

Expectancies and Evaluations of Alcohol Effects among College Students: Self-Determination as a Moderator*

CLAYTON NEIGHBORS, PH.D.,[†] DENISE D. WALKER, PH.D.,[†] AND MARY E. LARIMER, PH.D.[†]

Department of Psychology, North Dakota State University, 115 Minard Hall, Fargo, North Dakota 58105

ABSTRACT. *Objective:* This research examined individual differences in self-determination as moderators of both alcohol expectancies and of subjective evaluations of alcohol effects in college students. Previous work has shown lower levels of self-determination to be linked with drinking for more extrinsic reasons and as a means of regulating affect and social approval. We proposed that alcohol expectancies and subjective evaluations of alcohol effects would be more strongly linked to alcohol consumption and alcohol-related problems among students who were more controlled and/or less autonomous. *Method:* Self-reported alcohol expectancies and subjective evaluations of alcohol effects and self-determination were assessed among 560 (347 women) college students, along with self-reported alcohol consumption and alcohol-related negative consequences. *Results:* Alcohol expectancies and subjective evaluation of alcohol effects were examined separately. A series of

hierarchical multiple regressions revealed that positive alcohol expectancies were more strongly associated with greater alcohol consumption and alcohol-related problems among students who were lower in autonomy orientation, and among male students who were higher in controlled orientation. Similarly, more favorable evaluations of positive alcohol effects were associated with greater alcohol consumption among students who were lower in autonomy orientation and students, particularly men, who were higher in controlled orientation. *Conclusions:* Expectancy theories implicitly assume that individuals who believe alcohol has positive effects and who evaluate alcohol effects favorably are more likely to engage in problematic drinking. This research reveals this assumption is more appropriate among individuals who are generally less self-determined. Implications for interventions are discussed. (*J. Stud. Alcohol* 64: 292-300, 2003)

THE LITERATURE on alcohol expectancies (AE) has provided a rich framework for understanding drinking behavior. A consistent link has been found between AE and college student drinking (Brown, 1985; Sher et al., 1996; Wood et al., 1996). AE are generally defined as a person's beliefs about the effects of consuming alcohol, both positive and negative. Positive AE are associated with alcohol consumption in college students, adults and adolescents, and with drinking-related problems and alcohol dependence (Armeli et al., 2000; Fromme et al., 1993; Kilbey et al., 1998). While positive and negative AE may both predict drinking behavior, positive AE have consistently been stronger predictors (Lee et al., 1999; Leigh and Stacy, 1993; Rohsenow, 1983; Stacy et al., 1990).

In contrast to AE, subjective evaluations refer to the extent to which a person believes a particular effect of alcohol is good or bad (Fromme et al., 1993). Both AE and

subjective evaluations have been associated with drinking (Burden and Maisto, 2000; Leigh, 1987; Fromme et al., 1993). Subjective evaluations are conceptually important because presumed negative alcohol effects, such as cognitive impairment, are perceived as desirable by some (Fromme et al., 1986; McKee et al., 1998). Similarly, the strength of subjective evaluations may vary (i.e., positive effects are likely to be viewed as especially good for some). We suggest, as have others (Fromme et al., 1993; Leigh, 1989), that AE and subjective evaluations are both important predictors of alcohol consumption.

Numerous factors appear to moderate the relationship between AE and alcohol use, including contextual variables such as dose, beverage type and environment in which drinking occurs (George and Dermen, 1988; Guarna and Rosenberg, 2000; MacLachy-Gaudet and Stewart, 2001). Several studies have investigated individual differences—including gender, ethnicity and family history of alcoholism (Finn et al., 2000; Satre and Knight, 2001; Wall et al., 1998). Findings concerning gender differences have been mixed, but one consistent finding is that men hold higher sex-related AE than women do (Crowe and George, 1989; Lang, 1985). Others have reported that women expect less social and physical pleasure, less tension reduction effects and more impairment than men (Rohsenow, 1983).

Less research has been devoted to the examination of aspects of personality and coping in relation to AE (Cooper et al., 1992; Kassel et al., 2000; Katz et al., 2000).

Received: July 29, 2002. Revision: November 18, 2002.

*Research for this article was supported, in part, by National Institute on Alcohol Abuse and Alcoholism grant R01AA10772 awarded to Mary E. Larimer and grant T32AA07455 awarded to G. Alan Marlatt. Portions of this research were presented at the annual scientific meeting of the Society of Personality and Social Psychologists in Savannah, Georgia, March 2002.

[†]Correspondence may be sent to Clayton Neighbors at the above address, or via email at: clayton.neighbors@ndsu.nodak.edu. Denise D. Walker is with the Department of Psychology, University of Washington, Seattle, WA, and Mary E. Larimer is with the Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, WA.

Bartholow and colleagues (2000) found private self-consciousness to moderate the relationship between AE and consumption for participants of legal drinking age. Avoidant coping style in combination with high positive AE is also associated with increased alcohol consumption and related problems in men (Cooper et al., 1992; Kassel et al., 2000). These findings may have implications for tailoring interventions that incorporate AE challenges for heavy-drinking college students (e.g., Darkes and Goldman, 1993, 1998; Dimeff et al., 1999; Larimer et al., 2001; Marlatt et al., 1998). The primary aim of this research was to determine whether relations between AE and subjective evaluations of alcohol effects vary as a function of individual differences in self-determination.

Self-determination

Self-determination (SD) theory (Deci and Ryan, 1985b, 2000) suggests that individuals develop general motivational orientations towards autonomy and control. Autonomy is linked with personal growth and is associated with engaging in behaviors consistent with one's intrinsic interests and well-integrated goals. The autonomy orientation is positively related to self-actualization, private self-consciousness, ego development, interest and self-esteem (Deci and Ryan, 1985a). The controlled orientation, on the other hand, is linked with basing behaviors on introjected "shoulds" and "oughts" and external regulation of behavior, such as engaging in behavior to obtain some reward or avoid some aversive consequence. Controlled orientation is positively related to the Type-A coronary-prone behavior pattern, external locus of control, private and public self-consciousness, hostility and ego involvement (Deci and Ryan, 1985a; Knee et al., 2001; Neighbors et al., 2002).

Previous work examining college student drinking from an SD perspective has demonstrated that more controlled individuals report greater alcohol consumption and alcohol-related negative consequences (Neighbors et al., submitted for publication) and drink more for extrinsic reasons (Knee and Neighbors, 2002). Among non-Greek men (but not women), those higher in controlled orientation appeared to be more susceptible to the influence of perceived peer pressure (Knee and Neighbors, 2002). Expectancy approaches implicitly assume that individuals who believe alcohol will have positive effects or who evaluate the effects of alcohol more favorably will be more likely to engage in consumption. We suggest that this is likely to be especially true among individuals who are less self-determined (i.e., more controlled or less autonomous) because individuals who are less self-determined are more likely to engage in behaviors as a function of expected outcomes (e.g., seeking reward, avoiding aversive consequences). Alcohol also serves as an external means of obtaining such positive outcomes as tension reduction, courage and enhanced sexual-

ity. We also expect these effects to be more apparent among men than among women because drinking is a more important and self-defining activity for college men than for college women (Prentice and Miller, 1993). The majority of alcohol's reputed effects (e.g., feeling powerful, unafraid, sociable, daring, tough, aggressive and sexual) are qualities typically expected more in men than in women.

Gender differences in SD have been noted but not expanded upon. Previous research has found women to be more autonomous and less controlled than men (Deci and Ryan, 1985a). Wong (2000) suggested that while autonomy functions similarly in men and women, being controlled may manifest itself differently according to gender. Doing what one is expected to do may, in many instances, have different meanings for men and women and may have different consequences for each.

Hypotheses. Given previous findings, we expected the following: (1) Positive effects of alcohol would be evaluated more favorably than negative effects. (2) Autonomy would be negatively associated, if at all, with drinking outcomes, whereas controlled orientation would be positively associated with drinking outcomes. (3) Autonomy would be associated with evaluating positive and negative alcohol effects less favorably, whereas controlled orientation would be associated with evaluating positive and negative alcohol effects more favorably. (4) Positive expectancies and subjective evaluations of positive alcohol effects would be better predictors of consumption and consequences than negative AE and subjective evaluations of negative alcohol effects.

Our primary aim was to evaluate SD as a moderator of the effects of AE and subjective evaluations. We expected SD to moderate the relation between AE and consumption (Hypothesis 1) and between AE and negative consequences (Hypothesis 2). We expected SD to moderate the relation between subjective evaluations of alcohol effects and consumption (Hypothesis 3) and between subjective evaluation of alcohol effects and negative consequences (Hypothesis 4). We further expected that moderation effects would be more evident among men than women (Hypothesis 5).

Method

Participants

Participants included 560 (347 women) college students enrolled in undergraduate psychology courses at a large U.S. northwestern university. Students received extra course credit for participation. The average age (SD) of participants was 19.24 (1.77) years. Ethnicity was 58.7% white, 34.1% Asian/Asian American and 7.2% other. Participants were freshman (55.5%), sophomores (28.2%), juniors (11.4%) and seniors (4.9%). Relative to the university's undergraduate population, women and Asian/Asian

American participants were somewhat over-represented in this sample.

Procedure

Participants were recruited from the psychology student pool for a larger study examining motivational influences in drinking and gambling. Thus, students who had never gambled in their lives (including lottery and bingo) were not invited to participate. This qualification criterion excluded approximately 15% of the general college population (Lesieur et al., 1991). Only measures relevant to the present research are detailed. Participants completed measures in small groups but were instructed not to communicate with each other during the assessment. Participants were urged to answer items honestly and were reminded that all answers were anonymous. Following the assessment, which took about 40 minutes on average, participants were debriefed and thanked for their participation.

Measures

Autonomy and controlled orientations. We used the autonomy and controlled orientation subscales from the General Causality Orientations Scale (GCOS; Deci and Ryan, 1985a; revised: Hodgins et al., 1996). This measure includes 17 scenarios, each of which is followed by an autonomous and a controlled response for which participants respond on a seven-point scale (1 = very unlikely; 7 = very likely). For example, one of the scenarios is "You have been offered a new position in a company where you have worked for some time. The first question that is likely to come to mind is. . . ." The autonomy orientation is measured by the response, "I wonder if the new work will be interesting." The controlled orientation is measured by the response, "Will I make more at this position?" Alphas were 0.82 and 0.75 for the autonomy and controlled orientations, respectively.

AE and subjective evaluations of alcohol effects. AE were assessed with the Comprehensive Effects of Alcohol scales (CEOA; Fromme et al., 1993). The CEOA was developed for use with college students, has demonstrated reliability and validity, and has been used in numerous studies examining college student drinking. The CEOA includes items measuring both positive and negative AE and, moreover, assesses subjective evaluation of positive and negative alcohol effects. AE are assessed by asking respondents the extent to which they believe that each of 38 effects would happen to them if they were under the influence of alcohol. Participants respond on Likert-type scales from 1 (disagree) to 4 (agree). Subjective evaluations are assessed by asking participants to evaluate the effects, from 1 (bad) to 6 (good), regardless of whether they expect the effect would happen to them. Positive AE include sociability (e.g., "It would be

easier to talk to people"), tension reduction (e.g., "I would feel calm"), liquid courage (e.g., "I would feel brave and daring") and sexuality (e.g., "I would enjoy sex more"). Negative AE include cognitive and behavioral impairment (e.g., "I would feel clumsy" and "I would have difficulty thinking"), risk and aggression (e.g., "I would take risks" and "I would act aggressively") and self-perception (e.g., "I would feel moody"). Previous research has shown that AE are interrelated and positive and form separate factors (Collins et al., 1990; Cooper et al., 1988; George et al., 1995). We therefore created composite scores for positive and negative AE by averaging responses across subscales. Alphas were 0.91 and 0.85 for positive and negative AE, respectively. We also created composite scores for subjective evaluations of positive and negative alcohol effects. Alphas were 0.93 and 0.91 for subjective evaluations of positive and negative effects, respectively.

Alcohol consumption. Alcohol consumption was assessed with the Daily Drinking Questionnaire (DDQ; Collins et al., 1985). The DDQ includes items in which participants fill in the average number of standard drinks consumed and the time period of consumption for each day of the week over the previous 3 months. Standard drinks are defined as 10 ounces of wine cooler, 12 ounces of beer (8 ounces of Canadian, Malt Liqueur, or Ice beer, or 10 ounces of microbrew), or one cocktail with 1 ounce of 100-proof distilled spirits or 1.25 ounces of 80-proof distilled spirits. Daily quantities were summed, and values thus represent average number of standard drinks consumed per week. Alpha was 0.79.

Alcohol-related problems. Alcohol-related problems were assessed with the Rutgers Alcohol Problem Index (RAPI; White and Labouvie, 1989). In the RAPI, respondents indicate how many times they have experienced each of 23 problems during the previous 3 months. Responses were given on five-point Likert-type scales from "never" (1) to "more than 10 times" (5). Sample items included "got into fights, acted bad, or did mean things" and "caused shame or embarrassment to someone." Two additional items, "drove shortly after having more than two drinks" and "drove shortly after having more than four drinks," were also included. Scores were calculated as the number of problems experienced at least once in the previous 3 months. Alpha was 0.91.

Results

Descriptive information. Of the participants, 26 had missing data on one or more variables. Discrepancies in degrees of freedom are due to these missing data. Pairwise deletion was used throughout analyses. Hierarchical multiple regression was used as the primary analysis strategy. This strategy was chosen over structural equation modeling (SEM) because SEM has relatively strict distributional

TABLE 1. Zero-order correlations among men and women

Women	1	2	3	4	5	6	7	8
1. Autonomy orientation	—	.24†	.09	-.02	.10	-.13	-.11	-.19†
2. Controlled orientation	.19†	—	.15*	.29†	.14*	.18†	.15*	.17*
3. Positive expectancies	-.07	.22†	—	.17*	.50†	.00	.25†	.36†
4. Evaluation of positive alcohol effects	-.02	.19†	.40†	—	-.15*	.36†	.22†	.18†
5. Negative expectancies	-.06	.19†	.40†	-.10	—	-.16*	-.04	.19†
6. Evaluation of negative alcohol effects	-.20†	.13*	.11*	.42†	-.10	—	.06	.06
7. Weekly alcohol consumption	-.04	.09	.24†	.21†	.00	.12*	—	.68†
8. Alcohol-related negative consequences	-.09	.08	.35†	.22†	.19†	.17†	.63†	—

Notes: Correlations among measures for men are above the diagonal. Correlations among measures for women are below the diagonal.

* $p < .05$; † $p < .01$; ‡ $p < .001$.

assumptions that are not robust to violation, and there are practical difficulties in evaluating interactions with latent variables (e.g., specification of nonlinear constraints; choice of product indicators; Kline, 1998).

Self-determination

Table 1 presents zero-order correlations among variables by gender. Consistent with expectations, autonomy was negatively associated with alcohol consumption and negative consequences, whereas controlled orientation was positively associated with alcohol consumption and negative consequences. Autonomy was not associated with positive or negative AE but was associated with more unfavorable subjective evaluations of negative alcohol effects. Controlled orientation was positively associated with both positive and negative AE and with evaluating both positive and negative effects of alcohol favorably.

Gender differences

Men and women did not differ in the extent to which they endorsed positive or negative AE; however, men evaluated both positive ($t = 3.13$, 528 df, $p < .01$) and negative ($t = 2.53$, 528 df, $p < .05$) effects more favorably. Thus, while men and women agreed that drinking results in increased positive (sociability, tension reduction, liquid courage, sexuality) and negative (impairment, aggression, negative self-perception) effects, men rated the positive effects as more desirable and the negative effects as less undesirable than the women did. Men also reported higher levels of alcohol consumption ($t = 4.32$, 528 df, $p < .0001$), but men and women did not differ in the number of negative consequences experienced. Table 2 presents means and standard deviations for men and women.

Self-determination as a moderator of AE and consumption. Primary hypotheses were evaluated by a series of multiple regression analyses. Analyses involving interactions with AE and subjective evaluations were examined separately to maintain a reasonable number of product terms and to minimize multicollinearity problems. Hypothesis 1

was that SD would moderate the relationship between AE and alcohol consumption. Accordingly, we examined alcohol consumption as a function of gender, autonomy and controlled orientations, and positive and negative AE at Step 1. Two-way product terms were added at Step 2 to provide a test of the hypothesis. Three-way product terms involving gender were added at Step 3 to evaluate whether interactions between SD and AE differed between men and women (Hypothesis 5).

Main effects were consistent with zero-order correlations, with the exception that in this analysis, negative AE were associated with less alcohol consumption ($t = -3.09$, 505 df, $p < .01$). Results at Step 2 revealed an interaction between autonomy and positive AE ($t = -1.95$, 495 df, $p = .05$). Figure 1 (left panel) provides a graph of the interaction based on predicted values derived from the regression equation, where high and low represent one standard deviation above and below the mean, respectively (Aiken and West, 1991). Consistent with Hypothesis 1, the relationship between positive AE and alcohol consumption was

TABLE 2. Means and standard deviations of variables

Variable	Women	Men
	($n = 345$)	($n = 202$)
	Mean (SD)	Mean (SD)
Autonomy orientation	5.75 (0.66)	5.51 (0.69)†
Controlled orientation	4.23 (0.68)	4.41 (0.64)†
Positive expectancies	2.69 (0.57)	2.77 (0.52)
Evaluation of positive alcohol effects	0.17 (0.83)	0.42 (0.78)†
Negative expectancies	2.53 (0.51)	2.59 (0.55)
Evaluation of negative alcohol effects	-0.91 (0.74)	-0.75 (0.79)*
Weekly alcohol consumption	6.26 (7.95)	9.98 (11.78)†
Alcohol-related negative consequences	5.75 (5.77)	6.10 (6.06)

Notes: N 's for women and men ranged from 330 to 345 and from 195 to 202, respectively, depending on missing data. Autonomy and controlled orientations are on 7-point scales. Positive and negative expectancies are on 5-point scales and indicate the extent to which participants believe alcohol had these effects. Evaluations range from -2 to 2, with positive values indicating that participants thought effects were good and negative values indicating that participants thought these effects were bad. Weekly consumption represents typical number of standard drinks per week. Consequences refer to the number of problems experienced at least once in the previous 3 months.

* $p < .05$; † $p < .01$; ‡ $p < .001$.

stronger among individuals who were lower in autonomy. A three-way interaction between gender, controlled orientation and positive AE revealed a similar but opposite pattern between controlled orientation and positive AE, but primarily among men ($t = 2.00$, 589 df, $p < .05$). Simple effects revealed that the interaction between controlled orientation and positive AE was significant for men ($t = 1.96$, 178 df, $p = .05$) but not for women ($t < 1$). Thus, in the case of men only, the relationship between positive AE and consumption was stronger among individuals who were more controlled.

Self-determination as a moderator of AE and problems. Hypothesis 2 was that SD would moderate the relationship between AE and alcohol-related consequences. We followed the same procedure used to test Hypothesis 1, replacing the dependent variable. Main effects were consistent with zero-order correlations, with the exception that in this analysis controlled orientation did not uniquely predict alcohol-related negative consequences. A two-way interaction between autonomy and gender revealed that being higher in autonomy attenuated alcohol-related problems to a greater extent among men than among women ($t = -1.99$, 509 df, $p < .05$). Consistent with Hypothesis 2, a two-way interaction between autonomy and positive AE emerged ($t = -2.06$, 509 df, $p < .05$). The pattern of predicted values based on the regression equation was similar to that observed for alcohol consumption (see Figure 1, right panel), indicating that higher positive AE were associated with more alcohol-

related problems. This was especially true among individuals who were lower in autonomy. A three-way interaction with gender, controlled orientation and positive AE also revealed a pattern similar to the findings regarding alcohol consumption ($t = 1.93$, 503 df, $p = .05$). Women with stronger positive AE reported more alcohol-related problems, regardless of their status on controlled orientation. Among men, however, the relationship between positive AE and alcohol-related problems was strongest among those who were higher in controlled orientation. Simple effects tests revealed that controlled orientation moderated the relationship between positive AE and alcohol-related problems among men ($t = 1.99$, 177 df, $p < .05$), but not among women ($t = \leq 1$).

In sum, we found support for Hypothesis 2 in that being lower in autonomy orientation and being higher in controlled orientation were associated with a stronger relationship between positive AE and alcohol-related problems. However, consistent with Hypothesis 5, the interaction between controlled orientation and positive AE was only present among men. No interactions between SD and negative AE were evident.

Self-determination as a moderator of subjective evaluations and consumption. Interactions between SD and subjective evaluations of alcohol effects were examined using the same procedures as those used to examine expectancies. Main effects were consistent with zero-order correlations. Results at Step 2 revealed an interaction between

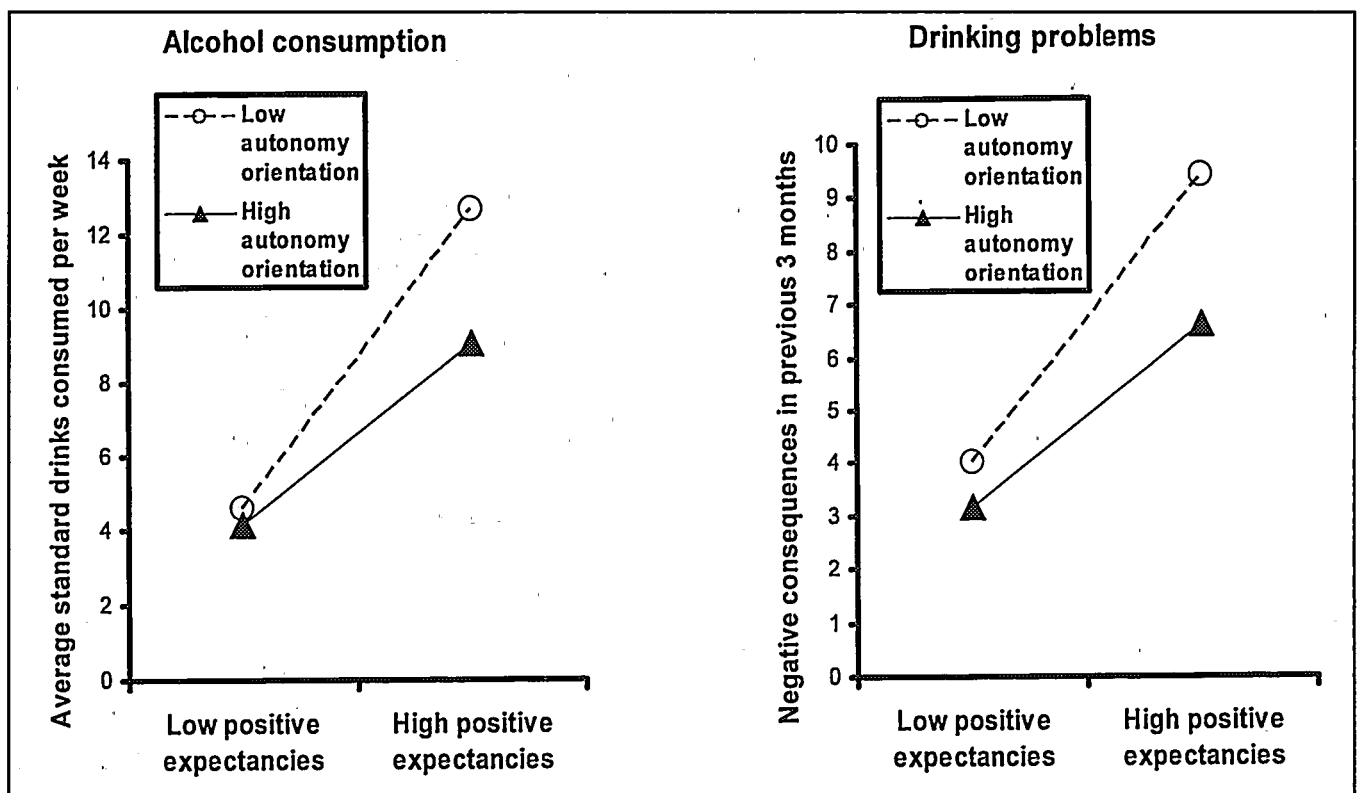


FIGURE 1. Autonomy orientation as a moderator of positive alcohol expectancies and drinking

autonomy and subjective evaluation of positive alcohol effects ($t = -2.07$, 490 df, $p < .05$), and an interaction between controlled orientation and subjective evaluation of positive alcohol effects ($t = 2.71$, 490 df, $p < .01$) (see Figure 2). Consistent with Hypothesis 3, favorable subjective evaluations of positive alcohol effects were more strongly associated with alcohol consumption among individuals who were lower in autonomy and among individuals who were higher in controlled orientation. A three-way interaction emerged between gender, controlled orientation and subjective evaluation of positive alcohol effects ($t = 2.82$, 484 df, $p < .01$). Consistent with Hypothesis 5, simple effects revealed the interaction between controlled orientation and evaluation was significant for men ($t = 3.13$, 176 df, $p < .01$) but not for women ($t = < 1$).

Self-determination as a moderator of subjective evaluations and problems. Hypothesis 4 was that SD would moderate the relationship between subjective evaluations of alcohol effects and alcohol-related negative consequences. Only the two-way interaction between autonomy orientation and subjective evaluations of positive alcohol effects approached significance ($t = -1.88$, 505 df, $p = .06$). Thus, while results were in the predicted direction, we found minimal support for Hypothesis 4. No three-way interactions with gender emerged.

Discussion

Overview

This research identified and documented an important qualifier to the well-established relationship between people's beliefs about alcohol and their drinking behavior. People who believe that alcohol makes it easier to be more exciting, brave, relaxed, talkative and sexier drink more. Individuals who value these presumed effects more than others do also drink more. Our research reveals, however, that these established truths do not apply to everyone in the same degree; specifically, they are less applicable to individuals higher in SD. To the extent that individuals hold positive AE and value the presumed effects of alcohol, drinking can be viewed as an external and artificial means to obtain these desirable ends.

Gender differences

Men reported consuming more alcohol than women did, yet men and women reported no differences in negative consequences. Men and women held similar beliefs about the effects of alcohol, but men evaluated the effects more favorably. The relationships between controlled orientation

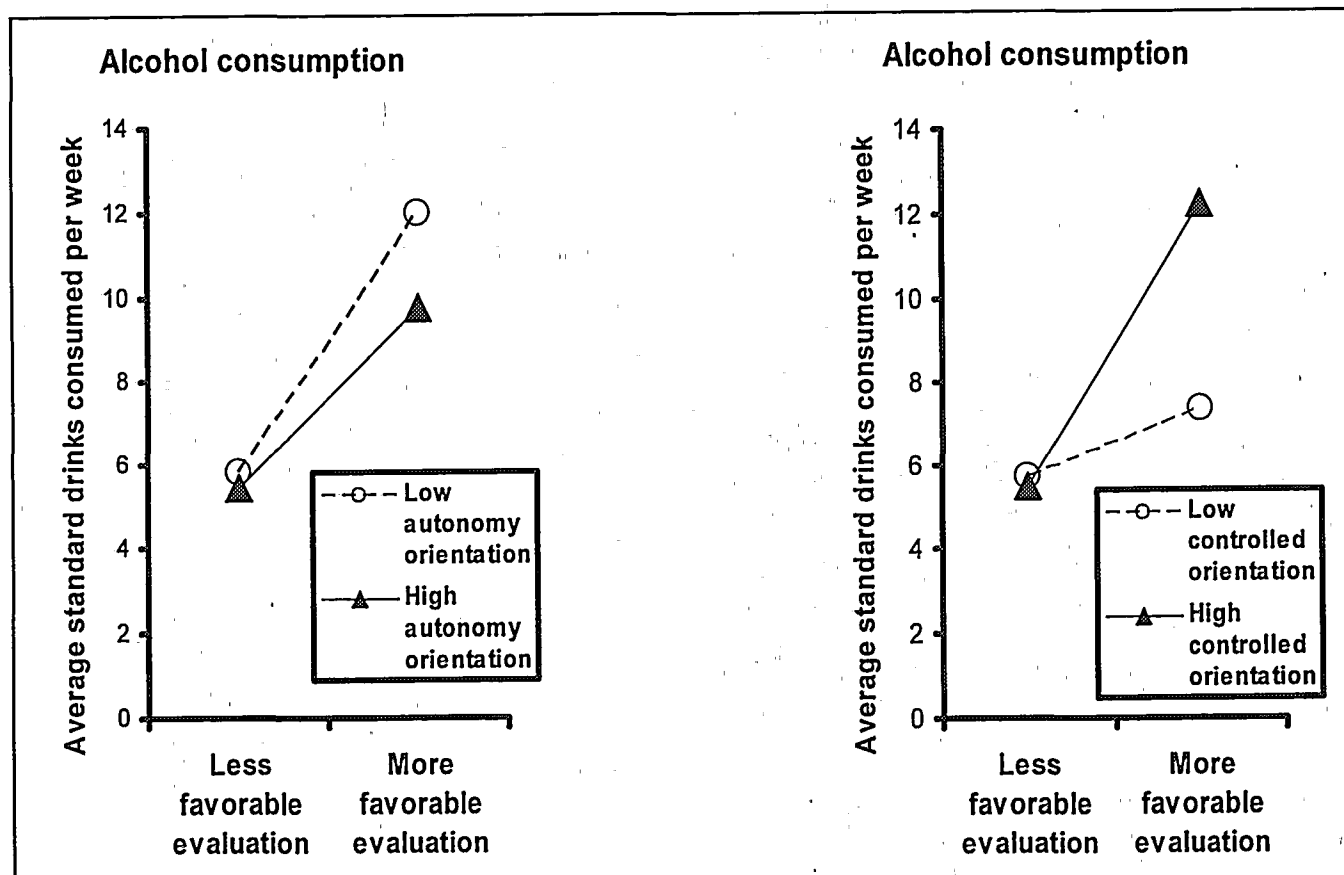


FIGURE 2. Autonomy and controlled orientation as moderators of subjective evaluations of positive effects and alcohol consumption

and positive AE and evaluations were also stronger for men than for women.

Physiological differences require men to consume more alcohol to achieve the same BAC as women. Controlling for body weight, women become more intoxicated than men for a given quantity of alcohol as a consequence of various factors unique to women: higher fat and lower water volume/body mass, lower levels of gastric alcohol dehydrogenase, and the effects of oral contraception and menstrual cycle on alcohol effects. While physiology may account for differences in consumption without differences in consequences, it cannot account for men evaluating alcohol effects more favorably or for the stronger association among men than among women between controlled orientation and AE and evaluations.

Another possibility is that alcohol-related effects are more relevant and consistent with the "male" social-identity. Prentice and Miller (1993) proposed "alcohol consumption is a more central or integral aspect of male social life than of female social life" (p. 249). Specific expectancies such as sexual enhancement, liquid courage and aggression may be more endemic in college men than in college women. This explanation is consistent with the finding that positive AE and evaluation of positive alcohol effects are associated with greater consumption and problems among the men, but not the women, who were more controlled, given that these expectations are more consistent with what men "ought" to be (e.g., powerful, sociable and daring). A related possibility involves differential societal perceptions of heavy-drinking women. Heavy drinking among college men may be excused as "boys will be boys," whereas heavy drinking by women may result in their being viewed as sexually promiscuous (George et al., 1988). If social perceptions of drinking women are more ambiguous or negative, the consequences of drinking become less clear. For men, drinking is associated with many positives. For women, these positives are less evident.

Implications for self-determination theory

Self-determination theory assumes that individual differences in motivational orientations are cultivated developmentally over time as a function of exposure to autonomy supportive versus controlling environments. Autonomy supportive environments are those that promote choices for behavior, acknowledgment of one's opinions and feelings, optimal challenges and meaningful rationales for requested behavior. Controlling environments are rigidly structured with directive prescriptions regarding "correct" behavior with little regard for one's needs or desires to express opinions or question judgments. Previous research has revealed that differences in SD are associated with engaging in behavior for varying motivations. Our research is the first to show that individual differences in SD affect expected outcomes of a particular behavior. Controlled individuals ap-

pear to be more outcome oriented, believing more strongly in the reputed effects of alcohol (positive and negative). Furthermore, they view presumed results of alcohol consumption more favorably (positive and negative). This research suggests there may be fundamental differences in the extent to which individuals perceive contingencies between behavior and consequences; specifically, individuals who are lower in SD appear to perceive more contingencies for behavior and to place more value on those contingencies, regardless of whether they are beneficial or harmful, and these expectations and evaluations are more strongly associated with reported behavior.

These findings corroborate those of Knee and Neighbors (2002) and the suggestions of Wong (2000) that gender is more likely to moderate the impact of controlled orientation than of autonomy. Gender roles often provide clear prescriptions for what men are expected to do versus what women "should" do in specific contexts. On the other hand, gender differences in core values and the experience of choice associated with autonomy are less clearly demarcated. Gender differences have largely been ignored in the SD literature. If we are to develop a more complete understanding of the role of SD in regulating behavior, we must acknowledge the ways larger social factors (e.g., gender roles) shape the pressures and perceived expectations related to specific behaviors differentially for various groups of people.

Implications for expectancy literature

The present results corroborate previous alcohol expectancy work that indicates the anticipated benefits of alcohol are more strongly linked to behavior than are its potential negative effects. However, our results challenge a fundamental assumption behind expectancy constructs, which is that beliefs about outcomes drive behavior. Expectancy theory is more applicable in predicting drinking for those who do not regulate their behavior based on intrinsic interests and integrated core values. Thus, believing that alcohol will result in positive outcomes is associated with more drinking only to the extent that expected outcomes drive behavior.

Implications for intervention

Challenging AE has demonstrated efficacy in reducing high-risk drinking among male college students (Darkes and Goldman, 1993, 1998) and has been incorporated into multi-component interventions (Dimeff et al., 1999; Larimer et al., 2001; Marlatt et al., 1998). The present research suggests this approach is unlikely to be effective for individuals higher in SD but may be especially effective among individuals who are lower in SD. Identification of individual differences that moderate the processes underlying efficacious interventions is an important step toward un-

derstanding which interventions work best for whom. Motivational Interviewing, an intervention that explores intrinsic values and how they align with current behavior, may be more indicated for individuals higher in SD.

Limitations

Sample representation is a possible limitation in this research. Because our sample was selected for other purposes, individuals who had never gambled (even bingo or lottery) were not recruited. According to a large study across six colleges and universities in five states, the proportion of students who report having never gambled is roughly 15% (Lesieur et al., 1991). Gambling and alcohol consumption are consistently correlated, so we may have recruited fewer nondrinking students than would have otherwise been the case. Still, there is no evidence to suggest that inclusion of students who have never gambled would systematically change relationships among SD, alcohol-related cognitions and drinking behavior. Our sample also included a relatively large proportion of Asian students. Asian students tend to drink less, report fewer alcohol-related consequences and be more likely to abstain from drinking than white students. AE among Asians are similar to whites with the exception of higher tension reduction AE (O'Hare, 1995). Our data, however, indicate Asians are also somewhat lower in SD. In general, therefore, the diversity of the sample resulted in more conservative tests of hypotheses. Examination of SD in the role of AE and drinking by ethnicity was beyond the scope of the present research but is a worthy endeavor for future studies. Drinking measures were based on retrospective self-reports; however, an attempt was made to minimize social desirability by reminding participants that responses were anonymous (Babor et al., 1987). In addition, the nonexperimental cross-sectional nature of the data precludes determination of causal direction. While results were consistent with hypotheses, alternative models cannot be ruled out.

Another potential limitation is that we did not examine AE and subjective evaluation of alcohol effects in the same regression equations. AE and evaluations were examined separately for theoretical as well as practical reasons. Theoretically, in this research we were not interested in examining relative strength of AE and evaluations. Practically, the number of product terms required to test our hypotheses would have been prohibitive. Moreover, we viewed separate examination of AE and evaluations as a means of establishing the robustness of SD as a moderator of cognitive antecedents of drinking.

Conclusions

Given that AE research, with few exceptions (e.g., Bartholow et al., 2000), has failed to identify motivational

and personality moderators of AE effects, our research represents a distinctive contribution. Despite the extensive literature supporting self-determination theory, only recently has research begun to explore its applications in etiology and prevention of college student problem drinking (Knee and Neighbors, 2002; Neighbors et al., 2002). The current findings further support the promise of this approach.

Although the present research focused on individual differences in SD, abundant research has shown the extent to which particular behaviors engaged in for self-determined reasons can be influenced by contextual, situational and interpersonal factors (see Deci and Ryan, 1985b, 2000 for reviews). Future research may explore these factors in interventions aimed at heavy-drinking college students. Despite efforts made to identify treatment-matching variables among patients seeking substance use treatment, few predictors have been consistently reported. Because therapy approaches vary drastically in their view of what promotes behavior change, SD may be a promising avenue of exploration in this area. For example, the Community Reinforcement Approach (Higgins, 1999) focuses on external reinforcers, while Motivational Interviewing (Miller and Rollnick, 2002) focuses on building intrinsic motivation. If people are motivated to engage in drinking behavior for diverse reasons, treatment approaches that match these areas may be more acceptable and effective.

References

- AIKEN, L.S. AND WEST, S.G. *Multiple Regression: Testing and Interpreting Interactions*, Thousand Oaks, CA: Sage, 1991.
- ARMELI, S., CARNEY, M.A., TENNEN, H., AFFLECK, G. AND O'NEIL, T.P. Stress and alcohol use: A daily process examination of the stressor-vulnerability model. *J. Pers. Social Psychol.* 78: 979-994, 2000.
- BABOR, T.F., STEPHENS, R.S. AND MARLATT, G.A. Verbal report methods in clinical research on alcoholism: Response bias and its minimization. *J. Stud. Alcohol* 48: 410-424, 1987.
- BARTHLOW, B.D., SHER, K.J. AND STRATHMAN, A. Moderation of the expectancy-alcohol use relation by private self-consciousness: Data from a longitudinal study. *Pers. Social Psychol. Bull.* 26: 1409-1420, 2000.
- BROWN, S.A. Reinforcement expectancies and alcoholism treatment outcome after a one-year follow-up. *J. Stud. Alcohol* 46: 304-308, 1985.
- BURDEN, J.L. AND MAISTO, S.A. Expectancies, evaluations and attitudes: Prediction of college student drinking behavior. *J. Stud. Alcohol* 61: 323-331, 2000.
- COLLINS, R.L., LAPP, W.M., EMMONS, K.M. AND ISSAC, L.M. Endorsement and strength of alcohol expectancies. *J. Stud. Alcohol* 51: 336-342, 1990.
- COLLINS, R.L., PARKS, G.A. AND MARLATT, G.A. Social determinants of alcohol consumption: The effects of social interaction and model status on the self-administration of alcohol. *J. Cons. Clin. Psychol.* 53: 189-200, 1985.
- COOPER, M.L., RUSSELL, M. AND GEORGE, W.H. Coping expectancies, and alcohol abuse: A test of social learning formulations. *J. Abnorm. Psychol.* 97: 218-230, 1988.
- COOPER, M.L., RUSSELL, M., SKINNER, J.B., FRONE, M.R. AND MUDAR, P. Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *J. Abnorm. Psychol.* 101: 139-152, 1992.
- CROWE, L.C. AND GEORGE, W.H. Alcohol and human sexuality: Review and integration. *Psychol. Bull.* 105: 374-386, 1989.

- DARKES, J. AND GOLDMAN, M.S. Expectancy challenge and drinking reduction: Experimental evidence for a mediational process. *J. Cons. Clin. Psychol.* 61: 344-353, 1993.
- DARKES, J. AND GOLDMAN, M.S. Expectancy challenge and drinking reduction: Process and structure in the alcohol expectancy network. *Exp. Clin. Psychopharmacol.* 6: 64-76, 1998.
- DECI, E.L. AND RYAN, R.M. The general causality orientations scale: Self-determination in personality. *J. Res. Pers.* 19: 109-134, 1985a.
- DECI, E.L. AND RYAN, R.M. *Intrinsic Motivation and Self-Determination in Human Behavior*, New York: Plenum Press, 1985b.
- DECI, E.L. AND RYAN, R.M. The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychol. Inq.* 11: 227-268, 2000.
- DIMEFF, L.A., BAER, J.S., KIVLAHAN, D.R. AND MARLATT, G.A. *Brief Alcohol Screening and Intervention for College Students (BASICS): A Harm Reduction Approach*, New York: Guilford Press, 1999.
- FINN, P.R., SHARKANSKY, E.J., BRANDT, K.M. AND TURCOTTE, N. The effects of familial risk, personality and expectancies on alcohol use and abuse. *J. Abnorm. Psychol.* 109: 122-133, 2000.
- FROMME, K., KIVLAHAN, D.R. AND MARLATT, G.A. Alcohol expectancies, risk identification, and secondary prevention with problem drinkers. *Adv. Behav. Res. Ther.* 8: 237-251, 1986.
- FROMME, K., STROOT, E. AND KAPLAN, D. Comprehensive effects of alcohol: Development and psychometric assessment of a new expectancy questionnaire. *Psychol. Assess.* 5: 19-26, 1993.
- GEORGE, W.H. AND DERMEN, K.H. Self-reported alcohol expectancies for self and other as a function of behavior type and dosage set. *J. Subst. Abuse* 1: 71-78, 1988.
- GEORGE, W.H., FRONE, M.R., COOPER, M.L., RUSSELL, M., SKINNER, J.B. AND WINDLE, M. A revised Alcohol Expectancy Questionnaire: Factor structure confirmation and invariance in a general population sample. *J. Stud. Alcohol* 56: 177-185, 1995.
- GEORGE, W.H., GOURNIC, S.J. AND MCAFEE, M.P. Perceptions of postdrinking female sexuality: Effects of gender, beverage choice, and drink payment. *J. Appl. Social Psychol.* 18 (15, Pt 1): 1295-1317, 1988.
- GUARNA, J. AND ROSENBERG, H. Influence of dose and beverage type instructions on alcohol outcome expectancies of DUI offenders. *J. Stud. Alcohol* 61: 341-344, 2000.
- HIGGINS, S.T. Potential contributions of the community reinforcement approach and contingency management to broadening the base of substance abuse treatment. In: TUCKER, J.A., DONOVAN, D.M. AND MARLATT, G.A. (Eds.) *Changing Addictive Behavior: Bridging Clinical and Public Health Strategies*, New York: Guilford Press, 1999, pp. 283-306.
- HODGINS, H.S., KOESTNER, R. AND DUNCAN, N. On the compatibility of autonomy and relatedness. *Pers. Social Psychol. Bull.* 22: 227-237, 1996.
- KASSEL, J.D., JACKSON, S.I. AND UNROD, M. Generalized expectancies for negative mood regulation and problem drinking among college students. *J. Stud. Alcohol* 61: 332-340, 2000.
- KATZ, E.C., FROMME, K. AND D'AMICO, E.J. Effects of outcome expectancies and personality on young adults' illicit drug use, heavy drinking, and risky sexual behavior. *Cog. Ther. Res.* 24: 1-22, 2000.
- KILBEY, M.M., DOWNEY, K. AND BRESLAU, N. Predicting the emergence and persistence of alcohol dependence in young adults: The role of expectancy and other risk factors. *Exp. Clin. Psychopharmacol.* 6: 149-156, 1998.
- KLINE, R.B. *Principles and Practice of Structural Equation Modeling*, New York: Guilford Press, 1998.
- KNEE, C.R. AND NEIGHBORS, C. Self-determination, perception of peer pressure, and drinking among college students. *J. Appl. Social Psychol.* 32: 522-543, 2002.
- KNEE, C.R., NEIGHBORS, C. AND VIETOR, N.A. Self-determination as a framework for understanding road rage. *J. Appl. Social Psychol.* 31: 809-904, 2001.
- LANG, A.R. The social psychology of drinking and human sexuality. *J. Drug Issues* 15: 273-289, 1985.
- LARIMER, M.E., TURNER, A.P., ANDERSON, B.K., FADER, J.S., KILMER, J.R., PALMER, R.S. AND CRONCE, J.M. Evaluating a brief alcohol intervention with fraternities. *J. Stud. Alcohol* 62: 370-380, 2001.
- LEE, N.K., GREELY, J. AND OEI, T.P.S. The relationship of positive and negative alcohol expectancies to patterns of consumption of alcohol in social drinkers. *Addict. Behav.* 24: 359-369, 1999.
- LEIGH, B.C. Evaluations of alcohol expectancies: Do they add to prediction of drinking patterns? *Psychol. Addict. Behav.* 1: 135-139, 1987.
- LEIGH, B.C. In search of the seven dwarves: Issues in measurement and meaning in alcohol expectancy research. *Psychol. Bull.* 105: 361-373, 1989.
- LEIGH, B.C. AND STACEY, A.W. Alcohol outcome expectancies: Scale construction and predictive utility in higher order confirmatory models. *Psychol. Assess.* 5: 216-229, 1993.
- LESIEUR, H.R., CROSS, J., FRANK, M., WELCH, M., WHITE, C.M., RUBENSTEIN, G., MOSELEY, K. AND MARK, M. Gambling and pathological gambling among university students. *Addict. Behav.* 16: 517-527, 1991.
- McKEE, S.A., HINSON, R.E., WALL, A. AND SPRIEL, P. Alcohol outcome expectancies and coping styles as predictors of alcohol use in young adults. *Addict. Behav.* 23: 17-22, 1998.
- MACLATCHY-GAUDET, H.A. AND STEWART, S.H. The context-specific positive alcohol outcome expectancies of university women. *Addict. Behav.* 26: 31-49, 2001.
- MARLATT, G.A., BAER, J.S., KIVLAHAN, D.R., DIMEFF, L.A., LARIMER, M.E., QUIGLEY, L.A., SOMERS, J.M. AND WILLIAMS, E. Screening and brief intervention for high-risk college student drinkers: Results from a two-year follow-up assessment. *J. Cons. Clin. Psychol.* 66: 604-615, 1998.
- MILLER, W.R. AND ROLLNICK, S. *Motivational Interviewing: Preparing People for Change*, 2nd Edition, New York: Guilford Press, 2002.
- NEIGHBORS, C., LARIMER, M.E., GEISNER, I.M. AND KNEE, C.R. Feeling controlled and drinking motives among college students: Contingent self-esteem as a mediator, manuscript submitted for publication.
- NEIGHBORS, C., VIETOR, N.A. AND KNEE, C.R. A motivational model of driving anger and aggression. *Pers. Social Psychol. Bull.* 28: 324-335, 2002.
- O'HARE, T. Differences in Asian and white drinking: Consumption level, drinking contexts, and expectancies. *Addict. Behav.* 20: 261-266, 1995.
- PRENTICE, D.A. AND MILLER, D.T. Pluralistic ignorance and alcohol use on campus: Some consequences of misperceiving the social norm. *J. Pers. Social Psychol.* 64: 243-256, 1993.
- ROHSENOW, D.J. Drinking habits and expectancies about alcohol's effects for self versus others. *J. Cons. Clin. Psychol.* 51: 752-757, 1983.
- SATRE, D.D. AND KNIGHT, B.G. Alcohol expectancies and their relationship to alcohol use: Age and sex differences. *Aging Ment. Hlth* 5: 73-83, 2001.
- SHER, K.J., WOOD, M.D., WOOD, P.K. AND RASKIN, G. Alcohol outcome expectancies and alcohol use: A latent variable cross-lagged panel study. *J. Abnorm. Psychol.* 105: 561-574, 1996.
- STACEY, A.W., WIDAMAN, K.F. AND MARLATT, G.A. Expectancy models of alcohol use. *J. Pers. Social Psychol.* 58: 918-928, 1990.
- WALL, A.M., HINSON, R.E. AND McKEE, S.A. Alcohol outcome expectancies, attitudes toward drinking and the theory of planned behavior. *J. Stud. Alcohol* 59: 409-419, 1998.
- WHITE, H.R. AND LABOUIE, E.W. Towards the assessment of adolescent problem drinking. *J. Stud. Alcohol* 50: 30-37, 1989.
- WONG, M.M. The relations among causality orientations, academic experience, academic performance, and academic commitment. *Pers. Social Psychol. Bull.* 26: 315-326, 2000.
- WOOD, M.D., SHER, K.J. AND STRATHMAN, A. Alcohol outcome expectancies and alcohol use and problems. *J. Stud. Alcohol* 57: 283-288, 1996.

A vertical bar on the left side of the page, consisting of a series of horizontal segments in shades of yellow and orange, with a small red diamond at the top.

COPYRIGHT INFORMATION

TITLE: Expectancies and Evaluations of Alcohol Effects among
College Students: Self-Determination as a Moderator

SOURCE: J Stud Alcohol 64 no2 Mr 2003

WN: 0306002128019

The magazine publisher is the copyright holder of this article and it is reproduced with permission. Further reproduction of this article in violation of the copyright is prohibited.

Copyright 1982-2003 The H.W. Wilson Company. All rights reserved.