Preventing Risky Drinking in First-Year College Women: Further Validation of a Female-Specific Motivational-Enhancement Group Intervention*

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ABSTRACT. **Objective:** Female college students have increased their alcohol consumption rates. The current study sought to replicate the effectiveness of a female-specific motivational-enhancement group intervention and extended previous work by adding a 6-month follow-up. The intervention included several motivational-enhancement components delivered in a group setting and included a group discussion of female-specific reasons for drinking. **Method:** Participants were 285 first-year college women. Data collection consisted of an online pre-intervention questionnaire, 10 weeks of online follow-up assessment, and a 6-month online follow-up. Using a randomized design, participants chose a group session, blind to treatment status. Held during the first weeks of the first semester, 159 participants received the intervention and 126 participants received an assessment-only control. **Results:** Using a repeated-measures analysis of covariance, intervention participants consumed significantly less than control participants on drinks per week ($F = 11.86$, 1/252 df, $p < .001$), maximum drinks ($F = 11.90$, 1/252 df, $p < .001$), and heavy episodic drinking events ($F = 20.14$, 1/252 df, $p < .001$) across 10 weeks of follow-up. However, these effects did not persist at the 6-month follow-up. Moderation effects were found for social motives on all drinking variables, such that the intervention was most effective for those women with higher social motives for drinking. **Conclusions:** Efficacy was found for a female-specific motivational group intervention in creating less risky drinking patterns among first-year women, especially women with social motives for drinking. The effect dissipated by the second semester, suggesting the need for maintenance or booster sessions. (*J. Stud. Alcohol Drugs,* Supplement No. 16: 77-85, 2009)

THE CURRENT STUDY cross-validates the effectiveness of a female-specific motivational-enhancement intervention designed to reduce college student drinking (see LaBrie et al., 2008). Excessive drinking among college students continues to be a national public health concern (Hingson et al., 2005), and female students in particular have increased their alcohol consumption rates (O'Malley and Johnston, 2002; Wechsler et al., 2002). From 1992 to 2001, the percentage of college women who reported drinking on 10 or more occasions in the past 30 days rose significantly, from 12.3% to 16.8%; the number of women who reported being drunk three or more times in the past 30 days rose significantly, from 18.9% to 24.6%; the number of women who reported drinking to get drunk increased significantly, from 35.6% to 42.4%; and the percentage of women classified as "frequent binge drinkers" (defined as "binge" or heavy episodic drinking three or more times in past 2 weeks) also rose significantly, from 17.1% to 20.9% (Wechsler et al., 2002).

These increased rates of alcohol consumption among female students are concerning because of the inherent physiological differences between men and women in the effects and metabolization of alcohol. Women experience the intoxicating effects of alcohol at lower levels of alcohol consumption than men (Jones and Jones, 1976; Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002; Perkins, 2000). With body size held constant, women still have more adipose tissue (body fat), less water to dilute the alcohol, less of the stomach enzyme (alcohol dehydrogenase) that breaks down alcohol, and fluctuating hormones which have been linked to women reaching higher blood alcohol concentrations (BACs) at lower levels of alcohol than men (Frezza et al., 1990; Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002). Considering these physiological differences, women may be placing themselves at greater risk for experiencing alcohol-related negative consequences, including sexual assault (Parks and Fals-Stewart, 2004; Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002). In fact, college women who drink are up to nine times more likely to be sexually victimized than women who do not drink (Parks and Fals-Stewart, 2004). Specific to the first year of college, 31% of first-year women experience some sort of sexual assault (Humphrey and White, 2000).

Moreover, the reasons women have for drinking may include the desire for a new relationship or improvement of an existing relationship. According to Gleason (1994a, 1994b), women may view alcohol as a means for facilitating

communication and sexual expression, contributing to the initiation of new relationships, finding intimacy, or coping with the loss of existing relationships. Thus, alcohol may be seen as a vehicle for building relationships and may have a paradoxical effect—despite the risk of negative consequences, alcohol may be used to meet new friends, try out new identities, and feel more comfortable in social situations. Given that women may view alcohol as a social vehicle, social motives for drinking may be especially potent among women. In fact, among college students, social motives have been found to be the best predictor of the frequency of heavy episodic drinking, the number of days alcohol was consumed, and average drinks per occasion (Cronin, 1997). LaBrie et al. (2007) also found a direct link between social reasons for drinking and alcohol-related problems among women. Thus, women may benefit from selective group-specific interventions designed to focus on social and relational dynamics.

Research supports the implementation of motivational-enhancement interventions as an effective way of reducing excessive alcohol use on college campuses. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) College Drinking Task Force (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002) examined prevention efforts and found evidence for the effectiveness of interventions that incorporate brief motivational-enhancement strategies (Dimeff et al., 1999; Marlatt et al., 1998), principles of motivational interviewing (MI; Miller and Rollnick, 2002), and cognitive-behavioral skills (Baer et al., 1992; Kivlahan et al., 1990). Such interventions adhere to the MI principles of empathy, nonconfrontation, nonjudgmental listening, and developing discrepancy and encourage students to resolve ambivalence about changing their drinking behaviors. Interventions using these techniques have been found to be successful in reducing alcohol use among college students (LaBrie et al., 2006; Larimer and Cronce, 2002; Walters and Neighbors, 2005). Moreover, the NIAAA (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002) encourages early prevention efforts in the college experience. During the first 6 weeks on a college campus, many students initiate heavy drinking, which may interfere with their ability to adapt to campus life and compromise successful negotiation of the transition into college. These patterns of heavy drinking may persist throughout the 4 years of college (Schulenberg et al., 2001) and, therefore, may jeopardize overall collegiate success. Early prevention interventions using group formats may provide an effective way to use limited campus resources.

Yet, although several interventions have been successful in reducing heavy episodic drinking and creating less risky patterns among heavy drinkers (Larimer and Cronce, 2002; Marlatt et al., 1998; Murphy et al., 2001), prevention efforts targeting specific at-risk groups are less common. In fact, our original study was the first to design and implement a motivational-enhancement group intervention targeting first-year college women, a fast-growing at-risk group on college campuses. We designed and tested a brief motivational-enhancement group intervention with women during their first semester in college. The intervention contained several elements of MI, including a decisional balance (weighing the pros and cons) and the use of normative feedback, as well as BAC information and information about the unique ways alcohol impacts women. Further, the intervention included an open-ended discussion of female-specific reasons for drinking focusing on relational and interpersonal reasons. The intervention was found to be successful in reducing alcohol consumption rates and alcohol-related consequences over the first semester of college for incoming female students (LaBrie et al., 2008). Compared with the women in an assessment-only control group, intervention participants drank fewer drinks per week, drank fewer drinks at peak consumption events, and had fewer alcohol-related consequences over 10 weeks of follow-up. Further, as predicted, social and enhancement reasons for drinking moderated intervention efficacy such that the intervention was more effective among those women with higher social and enhancement motives for drinking. These results were tempered by the short follow-up period.

The current project examined a new cohort of incoming female students and extended the previous work by incorporating a follow-up assessment 6 months after the intervention. The more extensive follow-up period will provide the opportunity to determine intervention effectiveness and female drinking patterns across the first year of college. We hypothesized that there would be a main effect for the intervention condition, such that incoming female students who participated in the intervention would drink less than women in the control condition. Specifically, across 10 weeks, it was expected that drinks per week, maximum drinks, and heavy episodic drinking events would be lower among women in the intervention condition. Likewise, it was hypothesized that these effects would persist at the 6-month follow-up assessment. Finally, we hypothesized that social and enhancement motives for drinking would moderate the intervention effectiveness, with women who report higher motives reducing drinking more as a result of the intervention than women with lower social and enhancement motives for drinking.

Method

Participants

A total of 285 first-year female students from a midsize West Coast university participated in the study, with a mean (SD) age of 17.93 (0.31) years. Racial composition was as follows: 57.5% (n = 164) white, 13.0% Hispanic/Latina, 10.5% Asian/Pacific Islander, 5.3% black/African American, and 10.2% more than one race; 3.5% reported "other" or

declined to state. The location of residence for the majority (96.1%) of the students was on-campus housing.

Design and procedure

The current study consisted of a pre-intervention online questionnaire, a group session (intervention or control) held within the first few weeks of the first semester, and 10 weeks of online follow-up assessment, similar to the procedures of the original study (LaBrie et al., 2008). This cross-validation study assessed a new cohort of freshmen women (no participant from the first study was included in this study) and added an online follow-up assessment 6 months after the group session.

Recruitment procedures were similar to those used in the original study (LaBrie et al., 2008). Letters were sent to all incoming first-year women ($N = 755$) during the summer before their initial semester of college. These letters invited any incoming freshmen woman to participate in "a study on women's values and attitudes toward drinking and health issues."

Data collection and group assignment procedures were also similar to the original study. During the second week of classes, all freshmen women received an email with information on how to participate in the study and a link to the online baseline survey. If the student chose to participate, she electronically "signed" an informed consent form, approved by the local institutional review board before proceeding to the survey. Upon completion of the baseline survey, the participant was then asked to select one of 26 groups to attend. These groups had been randomly assigned to be either intervention ($n = 14$) or control ($n = 12$). Enrollment occurred on a first-come, first-served basis, with participants selecting a group session blind to condition status. Enrollment terminated when all of the allotted spaces in the groups were taken (5 days).

Participants received a stipend of $40 for completing the baseline survey and attending their scheduled group and an additional $10 per week for completing 10 weekly online surveys. Further, 6 months after the intervention, participants received $20 for completing an online follow-up survey.

Pre-intervention questionnaire

The baseline survey assessed demographic questions as well as drinking behaviors and motivations.

Motivations for drinking alcohol were assessed using the 20-item Drinking Motives Questionnaire (Cooper, 1994), and its four subscales of conformity ($\alpha = .80$; e.g., "Because your friends pressure you to drink"), coping ($\alpha = .82$; e.g., "To forget your worries"), enhancement ($\alpha = .92$; e.g., "Because you like the feeling"), and social ($\alpha = .95$; e.g., "To be sociable") motives. Items were anchored by 1 (almost never/never) and 5 (almost always/always), with subscales computed by taking the mean score.

Group sessions

At the end of the online baseline survey, participants selected a group session to attend, blind to group status. All groups (assessment-only control or intervention) consisted of 8-12 first-year female students and were held near the end of the first month of the academic year and into the first weeks of the next month. The groups were supervised and led by a doctoral-level clinician and co-facilitated by a research assistant. Both facilitators were women who received extensive training in MI and followed the script used in the previous study.

Initial alcohol use was collected via a Timeline Followback (TLFB) (Sobell and Sobell, 1992). At the start of every group session and before participants knew whether they were in an intervention or assessment-only control group, participants individually completed the TLFB or calendar of drinking behaviors in the past month. Participants completed this pre-intervention TLFB by recording the number of drinks they had consumed on each day. Participants were instructed to use personal "marker" days (e.g., birthdays, sporting events, parties) and drinking patterns to aid recall as they filled out their daily calendar. From this drinking calendar, drinks per month (total number of drinks in the past month), maximum drinks per occasion (greatest number of drinks on any occasion in the past month), and heavy episodic drinking events (number of occasions in the past month in which four or more drinks were consumed) were calculated. This group-administered TLFB assessment has been shown to be as reliable and valid as the previously validated individual-administered TLFB (LaBrie et al., 2005; Pedersen and LaBrie, 2006).

Control group

The assessment-only control group session lasted approximately 30 minutes and consisted of participants completing the TLFB assessment. Participants were asked to complete the TLFB independently to discourage group interaction, and there was no facilitated group discussion. After completing the TLFB, participants were given a packet of alcohol-related information specific to women as well as compensation for attending.

Intervention group

Participants in the intervention condition participated in a session lasting approximately 2 hours and consisting of several components:

Timeline Followback. Once the TLFB was completed, the facilitators led a brief discussion asking participants if they noticed anything about their drinking patterns.

Group discussion on alcohol expectancies. Facilitators led an interactive discussion on the "good things" and "not-so-good things" about drinking, followed by a discussion about

alcohol expectancies, including a description of the research supporting the concept (Hull and Bond, 1986; Marlatt and Rohsenow, 1981; Rohsenow and Marlatt, 1981). Specifically addressed was the role social expectancies play in alcohol consumption during college.

Normative feedback. Following the suggestion of the NIAAA Task Force, normative feedback was interactively provided by presenting data on the average levels of drinking for women at that specific university. This presentation sought to correct overestimations of drinking on campus and is consistent with research supporting presentation of gender-specific normative information as opposed to information on students in general (Lewis and Neighbors, 2004).

Information presentation. A discussion about the inherent physiological differences between men and women as well as how alcohol affects the body ensued. Participants were provided with personalized BAC cards, and several BAC levels with corresponding effects were highlighted in a discussion. Symptoms of alcohol poisoning and information for local resources were provided. A discussion of the biphasic effects of alcohol highlighting the point of diminishing returns followed (Dimeff et al., 1999).

Reasons for drinking discussion. Participants discussed women's specific reasons for drinking, focusing on social and relational reasons for drinking and whether alcohol use, particularly excessive alcohol use, helped young women meet these needs. Facilitators, in MI style, reflected back participants' statements, amplifying the ways alcohol failed to enhance or interfered with social and relational needs. Further, facilitators highlighted and affirmed any change talk, that is, statements about cutting back on alcohol use to better meet needs.

Decisional balance. As a group, participants generated reasons for drinking less than they do now and reasons against drinking less and then wrote down their personal reasons for change. Nondrinking participants were asked to perform the decisional balance based on their reasons for or against continuing to not drink. Participants were asked to examine whether their reasons for change outweighed their reasons against change and to take notice of how reducing their alcohol use (or continuing to not use) would help them better attain their personal goals/needs.

Behavioral goals. Finally, participants set a behavioral goal indicating their intentions about drinking over the next 30 days and reported on the importance of the goal and their confidence in achieving the goal. They recorded the goal on a personal goal card which they kept after the intervention. A discussion about strategies to overcome potential obstacles in achieving their goals followed.

Follow-up assessments

Following the group sessions, all participants completed weekly online drinking diaries recording the number of drinks consumed on each day in the past week, for 10 weeks. From the drinking diaries, drinks per week, maximum drinks, and heavy episodic drinking events were calculated for each week. The 10-week time frame for follow-up assessments ended just before the winter break, allowing for data collection of drinking behaviors during the entire first semester of the academic year.

Near the end of the second semester (approximately 6 months after participation in the original group session), all participants were contacted via email and asked to complete a final follow-up drinking diary. This 6-month follow-up assessment was used to calculate drinks per week, maximum drinks, and heavy episodic drinking events in the past week. The follow-up assessment intervals allowed for the examination of various drinking behaviors over most of the first year of college. That is, group sessions were held near the end of the first month (September) and into the second month (October) of college, and the 6-month follow-up was administered in April of the following year. As such, collected data provided insight into student drinking behaviors near the beginning and end of their first academic year (the semester system ends in early May).

Results

Retention rates

Of the 126 control group respondents at baseline, 115 (91.2%) completed all 10 weeks of postintervention drinking diaries and 110 (87.3%) completed the 6-month follow-up. Among the 159 intervention respondents at baseline, 142 (89.3%) completed all 10 weeks of the drinking dairies and 140 (88.1%) completed the 6-month follow-up. Based on tests of independent proportions, participant retention was not significantly disparate between the control and intervention groups. Nor were there any significant demographic differences (age, race, college, and location of residence) between participants with and without data completed from all time points. Only three participants did not attend their group session and, therefore, did not receive the postintervention drinking diaries. Consistent with a repeated-measures analytic strategy, missing data were list-wise deleted, and should not be problematic given the high retention rate.

Group randomization check

We sought to determine if the randomization scheme employed created equivalent groups. On the pre-intervention 1-month TLFB, participants in the intervention condition drank an average of 18.71 (27.17) drinks per month, drank 4.10 (4.45) maximum drinks on any occasion, and had 2.48 (4.12) heavy episodic drinking events. Participants in the control condition averaged 14.16 (22.31) drinks per month, 3.53 (3.89) maximum drinks, and 1.85 (3.20) heavy

episodic events on the TLFB variables. Between the control and intervention, no significant pre-intervention differences were found on the TLFB variables, the demographic variables, or myriad other variables, including three dimensions of the Drinking Motives Questionnaire (coping, social, and enhancement) and drinking intentions (days, maximum, and average) ($p > .05$ for all comparisons).

Postintervention: Weeks 1-10

The efficacy of the intervention was evaluated using a repeated-measures multivariate analysis of covariance (MANCOVA) design in which the between-subjects factor was treatment condition (control or intervention). Time (Weeks 1-10) was specified as the within-subjects factor. To control for baseline drinking, the 1-month TLFB variables (drinks per month, maximum drinks, heavy episodic events) served as covariates. Dependent measures were drinks per week, maximum drinks, and heavy episodic drinking events—assessed weekly during the 10 weeks of the drinking diaries.

Results show a multivariate treatment effect ($F = 8.06$, 3/250 df, $p < .001$). The multivariate time effect ($F = 0.87$, 27/226 df, NS) and the multivariate Treatment × Time interaction ($F = 1.31$, 27/226 df, NS) were not statistically significant. These findings support that differences in efficacy between control and intervention groups were unlikely to be statistically moderated by time, as alcohol consumption levels for each group remained relatively stable across all 10 postintervention weeks.

Next, we decomposed this statistically significant omnibus treatment main effect with more focused analyses. Repeated-measures analysis of covariance (ANCOVA) models were then undertaken to examine the effectiveness of the intervention (vs control) across time on each of the three drinking outcomes. The between-subjects factor, within-subjects factor, and covariates were specified as in the previous analysis. As illustrated in Figure 1, treatment main effects were exhibited on all of the drinking variables. Specifically, while controlling for baseline drinking, the intervention participants consumed significantly less than the control par-
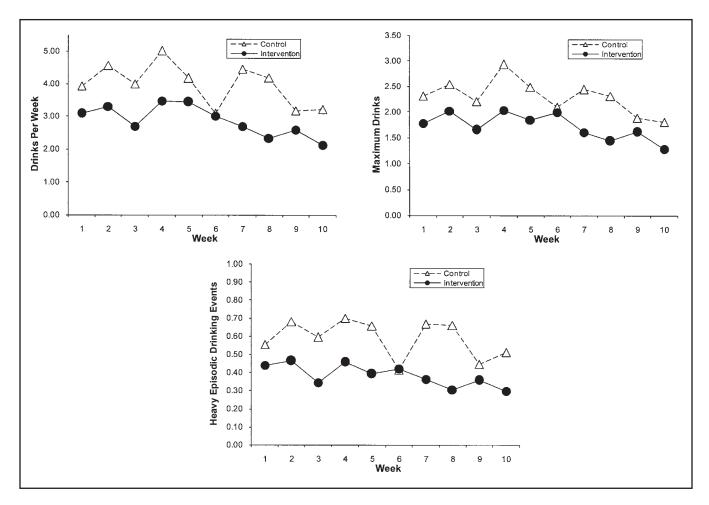

FIGURE 1. Estimated marginal means across 10 weeks of follow-up, controlling for pre-intervention drinking. Differences between control and intervention groups on drinks per week, maximum drinks, and heavy episodic drinking events.
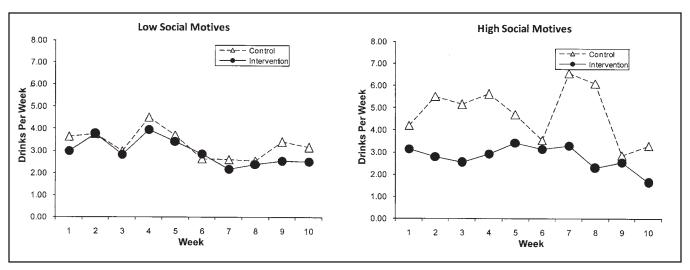
FIGURE 2.   Estimated marginal means across 10 weeks, controlling for pre-intervention drinking. Differences between control and intervention groups on drinks per week as moderated by low and high social motives.

ticipants in drinks per week ($F = 11.86$, 1/252 df, $p < .001$), maximum drinks ($F = 11.90$, 1/252 df, $p < .001$), and heavy episodic events ($F = 20.14$, 1/252 df, $p < .001$).

Moderation effects

Each Drinking Motives Questionnaire subscale, using a high-low median split, was tested as a moderator to the 10-week model. The interventions were not moderated by coping motives ($F = 2.08$, 3/248 df, NS), conformity motives ($F = 1.15$, 3/248 df, NS), or enhancement motives ($F = 2.40$, 3/248 df, NS). However, a moderation effect was demonstrated for social motives ($F = 3.74$, 3/248 df, $p < .05$), with follow-up tests showing that social motives interacted with the intervention to influence drinks per week ($F = 6.51$, 1/250 df, $p < .05$), maximum drinks ($F = 5.31$, 1/250 df, $p < .01$), and heavy episodic events ($F = 10.20$, 1/250 df, $p < .01$). Women in the intervention group who had strong social motivations for alcohol were more likely to experience a reduction in drinks per week than those with weak social motives (Figure 2). Although not displayed because of space limitations, a highly similar social motives–moderating effect pattern was demonstrated on maximum drinks and heavy episodic drinking events, such that women with higher social motives were more likely to benefit from the intervention.

Postintervention: 6-month follow-up

To evaluate whether the efficacy of the intervention persisted, all participants were recontacted 6 months after the intervention. Respondents reported their drinking patterns (drinks per week, maximum drinks, heavy episodic events) in the past week. Using a MANCOVA and controlling for baseline drinking, the multivariate treatment main effect was

not significant, suggesting that the beneficial effects of the intervention had dissipated by this point ($F = 2.15$, 3/243 df, NS). Although not statistically significant, intervention group means tended to be lower than control group means: 4.06 (5.12) drinks per week, 2.43 (2.82) maximum drinks, and 0.58 (0.76) heavy episodic events for the intervention group and 4.76 (5.13) drinks per week, 3.07 (2.82) maximum drinks, and 0.60 (0.77) heavy episodic drinking events for the control group.

Efficacy of the intervention among drinkers

Of the 285 baseline respondents, 63.9% ($n = 182$) indicated they consumed alcohol at least once during the past month (as defined with the pre-intervention TLFB drinks-per-month measure). Previously conducted analyses were replicated with this subsample of drinkers. Among these nonabstainers at pre-intervention, 160 (87.9%) completed all 10 weekly diaries, and 151 (83.0%) completed the 6-month follow-up. Analyses again revealed no significant differences between groups on baseline measures: Intervention participants on average drank 28.31 (28.06) drinks per month, drank 6.27 (4.08) maximum drinks, and experienced 3.79 (4.58) heavy episodic events; control participants on average drank 22.87 (24.62) drinks per month, drank 5.70 (3.48) maximum drinks, and experienced 2.97 (3.63) heavy episodic events.

Despite lower statistical power owing to smaller sample size, a similar pattern of results was obtained among non-abstainers, thus interpretation remains relatively unchanged. Consistent with results from the entire sample, across the 10-week diaries, there was a MANCOVA effect for treatment ($F = 5.38$, 3/153 df, $p < .01$) but not for time ($F = 1.42$, 27/129 df, NS) or Treatment × Time ($F = 1.01$, 27/129 df,

NS). The significant omnibus treatment effect, decomposed with repeated-measures ANCOVA analyses, indicated that, in comparison with the control respondents, the intervention participants experienced fewer total drinks ($F = 7.58$, 1/155 df, $p < .01$), maximum drinks ($F = 6.55$, 1/155 df, $p < .05$), and heavy episodic events ($F = 13.40$, 1/155 df, $p < .001$). Furthermore, social motives were found to marginally moderate effects of the treatment ($F = 2.32$, 3/151 df, $p < .10$); specifically, they had moderating effects on drinks per week ($F = 4.12$, 1/153 df, $p < .05$), maximum drinks ($F = 4.92$, 1/153 df, $p < .05$), and heavy episodic events ($F = 5.80$, 1/153 df, $p < .05$).

Finally, in the drinkers-only sample, the sustained efficacy of intervention over the control group was not demonstrated at 6-month follow-up ($F = 1.85$, 3/94 df, NS). Intervention participants averaged 6.39 (6.45) drinks per week, 3.75 (3.42) maximum drinks, and 0.92 (0.96) heavy episodic events at 6 months, while control participants averaged 7.18 (6.46) drinks per week, 4.58 (3.44) maximum drinks, and 0.93 (0.96) heavy episodic events.

Preventative efficacy of the intervention among nondrinkers

Conversely, we examined the efficacy of the intervention in preventing future alcohol consumption among nondrinkers (defined as zero drinks on the TLFB drinks-per-month variable assessing baseline drinking). At pre-intervention, 35% ($n = 55$) of the intervention group and 38% ($n = 48$) of the control group were nondrinkers. During the last month (Weeks 7-10) of the weekly follow-up assessments, 24% ($n = 13$) of the intervention group nondrinkers consumed alcohol, whereas 42% ($n = 20$) of the control group nondrinkers consumed alcohol ($z = 1.85$, $p < .05$). The preventative effects of the intervention appear to continue through the 6-month follow-up as well. At the 6-month follow-up, drinks in the past week was assessed, and, for this 1-week period, only 13% ($n = 7$) of the pre-intervention group nondrinkers consumed alcohol compared with 30% ($n = 14$) of the pre-intervention control group nondrinkers ($z = 1.98$, $p < .05$).

Discussion

The current study examined the efficacy of a female-specific motivational-enhancement group intervention in reducing risky drinking for first-year female students. This study replicated earlier work with a new cohort of incoming female students and extended the design by incorporating a 6-month follow-up assessment. Similar to previous findings, the motivational-enhancement intervention was efficacious in producing less risky drinking among first-year college women during their first semester in school, but this effect appeared to dissipate by the end of the second semester.

In support of our primary hypothesis, we found a main effect for the intervention, such that incoming female students who participated in the intervention drank fewer drinks per month, fewer maximum drinks, and fewer heavy episodic drinking events during their first semester of college, after controlling for pre-study drinking levels. Although the short-term efficacy of the intervention is encouraging, particularly as it occurs during the crucial period of transition into college, we failed to find differential drinking patterns at 6 months. Short-term effects are not atypical for a brief one-session intervention (Carey et al., 2007), and the lack of an intervention effect at the 6-month follow-up suggests that booster or maintenance sessions may be needed, perhaps at the start of the second semester, to encourage students to maintain their less risky drinking patterns (Carey et al., 2007). Alternatively, the women in both groups reported relatively lower risk drinking at 6 months (drinking around five to six drinks per week and averaging less than one heavy episodic drinking event per week). It is likely that once women negotiate the window of high-risk during the transition period into college, the natural tendency is to drink at a more moderate level. Thus, the intervention may be particularly helpful in assisting women in negotiating this period of risk. In fact, this is partially supported by the findings; the intervention group's drinking remained stable from Week 10 to the 6-month follow-up, and it appears the control group caught up by reducing drinking during that time frame.

Perhaps the most significant finding in the current study is the robust and long-term preventative effects for the intervention on nondrinkers. Specifically, female students who reported being nondrinkers at baseline were more likely to not drink at the last month of the 10-week follow-up and at the week of the 6-month follow-up if they received the intervention. A significantly higher percentage of control group nondrinkers drank in the last month of the 10-week assessment compared with nondrinkers who received the intervention. More than twice as many pre-intervention abstaining women from the control group drank during the week of the 6-month follow-up compared with those from the intervention group. Thus, the brief intervention was not only effective in reducing drinking during the first semester of college but appeared to have had a preventative effect, assisting nondrinkers from initiating alcohol use during the first year of college.

Our findings also indicate the intervention effect on drinking reductions was moderated by social motives for drinking, such that incoming women who were randomized to the intervention condition and reported high social motives for drinking drank fewer drinks than women who had also been randomized to the intervention condition but reported lower social motives for drinking. This finding was anticipated, because the purpose of having a female-specific intervention was to target women's reasons for drinking. As suggested by Gleason's (1994a) relational theory, women may view alcohol as a way to fulfill the need for social connectedness and thus may drink for primarily social motives. This may

be particularly true of first-year women, who are negotiating new social networks and relationships.

Interestingly, the current study did not find that enhancement motives statistically moderated the intervention as in the previous study. Possibly this might indicate that the effect of enhancement motives is an artifact that is specific to the previous sample. This could also suggest that enhancement motivations play a weaker moderating role in this sample, one that could be discovered with a larger sample size. Albeit not statistically significant, graphical results also show that the intervention tended to be more successful in reducing drinks among participants with higher enhancement motives, as found in the previous study. Considering the high correlation between enhancement motives and social motives ($r = .85$, $p < .001$), future research should seek to unravel the differential features responsible for why one of them serves as a more consistent moderator of the MI intervention.

Although these findings support the effectiveness of motivational-enhancement group interventions for college women, some limitations exist. For example, a true random sample cannot be assumed because of the first-come, first-served group selection basis. Although participants were blind to group status, the sampling and participation procedures may have catered to a more interested and motivated group of incoming students. Still, assignment of groups to condition was random and blind, and no significant differences existed between groups on demographic or baseline drinking variables, offering support for this design. Further, the same facilitators implemented both the intervention and control groups, making it possible that facilitators unknowingly expressed subtle cues about their own expectations. Again, it seems unlikely that such a demand characteristic would have occurred, because both facilitators were highly trained in MI and followed a script for both sessions. Moreover, an attempt was made to offer both conditions at similar times and on similar days, thereby minimizing the potential for selection bias. Finally, this study lacked a true control group by which to compare the natural trajectory of drinking behaviors of female college students. The use of the Time-line Followback in the assessment-only condition may have raised participant awareness of drinking behaviors, and the weekly monitoring of alcohol consumption could also have served as a quasi-intervention itself and, thus, dampened the observed intervention effect.

The current study applied an evidence-based intervention following the recommendations of the NIAAA Task Force (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002) and replicated the efficacy of a motivational-enhancement intervention to reduce high-risk drinking. Specifically, the intervention was implemented within the first weeks on campus, a crucial time in the development of consumption patterns (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002). This replication suggests that the combination of MI

techniques with a discussion of female-specific reasons for drinking form a group intervention that may benefit female students during the crucial transitional period into college. The intervention appeared to have beneficial effects in both reducing drinking over the first semester of college and preventing the initiating of drinking across the entire first year of college. With the rising trend noted over the past decade in female consumption patterns, especially heavy episodic and high-risk drinking, college personnel might consider similar interventions with incoming first-year women, as well as with other groups of young women. The group design not only compliments relational theory, allowing for female-specific discussions relevant to college women, but also uses fewer campus resources than individual interventions. Future research should examine whether such interventions, combined with a maintenance session, would contribute to more sustained behavior change.

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