

Assessing the Effectiveness of Peer-Facilitated Interventions Addressing High-Risk Drinking Among Judicially Mandated College Students*

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ABSTRACT. Objective: This study examined the effectiveness of three peer-facilitated brief alcohol interventions—small group motivational interviewing, motivationally enhanced peer theater, and an interactive alcohol-education program—with students engaging in high-risk drinking who were referred for alcohol policy violations. **Method:** Undergraduate students referred for alcohol policy violations ($N = 695$) at a large northeastern public university were randomized to one of the three conditions. Six-month follow-up data were collected on drinking frequency and quantity, negative consequences, use of protective behaviors, and perceptions of peers' drinking norms. **Results:** There were no statistically significant overall pre-post effects or treatment effects. However, exploratory analyses indicated that decreases in perceived norms and increases in use of protective behavioral strategies were associated with

reductions in alcohol use and alcohol-related problems at follow-up ($p < .01$). **Conclusions:** The presence of nonsignificant pre-post or main effects is, in part, consistent with recent research indicating that sanctioned college students may immediately reduce drinking in response to citation and that brief interventions may not contribute to additional behavioral change. The presence of statistically significant correlations between alcohol use and related problems with corrections in norms misperceptions and increased use of protective behaviors at the individual level holds promise for both research and practice. The integration of elements addressing social norms and use of protective behaviors within brief cognitive-behavioral intervention protocols delivered by trained peer facilitators warrants further study using randomized clinical trials. (*J. Stud. Alcohol Drugs*, Supplement No. 16: 57-66, 2009)

THE PROBLEM OF HEAVY DRINKING among college students is a significant public health issue that affects not only students themselves but the entire campus and broader community environment as well. More than 90% of college students are between the ages of 18 and 29 years, and individuals within this age range are at the highest current and lifetime risk for both heavy drinking and diagnosable alcohol- and substance-use disorders (Grant, 1997; Hurlbut and Sher, 1992; Johnston et al., 1997; Wechsler et al., 1994; Wood et al., 1992). National studies indicate approximately 20% of college students met diagnostic criteria for alcohol abuse or dependence in the preceding 12 months (Dawson et al., 2004), and approximately 40% of college students reported engaging in "heavy episodic" drinking (typically defined as four or five drinks in one sitting for women and men, respectively) in the preceding 2 weeks (Johnston et al., 2005; Wechsler et al., 2002). Research has

also shown that approximately 1,700 deaths and 500,000 injuries each year among college students can be attributed to alcohol use (Hingson et al., 2005). Further, heavy drinking among college students is associated with a variety of other consequences, including unplanned sexual activity, driving injuries, vandalism, physical illness, accidents, and injuries (Abbey, 2002; Cooper, 2002; Larimer et al., 1999; Leibsohn, 1994; Perkins, 2002; Wechsler et al., 1994, 1998).

Students cited for violating campus alcohol policies (which we refer to as "mandated" students) are more likely to be heavy drinkers who are at greater risk for negative consequences related to their drinking as compared with students in the general college population (Flynn and Brown, 1991; Fromme and Corbin, 2004; O'Hare, 1997) and are, therefore, in need of preventative interventions. To address this serious issue, most college campuses have implemented disciplinary referral policies mandating these students to complete alcohol-education and alcohol-abuse prevention programs (Barnett and Read, 2005; Flynn and Brown, 1991). Recently, several studies have examined the effectiveness of brief, motivational-interviewing (MI) and social-norms based intervention programs (which have been shown to be effective in the general college student population, see Carey et al., 2007; Larimer and Cronce, 2007) among mandated students. Some studies have shown mandated students participating in these types of interventions reported reduced

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alcohol use and/or alcohol-related problems (e.g., Borsari and Carey, 2005; Fromme and Corbin, 2004; Barnett et al., 2007; White et al., 2007, 2008). Additionally, some studies have shown MI-based and social-norms based interventions with this group to be more effective than alternative interventions at reducing alcohol use/problems, such as alcohol-education classes (e.g., Borsari and Carey, 2005; White et al., 2007). Most recently, White and colleagues (2008) concluded that brief interventions may not contribute to changes in drinking beyond the effects of the incident and/or citation. In sum, additional research examining whether these types of interventions are, in fact, effective with mandated college students is warranted.

Peer influences and college student alcohol use

The theoretical and research literature on models of social influence offers support for focusing on peer influences as a key element of interventions designed to reduce excessive consumption. This includes research on perceived norms for drinking, social motives or expected social benefits of drinking, modeling of heavy drinking as a risk factor, and direct alcohol offers (Carey, 1993; Larimer et al., 1997; Paschall et al., 2002; Wood et al., 2001a). Theoretical models of social influence (Bandura, 1977) have stressed peer influences on a range of behaviors, and empirical evidence suggests the social context is of particular relevance for college student drinking (Carey, 1993, 1995). In particular, drinking attitudes and behaviors of peers are among the strongest correlates of adolescent alcohol use/abuse (Hawkins et al., 1992; Perkins, 2002). Within the college campus setting, peer and social influences are highly salient and frequently involve alcohol (Borsari and Carey, 2001; Collins et al., 1985; Costa et al., 1999). Specific peer influences related to college drinking include alcohol offers, social modeling, and perceived descriptive and injunctive norms (Graham et al., 1991; Larimer et al., 1997; Wood et al., 2001b). Perceived descriptive norms include perceptions or misperceptions about what constitute typical drinking behavior among peers (Reno et al., 1993). College-age drinkers typically overestimate the amount of alcohol use and problems among peers (Baer and Carney, 1993; Baer et al., 1991; Borsari and Carey, 2001). Consistent with the concept of "injunctive norms" (judgments of what is appropriate behavior, see Reno et al., 1993), students also misjudge the prevailing attitudes of others toward alcohol use and intoxication (Berkowitz and Perkins, 1986; O'Leary et al., 2002; Prentice and Miller, 1993). Inaccurate perceptions of norms and attitudes regarding alcohol may result in the reinforcement and perpetuation of abusive drinking patterns.

The above findings suggest that interventions for college drinking aimed at individual risk factors should incorporate normative correction, challenge expectations of social benefits of drinking, and provide models of responsible at-

titudes toward drinking. Recent research offers support that group-specific live and interactive interventions that deliver normative feedback designed to correct misperceptions of alcohol-related group norms have been effective in reducing drinking behavior at 1- and 2-month follow-ups and that changes in perceived norms mediated the reductions in drinking (LaBrie et al., 2007, 2008). Based on work in the area of peer influence as well as brief interventions for alcohol use among college students, the implementation of novel, technologically advanced, group-based, brief alcohol interventions that address the correction of norm misperceptions warrant further exploration, both in regard to their effectiveness in reducing alcohol use and in their practical efficiency and cost-effectiveness when delivered within college and university settings.

Involving peers in delivering alcohol interventions

Given the literature on the importance of peer influences in college student drinking, it is possible that motivational- and social-norms based interventions delivered by peers would be particularly effective. For instance, role theory suggests students will learn more effectively from their peers than from individuals who are older and of a different generation (De Volder et al., 1985). It is this notion that underlies the promotion of formal peer-education programs on university and college campuses. There is wide variation in peer-education programs across college campuses and, as such, peer educators are used in varying capacities by health education organizations. The diverse activities of peer educators have included counseling and giving information to individuals and groups; facilitating outreach programs to a target audience; presenting programs that may include dramatic skits, role plays, or games for small groups; and staffing resource centers, hotlines, and outreach offices (Lindsey, 1997).

Although the majority of outcome research related to peer education focuses more on process evaluation than on behavior change (Sawyer et al., 1997), a few studies lend support to the efficacy of peer-education programs in the promotion of healthy behaviors (Richie and Getty, 1994; Sloane and Zimmer, 1993; Smith, 2000). It has also been suggested that some forms of peer education may be more effective than others. A report by the National Institute of Justice concluded that theatrical presentations can simultaneously educate and entertain, adapting concerns to the interests, vocabularies, and attention spans of their audiences (Epstein and Langenbahn, 1994). Several studies have since found theatrical interventions, ranging from interactive dramas to vignettes that were acted out and discussed, to be effective in producing significant positive changes in attitudes of college students toward sexual assault and rape prevention (Black et al., 2000; Frazier et al., 1994; Gilbert et al., 1991; Heppner et al., 1995). In addition, studies have shown that role-play

interventions resulted in increased knowledge about the topic area (Cimini et al., 2002; Duveen and Solomon, 1994; Perlini and Ward, 2000). Such findings suggest that dramatic methods may be a viable alternative to traditional lecture and video methods for enhancing knowledge in adolescents.

Based on the above literature, there is some support for integrating trained peers in the delivery of interventions addressing alcohol abuse among college students. Data from the National College Health Assessment (American College Health Association, 2007) suggest that about half of the students surveyed regard peer health educators as credible sources of health information. Further, at least two studies (Fromme and Corbin, 2004; Larimer et al., 2001) indicate that trained peer facilitators can be as effective as professionals in delivering structured motivational interventions with college student drinkers. Consistent with these findings, a study by O'Leary et al. (2007) evaluated whether incorporating a peer in the delivery of a brief motivational intervention would lead to significant reductions in alcohol use and problems in students mandated to receive treatment after violating campus alcohol policy. Results from this study found that participants in a brief motivational intervention that included the presence of a supportive peer reported greater reductions in drinking days and alcohol-related problems than did those in a motivational intervention without a peer (although differences were not statistically significant because of a small sample size).

To further assess the effectiveness of peer-facilitated interventions with college students who are engaging in heavy drinking, the aim of this study was to examine the effectiveness of three peer-facilitated brief alcohol interventions—small group MI, motivationally enhanced peer theater, and an interactive alcohol-education program—with high-risk drinkers referred for alcohol policy violations at a large northeastern public university. We hypothesized that participants in the MI and peer-theater conditions would report less drinking and fewer alcohol-related problems than those in the educational group. In addition to examining main effects for project interventions, we also focused on changes in social norms and use of protective behavioral strategies as potential mediators of intervention effectiveness.

Method

Participants

Participants for this study were 685 undergraduate students from a large, northeastern public university who had violated university alcohol policy and subsequently mandated for a sanction through the campus judicial system. The majority of the sample were male (62.2%) and white (82.6%), with other racial backgrounds as follows: 4.4% Asian/Asian American, 3.5% multiracial, 2.6% black/African-American, 0.3% Native American/American Indian, 0.3% Native Ha-

waiian/Pacific Islander, and 6.3% "other." Nearly 10% of the sample (9.6%) also identified themselves as Hispanic or Latino. The majority of students were either freshman (48.8%) or sophomores (36.4%), followed by juniors (13.3%) and seniors (1.6%). Almost all students (97.1%) lived in on-campus residence halls.

Measures

Alcohol use. To assess alcohol consumption we focused on two measures: peak number of drinks consumed on one occasion in the past 30 days (peak drinking) and average number of drinks per week. A standard drink definition was provided for these measures. To assess drinks per week, participants completed a version of the Daily Drinking Questionnaire (Collins et al., 1985). On the Daily Drinking Questionnaire, participants indicated the typical number of drinks consumed on each day of the week over a specified period (the past 30 days in the present study). To assess peak drinking, we asked participants to estimate the highest number of drinks they consumed on one occasion in the past 30 days (from the quantity/frequency/peak index; Dimeff et al., 1999).

Alcohol problems. We used the Rutgers Alcohol Problem Index (RAPI; White and Labouvie, 1989) to determine the presence of alcohol-related problems among our sample. The RAPI is a 23-item measure designed to assess a variety of problems associated with alcohol use. Example items include missing school or work, having an argument with friends, and not being able to do homework or study for a test. In this study we added two items associated with driving while intoxicated. Participants were asked to estimate how many times over the preceding 6 months they had experienced each problem, with responses scored on a 5-point scale ranging from 0 (never) to 4 (10 or more times). Prior studies have supported the reliability and validity of the measure (Martens et al., 2007b; White and Labouvie, 1989). In the current study the internal consistency was excellent ($\alpha = .91$).

Social norms. Because our interventions included a social-norms component, a measure of social norms was added to examine potential mediator effects. We assessed for perceived descriptive drinking norms via the Drinking Norms Rating Form (Baer et al., 1991). Its format mirrors the Daily Drinking Questionnaire except that participants are asked to estimate alcohol use by a specific reference group. In this study we used the Drinking Norms Rating Form to calculate an estimate of drinks per week by the typical student at the participants' school as well as their closest friend.

Protective behavioral strategies. We included a measure of protective behavioral strategies as another potential mediator variable. Protective behavioral strategies were assessed with the Protective Behaviors Strategies Scale (Martens et al., 2005). This scale is a 15-item measure that contains three

subscales: stopping/limiting drinking (e.g., “Have a friend let you know when you’ve had enough to drink”), manner of drinking (e.g., “Avoid drinking games”), and serious negative consequences (e.g., “Use a designated driver”). Responses are scored on a 6-point scale ranging from 1 (never) to 6 (always). Prior studies have supported the reliability and validity of the measure (Martens et al., 2005, 2007c). In the current study the internal consistency ranged from .67 (baseline serious negative consequences subscale) to .90 (follow-up manner of drinking subscale).

Procedures

All students who were referred to the university judicial system for alcohol-related policy violations were eligible to participate in this alcohol-education study. When students violated campus alcohol policy they met with a campus staff member (typically a residence director) who indicated that they were required to attend a program as part of their sanction. The students could choose one of two options: to enroll in the study and participate in one of the interventions associated with this project or to participate in an alternative program provided by the university counseling center. Both sets of programs involved similar time commitments, although students choosing to enroll in the study were provided with a \$25 gift card for completing a battery of questionnaires at baseline (before the intervention) and at 6 months after the intervention. Students were informed that if they enrolled in the study their judicial sanction would be satisfied after they participated in their scheduled intervention. Thus, completing follow-up questionnaires was not associated with their judicial sanction. The students who expressed an interest in participating in the project met with a research assistant to read and sign a consent form, complete the baseline questionnaires, and schedule the date and time of their intervention program. All questionnaires were completed online in the researchers’ laboratory. Participants were randomly assigned to one of three intervention conditions (see Table 1). Each intervention consisted of a single 2-hour group-based session facilitated by trained undergraduate students.

Motivational interviewing. The small-group MI condition included a number of specific components designed to enhance participants’ motivation to reduce their alcohol consumption, including a discussion focused on the evaluation of their own alcohol consumption and problems associated

with alcohol use and how current alcohol use is or is not consistent with their own personal values and goals. Specific areas of focus included discussions of participants’ assessment of their alcohol use, alcohol expectancies, personalized information on blood alcohol concentration, and the biphasic effects of alcohol. Other components were added to encourage group participants to examine more closely their alcohol use and its associated consequences. Information on campus alcohol-use norms was presented within the context of discussion. For instance, while talking with participants about various risk-reduction strategies they use, peer facilitators would share campus normative data specific to students’ use of protective behaviors, as well as address participants’ reactions to the norms in relation to their own behavior. All programs were conducted within the “spirit” of MI, in that facilitators attempted to create an empathic, accepting, and collaborative environment and to use reflective listening strategies.

Peer theater. The peer-theater condition was unique to this project. It consisted of an interactive theatrical presentation delivered by up to six student “actors” who represented a range of attitudes and behaviors around alcohol use. Scenarios related to alcohol use and focused on skill building and use of protective behaviors (e.g., peers encouraging a friend to assertively confront a temptation to go out drinking). The presentation consisted of five related “scenes” that follow the course of events throughout an evening and into the following day. Between the scenes a designated peer facilitator would stop the performance and invite group participants to discuss reactions to the scenario being represented, as well as offer an opportunity for participants to interact with the actors in their character roles. Within each theatrical performance, campus social-norms data were presented via slides appearing on a screen behind the actors about which the peer facilitator would elicit reactions from participants. The performance culminated with a discussion of how participants would have handled similar situations in real life and ways the actors could have reduced or avoided risks and/or negative consequences. Immediately before the theatrical presentation, participants were asked to complete a brief (four-question) anonymous social-norms questionnaire about their perceptions of alcohol use on their campus. These surveys were collected, shuffled, and later randomly distributed to participants after the performance, who were asked then to share survey responses with other group members

TABLE 1. Overview of intervention conditions

Variable	Format	Content	Facilitator	Length
Motivational interviewing	Group	PB, SN	Peer	2 hours
Motivationally enhanced peer theater	Group	PB, SN	Peer	2 hours
Interactive alcohol-education program	Group	PB, SN	Peer	2 hours

Notes: PB = protective behaviors; SN = social-norms information.

and engage in a peer-facilitated discussion during which their misperceptions about campus alcohol use were directly addressed.

Interactive alcohol-education program. In the interactive alcohol-education condition, participants were presented information on the effects of alcohol on the body, definitions of a standard drink, blood alcohol concentration, and tolerance. Facilitators also discussed the campus culture of college drinking, as well as potential consequences of drinking (e.g., financial cost, tolerance, and health problems) and the use of protective behaviors to reduce risk. Social-norms information was presented in the form of an activity in which normative statements related to their campus were posted around the room, and group participants worked together to match what they believed to be the correct norm statistic for each statement. Participants also viewed a 20-minute alcohol-education clip illustrating the physical and psychological effects of alcohol consumption over the course of several hours. Although there was some interaction between participants and the peer facilitators, the interactive alcohol-education program was designed to be more didactic and structured than the MI and peer-theater conditions, and participants' level of self-disclosure was considerably less than in the MI condition.

Facilitator training. The facilitators for this study were recruited from an existing university-based peer-education program and were assigned to a single condition throughout the course of the project, although they were initially trained in the general components of all intervention conditions. Facilitators received weekly 1-hour group supervision from the project coordinator (a licensed psychologist experienced in the delivery of MI-based interventions). Facilitators in the MI condition received an additional hour of individual supervision each week. Each facilitator was assigned to a single condition to help maintain the integrity of each intervention and to reduce the effects of variation in facilitator style, level of experience, and comfort in intervention delivery. All intervention programs were videotaped for supervision purposes, and some sessions were coded by trained members of a research team on another college campus for fidelity and adherence to MI principles. Supervision sessions reviewed the most recent intervention and included a discussion of feedback from the research staff coding the intervention. Role plays were also used to model facilitator behavior within the context of the specific intervention. There were also opportunities to address concerns of facilitators and to provide supportive and constructive feedback. At midyear, each facilitator met with the project coordinator to receive an individual evaluation that included the delivery of performance feedback and recommendations for intervention delivery enhancement. Facilitators also participated in training sessions at the beginning of each academic year delivered by experts in the area of college drinking and MI interventions. These workshops provided theoretical information regarding

college drinking (e.g., social-norms theory, physiological effects of alcohol, expectancy effects, and alcohol consumption) as well as a foundation in MI theory and psychodrama. Each session provided a practical basis for interventions delivered within this project.

Adherence to motivational interviewing principles. Interventions for 52 separate groups (approximately half of the study participants, $n = 308$) were coded for adherence to MI principles using the Motivational Interviewing Treatment Integrity rating scales (Moyers et al., 2003, 2005). All videotapes of intervention sessions were coded by a team of independent raters from another college campus who were trained in the Motivational Interviewing Treatment Integrity coding protocol. The results indicated that global empathy scores for MI and peer-theater sessions were higher than those for the interactive alcohol-education sessions (4.48 and 4.25 vs 3.69), as were global MI spirit scores (4.09 and 4.13 vs 3.46). Although the differences were not statistically significant, in part because of small sample sizes, effect sizes were in the medium range ($\eta^2 = .06-.09$). Thus, as expected, the ratings indicate the MI and peer-theater interventions had greater adherence to MI principles than the interactive alcohol-education condition. However, a score of 5 is considered demonstrative of good adherence to MI principles for beginning-level therapists; therefore, the MI and peer-theater conditions, in particular, were delivered with below-par adherence to MI principles.

Results

Missing data analyses

A total of 470 participants (68.6%) provided 6-month follow-up data on at least one of our three main outcome measures (peak drinking, drinks per week, and RAPI scores). Pairwise deletion procedures, where participants' data are included if missing data involve variables in the overall data set but not specific to the analysis in question, were used in cases where participants responded only to some of these measures. *T* tests were conducted to evaluate baseline differences in alcohol use and alcohol-related problems between those who did and did not complete the 6-month follow-up. Results indicated that those who did not provide follow-up data reported higher peak alcohol use ($t = 2.42$, 682 df, $p = .02$) and more drinks per week ($t = 2.11$, 675 df, $p = .03$) than by those who did complete the follow-up. No differences between the two groups existed on RAPI total scores ($t = 1.50$, 677 df, $p = \text{ns}$). Effect sizes were small for the alcohol-use measures ($d = 0.20$ and 0.18 for peak drinking and drinks per week, respectively), and average differences were only slightly more than one drink (11.33 vs 10.20) for peak drinking and two drinks (19.02 vs 16.87) for drinks per week. Thus, although participants completing follow-up assessments reported less baseline alcohol use than

noncompleters, the differences were relatively small. There were no differences across the three conditions in terms of percentage of students who provided follow-up data ($\chi^2 = 0.04$, 2 df, $p = \text{NS}$; $N = 685$) or in gender distribution ($\chi^2 = 4.29$, 1 df, $p = \text{NS}$; $N = 685$). There were gender differences in follow-up completion ($\chi^2 = 9.02$, 1 df, $p < .01$; $N = 685$), but the effect size was small ($\eta^2 = .01$). Finally, there were no differences among the conditions on baseline alcohol use or alcohol-related problems ($p = .14$ to $.95$). These findings suggest that our randomization procedures were successful.

Time and treatment effects

To examine treatment main effects, we conducted a series of three-level hierarchical linear mixed models (e.g., Raudenbush and Bryk, 2002), with peak drinking, drinks per week, and RAPI scores analyzed separately as outcome variables. Fixed effects included assessment point and intervention effects and were evaluated in two steps. Intervention group was specified by dummy-coded variables that contrasted the MI versus interactive alcohol-education program effect and peer-theater conditions versus interactive alcohol-education program. Product terms between assessment point and intervention contrast were then tested to evaluate changes in outcome as a function of intervention condition. Random effects were included representing person effects, because observations were nested within participants (Level 2) and group effects based on the specific group in which participants received the intervention (Level 3). For parsimony, results are presented only for tests of fixed effects.

Results of the hierarchical linear mixed models indicated no significant effect for assessment for peak drinking ($t = -0.42$, 466 df, $p = \text{NS}$), drinks per week ($t = 0.40$, 460 df, $p = \text{NS}$), or RAPI total scores ($t = -0.06$, 450 df, $p = \text{NS}$). Thus, across all participants there were no overall changes in drinking outcomes from baseline to follow-up (Table 2). Examination of the tests for Treatment and Time \times Treatment effects found no significant differences between the MI or peer-theater conditions and the interactive alcohol-education condition ($t = -1.70$ to 1.15 , $p = \text{NS}$), nor did statistically significant effects occur when the MI and peer-theater conditions were combined and compared with the interactive

alcohol-education condition or when the conditions were compared with each other.

Correlates of change

Given the lack of overall pre-post effects or treatment effects, our final analysis involved examining variables that might be associated with any changes that occurred at the individual level. Therefore, we examined whether changes in our hypothesized mediator variables—perceived norms and use of protective behavioral strategies—were associated with changes in alcohol use and alcohol-related problems. Although there were no between-group differences or overall pre-post changes on these variables, it is possible that, at the individual level, changes in the variables would be associated with changes in alcohol use and alcohol-related problems. To conduct these analyses, we calculated change scores by subtracting follow-up values from baseline values for our three outcome measures, the three Protective Behaviors Strategies subscales, and the two descriptive social-norms measures (perceived drinks per week by the closest friend [drinking norm friend] and by a typical college student at the university [drinking norm student]). Concerns have historically been raised about the reliability of change scores, but methodologists have shown that such scores are not inherently unreliable (Collins, 1996; Williams and Zimmerman, 1996). We then correlated the set of change scores. Although correlations among change scores do not imply causality, they can determine at the individual level if changes on one variable are associated with changes on another (Martens et al., 2007a).

The correlation matrix of change scores is presented in Table 3. Correlations between changes in descriptive drinking norms and changes in alcohol use and alcohol-related problems ranged from .17 (RAPI–drinking norm student) to .70 (drinks per week–drinking norm friend), all of which were statistically significant ($p < .01$). Our results also replicated prior studies addressing the importance of the salience of the normative reference group (e.g., Borsari and Carey, 2003), in that, for each alcohol-use or alcohol-problems measure, the change in perceived drinking by the closest friend had a stronger relationship with changes in use/problems than the change in perceived drinking by the typical student. Results also indicated that increases in the use of protective behavioral strategies were associated with decreases in alcohol use and alcohol-related problems, although the results were not as strong or as consistent as those found for social norms. The manner-of-drinking subscale change scores were correlated with the change scores on all three outcome measures ($r = -.12$ to $-.20$, $p < .01$), stopping/limiting drinking subscale change scores were correlated with peak drinking and RAPI change scores ($r = -.11$ to $-.14$, $p < .05$), whereas serious negative consequences subscale change scores were correlated only with RAPI change scores ($r = -.11$, $p < .05$).

TABLE 2. Overall differences for baseline versus 6-month follow-up alcohol use and alcohol-related problems

Variable	Baseline Mean (SD)	6-month follow-up Mean (SD)
Peak drinking	10.20 (5.58)	10.25 (5.88)
Drinks per week	16.87 (12.40)	17.22 (13.43)
RAPI scores	9.44 (10.31)	9.58 (12.49)

Notes: $n = 469$ for peak drinking; $n = 463$ for drinks per week; $n = 453$ for Rutgers Alcohol Problem Index (RAPI) scores.

TABLE 3. Correlations among change scores

	1.	2.	3.	4.	5.	6.	7.	8.
1. Peak drinking	—							
2. Drinks per week	.36†	—						
3. Rutgers Alcohol Problem Index	.22†	.31†	—					
4. Stopping/limiting drinking	-.11*	-.06	-.14†	—				
5. Manner of drinking	-.17†	-.20†	-.12†	.61†	—			
6. Serious negative consequences	-.06	-.04	-.11*	.42†	.30†	—		
7. Drinking norm friend	.29†	.70†	.26†	-.06	-.15†	-.05	—	
8. Drinking norm student	.21†	.37†	.17†	-.03	-.10*	.01	.31†	—

* $p < .05$; † $p < .01$.

Thus, our results indicate that, at the individual level, decreases in perceived drinking among others and increases in use of protective behavioral strategies were associated with decreased alcohol use and fewer self-reported alcohol-related problems.

Discussion

The aim of this study was to examine the effectiveness of three peer-facilitated brief alcohol interventions—small group MI, motivationally enhanced peer theater, and an interactive alcohol-education program—with students engaging in high-risk alcohol use who were referred for alcohol policy violations. Results indicated there were no statistically significant overall pre-post effects or treatment effects. Secondary analyses indicated that individual-level changes in perceived norms and use of protective behavioral strategies were correlated with changes in alcohol use and alcohol-related problems at follow-up regardless of intervention condition.

Although many brief intervention studies involving mandated students have found overall pre-post differences (e.g., Borsari and Carey, 2005; White et al., 2007, 2008), our findings are consistent with the conclusions of White and colleagues (2008) in that the event for which mandated students are cited and/or the citation itself may have an immediate impact in reducing drinking and that the interventions may not add over and above this effect. Thus, null findings as reported herein may be due in part to the timing of brief interventions relative to the citation itself, as our baseline assessments and subsequent interventions typically occurred a few weeks after the initial citation. It is also possible that this lack of overall effects is the result of underreporting of alcohol use at baseline. A recent study with mandated students (Walker and Cordin, 2007) found that the students reported less alcohol use when asked about it at intake relative to their self-report of use for the same historical timeframe after attending an intervention program, with concerns about disclosure noted as an explanation for the discrepancy. Additional research regarding the reliability of self-reported alcohol use among mandated college students and the specific timeframe

for drinking changes (e.g., postsanction or postintervention) seems warranted.

The lack of pre-post and treatment effects for both the MI and peer-theater conditions could be better understood within the context of peer facilitator skill/expertise at delivering the interventions. The task of learning and becoming proficient in the MI approach to treatment can be a difficult one for professionally trained counselors/therapists, let alone a group of undergraduate students with limited “hands-on” experience functioning in the role of group facilitator. In addition, there was great variability among the facilitators with respect to maturity, comfort level, and interpersonal skills. Some were naturally more adept than others at the acquisition and use of skills necessary for well-executed MI. This limitation was reflected in the below-optimal Motivational Interviewing Treatment Integrity ratings of the videotapes. In addition, the turnover of facilitators owing to graduation required that new facilitators be trained from baseline throughout the project. Perhaps a core group of facilitators maintained over the course of the entire study would have gained enough experience and confidence in the delivery of MI interventions, but this strategy may be somewhat incompatible with using peers as facilitators for these types of programs on a college campus. At exit interviews, many facilitators reported that it took six to eight programs before they felt comfortable in the role. It is possible that with ongoing training and experience the effectiveness of peers delivering these interventions could be enhanced.

Findings from the present study did show statistically significant correlations between changes in descriptive drinking norms and changes in alcohol use and alcohol-related problems ($p < .01$) and replicate prior studies illustrating that change in perceived drinking by one’s closest friend is more strongly related to changes in alcohol use and related consequences than is change in perceived drinking among the typical student. In addition, results also indicate that increases in the use of protective behavioral strategies were also associated with decreases in alcohol use and alcohol-related problems, although this association was not as strong as with changes in normative perceptions. These findings are consistent with the literature on models of social influence

that offer support for focusing on peer influences as a key element of interventions designed to reduce excessive alcohol consumption. The findings from this study support the importance of incorporating normative correction, challenging of expectations of social benefits of drinking, and providing models of responsible attitudes toward drinking within the context of interventions for college drinking aimed at individual risk factors. Future randomized trial research evaluating the delivery of key intervention elements by trained peers, including social-norms information and strategies focused on encouraging mandated students to employ protective behaviors, warrants investigation.

Students who violate campus alcohol or other drug policies represent a liability and risk management concern to colleges and universities. Following a policy violation, schools may impose fines or other financial punishments, notify parents as permitted under legal guidelines, push for suspension (particularly when the student has already gone through the judicial system), or pursue an alternative "punishment" that focuses on educating the student. Following the release of the National Institute on Alcohol Abuse and Alcoholism's report on college drinking (Task Force of the National Advisory Council on Alcohol Abuse and Alcoholism, 2002), colleges and universities are increasingly considering the evidence supporting any approach or intervention before adaptation. However, mandated students have long been a group for whom research evaluating intervention outcome has been limited. Practical issues, such as the impact of receiving a sanction on reported alcohol use, must further be researched and understood to determine how to best intervene with students following a policy violation. For example, studies could explore the clinical impact of the event that led to a sanction (including the presence of police vs housing staff), the effect of any ongoing legal investigation on behavior beyond the decisions made within the university, the reliability and validity of data collected from students for whom the extent of their behavior is unknown to university officials, clinical issues when a person is written up following use of a substance that is not the student's primary drug of choice (e.g., a student caught for alcohol use identifies marijuana as his or her primary drug of choice), and time from the policy violation to participating in a clinical intervention. It is difficult to interpret findings evaluating intervention outcome when the unique context surrounding the delivery of the intervention to mandated students is not fully understood.

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