



Short Communication

Family history of alcohol abuse associated with problematic drinking among college students

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ABSTRACT

Studies examining family history of alcohol abuse among college students are not only conflicting, but have suffered various limitations. The current report investigates family history of alcohol abuse (FH+) and its relationship with alcohol expectancies, consumption, and consequences. In the current study, 3753 student participants (35% FH+), completed online assessments. Compared to FH– same-sex peers, FH+ males and FH+ females endorsed greater overall positive expectancies, consumed more drinks per week, and experienced more alcohol-related negative consequences. Further, FH+ females evaluated the negative effects of alcohol to be substantially worse than FH– females. An ANCOVA, controlling for age, GPA, race, and alcohol expectancies, resulted in family history main effects on both drinking and consequences. An interaction also emerged between gender and family history, such that FH+ males were especially vulnerable to high levels of alcohol consumption. Results reveal the scope of FH+ individuals in the college environment and the increased risk for these students, particularly male FH+ students, suggesting a need for researchers and college health personnel to focus attention and resources on this issue.

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1. Introduction

Risky drinking among college students is of particular concern for university administrators and health professionals. Researchers have attempted to isolate correlates of risky drinking. A family history of alcohol abuse (FH+) is a well-documented risk factor for heavy alcohol use and alcohol-related problems (Chalder, Elgar, & Bennett, 2006; Cotton, 1979; Hussong, Curran, & Chassin, 1998; Kuntsche Rehm, & Gmel, 2004; Pullen, 1994; Turnbull, 1994; Warner, White, & Johnson., 2007). About 20% of college students are FH+ (Perkins, 2002) and the college environment may be more harmful for those students predisposed to alcohol problems. A few studies have revealed considerably higher rates of alcohol use (Kushner & Sher, 1993; LaBrie, Kenney, Lac, & Migliuri, 2009; Pullen, 1994) and alcohol-related problems (Leeman, Fenton, & Volpicelli, 2007) among FH+ compared with FH– college students. In contrast, other studies have found no relationship between family history and problematic alcohol use among college students (Engs, 1990; MacDonald, Fleming, & Barry, 1991; Harrell, Slane, & Klump, 2009). Further, there have been conflicting results on the role gender plays among FH+ college students. Some have found FH+ males to be more susceptible to risky drinking and consequences than FH+ females (e.g. Andersson,

Johnsson, Berglund, & Öjehagen, 2007; Jackson, Sher, Gotham, & Wood, 2001; Sher, Walitzer, Wood, & Brent, 1991), while Hartford, Parker and Grant (1992) found no such gender difference. Inconsistencies in existing research highlight the need to explicate how family history status may impact drinking behaviors and problems in collegiate populations.

Alcohol expectancies, the specific beliefs about the behavioral, emotional, and cognitive effects of alcohol (Leigh, 1987), are a potential psychosocial motivator of risky drinking. Stronger positive alcohol expectancies are associated with problem drinking (e.g. Anderson, Schweinsburg, Paulus, Brown, & Tapert, 2005; Brown, Goldman, & Christiansen, 1985). Alcohol-outcome expectancies result from both personal experience with alcohol and from mirroring drinking behavior of individuals (Lundahl et al, 1997), and have thus been shown to differ by family history status in that FH+ individuals have endorsed stronger alcohol-related expectancies, particularly overall positive expectancies (Morean et al, 2009; Pastor & Evans, 2003). Further, FH+ individuals with stronger overall positive expectancies are most likely to experience alcohol-related problems (Conway, Swendsen, & Merikangas, 2003; VanVoorst & Quirk, 2003).

Much of the previous research on family history of alcohol abuse has focused on COAs (children of alcoholics) during adolescence (Barnow, Schuckit, Lucht, John, & Freyberger, 2002; Brown, Creamer, & Stetson, 1987; Chalder et al., 2006; Nash, McQueen, & Bray, 2005; Sher et al., 1991) and middle-late adulthood (Beaudoin, Murray, Bond, & Barnes, 1997; Cloninger, Sigvardsson, & Bohman, 1996; Curran et al., 1999). Moreover, family history studies involving college students have suffered from various limitations, such as a relatively

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small sample size (e.g., Leeman et al., 2007; Pullen, 1994), single-sex samples (e.g. LaBrie et al., 2009; Harrell et al., 2009), or first-year student samples (e.g. Andersson et al., 2007, Gotham, Sher, & Wood, 2003; Jackson et al., 2001). The present study broadens previous research by offering unique insight into family history of alcohol abuse, alcohol-related behaviors and problems, and further examines the moderating effect of gender in family history status on alcohol consumption, alcohol expectancies, and alcohol-related consequences among a large, multisite, ethnically diverse sample of male and female college students.

2. Methods

2.1. Participants

Participants were recruited from two west-coast universities, a large, public institution with 30,000 undergraduates and a mid-sized private institution with approximately 5500 undergraduates. Of a randomly selected pool of 7000 students, 3753 (53.6%) consented to participate. Representative of the makeup of the corresponding institutions, participants' mean age was 19.88 ($SD = 1.36$) and the majority of the participants were female (61%). The sample consisted of 18.9% first-year students, 24.5% sophomores, 27.4% juniors, and 29.2% seniors. Racial representation was as follows: 57.4% Caucasian, 18.7% Asian, 10.7% Multiracial, 3.2% African American, and 10.0% reported other racial/ethnic groups. On average, participants consumed 6.04 ($SD = 8.58$) drinks over 1.59 ($SD = 1.53$) drinking days per week. Among the 67.5% of students who drank, they consumed an average of 8.94 ($SD = 9.11$) drinks per week and averaged 2.36 ($SD = 1.30$) drinking days.

2.2. Design and procedure

At the start of the fall semester, 7000 students (3500 from each campus), received letters inviting them to participate in a study about alcohol use and perceptions of college-student drinking. The students were directed to a link for an online survey. After students clicked on the link and entered their individual pin, they were presented with a local IRB-approved consent form. Participants then completed a 20min survey, for which they received a \$20 compensation.

2.3. Measures

2.3.1. Demographics

Participants indicated their gender, age, most recent GPA, and race.

2.3.2. Family history

Participants indicated whether they had a biological relative that "has or has had a significant drinking problem—one that should or did lead to treatment." This measure was previously developed and successfully used by Miller & Marlatt (1984).

2.3.3. Alcohol consumption

The Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlan, 1985; Kivlahan, Marlatt, Fromme, & Coppel, 1990) asked students to report, from the past 30 days, the typical number of drinks they consumed each day of the week. Responses were summed to form a total drinks per week variable used in this analysis.

2.3.4. Negative consequences

The 25-item Rutgers Alcohol Problem Index (RAPI, White & Labouvie, 1989) ($\alpha = .925$) assessed alcohol-related consequences. Using a 0 (never) to 4 (more than 10 times) scale, participants indicated how many times in the past three months they had experienced each stated circumstance (e.g., "Caused shame or embarrassment to

someone," "Passed out or fainted suddenly," or "Felt that you had a problem with school.").

2.3.5. Alcohol expectancies and evaluations

The Comprehensive Effects of Alcohol (CEOA; Fromme, Stroot, & Kaplan, 1993) is a two-part questionnaire consisting of 76 items. In Part 1, representing items tapping expectancies, participants indicated expectations concerning how he or she may act or feel under the influence of alcohol (e.g., "I would enjoy sex more," "I would act sociable"; 1 = "disagree" 4 = "agree"). In Part 2, representing evaluations, participants subjectively evaluated the effects of alcohol with the same 38 items as Part 1 of the questionnaire (e.g., "Enjoying sex more," "Feeling sociable"; 1 = "bad" 3 = "neutral" 5 = "good"). Each of the expectancies and evaluations components may be further divided into positive factors (sociability, tension reduction, liquid courage, and sexuality) and negative factors (cognitive behavioral impairment, risk and aggression, and self-perception).

3. Results

A family history of alcohol abuse was reported by 35.0% of the total sample, and FH+ participants were more likely to have drunk in the past year than their FH− peers (81% vs. 74%; $\chi^2 = 9.63$, $p < .001$). Independent sample *t*-tests, separately conducted for males and females, revealed several systematic differences between FH+ and FH− respondents (Table 1). Among males, FH+ respondents averaged significantly higher than their FH− counterparts on drinks per week, negative consequences, overall positive expectancies, positive expectancies concerned with tension reduction and liquid courage, as well as positive evaluations concerned with tension reduction. Among females, FH+ respondents reported significantly higher drinks per week, negative consequences, overall positive expectancies, as well as positive expectancies concerned with sociability, tension reduction, and sexuality in comparison to the FH− participants. Typically, FH+ females reported negative evaluations (risk and aggression, and self-perception) to be worse than did FH− females.

Additional analyses show that, among males, FH+ participants drank 45.7% more drinks per week and experienced 43.6% more negative consequences than those classified as FH−. Among females, however, FH+ individuals consumed 14.4% more drinks and experienced 23.6% more negative consequences than their FH− counterparts. Such results, taken together, suggest that a family history of alcohol abuse may adversely impact males more than females in the college environment.

An ANCOVA model, controlling for age, GPA, race, overall positive and negative expectancies, and overall positive and negative evaluations, was performed to predict drinks per week. Family history status (FH+ or FH−) and respondent gender (male or female) served as the independent factors. After ruling out the statistical contribution of the covariates, main effects were found for both family history and gender, and their interaction also emerged (Table 2). This statistical interaction, presented in Fig. 1, revealed that the difference between FH+ and FH− on drinking was more pronounced in males than females, and that FH+ males were especially vulnerable to higher levels of alcohol consumption.

A second ANCOVA model was conducted to predict alcohol negative consequences. Age, GPA, race, and drinks per week were entered as covariates, and family history and gender served as the independent variables. After the variance attributed to the covariates were accounted for in the model, family history remained statistically significant, but no gender main effect or interaction was discovered (Table 2).

4. Discussion

The present investigation uses a large multisite sample and corroborates extant literature by identifying family history as a

Table 1
Mean difference on drinking variable by family history, for males and females.

| Measure | Males | | | | t-test | Females | | | | t-test |
|-------------------------------|-------|---------|------|---------|---------|---------|--------|------|--------|----------|
| | FH+ | | FH– | | | FH+ | | FH– | | |
| | M | (SD) | M | (SD) | | M | (SD) | M | (SD) | |
| Drinks per week | 10.75 | (12.83) | 7.38 | (10.43) | 5.21*** | 4.94 | (6.04) | 4.32 | (5.68) | 2.48* |
| Negative consequences | 6.72 | (9.10) | 4.68 | (8.77) | 5.21*** | 4.55 | (6.64) | 3.68 | (6.03) | 3.11** |
| Overall positive expectancies | 2.55 | (0.55) | 2.47 | (0.58) | 2.16* | 2.42 | (0.58) | 2.35 | (0.59) | 2.73** |
| Sociability | 2.94 | (0.68) | 2.88 | (0.70) | 1.50 | 2.96 | (0.73) | 2.87 | (0.73) | 2.74** |
| Tension reduction | 2.63 | (0.71) | 2.53 | (0.74) | 2.39* | 2.32 | (0.72) | 2.24 | (0.72) | 2.53* |
| Liquid courage | 2.48 | (0.69) | 2.39 | (0.72) | 2.14* | 2.29 | (0.71) | 2.25 | (0.73) | 1.18 |
| Sexuality | 2.13 | (0.73) | 2.09 | (0.73) | 0.93 | 2.12 | (0.76) | 2.05 | (0.75) | 2.11* |
| Overall negative expectancies | 2.28 | (0.52) | 2.28 | (0.59) | 0.07 | 2.20 | (0.56) | 2.20 | (0.58) | 0.21 |
| Cognitive behavioral imp. | 2.64 | (0.60) | 2.63 | (0.65) | 0.32 | 2.64 | (0.65) | 2.62 | (0.68) | 0.73 |
| Risk and aggression | 2.31 | (0.71) | 2.26 | (0.73) | 1.21 | 2.10 | (0.74) | 2.11 | (0.74) | –0.40 |
| Self-perception | 1.89 | (0.64) | 1.95 | (0.72) | –1.34 | 1.87 | (0.69) | 1.87 | (0.69) | 0.25 |
| Overall positive evaluations | 3.48 | (0.84) | 3.40 | (0.83) | 1.75 | 3.18 | (0.85) | 3.19 | (0.86) | –0.39 |
| Sociability | 3.84 | (0.93) | 3.80 | (0.92) | 0.85 | 3.66 | (0.94) | 3.65 | (0.95) | 0.27 |
| Tension reduction | 3.82 | (1.00) | 3.67 | (0.97) | 2.55* | 3.41 | (0.99) | 3.40 | (1.00) | 0.26 |
| Liquid courage | 2.95 | (0.91) | 2.90 | (0.90) | 0.98 | 2.72 | (0.90) | 2.79 | (0.91) | –1.79 |
| Sexuality | 3.32 | (1.07) | 3.21 | (1.02) | 1.69 | 2.92 | (1.08) | 2.92 | (1.05) | –0.20 |
| Overall negative evaluations | 1.89 | (0.57) | 1.92 | (0.62) | –0.89 | 1.68 | (0.50) | 1.76 | (0.55) | –3.45*** |
| Cognitive behavioral imp. | 1.82 | (0.64) | 1.82 | (0.68) | 0.04 | 1.62 | (0.56) | 1.63 | (0.58) | –0.19 |
| Risk and aggression | 2.13 | (0.83) | 2.15 | (0.84) | –0.39 | 1.92 | (0.76) | 2.07 | (0.81) | –4.25*** |
| Self-perception | 1.71 | (0.64) | 1.79 | (0.71) | –1.85 | 1.49 | (0.55) | 1.58 | (0.61) | –3.49*** |

p* < .05. *p* < .01. ****p* < .001.

significant risk factor for alcohol misuse and related consequences among male and female college students (Kushner & Sher, 1993; Leeman et al., 2007; LaBrie et al., 2009; Pullen, 1994). More specifically, this study extends previous research by finding that, whether attributable to genetics or environmental upbringing, familial ties to alcoholism were considerably more hazardous for males than females in regard to excessive alcohol consumption. Compared to FH– same-sex peers, FH+ males drank 41% more drinks per week and FH+ females drank 14% more drinks per week. Notably, results covaried out other important predictors of drinking (e.g. age, GPA, race) to better assess how FH status and gender may be related to drinking in college, over and above such variables. By highlighting family history positive college students' heightened susceptibility to

risky drinking and consequences, and male FH+ students' enhanced risk for alcohol misuse, the current results may help college personnel identify and target prevention efforts to at-risk students. Preventative interventions taking place early in college with FH+ students might help them better understand their heightened alcohol-related vulnerabilities and provide them with tools and motivation to reduce potential harm.

In addition, findings both confirm and extend relevant research examining the role that alcohol expectancies play in FH+ college students' alcohol behaviors and outcomes. Not only did students reporting familial alcohol abuse endorse significantly greater overall positive expectancies than same-sex FH– counterparts, but FH+ female respondents evaluated the negative effects of alcohol to be substantially “more bad” than FH– females. This paradoxical finding, in which women exposed to familial alcohol abuse judged alcohol's

Table 2
ANCOVA models predicting drinks per week and negative consequences.

| Variable | df | MS | F test |
|----------------------------------|----|-----------|------------|
| <i>DV: drinks per week</i> | | | |
| Covariates | | | |
| Age | 1 | 137.51 | 2.29 |
| GPA | 1 | 209.84 | 3.49 |
| Race | 1 | 5207.62 | 86.57*** |
| Overall positive expectancies | 1 | 10,846.35 | 108.31*** |
| Overall negative expectancies | 1 | 6536.75 | 108.67*** |
| Overall positive evaluations | 1 | 6.15 | 0.10 |
| Overall negative evaluations | 1 | 2833.10 | 47.10*** |
| Family history | 1 | 1032.70 | 17.17*** |
| Gender | 1 | 8485.34 | 141.06*** |
| Family history × gender | 1 | 1025.75 | 17.05*** |
| <i>DV: negative consequences</i> | | | |
| Covariates | | | |
| Age | 1 | 95.33 | 2.34 |
| GPA | 1 | 452.91 | 11.09*** |
| Race | 1 | 423.66 | 10.39** |
| Drinks per week | 1 | 43,439.92 | 1063.97*** |
| Family history | 1 | 460.67 | 11.28 |
| Gender | 1 | 130.98 | 3.21 |
| Family history × gender | 1 | 2.71 | 0.07 |

Note: race (1 = Caucasian, 0 = non-Caucasian).
p* < .05. *p* < .01. ****p* < .001.

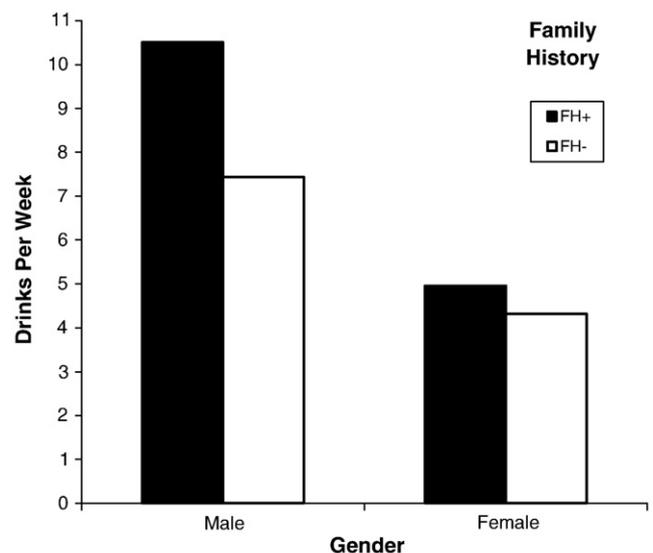


Fig. 1. Family history status × gender interaction on drinks per week.

negative evaluations to be worse, yet were more likely to agree that drinking personally yielded positive effects (i.e., expectancies) may suggest that FH+ women may not equate their own drinking with that of alcoholic family members and thus may feel immune to the negative evaluations they themselves associate with alcohol. More concerning, however, is the possibility that these findings may be indicative of cognitive dissonance, whereby highly endorsed positive expectancies contribute to continued drinking, often heavy drinking, in students even though they have been exposed to, and thus recognize, the negative aspects of drinking. By rationalizing alcohol misuse through heightened expectancies, FH+ college females may be able to reduce dissonance and fulfill strong, possibly genetically predisposed desires to imbibe. Regardless, FH+ students' apparent awareness of the negative effects of alcohol use through their own familial experience may be a promising avenue for intervening. Intervention with these students should allow them to reflect on and be mindful of their experiences with these negative effects, thereby building motivation to avoid these same consequences while challenging positive alcohol expectancies.

The present findings are limited in that they do not account for environmental risk factors known to co-occur with FH+ status (e.g., histories of physical or sexual abuse or attraction to high-risk student groups) and that may confound the relationship between FH+ status and both alcohol expectancies and misuse. Future studies assessing such risk factors may be warranted. Another limitation of the current study is the use of one, nonspecific classification of FH+ status. Future research may benefit from distinguishing first, second, and third degree affiliation to alcohol abuse (e.g. parent vs. grandparent or aunt/uncle), gender of the relative with alcohol problems (e.g. mother vs. father), or familial history density (i.e., whether an individual has more than one family member with an alcohol problem). A more defined classification of FH status may also reveal environmental risk factors; for instance, the extent to which residential exposure to alcoholism may heighten risk.

The current study reveals that FH+ students make up a substantial percentage (35%) of the college population and that these students are at increased risk for problematic drinking and consequences as compared to their FH– peers. Despite this and previous research in concert with the current findings, preventative interventions targeting FH+ students are lacking. Both researchers and college health personnel may wish to invest resources in targeting these individuals.

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Contributors

Dr. Joseph LaBrie generated the idea for the study as well as conducted statistical analyses and contributed in writing the introduction, results and discussion. Savannah Migliuri performed literature searches, conducted statistical analyses and wrote the introduction and methods. Shannon Kenney wrote the discussion and contributed to the introduction, and Andrew Lac wrote the results. All authors contributed to and approved the final manuscript.

Conflict of Interest

All authors declare they have no conflicts of interest.

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