

Normative Beliefs, Expectancies, and Alcohol-related Problems among College Students: Implications for Theory and Practice

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Abstract:

This investigation (1) examined the interrelations among normative beliefs, alcohol expectancies, and alcohol-related problems and (2) investigated whether alcohol-related expectancies mediate associations between normative beliefs and alcohol-related problems. Participants were 65 undergraduate college students who were participating in the evaluation of an alcohol education curriculum (Wyrick & Fearnow-Kenny 2002). Hierarchical multiple regression analyses provided support for one of the central tenets of social learning theory: that alcohol expectancies mediate the relationship between normative beliefs (the prevalence and acceptance of alcohol use) and alcohol-related socio-emotional and community problems. When differences in the operational definition of normative beliefs are considered, findings are consistent with previous research of the mediational role of alcohol expectancies. Implications for theory and alcohol education are discussed.

Keywords: Alcohol Education | Alcohol-Related Problems | College Students | Drinking | Normative Beliefs

Article:

Introduction

Alcohol, abuse, heavy episodic drinking in particular, is the number one substance use problem among college and universities in the United States (Presley, Leichliter, & Meilman, 1998; Syre, Martino-McAllister, & Vanada, 1997). Heavy episodic drinking (or high-risk alcohol use) is most commonly defined as the consumption of five or more drinks in one sitting (four or more for women). Survey results indicate that just under half of all college students report engaging in high-risk drinking at least once during the previous two weeks (Presley, et al., 1998) and

approximately 1 in 5 college students is a frequent high-risk drinker (defined as 14.5 drinks per week).

Heavy alcohol use by college students is associated with an increase in other health compromising behaviors. Students who engage in heavy drinking are more likely to use other drugs such as tobacco and marijuana (Kim, Larimer, Walker, & Marlatt, 1997; Emmons, Wechsler, Dowdall, & Abraham, 1998). They are also more likely to be a victim and/or perpetrator of sexual assault (Abbey, Ross, McDuffe, & McAuslan, 1996; Greene & Navarro, 1998; Ullman, Karabatsos, & Koss, 1999), have unprotected sex (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994), and engage in other high-risk sexual behaviors (e.g., multiple partners and high frequency of sex) (Prince & Bernard, 1998). In addition, heavy drinkers are at increased risk of driving under the influence (Engs & Hanson, 1988; Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998). In fact, it has been estimated that 30 to 40% of all college student high-risk drinkers have operated a motor vehicle after a heavy drinking episode: (Syre, et al., 1997; Wechsler, et al., 1998; Wechsler, Molnar, Davenport, & Baer, 1999). Clearly, attempts to reduce campus alcohol abuse have the potential to positively impact the lives of students who engage in high-risk drinking, as well as others in the community.

Recent attempts to address the problem of college alcohol abuse and associated problems have been based on key constructs of social learning theory, alcohol-related expectancies and normative beliefs (Bandura, 1997; Abrams & Niaura, 1987). Research has demonstrated that alcohol-related expectancies (beliefs) predict that quantity and frequency of heavy alcohol use (Carey, 1995). As one would expect, positive expectancies (e.g., alcohol allows me to be more assertive), as well as weak negative expectancies (e.g., alcohol makes me depressed), are predictive of greater alcohol use (Colder, Chassin, Stice, & Curran, 1997; Mooney, Fromme, Kivlahan, & Marlatt, 1987). There is evidence that alcohol expectancies and alcohol consumption among college drinkers can be changed through experimental means (Drakes & Goldman, 1993).

The correction of erroneous beliefs about the prevalence and acceptance of high-risk drinking has also been identified as an important component of prevention programming. College students generally overestimate the extent of alcohol consumption among other students (Baer & Carney, 1993; Baer, Stacy, & Larimer, 1991; Perkins, Meilman, Leichliter, Cashin, & Presley, 1999). They also view heavy drinking as more acceptable when associating with groups that exhibit high levels of alcohol consumption (e.g., Greek organizations) (Larimer, Irvine, Kilmer, & Marlatt, 1997). These misperceptions (erroneous normative beliefs) tend to generate greater use (Baer et al., 1991; Perkins & Wechsler, 1996; Presley et al., 1998). Many college prevention programs that target normative beliefs have demonstrated reductions in reported drinking behavior (Barnett, Far, Mauss, & Miller, 1996; Haines & Spear, 1996), consequences of alcohol use (Steffian, 1999), and student alcohol use norms (Gomberg, Schneider, & DeJong, 2001).

According to social learning theory, cognitive factors (e.g., self-efficacy and outcome expectancies) mediate or at least partially explain the relationships between social influences (e.g., social modeling and perceived norms) and behavior. Several studies have examined the mediational role of alcohol expectancies in relations between perceived norms (normative beliefs) and alcohol use and related problems (Scheier & Botvin, 1997; Wood, Read, Palfai, & Stevenson, 2001). Wood and his colleagues (2001) examined the mediational role of alcohol outcome expectancies in the relations of several social influence variables and college student

alcohol use and related problems. They observed a significant mediational effect for outcome expectancies in the association between social modeling and alcohol use and problems. Social modeling was assessed with items measuring friends' drinking behavior, friends' attitudes toward drinking, and perceived pressure from friends to drink. Perceived norms, although directly related to alcohol use, did not influence alcohol use or related-problems through a mediated effect of outcome expectancies. Perceived norms were assessed with items measuring the quantity-frequency of alcohol use, heavy, drinking, and alcohol problems among typical college students (i.e., of same genders, attending same university).

The lack of support for mediational effect of expectancies on the relation between perceived norms and alcohol-related problem behavior is somewhat surprising. It is possible that perceived norms are indirectly related to problem behavior through an unidentified variable. It is also possible that inconsistency across studies in the operational definition of normative beliefs is producing the disparate findings. For example, Scheier and Botvin (1997) found support for a mediational effect of expectancies on adolescent alcohol use when normative beliefs were defined as peer attitudes and friends' use (prevalence) but not when defined as perceived prevalence of peer ("people your age") alcohol use. Further investigation of the relations between alcohol-related expectancies, normative beliefs, and alcohol-related problem behaviors is needed to determine the usefulness of the social learning theory in understanding college alcohol abuse and to develop and refine programs that target the reduction of negative consequences associated with high-risk drinking by college students.

The purpose of the present study is to further define the relationship between alcohol expectancies, normative beliefs, and problems associated with alcohol abuse. First, we sought to examine interrelations among normative beliefs, alcohol expectancies, and two types of problem behaviors: socio-emotional and community. It was hypothesized that holding normative beliefs that are consistent with high-risk alcohol use and having expectancies of positive (i.e., desirable) effects of alcohol use would be associated with greater occurrence of both types of problem behaviors. Second, we wanted to directly set one of the central tenets of social learning theory by investigating whether alcohol-related expectancies mediate associations between normative beliefs and alcohol-related socio-emotional and community problems.

Method

Participants

Participants were 65 undergraduate students from two 3-credit Personal Health courses. The age of the participants ranged from 18 to 36 years (Mean age was 20.38 years). There were 18 freshman (27.7%), 22 sophomores (33.8%), 20 juniors (30.8%), and 5 seniors (7.7%). The ethnic distribution was split by mostly White (55.4%), and African-American (41.5%) students. There were more females (50; 76.9%) than males (15; 23.1%) in this sample. Slightly more students lived on campus (38; 58.5%) than off campus (27; 41.5%).

Procedures

Students in the two classes were asked to participate in an evaluation of an Internet-based college alcohol education course (Wyrick & Feamow-Kenney, 2002). Each student was required to complete the alcohol education curriculum, which was one component of the 3-credit Personal Health course, but was given the option to decline participation in the evaluation surveys. The pretest survey was administered prior to the start of the course. The posttest survey was

administered following the completion of the alcohol curriculum (i.e., approximately three weeks later). Ninety-four percent of the students agreed to participate in the data collection activities. Measures to protect confidentiality were discussed with students and written informed consent was received from all participants.

Measures

Alcohol expectancies: The Alcohol Expectancy Questionnaire (AEQ), (Brown, Christiansen, & Goldman, 1987) was used to measure alcohol-related expectancies. The scales for social assertiveness, tension reduction, and enhanced sexual pleasure were used because they have been shown to vary with heavy drinking among college students (O'Hare, 1997). Cronbach's alphas for the social assertiveness, tension reduction, and sexual pleasure scales were .95, .87, and .80, respectively. A total expectancy scale was created by averaging scores from the three scales. Cronbach's alpha for the total scale was .95.

Normative beliefs: We revised the "normative belief" scale that is part of a survey that was developed for use with a middle school drug prevention program (McNeal & Hansen, 1999). Sample items from this scale include "How many of your friends get drunk at least once a week?" and "How would your close friends feel about you having five or more drinks in one sitting?" Internal consistency for this 5-item scale was .78.

Consequences of Alcohol Abuse: The College Alcohol Problem Scale (CAPS); (O'Hare, 1997) was used to assess consequences of drinking behavior. Items assessing socio-emotional and community problems related to drinking behavior were selected. The socio-emotional scale measured problems such as "feelings sad, blue, or depressed," "had family problems related to your drinking," and "caused you to feel bad about yourself." The community scale included problems such as "spent too much money on alcohol or drugs," "drove under the influence," and "had problems with the law/school administration."

Analysis

The first set of analyses examined the bivariate correlations among the five potential correlates of alcohol-related problem behaviors (i.e., socio-emotional and community). These tests were conducted to identify correlates of alcohol-related problem behaviors. In the second set of analyses we used hierarchical multiple regression analyses to test for mediating (causal) effects. The mediating process of interest in this study was the effect of normative beliefs (independent variable) on alcohol-related expectancies (mediator) and the link between those variables and socio-emotional and community problems (outcomes). For the purposes of these analyses, all predictors (e.g., mediators and moderators) were measured at the pretest survey occasion and both outcomes were measured at the posttest survey occasion.

Results

Prevalence of Alcohol-Related Problems

Descriptive data on the prevalence of alcohol-related problems in this sample are presented in Table 1. The most frequently experienced problems were "feeling nauseous, tired, and vomiting," "spending too much money," and "feeling sad, blue, or depressed." Students reported "never or almost never" experiencing "family problems," "having unprotected sex," or "experiencing physical injury" due to their drinking. Very few students (less than 10% of the sample) reported experiencing problems "often" or "very often."

Correlates of Alcohol-Related Problems

Table 2 presents the intercorrelations among study variables. No significant correlations were observed between student gender, age, or residential status (i.e., whether the student lives on-or off-campus) and both types of alcohol-related problems. Therefore, these variables were not included in the remaining analyses. However, having positive alcohol-related expectancies (e.g., drinking gives me more confidence in myself) and having normative beliefs consistent with heavy alcohol use were associated with greater socio-emotional and community problems. Alcohol-related expectancies and normative beliefs were included as predictors in subsequent regression analyses.

Test of Mediation

According to Baron & Kenney (1986) and others (MacKinnon, 1994), tests of mediation involve a three step process: 1) the independent variable must be correlated with the potential mediator, 2) the potential mediator must be correlated with the outcome, and 3) the once significant relationship between the independent variable and the outcome becomes non-significant (partial mediation) or becomes equal to zero (complete mediation) when the mediator is entered in the equation. The mediator, therefore, explains the relationship between the predictor and the outcome. We hypothesized that alcohol-related expectancies mediate (explain) the relationship between normative beliefs and alcohol-related problems.

Evidence for the existence of the first two conditions described above is provided by the correlational analyses. The independent variable, normative beliefs, was significantly correlated with socio-emotional ($r=.261$, $p<.05$) and community problems ($r=.279$, $p<.05$). In addition, alcohol expectancies, the proposed mediator, was related to socio-emotional problems $r=.319$, $p<.05$) and community problems ($r=.495$, $p<.01$).

The third condition was tested with a series of hierarchical multiple regressions. The results of these analyses can be seen in Table 3. In the first regression, normative beliefs was a significant predictor of posttest socio-emotional ($[\beta]=.261$, $p<.05$) and community-related alcohol problems ($[\beta]=.279$, $p<.05$). However, when alcohol expectancies were entered in the equations, the regression coefficients for normative beliefs became non-significant ($[\beta]=.132$, $p>.10$ and $[\beta]=.030$, $p>.10$, respectively). The existence of partial mediation was supported for both outcomes. The effect of normative beliefs on socio-emotional and community problems appears to be at least partially caused by its influence on alcohol-related expectancies.

MacKinnon (1994) provides a method for testing the statistical significance of the mediated effect and determining the proportion of the effect that is mediated. We calculated the mediated effect for socio-emotional problems (.0091) and found that it accounted for 47% of the total effect of norms on these problems. This indirect effect, however, failed to reach statistical significance ($Z= 1.61$). The mediated effect for community problems (.0125) was estimated to account for 77% of the total effect of norms on these problems. This indirect effect was statistically significant ($Z=2.54$).

Discussion

The purpose of this investigation was to examine the relationships between normative beliefs, alcohol expectancies, and alcohol-related problems in a sample of college students. Short-term longitudinal data revealed significant relations between both of the proposed influences and

alcohol-related problems. That is, holding positive alcohol expectancies and holding perceptions of greater peer alcohol use and acceptance of use were associated with more frequent socio-emotional and community problems. The findings of this study also provided evidence to support one of the major tenets of social learning theory: that expectancies at least partially mediate the relationship between normative beliefs and alcohol-related problems. Alcohol expectancies significantly mediated the relationship between normative beliefs and community problems, and this effect approached significance in the prediction of socio-emotional problems.

The results of this study make two important contributions to research on college alcohol prevention. First, the findings regarding the mediational effect of alcohol expectancies challenge researchers to come to a consensus regarding the operational definition of normative beliefs (also known as perceived norms and social norms). The measure of normative beliefs used in this investigation included perceptions of peer acceptance of alcohol use, as well as the prevalence of use. With this measure, the relationship between normative beliefs and alcohol problems was mediated by alcohol expectancies. The definition used in this study resembles that of the "social modeling" construct used by Wood and his colleagues (2001) and the "peer attitudes" and "perceived friends' alcohol use" constructs used by Scheier and Botvin, (1997). Taking this fact into consideration, the findings reported here are generally consistent with those of previous studies. Further research is needed to determine if the more qualitative assessment of peer acceptance or approval is a critical component of normative beliefs as described by social learning theory.

A second contribution made by this study is to provide further support for the inclusion of normative beliefs and alcohol expectancies as mediators of college alcohol prevention programs. According to the findings presented here, programs can directly target alcohol expectancies in an attempt to reduce alcohol-related harm. Expectancies have been successfully changed by procedures designed to reduce alcohol consumption (e.g., "expectancy challenge"), (Darkes & Goldman, 1993; 1998). It seems reasonable to assume that the same procedures, as well as others, can also be used to either directly or indirectly prevent alcohol-related harm. The mediational findings also suggest that prevention efforts can minimize alcohol-related problems by targeting normative beliefs, which in turn have the potential to change alcohol expectancies. Again, the results reported here suggest that efforts should be focused on correcting normative beliefs regarding the prevalence and acceptance of alcohol use.

Several limitations of the present investigation need to be considered when interpreting the results. First, alcohol-related problems were assessed via self-report and may have been under reported. Attempts were made to minimize response bias by providing participants with a statement of confidentiality and using identification numbers instead of names on written surveys. These procedures are often used to increase the reliability of self-report. Second, the participants of this study are not a representative sample of college students. The current sample was taken from a single university campus and therefore, results cannot be generalized to college students on campuses of different sizes, geographic locations, and so forth. Third, alcohol use, heavy alcohol use in particular, was less common in this sample than would be expected among a national sample of college students (Wechsler et. al., 1998, Wechsler, Lee, Kuo, & Lee, 2000). Two design factors may have contributed to this limitation: (1) students who drink heavily may be unlikely to take a Personal Health course of this nature and (2) the sample included five older students (over the age of 22) who are less likely to engage in high-risk drinking (Wechsler, et. al., 1994).

Implications for Education and Prevention

Despite the limitations, this study has important implications for alcohol education and prevention research. Findings reported here add weight to the general theoretical proposition that alcohol abuse and associated consequences are at least partially influenced by malleable cognitive processes. Campus alcohol education and prevention efforts have the potential to change students' beliefs about the prevalence and acceptance of alcohol use, and in turn, their beliefs or expectations regarding the effects of alcohol. Collecting and disseminating campus data on the acceptance of risky drinking behaviors may be one method of changing alcohol expectancies and reducing alcohol-related harm. Other methods undoubtedly exist and will surface as more campuses incorporate these concepts into their educational and prevention curricula.

Table 1. Prevalence of alcohol-related problems as reported on the CAPS

| Problem | Never/almost never | seldom | moderate degree |
|---------------------------------------|-----------------------|--------|--------------------|
| nausea, vomit, tired | 46 (71) | 7 (11) | 10 (15) |
| memory loss | 55 (85) | 7 (11) | 2 (3) |
| sad, blue | 50 (77) | 8 (12) | 3 (5) |
| Nervousness, irritability | 53 (82) | 9 (14) | 3 (5) |
| physical injury | 62 (95) | 2 (3) | 1 (2) |
| family problem | 61 (94) | 1 (2) | 2 (3) |
| friendship/relation- ship problems | 55 (85) | 4 (6) | 4 (6) |
| unplanned sex | 55 (85) | 7 (11) | 2 (3) |
| fights | 51 (79) | 8 (12) | 2 (3) |
| problems w/school or work | 57 (88) | 4 (6) | 1 (2) |
| hurt another person | 57 (88) | 4 (6) | 2 (3) |
| felt bad about self | 54 (83) | 6 (9) | 2 (3) |
| regretted something | 50 (77) | 9 (14) | 4 (6) |
| spent too much money | 50 (77) | 5 (8) | 4 (6) |
| drove after drinking | 55 (85) | 2 (3) | 5 (8) |
| unprotected sex | 62 (95) | 1 (2) | 1 (2) |
| illegal activities | 60 (92) | 1 (2) | 1 (2) |
| problems w/law or school officials | 61 (94) | 1 (2) | 1 (2) |
| problems with appetite, sleeping | 54 (83) | 3 (5) | 6 (9) |
| others criticized my behavior | 52 (80) | 7 (11) | 4 (6) |

| Problem | often | very often |
|------------------------------------|-------|------------|
| nausea, vomit, tired | 1 (2) | 1 (2) |
| memory loss | 1 (2) | 0 |
| sad, blue | 3 (5) | 1 (2) |
| Nervousness, irritability | 0 | 0 |
| physical injury | 0 | 0 |
| family problem | 1 (2) | 0 |
| friendship/relationship problems | 2 (3) | 0 |
| unplanned sex | 1 (2) | 0 |
| fights | 3 (5) | 1 (2) |
| problems w/school or work | 3 (5) | 0 |
| hurt another person | 1 (2) | 1 (2) |
| felt bad about self | 1 (2) | 2 (3) |
| regretted something | 0 | 2 (3) |
| spent too much money | 3 (5) | 3 (5) |
| drove after drinking | 3 (5) | 0 |
| unprotected sex | 1 (2) | 0 |
| illegal activities | 0 | 3 (5) |
| problems w/law or school officials | 1 (2) | 1 (2) |
| problems with appetite, sleeping | 2 (3) | 0 |
| others criticized my behavior | 2 (3) | 0 |

Note. The number of students endorsing each category is presented, followed by the percentages.

Table 2. Intercorrelations Among Study Variables

| Study Variable | Gender | Age | Residential Status | Alcohol Expectancies |
|----------------|---------|---------|--------------------|----------------------|
| Gender (a) | 1.00 | | | |
| Age | .351 ** | 1.00 | | |
| Residential | -.017 | .427 ** | 1.00 | |

| Study Variable | Normative Beliefs | Socio-emotional Problems | Community Problems | Alcohol Expectancies |
|--------------------------|-------------------|--------------------------|--------------------|----------------------|
| Gender (a) | | | | |
| Age | | | | |
| Residential Status (b) | | | | |
| Alcohol Expectancies | .122 | .075 | .140 | 1.00 |
| Normative Beliefs | .300 * | .245 | .281 * | .448 ** |
| Socio-emotional Problems | .176 | .126 | -.016 | .319 * |
| Community Problems | .074 | .023 | .089 | .495 ** |

| Study Variable | Normative Beliefs | Socio-emotional Problems | Community Problems |
|--------------------------|-------------------|--------------------------|--------------------|
| Gender (a) | | | |
| Age | | | |
| Residential Status (b) | | | |
| Alcohol Expectancies | | | |
| Normative Beliefs | 1.00 | | |
| Socio-emotional Problems | .261 * | 1.00 | |
| Community Problems | .279 * | .746 ** | 1.00 |

Notes. * p<.05 (2 tailed) ** p>.01

(a) gender (female = 0, male = 1)

(b) Campus residence (on-campus = 0, off campus = 1)

Ns vary from 57 to 61 due to missing data.

Table 3. Test of Mediation

| Variables entered at each step | Socio-emotional Problems | | Community Problems | |
|--------------------------------|--------------------------|-----------|--------------------|-----------|
| | [beta] | [R.sup.2] | [beta] | [R.sup.2] |
| 1. Normative Beliefs | .261 ** | .068 * | .279 ** | .078** |
| 2. Normative Beliefs | .132 | .116 ** | .030 | .246** |

| | | |
|----------------------|-------------------|-------------------|
| Alcohol Expectancies | .261 * | .482 ** |
| Total Model | F(2,54) = 3.53 ** | F(2,54) = 8.80 ** |

Notes: * $p < .10$ (2-tailed)

** $p < .05$

*** $p < .001$

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