Family history of alcohol abuse moderates effectiveness of a group motivational enhancement intervention in college women

Joseph W. LaBrie *, Nashla Feres, Shannon R. Kenney, Andrew Lac

Loyola Marymount University, 1 LMU Drive, Suite 4700, Los Angeles, CA 90045-0041, United States

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A B S T R A C T

This study examined whether a self-reported family history of alcohol abuse (FH+) moderated the effects of a female-specific group motivational enhancement intervention with first-year college women. First-year college women (N=287) completed an initial questionnaire and attended an intervention (n=161) or control (n=126) group session, of which 118 reported FH+. Repeated measures ANCOVA models were estimated to investigate whether the effectiveness of the intervention varied as a function of one's reported family history of alcohol abuse. Results revealed that family history of alcohol abuse moderated intervention efficacy. Although the intervention was effective in producing less risky drinking relative to controls, among those participants who received the intervention, FH+ women drank less across five weeks of follow-up than FH− women. The current findings provide preliminary support for the differential effectiveness of motivational enhancement interventions with FH+ women.

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1. Background

Although research on college drinking has received considerable attention in recent years, intervention studies have not examined the potential genetic factors that may moderate higher drinking levels. Heavy episodic drinking is considered the leading public health concern on college campuses and the increased drinking levels of college women are of particular concern (NIAAA, 2002b; Wechsler & Kuo, 2000). Among college women, increases have been noted in frequency of drinking, number of lifetime drinks, and likelihood of becoming alcohol dependent (Grant, 1997; Holmila & Raitasalo, 2005; Keyes, Grant, & Hasin, 2007). Recent studies have reported that college women continue to be at increased risk for negative alcohol-related consequences including health problems, sexual assault, and alcohol dependency, due to their high levels of alcohol consumption. Further, because women metabolize alcohol at slower rates than men (even at similar levels of consumption and holding weight constant) and have fewer alcohol metabolizing enzymes (alcohol dehydrogenase), they will become intoxicated more quickly than a man and remain intoxicated for a longer period of time (Barona, Dohmen, Pozzato, & Lieber, 1998; NIAAA, 2002a). Thus, college women's drinking is an important area for further examination and determining potential moderating variables may help create effective interventions.

Further, intervening with college women may be particularly important during the transition to college. A longitudinal study of 1220 girls passing from elementary school through college found that the greatest increases in alcohol use and heavy episodic drinking takes place between senior year in high school and freshmen year in college. Also, research supported by the National Institute of Alcohol Abuse and Alcoholism has labeled the first six weeks in college as a critical period in which students may develop risky drinking habits and patterns that can persist throughout college (NIAAA, 2002a). Underage drinking is typically acceptable within the college culture, and alcohol is readily available and at the forefront of social life. The pervasiveness and popularity of alcohol at social gatherings may be particularly appealing to first year women since establishing relationships is thought to be a fundamental component of female identity and positive sense of self (Glesason, 1994). Thus, it may be crucial to intervene with students, particularly women, at the beginning of their college experience.

The National Institute of Alcohol Abuse and Alcoholism (NIAAA, 2002a) notes strong evidence supporting the effectiveness of interventions that simultaneously address alcohol-related attitudes and behaviors, use survey data to counter students’ misconceptions about peers’ attitudes regarding drinking and drinking practices, and increase students’ motivation to change their drinking habits. Programs that combine these approaches have proven the most effective in reducing problematic drinking among heavy drinkers (Barnett et al., 2004; LaBrie, Lamb, Pedersen, & Quinlan, 2006; Larimer & Crone, 2002; Perkins, Haines, & Rice, 2005; Walters & Neighbors, 2005; White et al., 2006).

Previous intervention studies have successfully incorporated Motivational Interviewing (MI) (Miller & Rollnick, 2002) – a non-confrontational and non-judgmental therapeutic style of interaction, which is directed at expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy – into interventions that attempt to reduce heavy alcohol consumption (Miller, Benefield,
with a family history of alcohol abuse will respond more positively to drinking more relevant and credible. Thus, we expect that women discussion about negative outcomes and female-specific positive women, who may be more attuned to the specific in which their peers are involved with alcohol. Further, because of women (LaBrie et al., 2008). We believe that the small group setting with sample (LaBrie et al., 2008) and in another sample of (Hansson, Rundberg, Zetterlind, Johnsson, & Berglund, 2006). The in need of and receptive to interventions that aim to minimize drinking one more likely to develop dependent drinking patterns (Bucholz, Heath, 1993; McGue, Sharma, & Benson, 1996) and having a family history makes alcohol-related problems among their peers.

A potential moderator of intervention efficacy with college students that has remained largely unexamined is the presence of a family history of alcohol abuse. Those students who report having a family history of alcohol abuse among their relatives (FH+) may have prior experience and knowledge about the negative aspects of alcohol use that would make an intervention session more meaningful. Whether direct or indirect, exposure to negative alcohol-related events has been shown to promote awareness and motivate readiness to change (Barnett, Goldstein, Murphy, Colby, & Monti, 2006; Barnett et al., 2002; Sentell, 2008), a central component of successful motivational intervention (Miller & Rollnick, 2002). These women may also engage more frequently in discussion during a group, may be better equipped to weigh the pros and cons of drinking, and may be more accepting of the occurrence of alcohol-related problems among their peers.

Further, since alcohol problems usually cluster within families (Casswell, Pledger, & Pratap, 2002; Chalder, Elgar, & Bennett, 2006; Hartman, Lesserm, Hopper, Crowley, & Stallings, 2006; Kushner & Sher, 1993; McGue, Sharma, & Benson, 1996) and having a family history makes one more likely to develop dependent drinking patterns (Bucholz, Heath, & Madden, 2000; Crum & Harris, 1996). FH+ women may be particularly in need of and receptive to interventions that aim to minimize drinking (Hansson, Rundberg, Zetterlind, Johnsson, & Berglund, 2006). The widespread alcohol codependency movement has contributed to the pathologizing of risk by relation, thereby enculturating the need for family history positive individuals to self-label as such (Asher & Brissett, 1986). Identifying oneself as FH+ may indicate that a participant recognizes not only her heightened risk for alcohol dependence, but her need to develop healthy drinking-related behaviors as well. For these reasons, examining intervention efficacy among women with and without a family history of alcohol abuse may further increase our understanding of the ways in which an intervention can be effective for individuals with different backgrounds.

The current study examines whether a self-reported family history of alcohol abuse moderates the efficacy of a group motivational enhancement intervention with first-year college women. The efficacy of this intervention has been previously documented both in the current sample (LaBrie et al., 2008) and in another sample of first year college women (LaBrie et al., 2008). We believe that the small group setting with female peers may evoke greater involvement among family history positive women, who may be more attuned to the specific situations in which their peers are involved with alcohol. Further, because of their experience, family history positive women may find the group discussion about negative outcomes and female-specific reasons for drinking more relevant and credible. Thus, we expect that women with a family history of alcohol abuse will respond more positively to the intervention by reducing their levels of drinking, compared with women who do not report a family history of alcohol abuse.

2. Method

2.1. Participants

During the first two weeks on campus in the Fall of 2006, 287 first-year college women completed an initial questionnaire and attended either one of 14 intervention group sessions (n = 161; 56%) or 11 non-intervention control groups (n = 126; 44%). Groups were held in the Student Life Center on campus. Participants averaged 17.93 (SD = 0.31) years of age. Participants were 57.5% White/Caucasian, 13.0% Hispanic/Latino, 10.5% Asian/Pacific Islander, 10.2% “more than one race,” 5.3% Black/African American, 3.5% reported other or declined to state. Data from the Registrar’s office reveals that the ethnic representation of the participants mirrored the make-up the first year class with the exception of Hispanic/Latinos who were underrepresented in the sample.

2.2. Design and procedure

During the Fall of 2006 incoming first year college women (N = 660) received letters inviting them to participate in a research study on “women’s values and attitudes on drinking”. Two weeks into their first semester, each of these females was sent an e-mail requesting her participation. If the student agreed to take part in the study, she clicked on a link and electronically “signed” a local IRB-approved informed consent form before completing an online baseline questionnaire. At the end of the survey, participants were presented with a screen which asked them to select a group to attend. The groups were randomly assigned to be intervention or control groups and participants selected their group blind to group status. All available spaces in the intervention and control groups for the larger study were filled after three days of opening the survey and recruitment was shut down. Thus, the 287 participants represent those who completed the survey in the first three days and made up 43% of the freshmen women on campus. The groups took place within 2 weeks of completing the baseline survey and are described below. Following their group meetings, participants received weekly online drinking diaries that were used to assess post-intervention behavior. Participants received a nominal stipend for completing the baseline survey and attending their group ($40) and for completing each post-intervention weekly diary ($10 per diary). Retention rates were high, with 92.9% of control and 91.3% of intervention group participants completing measures at all time points.

2.3. Measures

2.3.1. Family history of alcohol abuse

Assessed only at baseline, each participant was asked which, if any, of her “biological relatives (mother, father, grandmother/grandfather, uncle/aunt, cousin, sibling) had a history of alcohol abuse.” For each of these family members, participants subjectively ascertained the presence or absence of familial alcohol abuse. Research supports that the likelihood of alcohol dependence is significantly increased among persons who have reported alcohol problems in first, second, and third degree relatives (Dawson, Harford, & Grant, 1992). Thus, participants who indicated one or more relatives with alcohol problems were classified as family history positive (FH+), whereas participants who indicated no relatives with alcohol problems were classified as family history negative (FH−). A similar method of collecting self-report data on family history of alcohol abuse has been successfully developed and used by Miller and Marlatt (1984). This measure asks “To your knowledge, do you have any biological relatives that have a significant drinking problem — one that should or did lead to treatment?” In their study, a list of a potential 14 relatives is then provided for participants to respond with a yes or no. Although the question used in the current study varies slightly, it represents the same construct as used previously by Miller and Marlatt.

2.3.2. TLFB alcohol use

Each group (intervention and control) began with the completion of a Timeline Followback (TLFB; Sobell & Sobell, 1992) assessment of drinking behavior over the three months prior to the intervention. As
participants were completing the TLFB, they were not aware of whether they were going to receive an intervention or not. They were instructed to construct their TLFB individually, although the directions were given in the group. To increase memory for drinking events over the three-month period, each participant identified personal “marker” days, or significant events, such as vacations, sporting events, visitors, parties, and birthdays. Using the marker days and drinking patterns to aid in recall, participants went back, day-by-day, through their calendar, writing in the number of drinks consumed each day they drank. This group TLFB assessment has been shown to be as reliable and valid as single item self-reports of behavior and as reliable and valid as the previously validated individual TLFB (LaBrie, Pedersen, & Earleywine, 2005; Pedersen & LaBrie, 2006). Responses for the past 30 days were summed together to create drinks in the past month, maximum drinks, and binge episodes (drinking four or more drinks in one setting) variables used in the analyses.

2.3.3. Follow-up drinking diaries

All participants completed weekly online drinking diaries for the 5 weeks following the group session. Each week, participants were sent emails containing a link to the online diary, which asked them to record the number of drinks they consumed each day in the past week. Total drinks per week, maximum drinks, and binge episodes were calculated for each week.

2.4. Intervention and control conditions

2.4.1. Intervention group

A detailed description of the intervention can be found in LaBrie et al. (2008). The intervention groups were facilitated by research assistants trained in MI (Miller & Rollnick, 2002). Upon arrival, participants received and acknowledged assurances of confidentiality of their responses. Intervention sessions began with the TLFB assessment and then continued with several other tasks for the remaining 90 min. After the TLFB, facilitators asked participants to reinspect. Next, we examined the percentage of relatives for each participant who had a history of alcohol abuse. Finally, using repeated measures models across 5 weeks post-intervention, we assessed whether differences in efficacy between the control and intervention groups were moderated by family history, controlling for TLFB pre-intervention drinking.

3. Results

3.1. Drinking descriptive statistics

Control group participants averaged 14.16 (SD=22.31) drinks per month, 3.53 (SD=3.89) maximum drinks on any occasion, and experienced 1.85 (SD=3.20) binge episodes in the past month prior to entering the study; while intervention group participants averaged 18.71 (SD=27.17) drinks in the past month, 4.10 (SD=4.45) maximum drinks, and 2.48 (SD=4.12) binge episodes. As expected, no significant differences on the pre-intervention TLFB drinking variables were exhibited between the control and intervention conditions, all were ns. FH+ participants averaged 18.07 (SD=26.70) drinks per month, 3.92 (SD=4.16) maximum drinks per occasion, and 2.38 (SD=4.07) binge episodes; FH− participants had a mean of 16.63 (SD=27.65) drinks in the past month, 3.82 (SD=4.26) maximum drinks, and 2.13 (SD=3.54) binge episodes. No significant differences emerged between FH+ and FH− participants on the pre-intervention TLFB drinking variables, all were ns.

3.2. Family history descriptive statistics

Control participants on the pre-intervention questionnaire reported that the following family members have “a history of alcohol abuse”: 5.2% mother, 14.3% father, 27.0% grandmother/grandfather, 23.0% uncle/aunt, and 4.0% cousin, and 2.4% sibling. Similarly, intervention participants reported the following family members as having experienced a history of alcohol abuse: 4.4% mother, 11.3% father, 25.8% grandmother/grandfather, 21.4% uncle/aunt, 6.9% cousin, and 5.0% sibling. According to Z-tests of independent proportions, the proportion of each relative abusing alcohol did not significantly differ between the control and intervention, all were ns. As mentioned previously, participants were classified as either FH+ or FH− if they reported one or more family members as having a history of alcohol abuse. Consequently, 41.3% (n=52) and 41.0% (n=66) of participants in the control and intervention groups, respectively, were classified as family history positive, Z=1.7, ns.

3.3. Main analyses

3.3.1. Moderation of intervention efficacy

To investigate whether the effectiveness of the intervention varied as a function of one’s reported family history of alcohol abuse, three 2×2×5 (family history×treatment×time) repeated measures ANCOVA models were estimated. The pre-intervention TLFB measures (drinks per month, maximum drinks, and binge episodes) served as the covariates to account for prior drinking levels. Treatment (intervention vs. control) and family history (positive vs. negative) were the between-subjects factors. Behavioral outcome measures were drinks per week, maximum drinks, and binge episodes — assessed post-intervention across all 5 weeks, the within-subjects factor.

Results revealed treatment main effects on drinks per week, F(1,257)=5.68, p<.05, maximum drinks, F(1,257)=5.68, p<.05, and binge episodes, F(1,257)=5.59, p<.05. Family history and time main effects were not statistically significant. Consistent with our hypotheses, treatment×family history interaction effects were evidenced on drinks per week, F(1,257)=10.35, p<.01 (Fig. 1), maximum drinks, F(1,257)=13.35, p<.001 (Fig. 2), and binge episodes, F(1,257)=19.11, p<.001 (Fig. 3). There were no other two-way or three-way interactions, all were ns.
3.3.2. Decomposition of interactions

To decompose the efficacy of the treatment as a function of each family status grouping, 2 (treatment) \( \times \) 5 (time) repeated measures ANCOVA models were estimated, with the TLFB measures covaried. When selecting only family history positive participants — results confirmed that the intervention, in contrast to the control, group consumed fewer drinks per week, \( F(1, 104) = 14.08, p < .001 \), maximum drinks, \( F(1, 104) = 12.41, p < .001 \) and engaged in fewer binge episodes, \( F(1, 104) = 13.98, p < .001 \). When selecting only the family history negative participants, however — no statistically significant differences emerged between the intervention and control groups on any of the three drinking outcomes, all were ns. These moderating effects highlight that the intervention was more efficacious among family history positive, rather than negative, participants in lowering alcohol consumption of drinks per week (Fig. 1), maximum drinks, (Fig. 2), and binge episodes (Fig. 3).

4. Discussion

The current study examined the role of self-reported family history of alcohol abuse in moderating the efficacy of a previously validated female-specific group motivational enhancement intervention among first-year college women. Consistent with our hypotheses, family history status moderated intervention efficacy such that FH+ females who attended the intervention exhibited significantly lower levels of alcohol consumption (as measured by drinks per week, maximum drinks per occasion, and heavy episodic drinking) than FH+ control group participants over five weeks post-intervention (\( p < .001 \)). Further, despite main effects of intervention efficacy across all participants (LaBrie, Hutching et al., in review), there were no significant differences in follow-up drinking between FH+ intervention and control participants. Thus, the findings suggest that FH+ women were more responsive to the female-specific motivational enhancement intervention. This appears to be the first study showing that interventions with college students may be differentially effective for those with a history of familial alcohol misuse compared to those without such a history and highlights the need to design and implement...
interventions that are effective with both family history positive and negative students.

The positive impact that this group motivational enhancement intervention had on FH+ women is a particularly valuable finding in light of recent data revealing significantly riskier natural drinking patterns among FH+ women in their first-year of college than their FH− peers (LaBrie, Kenney, Lac, & Migliore, 2009). If FH+ college women are in fact predisposed to risky alcohol use upon entering college, the need for efficacious interventions is imperative. The differential success of the group motivational enhancement intervention suggests that individuals with a positive family history for alcohol abuse prior to college may develop unique psychosocial perspectives that make them more receptive to such interventions. Women with family histories of alcohol abuse may benefit most from interventions since exposure to familial alcoholism, whether direct or indirect, is likely to instill in individuals a critical self-awareness regarding alcohol abuse and its associated ramifications (George et al., 1999; Sentell, 2008). In contrast, FH− women who are less familiar with dysfunctions of alcoholism may have a tendency to perceive their drinking behaviors as benign and normative, and thus not in need of modification. Consequently, it is likely that those participants who self-labeled as FH+ viewed their own past drinking, as well as future drinking-related risks, as more problematic than FH− individuals despite comparable levels of pre-intervention alcohol usage. Since MI-based interventions attempt to raise participants’ awareness of risky drinking in order to motivate change, it is possible that family history positive participants would be primed to modify their drinking behaviors accordingly.

Further, it is important to note that this was a prevention study done at the beginning of the college experience. As noted earlier, this is a critical high risk time in the development of risky drinking. Since the intervention was conducted during the first weeks of college, the women may not yet have been well integrated into social drinking groups. While it is possible that a group prevention effort may have iatrogenic effects (such as forming a cohesive group around drinking), it is likely that the content and style of the group promoting greater mindfulness of alcohol use and issues and built motivation for negotiating future social settings (such as forming a cohesive group around drinking), it is likely that the content and style of the group promoting greater mindfulness of alcohol use and issues and built motivation for negotiating future social settings will evolve over a longer period of time. Because the ultimate goal of such interventions is to reduce risky alcohol consumption and mitigate alcohol-related consequences, the durability of intervention outcomes is relevant. Moreover, given FH+ individuals’ high risk for enduring alcohol problems, longitudinal studies that incorporate periodic and consistent follow-up interventions appear warranted. Nonetheless, it is important that the intervention successfully prevented FH+ women from developing heavy drinking patterns during the critical high-risk transition period into college.

4.2. Conclusions

In conclusion, the current project, which found a MI-based preventative intervention to be effective in the subgroup of FH+, but not FH− first-year college women, provides support for use of motivational enhancement interventions targeted toward FH+ women. These findings corroborate research that advocates the importance of early identification and communication with FH+ college women. The success of the present intervention with FH+ female students is encouraging since this group is susceptible to alcohol abuse and dependency (Mellott & Swartz, 1998; NACOA, 1987; Pullen, 1994). However, more research is needed to determine why such clear differences between FH+ and FH− college females emerged and how best to intervene with FH+ women. Further, future research should examine if family history of alcohol abuse functions similarly in college men and students in years subsequent to freshman year in moderating treatment efficacy. Nonetheless, nonjudgmental and non-coercive group motivational enhancement interventions that take place early in the first-year of college and target women transitioning to college produce less risky drinking in women with a family history of alcohol abuse.

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References


