



Digital Commons@

Loyola Marymount University
LMU Loyola Law School

Heads Up!

Psychological Science

12-2010

Reducing Alcohol Risk in Adjudicated Male College Students: Further Validation of a Group Motivational Enhancement Intervention

Joseph W. LaBrie

Loyola Marymount University, jlabrie@lmu.edu

Jessica Cail

Loyola Marymount University

Eric R. Pedersen

University of Washington

Savannah Migliuri

Loyola Marymount University

Follow this and additional works at: <https://digitalcommons.lmu.edu/headsup>



Part of the [Psychology Commons](#)

Repository Citation

LaBrie, Joseph W.; Cail, Jessica; Pedersen, Eric R.; and Migliuri, Savannah, "Reducing Alcohol Risk in Adjudicated Male College Students: Further Validation of a Group Motivational Enhancement Intervention" (2010). *Heads Up!*. 23.

<https://digitalcommons.lmu.edu/headsup/23>

This Article - post-print is brought to you for free and open access by the Psychological Science at Digital Commons @ Loyola Marymount University and Loyola Law School. It has been accepted for inclusion in Heads Up! by an authorized administrator of Digital Commons@Loyola Marymount University and Loyola Law School. For more information, please contact digitalcommons@lmu.edu.



Published in final edited form as:

J Child Adolesc Subst Abuse. 2010 December ; 20(1): 82–98. doi:10.1080/1067828X.2011.534369.

Reducing Alcohol Risk in Adjudicated Male College Students: Further Validation of a Group Motivational Enhancement Intervention

JOSEPH W. LaBRIE,

Loyola Marymount University, Los Angeles, CA, USA

JESSICA CAIL,

Loyola Marymount University, Los Angeles, CA, USA

ERIC R. PEDERSEN, and

University of Washington, Seattle, WA, USA

SAVANNAH MIGLIURI

Loyola Marymount University, Los Angeles, CA, USA

Abstract

This study examined the effectiveness of a single-session group motivational enhancement alcohol intervention on adjudicated male college students. Over two sequential academic years, 230 students sanctioned by the university for alcohol-related infractions attended a 60- to 75-minute group intervention. The intervention consisted of a timeline followback, social norms education, decisional balance for behavioral change, blood alcohol content (BAC) information, expectancy challenge, and generation of behavioral goals. Participants were followed weekly for three months and showed reductions in drinking (29%) and alcohol-related consequences (32%) at three-month follow-up. The intervention was successful in reducing drinking for both first-year students and upperclassmen, with reductions appearing to be a function of the intervention and not the citation itself. Furthermore, a post hoc control condition revealed that those participants randomly assigned to the intervention group condition reduced drinking (19%) and alcohol-related consequences (44%) more than participants in the control condition over one month. These results provide continued evidence of the effectiveness of group motivational enhancement interventions with adjudicated male college students.

Keywords

adjudicated college students; alcohol consequences; group intervention; motivational interviewing

INTRODUCTION

It is well-documented that heavy drinking by college students can lead to a multitude of problems for the students and the university community at large, ranging from missed classes and hangovers, to damaged property, fights, sexual assaults, and even death (Hingson, Heeren, Winter, & Wechsler, 2005; Wechsler, Lee, Kuo, & Lee, 2000; Wechsler, Moeykens, Davenport, Castillo, & Hansen, 1995). Violations of alcohol policies are currently the most common reason for disciplinary action on college campuses (Anderson & Gadaletto, 2001; Dannells, 1991; Stone & Lucas, 1994) and the problem appears to be on the rise, as the number of students receiving violations nearly doubled from 1993 to 2001 (Wechsler, Lee, Nelson, & Kuo, 2002). This trend is more troubling in light of evidence that heavy drinkers within the judicial system rarely identify their behavior as problematic or voluntarily seek treatment (Barnett & Read, 2005; NIAAA, 2002).

Male college drinking in particular appears to be worsening. From 1993 to 2001, the percentage of college males who reported drinking on 10 or more occasions in the past month increased 5.3%, while the percentage of men who “drink to get drunk” increased 10.8% (Wechsler et al., 2002). Males 12 or older are three times more likely than females to have met the criteria for heavy alcohol use in the past year (SAMHSA, 2007), and report significantly more negative consequences from drinking than women (Geisner, Larimer, & Neighbors, 2004).

In addition, the first year of college also appears to be a risk factor for alcohol use and related problems, as a number of studies have shown that students increase their alcohol consumption during this time (see Borsari, Murphy, & Barnett, 2007, for review), and that these patterns of consumption may continue throughout college and beyond (Del Boca, Darkes, Greenbaum, & Goldman, 2004; Schulenberg, O’Malley, Bachman, Wadsworth, & Johnston, 1996). As a consequence, university personnel are in need of low-cost, effective sanctions that will reduce heavy drinking and negative consequences in high-risk groups with multiple risk factors, such as judicially mandated first-year males.

Traditionally, mandated programs have been used by university judicial systems as a sanction for infractions ranging from underage drinking, to public intoxication, defilement of university property, or assault of another student while intoxicated (Stone & Lucas, 1994). While serving as punishment, these programs also target the heaviest drinkers, who are at disproportionate risk for negative consequences (Caldwell, 2002; Larimer, Cronce, Lee, & Kilmer, 2004). To date, a variety of prevention and treatment approaches have been employed, including cognitive-behavioral, educational-informative, and motivational enhancement style approaches. However, it is important to note that while many universities employ these mandated interventions, not all have been empirically tested to determine their efficacy (Barnett & Read, 2005).

The cognitive-behavioral approach incorporates an educational component, personal values specific to the person, and normative re-education components. After assessing these issues, the facilitator seeks to teach the participant specific skills in order to modify beliefs and behaviors (Larimer & Cronce, 2002). Although this approach has been found to be effective

with high-risk college drinkers (Baer et al., 1992; Donohue, Allen, Maurer, Ozols, & DeStefano, 2004; Johnson & Berglund, 2006; Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990; Stahlbrandt, Johnson, & Berglund, 2007), many of these studies have been limited by small sample sizes and high attrition rates (Larimer & Cronce, 2002). As there are typically multiple sessions implemented within the intervention, the method is time-consuming, possibly contributing to the high attrition rates. Furthermore, cognitive-behavioral programs have not been widely used in universities for judicially mandated college students, most likely due to the limited results of previous research.

Educational-informative interventions are among the oldest prevention and treatment approaches used among college drinkers. These interventions are based on the theory that students misuse alcohol due to a lack of knowledge of the high risks of heavy drinking (Moskowitz, 1989), and that awareness of these risks will reduce drinking. Although educational-informative programs do increase students' knowledge about the effects of alcohol, didactic-based interventions alone have not been found to significantly reduce drinking or negative consequences in the college cohort (Larimer & Cronce, 2002, 2007; Robinson, Roth, Gloria, Keim, & Sattler, 1993).

Contrarily, motivational enhancement approaches and the use of peer groups have been found to be quite effective in reducing high-risk college drinking (Larimer & Cronce, 2002, 2007; Paglia & Room, 1999). Motivational interviewing (MI; Miller & Rollnick, 2002) is a non-judgmental, client-centered approach that was established utilizing the basic principles of developing discrepancy, rolling with resistance, expressing empathy, and supporting efficacy, with the goal of increasing internal motivation to change behavior. At the core of MI is the idea that not everyone is ready or willing to change their current behavior, and it is this idea that may resonate especially with adjudicated students who rarely identify their alcohol use as a problem or see a need to change. Thus, brief one-on-one MI-based interventions with these students may help in finding inconsistencies between goals and current behaviors, building intrinsic motivation to reduce problem drinking and exploration of new strategies to handle high-risk situations.

Brief individualized interventions based on these techniques have shown promise (Borsari & Carey, 2005; Dimeff, Baer, Kivlahan, & Marlatt, 1999; Fromme & Corbin, 2004). A recent meta-analysis of 62 studies involving 13,750 college students found that the greatest reductions in drinking and consequences were seen for interventions that were individual, face-to-face, or used motivational interviewing or personalized normative feedback in their paradigms (Carey, Scott-Sheldon, Carey, & DeMartini, 2007).

While several studies have documented the efficacy of individualized brief motivational interventions (BMIs) for at-risk college drinkers, few have tested the efficacy of group-based BMIs. Fromme and Corbin (2004) found that a Lifestyle Management Class incorporating both motivational enhancement and cognitive-behavioral skills training resulted in decreases in heavy alcohol use and driving after drinking, with slightly larger (but non-significant) decreases among mandated males. Michael, Curtin, Kirkley, Jones, and Harris (2006) revealed that subjects randomly assigned to attend a group MI-style intervention consumed fewer drinks per occasion, and had fewer episodes of intoxication

over the monitored semester, than subjects in an assessment-only control condition. LaBrie, Lamb, Pedersen, and Quinlan (2006) found that a single-session MI-based group intervention in a co-ed group of adjudicated college students resulted in significant reductions in drinking from baseline to one- and three-month follow-ups, with males showing the largest and most sustained reductions in drinking.

Consistent with the National Institute on Alcohol Abuse and Alcoholism's goal of developing targeted interventions among college students (NIAAA, 2002), the current study seeks to further previous work on two fronts. First, it seeks to validate the efficacy of group-based BMIs on adjudicated students, a population that has been shown to be at particularly high risk for heavy drinking and alcohol-related problems. Judicially mandated students are more likely to be heavy drinkers (Barnett et al., 2004; Fromme & Corbin, 2004; LaBrie, Tawalbeh, & Earleywine, 2006; O'Hare, 1997), binge drinkers (Caldwell, 2002; LaBrie, Tawalbeh, et al., 2006), and more likely to encounter negative consequences (Barnett et al., 2004; Caldwell, 2002; Fromme & Corbin, 2004; LaBrie, Tawalbeh, et al., 2006; LeMay, 1968) than the general college population. If a group-based BMI is effective in this highly at-risk demographic, then universities would have a cost-effective response to problematic drinking that could reach more students at risk, without diluting the quality of empirically tested interventions. Second, this study seeks to mirror our work on targeted interventions for female adjudicated students (LaBrie, Thompson, Huchting, Lac, & Buckley, 2007) by developing a gender-specific targeted program for males. Although it is unclear exactly what aspects of an intervention may lead males and females to respond differentially to a same-sex versus co-ed environments previous work in our lab has shown that same-sex targeted interventions work well for at-risk adjudicated students (LaBrie et al., 2007). In this study, adjudicated male college students were given a single-sex targeted group-based BMI as part of a university sanction for violating campus alcohol policies. We predicted that the intervention would reduce drinking behaviors and drinking-related consequences among all participants.

METHOD

Participants

Over the course of two academic years, 230 male students who violated campus alcohol policies were sanctioned by the university to attend one of 30 group interventions. Participants had a mean age of 18.75 years ($SD = 0.75$) and comprised 129 first-year students (56%), 81 sophomores (35%), 19 juniors (8%), and one senior (1%). One hundred and seventy-four (76%) of the participants were Caucasian, 23 (10%) were Hispanic/Latino, 10 (4%) were "more than one race," 8 (4%) were black/African American, 5 (2%) were Asian/Pacific Islander, 5 (2%) were classified as "other," and 5 (2%) declined to state their ethnicity. Two hundred and eighteen (95%) completed the one-month follow-up and 211 (92%) completed the three-month follow-up.

Design and Procedure

Initial questionnaire—All efforts to ensure participants' confidentiality were made. Prior to attending the group session, participants read and signed an informed consent form

approved by a local institutional review board (IRB). Students completed an online survey assessing demographic variables such as age, ethnicity, family income, major, and class year, as well as drinking behaviors including the number of drinking days in the past 30 days (frequency) and the average number of drinks per drinking occasion (quantity). The questionnaire also included the 23-item Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989) ($\alpha = .87$), which was used to measure alcohol-related consequences within the past month, such as “Not able to do your homework or study for a test,” “Noticed a change in your personality,” and “Had a bad time.” Statements were anchored by 0 (*never*) and 4 (*more than 10 times*).

Intervention—Groups of 8 to 15 adjudicated students attended a scheduled 60- to 75-minute meeting co-facilitated by a doctoral-level clinician and a graduate student trained in MI. The groups met biweekly throughout the academic year. All students cited for violating campus alcohol policies were sanctioned to the intervention as described herein. Students met briefly with a judicial officer to review their offense and receive their sanction to the group intervention. They did not receive any additional services (e.g., attendance at different interventions, school-sanctioned counseling) during the time between their citation and the intervention. In order to create an ambiance of trust and openness, students were assured about the confidentiality of the discussion, and reminded that any information disclosed would remain completely separate from Judicial Affairs. In accordance with the principles of MI, the interventions were non-confrontational, as facilitators validated students’ drinking experiences, rolled with resistance, and encouraged participants to make mindful decisions regarding drinking.

Participants first completed a timeline followback (TLFB; Sobell & Sobell, 1992) of drinking behavior for the three months prior to the intervention. These group-administered TLFBs have been found to provide data similar to individually administered TLFBs (LaBrie, Pedersen, & Earleywine, 2005; Pedersen & LaBrie, 2006). Participants received a calendar of the past 90 days with important academic dates, national holidays, and campus-specific events previously marked. In order to aid recall, participants were also encouraged to recall personal “marker days,” such as birthdays, vacations, parties, national holidays, and campus-specific events. Once the participants were finished indicating “marker days,” they charted which days they drank and how many drinks they consumed on each drinking day. This component of the intervention allowed participants to identify and personally confront their own drinking behavior.

Then, to better create an atmosphere of open discussion and group cohesion, participants were asked to introduce themselves and share their story of receiving a sanction. At this time, the facilitator openly validated expressions of frustration, offered empathy for their predicament, and suggested that regardless of circumstance, their participation was important and necessary for a successful session. This discussion introduced the participants to the nonjudgmental setting of the group and aided in the development of rapport and the reduction of resistance (Walters, 2000).

Students were then surveyed regarding perceived campus drinking norms. To correct misperceptions, the facilitator provided accurate data on normative university drinking

(based on data collected using the CORE Alcohol and Drug Survey). For example, students were asked their perception of how many male students typically drink three or more times per week. After sharing their perception, facilitators offered the correct statistic (19%). Occasionally, resistance emerged in the form of audible doubts and queries about the validity of the data. Here, a discussion began by highlighting the discrepancy between the group members' often inflated perceived norms, and the actual campus norms. Participants received feedback about the prevalence of alcohol-related incidents of violence, regretted sexual experiences, vandalism, and other negative alcohol-related consequences. This social norms component is a critical portion of college-based interventions to reduce drinking (i.e., Collins, Carey, & Sliwinski, 2002; Marlatt et al., 1998).

Participants then generated reasons for and against reducing their current levels of drinking by engaging in a decisional balance (Janis & Mann, 1977). The decisional balance was designed to outline the benefits and costs (pros and cons) of changing behavior patterns. Each reason generated by the group was acknowledged by the facilitator using the style of MI. The benefits for changing drinking patterns were especially highlighted because research suggests that amplifying benefits to change in turn influences motivation to change (Prochaska & Redding, 1994). If the group did not generate specific benefits from a validated decisional balance measure (Migneault, Pallonen, & Velicer, 1997), the facilitator presented them for discussion. After the group dialogue, participants decided on the pros and cons that resonated with them individually, and documented them on a decisional balance sheet. Each participant then rated the self-importance of each pro and con on a scale of 0 (*not important to me*) to 10 (*very important to me*), as well as the overall importance of each column of pros and cons. Each participant then reported to the group his most important reason for change and explained the personal importance of that particular reason.

Next, the facilitators led a discussion on the physiological effects of alcohol. Personalized Blood Alcohol Content (BAC) cards tailored for gender and weight were disseminated, and the biphasic effects of alcohol, individual tolerance, risks (such as drunk driving and alcohol poisoning), physical signs of alcohol poisoning, and the emergency number to call if confronted with an alcohol-related poisoning on campus, were discussed. The conversation did not vilify alcohol, but rather emphasized the importance of drinking in moderation in order to optimize the positive effects of alcohol without reaching the point of significant impairment or serious negative consequences (Dimeff et al., 1999).

The group then explored situations in which students felt it would be difficult to avoid excessive or unplanned drinking. Some of the high-risk situations included certain peer groups, specific social situations, and various emotional states of the participant. Participants were then encouraged to analyze causes for their own previous excessive drinking episodes (e.g., peer pressure, stress, problems with friends or significant other, etc.), identify current skills they may possess for dealing effectively with these situations (e.g., saying "no" or exploring other options to deal with stress), and to develop new skills to handle risky situations that may arise in the future. These discussions also facilitated conversations among the participants, thus enhancing sharing among the group.

Facilitators then presented research on the role of expectancies in drinking behavior and emotions (Neighbors, Walker, & Larimer, 2003; Noar, LaForge, & Maddock, 2003). Widespread expectations about the social and sexual enhancement effects of alcohol were discussed, along with the suggestion that some of these effects may have been due to expectancies rather than the alcohol itself.

Participants then completed an assessment of intended drinking over the next month that included precise behaviors (days per month, average drinks, and maximum drinks) as well as behavioral goals such as “I will continue to drink in a responsible manner, which is about two to three drinks per occasion” (maintenance) or “I want to limit my drinking to five or six drinks at parties; I want to drink in moderation and still enjoy social situations” (reduction). These goals were aimed at either maintaining safe levels or reducing harmful levels of drinking.

Follow-up—The intervention ended with a description of the follow-up diaries and assessments. The diaries consisted of 12 weekly e-mail-based journals in which participants noted the days they drank and the number of drinks consumed. For the one- and three-month follow-up assessments, the diaries also included a RAPI assessment of alcohol consequences in the prior month.

RESULTS

Data Analyses

Baseline drinking levels were established by using the TLFB to construct the variable “drinks per month.” Outcome measures were calculated using data from the weekly online diaries. Alcohol-related negative consequences for the pre- and post-intervention periods were assessed by combining the RAPI consequences into a summary composite score. Descriptive analyses involved the presentation of mean drinking and consequences. Separate repeated measures analysis of variance tests documented reductions in drinking and consequences for all participants and separated by class year. Independent samples t-tests examined differences between mean drinking and consequences.

Overall, participants consumed an average of 64.42 drinks in the month prior to intervention, 51.62 drinks at one-month follow-up, and 45.45 drinks at three-month follow-up. Average RAPI composite scores were 7.28 during baseline, 4.96 at one month post-intervention, and 4.95 at three months post-intervention. Broken down by class year, freshmen consumed an average of 62.80 drinks and experienced 7.42 consequences in the baseline, compared to 49.25 drinks and 5.25 consequences at one-month follow-up, and 41.31 drinks and 4.81 consequences at three-month follow-up. Upperclassmen consumed an average of 66.52 drinks and experienced 7.11 consequences during baseline, compared to 54.74 drinks and 4.58 consequences at one-month follow-up, and 51.12 drinks and 5.13 consequences at three-month follow-up. Compared with other national samples of male mandated students in the research literature (e.g., Barnett et al., 2008; Morgan, White, & Mun, 2008), this sample appeared to contain students drinking at heavier levels and experiencing more consequences. However, at follow-ups, the present sample appeared to

drink at lower levels than mandated students assessed prior to an intervention (e.g., Barnett et al., 2008; Borsari & Carey, 2005).

Main Effects: Within-Persons Analyses

Repeated measures analyses revealed a main effect for the intervention on reduction in drinks consumed per month across three months of follow-up for all participants, $F(2, 402) = 14.15, p < .001$. Drinks per month were reduced by 20% at one-month follow-up and by 29% at three-month follow-up. In addition, a significant main effect existed for reductions in composite scores on the RAPI, $F(2, 396) = 15.98, p < .001$, and participants reduced composite RAPI scores by 32% at three-month follow-up (see Figure 1).

Class Year Analyses

Participants were divided into two groups for analyses—one comprising 129 first-year students and the other comprising 101 sophomore, junior, and senior students. Prior to the intervention, first-year students drank at similar levels to upperclassmen (see Figure 2 for mean drinks). Split file repeated measures analyses revealed that the intervention appeared equally successful in reducing drinking for both first-year students ($F(2, 240) = 6.28, p < .01$) and upperclassmen ($F(2, 172) = 4.78, p < .05$). First-year students reduced drinks per month by 22% at one-month follow-up and by 34% at three-month follow-up. Upperclassmen participants reduced drinks per month by 18% at one-month follow-up and by 23% at three-month follow-up. Furthermore, both first-year students and upperclassmen significantly reduced composite RAPI scores after the intervention, with reductions of 37% and 28%, respectively, at three-month follow-up, $F(2, 226) = 8.10, p < .001$; $F(2, 168) = 7.32, p < .001$. Repeated measures analyses with freshmen versus upperclassmen as a between-subjects factor revealed no significance between group effects in drinking reductions or in alcohol-related problems reductions. These analyses demonstrate the effectiveness of the intervention on both potentially inexperienced and experienced drinkers at a university.

Recidivism

University judicial records revealed a 10% recidivism rate for participants during the two years of the study ($N = 24$). This figure is similar to the 15% reported during the first year of the study, and a large improvement over the 51% reported by the university before the implementation of the group-based BMI.

Effects of receiving an alcohol citation—For the following analyses, the Judicial Affairs office provided the dates on which students were cited for violating campus alcohol policies (e.g., the student was caught drinking under age in their residence hall room). Recent literature has suggested that receiving the alcohol infraction alone can impact behavior change and reduces alcohol intake before any intervention (Morgan, White, & Mun, 2008). To determine if receiving a citation alone impacted drinking among this sample, only those students who were cited for infractions between 30 and 60 days prior to the intervention were selected ($N = 72$). This group was selected because, for these participants, the earliest month of the TLFB (90 to 60 days ago) represented drinking *before* being cited and the most recent month of the TLFB (30 to 0 days ago) represented drinking

after citation. Thus, we were able to compare individuals' drinking prior to their infraction with their drinking after the infraction to determine if drinking was impacted by "getting caught" for violating campus alcohol policies. The 72 participants who met this criterion did not differ in age, class year, or ethnicity from the other participants in the study (i.e., those receiving citations more than 60 days ago or less than 30 days ago). Furthermore, separate one-way ANOVAs revealed that drinking during the earliest month of the TLFB and the most recent month of the TLFB for these 72 participants did not differ from drinking during the same TLFB months for the other participants. Contrary to current research, it was found that for these 72 students drinking actually increased from three months prior to the intervention (45.75 [$SD = 50.85$]) to one month prior to the intervention (57.25 [$SD = 49.09$]), $t(70) = 2.18, p < .05$. Thus, it appears that simply being cited for an infraction did not produce reductions in drinking.

Additional Analyses: A Post Hoc Control Condition

Although this experiment did not contain a true control group, a post hoc control condition was created to simulate such a case for further analysis. To create this condition, subjects with greater than 30 days between citation and intervention ($N = 209$) were randomly assigned to post hoc control ($N = 110$) or intervention groups ($N = 99$). To determine if randomization was successful, independent samples t-tests and chi-square analyses were conducted and revealed that participants in the two conditions did not differ on age, baseline drinking, baseline consequences, ethnicity, and class year. Data for the post hoc control group consisted of the drinking quantities and RAPI consequences for those subjects during the month prior to intervention, mimicking a one-month wait-list control condition. Data for the post hoc intervention group used the drinking quantities and RAPI consequences for those subjects over the month following intervention.

Overall, it was found that the intervention group drank 19% fewer drinks (50.2 versus 61.8) over the month than controls, $F(1, 207) = 3.95, p < .05$. Furthermore, participants in the intervention group experienced significantly fewer consequences over the month observed than controls, $F(1, 200) = 10.55, p = .001$, representing 44% fewer RAPI consequences (4.62 versus 8.21).

DISCUSSION

While there is a growing literature that supports the effectiveness of personalized MI-based interventions (Borsari & Carey, 2005; Dimeff et al., 1999; Fromme & Corbin, 2004), research on MI models that incorporates those principles into group interventions is lacking. It is important to note that this particular intervention is a motivational enhancement approach that incorporated many elements of MI, but was not strictly an MI intervention as it also included various components of harm reduction techniques, such as the discussion about social norms, the physiological effects of alcohol, and alcohol expectancies. This study found that this adapted, group-formatted MI intervention not only reduces drinking and alcohol-related consequences in a manner comparable to a one-on-one model, but it does so in a gender-specific intervention targeted to male adjudicated students. Significant reductions in drinks per month and alcohol-related negative consequences were reported by

all participants over the three months of follow-up, and post hoc analyses showed the intervention significantly reduced consequences relative to a randomly assigned wait-list-like control condition. Furthermore, both first-year and upperclassmen participants benefited from the intervention, and analyses of the time between the citation and the intervention suggest that these reductions were not due solely to the receipt of citation. Finally, these adjudicated students experienced lower rates of recidivism after receiving the intervention than students from previous years, who received a psycho-educational class.

These results add to the growing body of evidence supporting the use of group-based MI interventions. The NIAAA Task Force on College Drinking (NIAAA, 2002) has found support for the use of brief motivational enhancement (Dimeff et al., 1999; Marlatt et al., 1998) and cognitive-behavioral interventions (Baer et al., 1992; Kivlahan et al., 1990) to inspire a change in drinking habits. The technique of motivational interviewing (MI; Miller & Rollnick, 2002) has been shown to reduce binge drinking and alcohol-related negative consequences (Marlatt et al., 1998), even in heavy drinkers (Larimer & Cronce, 2002; Murphy et al., 2001). Although many universities have group interventions with adjudicated students, the addition of the motivational enhancement component appears to work better than an educational-informative intervention alone (Robinson et al., 1993). The successful extension of established BMI techniques into a group-based paradigm may provide universities with a more cost-effective response to problematic drinking than one-on-one interventions.

Furthermore, the current study also lends support to the use of targeted interventions, based both on mandated status and gender. While few studies have examined the effectiveness of MI-based interventions specifically targeted to mandated students, this work and others suggest that they may be effective at reducing alcohol use and related problems in this high-risk population (Borsari & Carey, 2005; Fromme & Corbin, 2004; LaBrie, Lamb, et al., 2006). These results also support our work on the efficacy of gender-specific interventions by developing a male-targeted program to match our currently running program for females (LaBrie et al., 2007). Given that being male and adjudicated are both risk factors for problematic alcohol use, the fact that this intervention yielded reductions in drinking and negative consequences suggests that it may be promising for continued study in this and other high-risk groups. Future researchers may wish to investigate ways to further boost the efficacy of this intervention, as despite the reductions seen here, the cohort is still consuming a considerable number of drinks per month.

It is important to note that, while follow-up is necessary to test any intervention, we cannot be certain that the simple monitoring of drinking with the TLFB and behavioral diaries did not serve as an intervention. However, it is our contention that the TLFB may increase mindfulness of drinking behaviors (Carey, Carey, Maisto, Gordon, & Weinhardt, 2001; Kalichman, Rompa, & Coley, 1996; Weinhardt, 2002), but without the development of a motivation to change this simple monitoring would not provide the lasting change seen here. This is consistent with previous work by Carey, Carey, Maisto, and Henson (2006), which found that TLFB alone does not appear to initiate the same reductions in drinking as it does in combination with a motivational intervention.

A second limitation of this study is the lack of a true randomized control design. All students referred by the judicial system received the intervention, and there was no wait-list control condition. This was mostly due to the university's pressing need to intervene with these high-risk students as soon as possible to build motivation for change, instill harm-reduction principles, and prevent further violations. Although future investigations would benefit from more empirically designed studies (Barnett & Read, 2005), our post hoc control condition simulated this case with promising results. Despite the use of the post hoc control condition, students were not randomized to condition prior to the intervention; thus, true effects of an intervention group versus a control group are yet to be examined.

In conclusion, this study found that a group-formatted MI-based intervention produced significant reductions in drinking and alcohol-related negative consequences over three months in adjudicated male college students. These results provide continued evidence for the effectiveness of gender-targeted, group-based motivational enhancement interventions, which may provide universities with a more cost-effective way to reach the heaviest and most at-risk students than traditional one-on-one sessions.

Acknowledgments

This research was funded by a Model Award from the U.S. Department of Education (Grant Q184N050003) and by Grant U18 AA015451-01 from the National Institute of Alcohol Abuse and Alcoholism (NIAAA).

References

- Anderson, DS.; Gadaletto, A. Results of the 2000 College Alcohol Survey: Comparison with 1997 results and baseline year. Fairfax, VA: Center for the Advancement of Public Health, George Mason University; 2001.
- Baer JS, Marlatt A, Kivlahan DR, Fromme K, Larimer ME, Williams E. An experimental test of three methods of alcohol risk reduction with young adults. *Journal of Consulting and Clinical Psychology*. 1992; 60(6):974–979. [PubMed: 1460160]
- Barnett NP, Borsari B, Hustad JT, O'Leary-Tevyaw T, Colby SM, Kahler CW, et al. Profiles of college students mandated to alcohol intervention. *Journal of Studies on Alcohol and Drugs*. 2008; 69:684–694. [PubMed: 18781243]
- Barnett NP, O'Leary-Tevyaw T, Fromme K, Borsari B, Carey KB, Corbin WR, et al. Brief alcohol interventions with mandated or adjudicated college students. *Alcoholism: Clinical and Experimental Research*. 2004; 28(6):966–975.
- Barnett NP, Read JP. Mandatory alcohol intervention for alcohol-abusing college students: A systematic review. *Journal of Substance Abuse Treatment*. 2005; 29:147–158. [PubMed: 16135343]
- Borsari B, Carey K. Two brief alcohol interventions for mandated college students. *Psychology of Addictive Behaviors*. 2005; 19:296–302. [PubMed: 16187809]
- Borsari B, Murphy JG, Barnett NP. Predictors of alcohol use during the first year of college: Implications for prevention. *Addictive Behaviors*. 2007; 32:2062–2086. [PubMed: 17321059]
- Caldwell PE. Drinking levels, related problems and readiness to change in a college sample. *Alcoholism Treatment Quarterly*. 2002; 20(2):1–15.
- Carey KB, Carey MP, Maisto SA, Henson JM. Brief motivational interventions for heavy college drinkers: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*. 2006; 74:943–954. [PubMed: 17032098]
- Carey KB, Scott-Sheldon LAJ, Carey MP, DeMartini KS. Individual-level interventions to reduce college student drinking: A meta-analytic review. *Addictive Behaviors*. 2007; 32:2469–2494. [PubMed: 17590277]

- Carey MP, Carey KB, Maisto SA, Gordon CM, Weinhardt LS. Assessing sexual risk with the behaviour with the Timeline Followback (TLFB) approach: Continued development and psychometric evaluation with psychiatric outpatients. *International Journal of STDs and AIDS*. 2001; 12:365–375.
- Collins SE, Carey KB, Sliwinski M. Mailed personalized normative feedback as a brief intervention for at-risk college drinkers. *Journal of Studies on Alcohol*. 2002; 63:229–567. [PubMed: 12033700]
- Dannells M. Changes in student misconduct and institutional response over 10 years. *Journal of College Student Development*. 1991; 32:166–170.
- Del Boca F, Darkes J, Greenbaum PE, Goldman MS. Up close and personal: Temporal variability in the drinking of individual college students during their first year. *Journal of Consulting and Clinical Psychology*. 2004; 72(2):155–164. [PubMed: 15065951]
- Dimeff, LA.; Baer, JS.; Kivlahan, DR.; Marlatt, GA. *Brief Alcohol Screening and Intervention for College Students (BASICS): A harm reduction approach*. New York: Guilford Press; 1999.
- Fromme K, Corbin W. Prevention of heavy drinking and associated negative consequences among mandated and voluntary college students. *Journal of Consulting and Clinical Psychology*. 2004; 72(6):1038–1049. [PubMed: 15612850]
- Geisner IM, Larimer ME, Neighbors C. The relationship among alcohol use, related problems, and symptoms of psychological distress: Gender as a moderator in a college sample. *Addictive Behaviors*. 2004; 29:843–848. [PubMed: 15219328]
- Hingson R, Hereen T, Winter MR, Wechsler H. Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18–24: Changes from 1998 to 2001. *Annual Review of Public Health*. 2005; 26:259–279.
- Janis, IL.; Mann, L. *Decision making: A psychological analysis of conflict, choice, and commitment*. London: Cassel & Collier Macmillan; 1977.
- Johnsson KO, Berglund M. Comparison between a cognitive alcohol programme and post-mailed minimal intervention in high-risk drinking university freshman: Results from a randomized controlled trial. *Alcohol and Alcoholism*. 2006; 41:174–180. [PubMed: 16322100]
- Kalichman S, Rompa D, Coley B. Experimental component of a behavioral HIV-AIDS prevention intervention for inner-city women. *Journal of Consulting and Clinical Psychology*. 1996; 64:687–693. [PubMed: 8803358]
- Kivlahan DR, Marlatt GA, Fromme K, Coppel DB, Williams E. Secondary prevention with college drinkers: Evaluation of an alcohol skills training program. *Journal of Consulting and Clinical Psychology*. 1990; 58(6):805–810. [PubMed: 2292630]
- LaBrie JW, Lamb T, Pedersen ER, Quinlan T. A group motivational interviewing intervention reduces drinking and alcohol-related consequences in adjudicated college students. *Journal of College Student Development*. 2006; 47(3):267–280.
- LaBrie JW, Pedersen ER, Earleywine M. A group-administered Timeline Followback assessment of alcohol use. *Journal of Studies on Alcohol*. 2005; 66:693–697. [PubMed: 16329460]
- LaBrie JW, Tawalbeh S, Earleywine M. Differentiating adjudicated from nonadjudicated freshmen men: The role of alcohol expectancies, tension, and concern about health. *Journal of College Student Development*. 2006; 47(5):521–533.
- LaBrie JW, Thompson AD, Huchting K, Lac A, Buckley K. A group motivational interviewing intervention reduces drinking and alcohol-related negative consequences in adjudicated college women. *Addictive Behaviors*. 2007; 32(11):2549–2562. [PubMed: 17628347]
- Larimer ME, Cronce JM. Identification, prevention, and treatment: A review of individual-focused strategies to reduce problematic alcohol consumption by college students. *Journal of Studies on Alcohol*. 2002; 14:148–163.
- Larimer ME, Cronce JM. Identification, prevention, and treatment revisited: Individual-focused college drinking prevention strategies 1999–2006. *Addictive Behaviors*. 2007; 32(11):2439–2468. [PubMed: 17604915]
- Larimer ME, Cronce JM, Lee CM, Kilmer JR. Brief intervention in college settings. *Alcohol Research and Health*. 2004; 28:94–104. [PubMed: 19006997]

- LeMay M. College disciplinary referrals for drinking. *Quarterly Journal of Studies on Alcohol*. 1968; 29(4-A):939–942. [PubMed: 5705415]
- Marlatt GA, Baer JS, Kivlahan DR, Dimeff LA, Larimer ME, Quigley LA, et al. Screening and brief intervention for high-risk college student drinkers: Results from a 2-year follow-up assessment. *Journal of Consulting and Clinical Psychology*. 1998; 66(4):604–615. [PubMed: 9735576]
- Michael KD, Curtin L, Kirkley DE, Jones DL, Harris R. Group-based motivational interviewing for alcohol use among college students: An exploratory study. *Professional Psychology, Research and Practice*. 2006; 37:629–634.
- Migneault JP, Pallonen UE, Velicer WF. Decisional balance and stage of change for adolescent drinking. *Addictive Behaviors*. 1997; 22(3):339–351. [PubMed: 9183504]
- Miller, WR.; Rollnick, S. *Motivational interviewing: Preparing people for change*. 2. New York: Guilford; 2002.
- Morgan TJ, White HR, Mun EY. Changes in drinking before a mandated brief intervention with college students. *Journal of Studies on Alcohol and Drugs*. 2008; 69(2):286–290. [PubMed: 18299770]
- Moskowitz JM. The primary prevention of alcohol problems: A critical review of research literature. *Journal of Studies on Alcohol*. 1989; 50:54–88. [PubMed: 2648075]
- Murphy JG, Duchnick JJ, Vuchinich RE, Davison JW, Karg RS, Olson AM, et al. Relative efficacy of a brief motivational intervention for college student drinkers. *Psychology of Addictive Behaviors*. 2001; 15(4):373–379. [PubMed: 11767271]
- National Institute on Alcohol Abuse and Alcoholism (NIAAA). NIH Publication No. 02-5010. Rockville, MD: National Institute on Alcohol and Abuse and Alcoholism; 2002. A call to action: Changing the culture of drinking at U.S. colleges.
- Neighbors C, Walker DD, Larimer ME. Expectancies and evaluations of alcohol effects among college students: Self-determination as a moderator. *Journal of Studies on Alcohol*. 2003; 64(2):292–299. [PubMed: 12713205]
- Noar SM, LaForge RG, Maddock JE. Rethinking positive and negative aspects of alcohol use: Suggestions from a comparison of alcohol expectancies and decisional balance. *Journal of Studies on Alcohol*. 2003; 64:60–69. [PubMed: 12608484]
- O'Hare T. Measuring problem drinking in first time offenders: Development and validation of the College Alcohol Problem Scale (CAPS). *Journal of Substance Abuse Treatment*. 1997; 14(4):383–387. [PubMed: 9368216]
- Paglia A, Room R. Preventing substance abuse among youth: A literature review and recommendations. *The Journal of Preliminary Prevention*. 1999; 20(1):3–50.
- Pedersen ER, LaBrie JW. A within-subjects validation of a group administered Timeline Followback for alcohol use. *Journal of Studies on Alcohol*. 2006; 67:332–335. [PubMed: 16562417]
- Prochaska JO, Redding CA. The transtheoretical model of change and HIV prevention: A review. *Health Education Quarterly*. 1994; 21(4):471–487. [PubMed: 7843978]
- Robinson SE, Roth SL, Gloria AM, Keim L, Sattler H. Influence of substance abuse education on undergraduates' knowledge, attitudes and behaviors. *Journal of Alcohol and Drug Education*. 1993; 39:123–130.
- Schulenberg J, O'Malley PM, Bachman JG, Wadsworth KN, Johnston LD. Getting drunk and growing up: Trajectories of frequent binge drinking during the transition to young adulthood. *Journal of Studies on Alcohol*. 1996; 57(3):289–304. [PubMed: 8709588]
- Sobell, LC.; Sobell, MB. Timeline followback: A technique for assessing self-reported alcohol consumption. In: Litten, RZ.; Allen, JP., editors. *Measuring alcohol consumption: Psychosocial and biological methods*. Totowa, NJ: Humana Press; 1992. p. 41-72.
- Stahlbrandt H, Johnsson KO, Berglund M. Two-year outcome of alcohol interventions in Swedish University Halls of Residence: A cluster randomized trial of a brief skills training program, twelve-step-influenced intervention, and controls. *Alcoholism: Clinical and Experimental Research*. 2007; 31:458–466.
- Stone GL, Lucas J. Disciplinary counseling in higher education: A neglected challenge. *Journal of Counseling and Development*. 1994; 72(3):234–238.

- Substance Abuse and Mental Health Services Administration (SAMHSA), OoAS. The NSDUH report: Gender differences in alcohol use and alcohol dependence or abuse: 2004 and 2005. Rockville, MD: SAMHSA; 2007.
- Walters ST. In praise of feedback: An effective intervention for college students who are heavy drinkers. *Journal of American College Health*. 2000; 48:235–238. [PubMed: 10778024]
- Wechsler H, Lee JE, Kuo M, Lee H. College binge drinking in the 1990s: A continuing problem. Results of the Harvard School of Public Health 1999 College Alcohol Survey. *Journal of American College Health*. 2000; 48:199–210. [PubMed: 10778020]
- Wechsler H, Lee JE, Nelson TF, Kuo M. Underage college students' drinking behavior, access to alcohol, and the influence of deterrence policies: Erratum. *Journal of American College Health*. 2002; 51(1):37.
- Wechsler H, Moeykens B, Davenport A, Castillo S, Hansen J. The adverse impact of heavy episodic drinkers on other college students. *Journal of Studies on Alcohol*. 1995; 56:628–634. [PubMed: 8558894]
- Weinhardt LS. Effects of a detailed sexual behavior interview on perceived risk of HIV infection: Preliminary analysis in a high risk sample. *Journal of Behavioral Medicine*. 2002; 25:195–203. [PubMed: 11977438]
- White HR, Labouvie E. Towards the assessment of adolescent problem drinking. *Journal of Studies on Alcohol*. 1989; 50:30–37. [PubMed: 2927120]

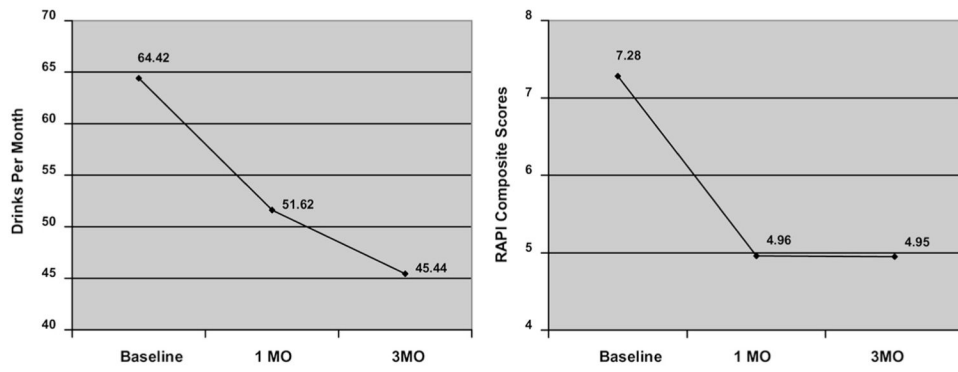


FIGURE 1. Reductions in drinks per month and composite RAPI scores for all participants ($N = 230$).

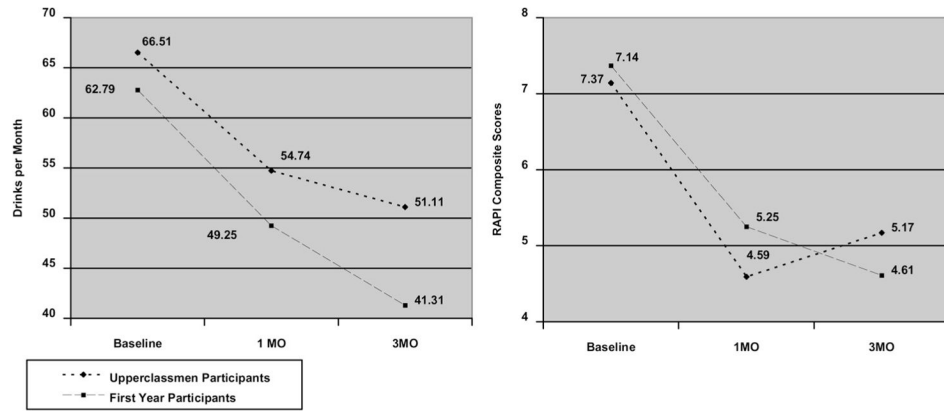


FIGURE 2. Reductions in drinks per month and composite RAPI scores for first-year participants ($N = 129$) and upperclassmen ($N = 101$).