	2.81 (0.12)[a]	3.16 (0.12)[b]	.72
Risk/Aggression	3.11 (0.12)[a]	3.32 (0.10)[a]	.54
Self-Perception	3.04 (0.11)[a]	3.34 (0.11)[b]	.60

Differing superscripts are indicative of significant differences.
 * All bivariate correlations between pre- and post-consumption expectancy and valence ratings on the CEOA subscales are significant, $p < .001$.

correlated (all $p < .001$). As well, participants' pre- and post-consumption evaluations of expected alcohol-related effects were moderately to highly correlated (r ranged from .54 to .84). A similar pattern of results was evident when bivariate correlations were computed separately for men and women.

Subsequently, a multivariate analysis of variance (MANOVA), with the CEOA subscales (seven expectancy and seven valence subscales) as repeated measures, time (pre- and post-drinking) as a within-subject factor, and gender as a between-subjects factor was conducted. A significant main effect for time was observed, *Wilks'* lambda=.54, $F(14,35) = 2.15$, $P < .05$. As well, a main effect for gender was marginally significant, *Wilks'* lambda=.56, $F(14,35) = 1.95$, $p = .055$. Given these overall effects, results from the analyses carried out on each of the expectancy and valence subscales were examined. The mean (*SE*) expectancy and valence ratings obtained on the seven CEOA subscales that were administered prior to and following the drinking episode are presented in Table 2.

As shown in Table 2, a significant main effect for time was found only for the expectancy ratings on the Risk/Aggression subscale, $F(1,48) = 6.56$, $P < .05$, with participants, on average, feeling less aggressive and more disinclined to engage in risky behaviors than they had expected prior to drinking. A significant main effect for time was observed for participants' valence ratings on three CEOA subscales, with one "positive" and two "negative" CEOA subscales being rated more favorably at the cessation of the acute drinking episode: Liquid Courage, $F(1,48) = 6.16$, $p < .05$; Cognitive Behavioral Impairment, $F(1,48) = 14.73$, $p < .001$; Self-Perception, $F(1,48) = 9.04$, $p < .01$. Finally, participants' valence ratings on the Risk/Aggression subscale approached significance, $F(1,48) = 3.80$, $p = .06$, suggesting a trend for individuals to also evaluate this alcohol-related outcome more favorably after drinking.

Given that a marginally significant main effect for gender was observed in the overall analysis, men's and women's expectancy and valence ratings on the individual CEOA subscales (collapsed across pre- and post-drinking administrations) were examined. The mean (*SE*) obtained on each of the expectancy and valence CEOA subscales, as a function of gender, are shown in Table 3. A significant main effect for gender was found for participants'

Table 3

Mean (*SE*) expectancy and valence ratings of CEOA subscales obtained for men and women (collapsed across pre- and post-drinking measures)

CEOA subscale	Expectancy ratings		Valence ratings	
	Men	Women	Men	Women
Sociability	2.86 (0.16)[a]	2.44 (0.19)[a]	3.88 (0.11)[a]	3.47 (0.13)[b]
Tension Reduction	2.91 (0.13)[a]	2.33 (0.16)[b]	3.95 (0.12)[a]	3.36 (0.15)[b]
Liquid Courage	2.36 (0.15)[a]	1.86 (0.18)[b]	3.41 (0.13)[a]	3.18 (0.16)[a]
Sexuality	2.24 (0.14)[a]	1.82 (0.18)[a]	3.53 (0.11)[a]	3.12 (0.13)[b]
Impairment	1.96 (0.12)[a]	1.73 (0.15)[a]	3.22 (0.14)[a]	2.74 (0.17)[b]
Risk/Aggression	2.14 (0.13)[a]	1.68 (0.16)[b]	3.37 (0.12)[a]	3.06 (0.15)[a]
Self-Perception	1.89 (0.12)[a]	1.74 (0.15)[a]	3.33 (0.13)[a]	3.05 (0.16)[a]

Differing superscripts are indicative of significant between group differences.

expectancy ratings on the following CEOA expectancy subscales: Tension Reduction, $F(1,48) = 7.58$, $p < .01$; Liquid Courage, $F(1,48) = 4.49$, $p < .05$; Risk/Aggression, $F(1,48) = 4.99$, $p < .05$. As can be seen in Table 3, men, in comparison to women, had significantly higher endorsements on these three subscales. Additionally, significant gender differences were observed with respect to participants' valence ratings on several CEOA subscales. Specifically, a main effect for gender was found for Sociability, $F(1,48) = 6.16$, $p < .05$; Tension Reduction, $F(1,48) = 9.31$, $p < .01$; Sexuality, $F(1,48) = 6.13$, $p < .05$; and Cognitive/Behavioral Impairment, $F(1,48) = 4.84$, $p < .05$. As shown in Table 3, men, in comparison to women, consistently rated these alcohol-related outcomes more favorably.

4. Discussion

The present study was designed as a test of social-learning theory in a naturalistic bar setting. Of central interest in the present investigation was whether regular bar patrons' pre-drinking AOEs are realized within an acute drinking episode. In keeping with social-learning theory, congruency between participants' pre-drinking AOEs and their subjective intoxicated outcomes was expected. As the valence individuals associate with alcohol-related outcomes is also postulated to be an important determinant of drinking (Fromme et al., 1993; Leigh, 1987; Stacy et al., 1990), and subjective evaluations of specific AOEs are more positive in the presence of naturalistic bar cues (Wall et al., 2001), the present investigation also examined the relationship between individuals' evaluations of pre- and post-drinking outcomes. Finally, gender differences were examined. Overall, the present findings suggest that social-learning theory is a valid model for understanding acute drinking behavior in a naturalistic bar setting.

In contrast to the limited work that has been conducted in this area (e.g., see Fromme & Dunn, 1992; Sher, 1985), the present findings suggest that regular bar patrons' pre-drinking AOEs are realized as a result of consuming alcohol in their usual bar setting. With the exception of an observed diminution in risky and aggressive behaviors participants reportedly experienced as a result of drinking, the affective, behavioral, and cognitive outcomes they subjectively experienced mirrored their pre-drinking expectations concerning alcohol's effects. Thus, it would appear that when heavy drinkers consume alcohol in their usual bar environment in an *ad lib* fashion, their subjective perceptions of alcohol-related outcomes are generally in keeping with the AOEs they held prior to drinking. Participants' subjective evaluations of specific alcohol-related outcomes were, however, more positive at the end of the drinking episode. Specifically, participants ratings on one "positive" (Liquid Courage) and two "negative" (Cognitive/Behavioral Impairment and Self-Perception) CEOA subscales were significantly more favorable following alcohol consumption. Overall, these latter findings re-affirm the need for researchers to directly assess, rather than infer, the valence individuals attach to specific alcohol-related outcomes (Fromme et al., 1993; Leigh, 1987; Wall et al., 2001). Such a positive shift in drinkers' evaluations of intoxicated outcomes may serve to reinforce AOEs, which could, in turn, motivate decision-making concerning future, acute drinking bouts and the level of intoxication achieved during such episodes. Prospective

research is needed to investigate whether a reciprocal relationship exists between AOEs, evaluations of expected alcohol-related outcomes, and acute drinking behavior.

Consistent with social-learning theory, which posits that drinking is a volitional, goal-directed behavior (e.g., Jones et al., 2001; Maisto et al., 1999), the average number of alcoholic beverages consumed by participants did not exceed their behavioral intentions. It should be emphasized, however, that because participants were aware of the fact that the actual number of alcoholic beverages they consumed would be verified at the end of the experiment this may have increased their self-monitoring behavior, thus mitigating against the possibility of violating their behavioral intentions. In a similar vein, this heightened awareness might have also contributed to the accuracy with which participants reported the number of alcoholic beverages they consumed during the drinking bout. Furthermore, the present experiment was conducted during a *single* drinking episode. Given these concerns, it would be erroneous to conclude that heavy drinkers do not violate their behavioral intentions concerning the use of alcohol or that they accurately estimate their levels of consumption on a consistent basis. In keeping with participants' self-reported usual drinking history, men and women did not differ significantly with respect to the average number of alcoholic drinks consumed during their drinking episodes. Nonetheless, men, in comparison to women, consumed significantly more alcoholic beverages, on average, than they had intended. Such an apparent tendency to violate one's behavioral intentions, which, again, might be exacerbated during usual drinking circumstances may contribute, in part, to heavier consumption patterns typically observed among men (e.g., McKee et al., 1998; Mooney et al., 1987; Thombs, 1993; Wall et al., 1998, 2000).

Although no evidence was obtained that the relationship between individuals' AOEs and post-drinking outcomes was moderated by gender, men's and women's expectancy and valence ratings differed significantly on a number of the CEOA subscales. These findings add to a growing body of research that suggests that men and women differ with respect to their beliefs about alcohol's effects and the valence they attach to alcohol-related outcomes (Mooney et al., 1987; Rohsenow, 1983; Thombs, 1993; Wall et al., 2000). Consistent with social-learning explanations concerning antecedents that determine the acquisition of AOEs, male participants' higher level of usual drinking behavior may have contributed, in part, to their greater endorsement and more favorable evaluations of specific AOEs.

While the overall pattern of results suggests that social-learning theory is a valid theoretical framework for understanding acute drinking behavior in a naturalistic drinking environment in which *ad lib* consumption occurs, the generalizability of the findings is, nonetheless, limited. As the vast majority of participants in the present study could be classified as binge drinkers and, as a group, their typical consumption of alcohol well exceeded average consumption levels reported by individuals in the general population (McKenzie & Single, 1997), the present findings are limited to heavy drinkers. Research has also found that alcohol consumption is situation-specific, with heavy alcohol consumption being most evident in licensed community establishments similar to the one in which the present study was conducted (e.g., see Single & Wortley, 1993). It is unclear whether a similar pattern of results would emerge in other naturalistic drinking environments that are associated with differential consumption patterns. While the present findings suggest that heavy drinkers'

AOEs are realized at the end of an acute drinking episode, the possibility exists that assessing participants' beliefs about alcohol-related outcomes immediately prior to the initiation of drinking may have influenced their post-consumption responses on the revised CEOA. Indeed, previous research has failed to find evidence that AOEs are realized as a result of drinking when individuals' expectations concerning alcohol-related outcomes are assessed well in advance of a given drinking episode (Fromme & Dunn, 1992). Moreover, because investigators have found that AOEs' impact on post-drinking subjective experiences are "short-lived" (Sher, 1985), it remains an empirical question whether the congruency observed between pre- and post-drinking alcohol-related outcomes in a naturalistic drinking environment is sustained beyond the immediate cessation of drinking. Previous research in laboratory or simulated bar environments (Fromme & Dunn, 1992; Sher, 1985) has also found that manipulating social context (e.g., solitary vs. group consumption) has an impact on individuals' post-drinking subjective perceptions of alcohol's effects. Preferential solitary, as opposed to group, drinking has been shown to be highly associated with drinking to cope with negative affect and problem drinking (e.g., see Cooper, Russell, Skinner, & Windle, 1992). In the present investigation, 96% of participants drank in the company of others, thus precluding an examination of the potential impact of social context on the congruency between individuals' AOEs and intoxicated outcomes, volitionality of their drinking behavior, or gender-specific expectancy and valence endorsements of the CEOA subscales. Future research with a larger sample that would afford an investigation of self-selected solitary vs. group drinking is needed to clarify whether social-learning theory is a valid model for understanding solitary acute alcohol consumption in a naturalistic bar setting. Finally, in the present study, the contribution of gender-specific pre-drinking AOEs to participants' levels of consumption was not assessed. Future demonstrations that individuals' AOEs are predictive of acute drinking patterns in naturalistic bar settings, over and above past drinking history, would contribute significantly to the growing body of literature which suggests that AOEs proximally influence behavioral decision-making concerning the use of alcohol.

Acknowledgements

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