

A Group Motivational Interviewing Intervention Reduces Drinking and Alcohol-Related Consequences in Adjudicated College Students

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This study examines the effectiveness of a single-session group motivational enhancement intervention with college students adjudicated for violation of alcohol policy. The intervention consisted of a Timeline Followback assessment of drinking, social norms re-education, decisional balance for behavior change, relapse prevention, expectancy challenge, and the generation of behavioral goals. All participants evidenced significant reductions in drinking from baseline through one and three month follow-up. Male participants and frequent binge drinkers showed the largest and most sustained reductions in drinking behavior. The results of this study provide tentative evidence for the effectiveness of group motivational enhancement interventions with adjudicated students.

The effects of alcohol abuse on college campuses are dramatic and concern administrators and campus communities throughout the United States (Walters, Grunewald, Miller, & Bennett, 2001). Prompted by increased recidivism and the strong relationship between alcohol misuse and problematic behavior, most universities have incorporated alcohol education courses, prevention strategies, or treatment services into their disciplinary sanctions (Larimer & Cronce, 2002; Walters et al., 2001). In fact, the referral of college students who violate campus alcohol policies (adjudicated students) to mandated prevention and treatment programs is becoming a

standard practice of university judicial systems (Stone & Lucas, 1994). Given the widespread impact of alcohol misuse, the development and evaluation of mandated alcohol prevention programs is an urgent research priority and an ethical necessity (Barnett et al., 2004; Larimer & Cronce, 2002).

The National Institute on Alcohol Abuse and Alcoholism (NIAAA) College Drinking Task Force (2002) noted strong evidence for the effectiveness of interventions that: (a) use survey data to counter students' misconceptions about their fellow students' attitudes towards excessive drinking, (b) simultaneously address alcohol-related attitudes and behaviors, and (c) increase students' motivation to change their drinking habits. Multi-component skills-based programs that combine these three empirically validated approaches have proven the most effective in reducing alcohol consumption, alcohol-related problems, or both (Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990; Larimer & Cronce, 2002).

Adjudicated College Students and Motivational Enhancement Interventions

Research suggests that adjudicated students are disproportionately heavy drinkers and are at increased risk for alcohol-related consequences (Caldwell, 2002; Larimer & Cronce, 2002). However, most heavy drinkers involved in the judicial system do not view their behavior as

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problematic and rarely voluntarily seek assistance (NIAAA, 2002). Therefore, approaches that utilize motivational enhancement techniques might better assist students who drink heavily, as these interventions encourage participants to begin thinking about changing a behavior (Barnett et al., 2004). Interventions designed to build motivation to change problematic behavior often follow the principles of Motivational Interviewing (MI; Miller & Rollnick, 2002). At the core of MI is the recognition that not everyone is ready or willing to make changes in their behavior. Thus, increasing the willingness to change (building motivation) is a primary goal of MI interventions. MI is a non-judgmental, client-centered approach founded on the basic principles of expressing empathy, developing discrepancy, rolling with resistance, and supporting efficacy. MI strategies with students might include helping find inconsistencies between their goals and current behavior, aiding in identifying intrinsic motivation to reduce problematic drinking, and teaching new strategies to deal with high-risk situations.

Interventions that incorporate additional non-MI techniques or interventions that are not strictly MI constitute adaptations of Motivational Interviewing (AMIs; Rollnick, Heather & Bell, 1992). The efficacy of AMI interventions has been generally supported in the literature (Burke, Arkowitz, & Menchola, 2003; Marlatt et al., 1998). Individually focused AMI interventions with both volunteer and mandated students have produced reductions in drinking in identified problem drinkers (Barnett et al., 2004; Marlatt et al.). Foote, DeLuca, and Magura (1999) outlined the extension of individualized AMI interventions to group formats. They theoretically explicate a model for transferring certain key elements of MI and modifying other techniques for group settings. Their preliminary

data suggests that participants perceived the treatment as being autonomy-supportive, which may be central to participants' choosing to make significant changes (Foote et al., 1999).

Although several studies have implemented group MI interventions with various populations, including dually diagnosed psychiatric inpatients and court mandated outpatients (Lincourt, Kuettel, & Bombardier, 2002; Van Horn & Bux, 2001), few studies have been published regarding their use or effectiveness with college students. Additionally, these studies reveal discrepant findings regarding the success of group MI interventions (Fromme & Corbin, 2004; Walters, 2000; Walters, Bennett, & Miller, 2000). Nevertheless, these studies provide preliminary support and encouragement for group AMI interventions with college students.

Strengths of group motivational interviewing approaches include cost-effectiveness, the salutary effects of group dynamics on treatment effectiveness, and the fact that group approaches to substance abuse treatment are already the most widely used formats (Foote et al., 1999). The large number of students on college campuses necessitates interventions that move beyond individual one-on-one contact. Group interventions that foster increased autonomous motivation predict greater individual change (Ryan, Plant, & O'Malley, 1995). The use of group-formatted motivational interventions may provide a judicious allocation of university resources.

A Single-Session Group AMI Intervention with Adjudicated College Students

The current study investigates the effectiveness of a brief, single session, multi-component group AMI intervention with adjudicated students. The group intervention combines the reflective and empathic style of MI with

empirically validated approaches in an attempt to reduce drinking among students sanctioned for violating campus alcohol policies. The non-confrontational style of MI motivates behavior change in concert with three main components: (a) providing participants with normative feedback to counter misperceptions of campus drinking; (b) providing participants with information regarding the role of alcohol expectancies in influencing drinking behavior; and (c) building motivation to change using the MI techniques of assessing previous drinking behavior, constructing a decisional balance for changing drinking behavior, developing skills to deal with high-risk drinking situations, and forming behavioral goals around drinking. The group AMI modality allows participants to discuss their beliefs, attitudes, and behaviors regarding alcohol use in a comfortable and non-judgmental setting. In addition to the intervention itself, assessment of previous drinking behavior and follow-up monitoring of alcohol use assists the intervention. It is hypothesized that the intervention will reduce drinking behavior, drinking-related consequences, and recidivism of alcohol-related violations. Implementing a brief, single session group AMI with adjudicated students has the potential to intervene with large numbers of students, thereby relieving pressure on over-taxed university resources, to increase motivation, and reduce problematic drinking behavior.

METHOD

Participants

During the 2003-2004 academic year at a mid-sized, private university, 167 students (100 males and 67 females) were referred by the Judicial Affairs Office to attend the group intervention. Participants were first-time offenders of campus alcohol policies, man-

dated to either attend the intervention or pay a fine and be placed on disciplinary probation. The infractions ranged from presence in a room where alcohol was in the sight of resident advisors to intoxication requiring medical attention. Group facilitators informed the students that all information they reported on forms or shared in the group was confidential and would be used solely for research purposes of data analysis. The participants received further assurances that no one from the intervention/research team would communicate any information about them or their responses to any member of Judicial Affairs except whether or not they completed the intervention.

The coed sample averaged 18.80 ($SD = .82$) years of age. One hundred twenty three of the students (74%) were White and the remaining 44 students (26%) belonged to several different ethnic backgrounds and were classified as non-White. Freshmen made up 71% of the sample, along with 18% sophomores, 8% juniors, and 3% seniors.

Procedure and Measures

Upon arrival at the group intervention, each participant gave informed consent and received assurances about the confidentiality of their responses. Participants then completed an assessment questionnaire that included demographic information and questions asking about the frequency, quantity, and maximum number of drinks they drank within the prior month. In addition, participants indicated their intended drinking behavior (i.e., days per month, average drinks, and maximum drinks) over the next month.

The initial questionnaire also included several established measures to assess alcohol-related consequences, beliefs about the effects of alcohol use, and motivation to change drinking behavior. An adaptation of the

Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989) assessed alcohol-related consequences encountered during the prior month using an open-ended response option. Participants indicated how many times in the past month they experienced each of the measure's 23 items. Finally, a Readiness to Change (RTC) Ruler assessed motivation to change drinking behavior. The RTC Ruler asked individuals to rank along a 10-point ruler how they felt about changing their current drinking from 1 (*Never think about changing my drinking*) to 10 (*My drinking has changed. I now drink less than I used to*). The RTC Ruler performs equivalently to longer questionnaires in assessing motivation to change a targeted problematic behavior (LaBrie, Quinlan, Schiffman, & Earleywine, 2005).

Intervention

The group intervention consisted of a Timeline Followback (TLFB) assessment of drinking, normative feedback, decisional balance assessment of changing drinking behavior, relapse prevention, expectancy challenges, and the creation of behavioral goals. Groups consisted of 10-15 participants, lasted between 60 and 90 minutes, and were led by doctoral-level or graduate student facilitators trained in MI. The groups occurred bi-weekly throughout the academic year.

Participants completed a TLFB (Sobell & Sobell, 1992) of drinking behavior for the three months prior to the intervention. Though administered in a group setting, participants completed their own TLFB individually. Group-administered TLFBs provide similar data to individual interview TLFBs (LaBrie, Pedersen, & Earleywine, 2005). Participants received a calendar of the previous three months with important academic dates, national holidays, and campus-

specific events highlighted. To assist memory, each participant identified personal marker days, such as vacations, visitors, parties, and birthdays. Using marker days and drinking patterns to aid recall, participants went back, day-by-day, through the calendar writing in the number of drinks consumed each day they drank. The TLFB allows participants to identify and personally confront their own drinking behavior.

Next, participants introduced themselves and shared how they became involved in the judicial system. At this time, the facilitator encouraged expressions of frustration regarding adjudication and validated those feelings. The facilitator expressed empathy for their predicament and suggested that no matter what circumstance brought each individual to the group their participation was important and necessary for a successful group. This introduced the participants to the non-judgmental setting of the group discussion and aided in the development of rapport and the reduction of resistance (Walters et al., 2000).

Normative re-education consisted of highlighting discrepancies between participants' perceptions of community norms and actual data for the university (based on the campus-specific 2003 CORE Alcohol and Drug Survey). Participants also received feedback regarding the percentage of alcohol involvement in incidents of regretted sexual experiences, forced sex, vandalism, and physical violence on campus. Normative feedback is a critical component of several college-based interventions to reduce drinking (i.e., Collins, Carey, & Sliwinski, 2002; Marlatt et al., 1998).

Within the group, participants generated reasons for (pros) and reasons against (cons) reducing their current levels of drinking. Each reason was highlighted and affirmed. While still validating the participants' cons (reasons

for continuing to drink at the same level), the facilitator highlighted the pros of changing behavior, given that increasing the value of the pros may account for more of the variance in increased motivation to change as opposed to reducing the values of the cons (Prochaska & Redding, 1994). If the group did not generate specific pros from a validated decisional balance measure (Migneault, Pallonen, & Velicer, 1997), the facilitator presented them for discussion. After the group dialogue, participants decided on the personal pros and cons that resonated with them 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*).

Group members took part in a facilitated discussion of specific high-risk situations in which they felt it would be difficult for them to avoid excessive or unplanned drinking. These high-risk situations included specific social situations, peer groups, and emotional states. Participants were encouraged to: (a) analyze the antecedents of excessive drinking episodes (i.e., pressure from certain friends or after a stressful day at school), (b) identify existing skills for dealing effectively with high-risk situations (i.e., saying “no” or finding a more constructive way to deal with stress), and (c) build new skills for dealing with future situations. These discussions allowed students to explore personally relevant high-risk situations, identify their existing skills to effectively deal with risky situations, as well as obtain the group’s input on new approaches/skills for dealing with these situations in the future.

The group also discussed expectations about the social and sexual-enhancing effects of drinking in their lives. They received alternative evidence indicating that expectancies rather than the alcohol itself may lead

to the effects typically associated with drinking. Facilitators presented descriptions of scenarios and research studies that revealed the role of expectancies in post-drinking behavior and emotion (Neighbors, Walker, & Larimer, 2003; Noar, LaForge, & Maddock, 2003). Finally, participants wrote down a behavioral goal for how they would drink in the next 30 days and shared these goals with the group.

Post-Intervention Follow-up

Participants kept monthly drinking diaries for three months following the intervention. Each day, participants recorded where, when, and how many drinks they consumed. In addition, the monthly diaries included an assessment of intended drinking over the next 30 days, seven alcohol-related consequence questions from the RAPI, and an RTC Ruler.

RESULTS

Of the 167 participants who completed the initial intervention group, 81% ($n = 136$) completed the three-month follow-up. Those who failed to complete three months of follow-up did not significantly differ from those who completed on age, sex, ethnicity/race, and baseline drinks per month. Drinking variables assessed included self-reported drinks per month, drinking days per month, average drinks per month, and maximum number of drinks consumed at one time. All participants drank at least once in the month prior to receiving the intervention.

For the purpose of this study, binge drinking was defined as consumption of five or more drinks in a row for males and four or more drinks in a row for females in a two-hour period. Based on the number of binge-drinking episodes in the two weeks prior to the intervention, participants were divided into three groups: non-binge drinkers, binge

TABLE 1.
Drinking Variables by Gender

	Baseline		1-Month Follow-up		3-Month Follow-up	
	Mean	SD	Mean ^a	SD	Mean ^a	SD
<i>Males</i>						
Drinks/Month	96.54	87.76	63.31***	54.31	47.76***	46.71
Drinking Days	11.76	6.71	8.83	5.82	7.32***	5.26
Average Drinks	7.49	3.58	6.24	3.72	5.52***	3.51
Max Drinks	15.40	6.47	10.54***	5.88	8.72***	5.17
RAPI-7 Total	8.98	11.94	5.13**	6.17	3.16***	4.21
RAPI-7 Breadth	2.30	1.55	1.88*	1.73	1.43***	1.53
<i>Females</i>						
Drinks/Month	54.00	47.62	38.69*	35.94	29.52**	32.49
Drinking Days	8.47	5.21	7.75	5.81	6.20	4.65
Average Drinks	5.39	2.77	4.16**	2.72	3.97*	2.63
Max Drinks	9.52	4.88	7.08***	4.56	6.15***	4.17
RAPI-7 Total	5.88	5.90	4.48	5.93	3.00**	4.61
RAPI-7 Breadth	2.29	1.77	1.72	1.64	1.33**	1.55

^a Values represent significant differences from baseline.

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

drinkers, and frequent binge drinkers (Wechsler & Nelson, 2001). Non-binge drinkers comprised 17% ($n = 29$) of the sample and did not engage in binge drinking in the previous two weeks. The binge drinker group ($n = 51$, 31%) binge drank one or two times in the previous two weeks. Participants ($n = 87$, 52%) reporting three or more binge drinking events during the prior two weeks formed the frequent binge drinker group.

Changes in Drinking Behavior

Separate repeated measure ANOVAs revealed within-subject effects across time (baseline, one-month follow-up, and three-month follow-up) for drinks per month, $F(2, 264)$

$= 22.40$, $p < .001$, drinking days, $F(2, 264) = 20.71$, $p < .001$, average drinks, $F(2, 264) = 12.75$, $p < .001$, and maximum drinks, $F(2, 254) = 49.05$, $p < .001$. Post hoc comparisons revealed significant reductions in drinking behavior across time on all drinking variables for all participants. There also was a significant gender x time interaction effect for drinks per month, $F(2, 262) = 5.40$, $p < .05$, drinking days, $F(2, 262) = 5.49$, $p < .01$, and maximum drinks, $F(2, 252) = 7.19$, $p < .01$. Subsequent analyses revealed significant reductions in drinking behavior across time for both males and females although males started at higher consumption levels than females. Males and females reduced their

drinks per month by 50% and 45%, respectively. Table 1 includes drinking means and standard deviations across time, as well as significant changes in drinking from baseline (see Table 1 and Figure 1).

Mixed model repeated measures ANOVAs with time (baseline, one-month follow-up, and three-month follow-up) and drinker type revealed a drinker type x time interaction effect for drinks per month, $F(4, 260) = 6.76$, $p < .001$, and drinking days per month, $F(4, 260) = 6.44$, $p < .001$. Post hoc tests revealed that frequent binge drinkers reducing drinks per month by nearly 61% from 113.93 ($SD = 87.41$) to 53.03 ($SD = 44.83$) evidenced significantly greater reductions ($p < .001$) on all four drinking variables than both non-binge drinkers and binge drinkers. In addition, binge

drinkers, who reduced drinks per month 21% from 52.94 ($SD = 38.90$) to 32.38 ($SD = 41.10$), also showed significantly greater reductions ($p < .001$) in average drinks and maximum drinks than non-binge drinkers. Table 2 contains means and standard deviations of drinking behavior by drinker type across time (see also Figure 1).

Changes in Alcohol-Related Consequences

Seven items from the RAPI, subsequently referred to as the RAPI-7, were included in each monthly drinking diary. These seven items were those most endorsed by this sample at baseline and included: (a) inability to complete homework, (b) fighting, (c) attending school drunk, (d) needing more alcohol

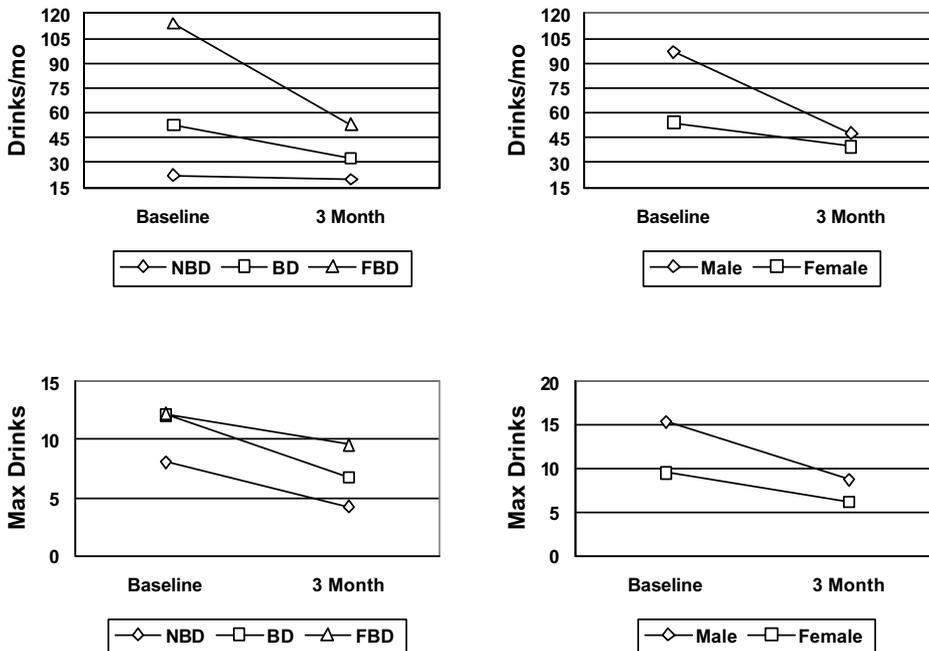


FIGURE 1. Reductions in Drinks per Month and Maximum Drinks per Month by Drinker Type and Gender.

NBD = Non-Binge Drinker, BD = Binge Drinker, FBD = Frequent Binge Drinker

TABLE 2.
Changes in Drinking Variables by Drinker Type

	Baseline		1-Month Follow-up		3-Month Follow-up	
	Mean	SD	Mean ^a	SD	Mean ^a	SD
<i>Non-Binge Drinker</i>						
Drinks/month	22.21	26.52	22.77	30.09	19.88	23.50
Drinking Days	4.46	4.11	5.25	6.36	5.32	4.54
Average Drinks	3.93	2.85	3.10	3.55	2.71	2.39
Max Drinks	8.07	7.36	5.25*	5.63	4.20*	3.56
RAPI-7 Total	2.11	2.78	3.21	4.90	2.20	3.92
RAPI-7 Breadth	1.32	1.49	1.32	1.63	1.00	1.53
<i>Binge Drinker</i>						
Drinks/month	52.94	38.50	32.57***	27.62	32.38***	41.10
Drinking Days	8.51	4.97	6.43*	5.17	5.98*	5.93
Average Drinks	6.12	2.36	4.56*	2.53	4.27*	2.80
Max Drinks	12.11	4.92	8.16***	5.30	6.76***	4.59
RAPI-7 Total	5.24	5.31	3.50	6.33	2.93*	4.77
RAPI-7 Breadth	2.00	1.58	1.26*	1.37	1.24*	1.53
<i>Freq. Binge Drinker</i>						
Drinks/month	113.93	87.41	76.68***	53.40	53.03***	44.83
Drinking Days	13.53	5.84	10.62***	5.09	8.00***	4.37
Average Drinks	7.87	3.56	6.76*	3.44	6.10**	3.33
Max Drinks	12.24	6.05	11.18***	5.01	9.54***	4.77
RAPI-7 Total	11.05	12.30	6.25**	6.03	3.54***	4.25
RAPI-7 Breadth	2.79	1.54	2.31*	1.74	1.63***	1.53

^a Values represent significant differences from baseline.

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

to get same effect, (e) having a hangover, (f) missing a class, and (g) noticing changes in one's personality. Participants reported on the number of times each of these alcohol-related consequences occurred in the previous month.

Two scoring methods examined changes in these alcohol-related consequences. First, each variable was coded dichotomously to

reflect either the presence or absence of the consequence. The RAPI-7 dichotomous total (RAPI-7 Breadth; 0–7) reflects the breadth of consequences experienced. All participants reduced the breadth of alcohol-related consequences by 22% from baseline to three-month follow-up, $t(133) = 5.164$, $p < .001$, with both males and females reducing the breadth of negative consequences at three-

month follow-up (see Table 1).

Second, a sum-total for the RAPI-7 items (RAPI-7 Total) reflects the absolute total number of these seven alcohol-related consequences experienced by an individual in a month (Range 0 to 90, $SD = 10.09$). Higher numbers indicate a greater number of RAPI-7 alcohol-related consequences regardless of type. Participants decreased total RAPI-7 alcohol-related consequences by 60% from baseline to three-month follow-up, $t(133) = 4.81, p < .001$. Further, there was a gender \times time interaction on the RAPI-7 total, $F(2, 260) = 3.52, p < .05$, with both males and females reducing total alcohol-related problems at three-month follow-up. There was also a drinker type \times time interaction effect, $F(4, 258) = 5.75, p < .01$, on the RAPI-7 total. Subsequent paired-sample t test analyses revealed that both frequent binge drinkers and binge drinkers significantly reduced their total

alcohol-related consequences at three-month follow-up (see Table 2).

Changes in Judicial Recidivism

Records from the university Judicial Affairs Office at the end of the 2003-2004 academic year determined if adjudicated students who received the group intervention differed from previous year adjudicated students in recidivism rates. Data used to determine recidivism rates were limited to the year in which the initial violation occurred. The offenders from 2002-2003 did not differ from the participants in the present sample on any demographic variables: 60% ($n = 217$) male and 40% ($n = 147$) female, average 18.93 ($SD = .83$) years of age, and 66% White. Figure 2 compares the recidivism rates of intervention participants with recidivism rates of students prior to the inception of the group intervention at the university. A chi-square analysis

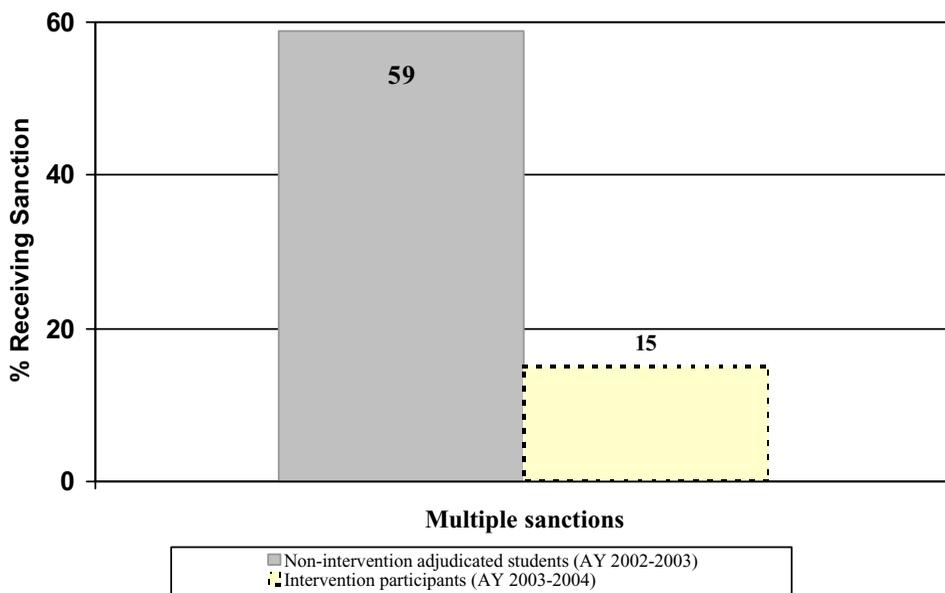


FIGURE 2. Percentage of Intervention Participants Receiving Multiple Sanctions Compared to Previous Year's Archived Data of Students Receiving Multiple Sanctions.

on the number of first offenders who re-offended revealed a significant difference between the two years on recidivism rates, $\chi^2(1) = 38.21, p < .001$. The sanction in place in 2002-2003 was an alcohol education class and the viewing of an alcohol information CD-ROM. Further, an internal study conducted by the university in 2002 revealed that 57% of all alcohol-related violations in the 2000-2001 academic year involved students with previous alcohol violations. It appears that the intervention was particularly successful at reducing judicial recidivism.

Preventative Component

To provide evidence for the intervention's possible preventative effects, pre-intervention drinker type (Wechsler & Nelson, 2001) was compared with drinker type using the last two weeks of the participants' third month follow-up diary. Forty-three percent of the participants met classification in a less risky drinker type than at pre-intervention, whereas 42% stayed the same drinker type from pre-intervention to three-month follow-up. Examined more closely, 60% of the non-binge drinkers continued not to binge drink at three-month follow-up. Additionally, 45% of binge drinkers and 25% of frequent binge drinkers decreased to non-binge drinkers at follow-up. Thirty-seven percent classified as frequent binge drinkers, meaning they binge drank three or more times in a two-week period at pre-intervention, decreased to the classification of binge drinker, who binge drank one or two times in a two-week period. Only 15% of all participants increased drinker type to a higher drinking label at follow-up than at pre-intervention.

DISCUSSION

To date no previous research has examined the utility of brief group AMI interventions with

adjudicated college students. The current study found that a single session, motivational enhancement group intervention was effective in reducing levels of drinking, alcohol-related consequences, and judicial recidivism in a sample referred for violating campus alcohol policies. Those participants most at risk for problems from drinking (the heaviest drinkers—males and frequent binge drinkers) experienced the most change. The results suggest that brief group interventions promoting intrinsic motivation to drink responsibly might be a successful way of intervening with collegiate problem drinkers.

Although both males and females displayed significant reductions in drinking behavior, males evidenced the largest reductions in drinking behavior. Fromme and Corbin (2004) suggest that interventions aimed at younger college students, particularly White males, may be the most helpful in reducing recidivism and alcohol-related consequences. The current study found evidence for a successful intervention with this high-risk population. Although the reductions in drinking among the heaviest drinkers might be accounted for by regression to the mean, that seems highly unlikely as three months of pre-intervention drinking data was collected. The heaviest drinkers (males and frequent binge drinkers) drank consistently at the same level over the course of those three months. Thus, the gender-specific and drinker type findings of the current study support the assertion that adjudicated students are a heterogeneous population that may require intervention tailored to specific subpopulations (Larimer & Cronce, 2002).

Descriptive analyses of adjudicated students revealed that they are primarily male (60%) and White (75%; at a university whose ethnic makeup is only 50% White). Further, these adjudicated students drink at risky levels.

Eighty-three percent of the students binge drank at least once in the two weeks prior to the intervention, with more than half (52%) bingeing three or more times. These frequent binge drinkers are at heightened risk for severe alcohol-related consequences (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Their reductions in drinking behavior are important markers, paralleled by their reductions in alcohol-related consequences. Further, although only 17% of the participants were non-binge drinkers, it is likely that they had a positive impact on the group intervention. Although their drinking was not at risky levels, they evidenced reductions in drinking days and monthly consumption, and 60% of the non-binge drinkers continued not to binge drink at three-month follow-up. These drinkers' responses in the group setting may have been important for the others. Previous research has found that groups comprising solely heavy drinkers are ineffective in producing change (Walters et al., 2000). The presence of participants with varying levels of drinking behavior likely reduced the possibility that a homogeneous group of heavy drinking students might reinforce their own inaccurate perceptions of drinking norms and negatively influence the facilitation of behavior change. Future research with group AMI interventions should include participants with varying prior drinking patterns.

Reducing maximum drinks is especially important given the relationship between large quantities of alcohol consumed at one time and alcohol poisoning. It is significant that participants reduced their average maximum drinks (males by nearly one-half from 15.4 to 8.7 drinks; females by one third from 9.5 to 6.1 drinks) seeing as this may reduce the chances of acute health problems or decrease situations involving university and community emergency resources. Further, frequent binge

drinkers reduced their average maximum drinks by nearly three drinks (from 12.2 to 9.5 drinks) and their drinks per month by approximately 53%. Finally, because females metabolize alcohol slower than males and have heightened risk for alcohol poisonings (NIAAA, 1999), the intervention appeared particularly successful in reducing average maximum drinks among heavy drinking women (those who drank 12 drinks or more; $M = 14.75$). They reduced their mean maximum drinks 36% to 9.5 drinks at three-month follow-up, thus reducing the likelihood of serious health consequences.

Although all participants evidenced reductions in alcohol-related consequences, the heaviest drinkers (males and frequent binge drinkers) experienced the most dramatic reductions. Moreover, not only did participants reduce their total number of drinking-related problems per month, but they also evidenced reductions in the types of problems they experienced (inability to complete homework, verbal arguments, etc.). The intervention also appeared to reduce the likelihood that students would violate campus policies again compared to previous campus sanctions used at the university (a professional-led alcohol education class and an informational CD-ROM).

Limitations

Several methodological limitations temper the present findings. First, the current study lacked a control group. As such, inferences made regarding the effectiveness of the intervention on specific aspects of drinking behavior are tentative. Future research with random assignment to group intervention and alternative control could determine if the intervention accounted for change. The fact that groups ran throughout the year, however, reduces the likelihood that reductions in

drinking resulted from a cohort time effect (such as reductions around finals or increases over spring break). Also, the effects may have been the result of simply receiving a citation and punishment. However, the average time between receiving a citation and participating in a group was nearly 60 days, so any decrease in drinking and drinking-related consequences resulting from involvement in the judicial system would have appeared in the TLFB assessment of pre-intervention drinking. In fact, because the month prior to the intervention was post-citation, comparing drinking in that month to drinking levels after the group controls for any citation/sanction-related reductions in drinking and rules out sanctioning alone as an explanation for the decreases in drinking experienced after the intervention.

Second, the multi-component nature of the intervention makes it impossible to ascertain which aspects of the intervention were effective in changing behavior. Nonetheless, the intervention did reveal significant within-person reductions in problematic drinking. Thus, although it is impossible to determine without adequate control what accounted for drinking reductions and reduced recidivism, these changes are clinically significant to campus communities who can use similar interventions that are brief and easy to administer with their own adjudicated students.

Finally, the use of retrospective self-report data from adjudicated college students raises the issue of built-in demand characteristics to report lower levels of alcohol consumption. However, the study took several steps to address this issue. First, MI principles were employed to defuse resistance, encourage personal responsibility, and foster an atmosphere of acceptance and non-judgment. Second, participants received verbal and

written assurances of the confidentiality of their responses. They received assurances that no further penalties would ensue from their responses. Barbor, Aguirre, Marlatt, and Richard (1999) found that participants accurately report alcohol use when no penalties are evident for being honest about drinking. In addition, TLFB assessments are a valid and reliable measure of drinking behavior among college students (Searles, Helzer, Rose, & Badger, 2002; Searles, Helzer, & Walter, 2000). Nonetheless, future research might attempt to identify blood alcohol levels independent of self-reports. Physiological measures may provide more accurate assessments of alcohol use and reduce the negative impact of response bias on the validity of data (Maisto & Connors, 1990).

Conclusion

The results herein provide preliminary support for the effectiveness of brief group AMI interventions with adjudicated students. As hypothesized, the intervention led to reductions in drinking behavior, alcohol-related consequences, and judicial recidivism. Motivational enhancement interventions, which are designed to reduce/diffuse resistance and build motivation for changing behavior, may be particularly effective with adjudicated students. Adjudicated students are unlikely to enter a university sanction program with significant concern about their alcohol consumption or a desire to reduce it. They may be more likely to respond to interventions employing AMI strategies. If future research confirms these results, group motivational enhancement interventions will allow for a more judicious use of university personnel and resources than typical one-on-one interventions while effectively reducing risk to individuals and campus communities posed by heavy drinking students.

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