Evaluating Personalized Alcohol Interventions

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Alcohol use on college and university campuses is not a recent phenomenon. Spurred, in part, by media attention, there has been greater attention paid to the incidence and costs of heavy drinking by college students. Heavy episodic drinking (i.e., binge drinking) has been particularly singled out as a behavior with negative consequences (Wechsler, Lee, Kuo & Lee, 2000), including interference with school performance, engaging in unprotected sex, damaging property, getting hurt and getting in trouble with the law. Clear evidence exists connecting higher levels of alcohol use with poor academic marks (Presley, Meilman & Cashin, 1996); in part, this is likely because the time spent consuming alcohol and/or recovering from its effects is time that is not spent on schoolwork.

Despite these rather alarming findings, DeJong and Langford (2002) found that administrators at institutions of higher education have failed to develop or support (through permanent reallocation of funds) on-campus programs aimed at prevention or promotion of healthy decision-making where alcohol is concerned. This is especially unfortunate because a sizable literature exists that indicates that this type of behavior is quite amenable to change in the face of education and personalized feedback. For example, Miller, Benefield, and Tonigan (1993) found that a 2-session intervention with students resulted in a decrease in drinking of more than 50% at both six weeks and one year post-intervention.

Even when the intervention is decreased to one hour of advice and personalized feedback, similar reductions in student alcohol consumption are seen (Baer, et al., 1992).

A number of commercially-packaged, computer-administered prevention programs are available to provide such feedback and address student drinking behavior. Typically, these programs include both educational components regarding alcohol and its effects, as well as personalized feedback regarding the student's self-reported drinking behavior. Alcohol-wise (3rd Millennium Classrooms, 2005) is an example of such a program.

Less comprehensive, but also providing students with computer-delivered assessment and feedback, normed to a national sample, are services like E-Chug (San Diego University Research Foundation, 2006). This tool, more limited in scope, may be used in a standalone fashion or as part of a more comprehensive (and perhaps locally developed) intervention.

The current study seeks to compare the effect on academic performance (grades and retention) of a comprehensive, online prevention program to a locally-developed hybrid program (face-to-face session combined with online assessment and feedback) to a no-treatment control group with first year university students.

Method

Participants and Procedure

Participants were drawn from 621 students (340 males, 281 females) assigned to first year student floors in a single residence hall on a mid-sized Midwestern regional university campus. Participants were assigned by residence hall floor to one of three intervention conditions. Those in the first group completed the Alcohol-wise online prevention program (referred to hereafter as the Alcohol-wise group). This program combines psychoeducational information with a personalized assessment of drinking behavior for each student; completion requires about 120 minutes. The second condition (the AOD/E-Chug group) involved a locally-developed face-to-face informational session presented by an Alcohol and Other Drug (AOD) Center staff member; in addition, students completed and received printed feedback about their performance on the E-Chug online assessment tool. A third condition was a no-treatment control condition; participants in this condition completed the introductory packet but had no other involvement.

Of the 621 students, 473 (76%) consented to participate, which included granting access to institutional academic records and completing baseline measures of alcohol use (see below). To limit the sample to first year students in their first semester, any student who had completed more than 15 semester hours was excluded. This resulted in sample of 358 participants in the three conditions: Alcohol-wise – 141; AOD/E-Chug – 106; Control – 111. Students in

the non-control conditions participated, at the encouragement of residence hall assistants, during the latter three weeks of September 2005. Of students agreeing to participate, approximately 50% in both interventions conditions actually completed the training (see Table 1). The total number of participants who completed the study was 235 (107 males, 128 females).

Table 1

Sample attrition

	Alcohol-wise	AOD/E-Chug	Control
Consenting freshmen (sample)	141	106	111
Completed intervention	70	54	111
	49.7%	51.0%	100%

Measures

Archival data was collected on all participants. Institutional records of consenting students produced measures of academic accomplishment: incoming overall scores on the ACT college entrance exam, ranging from 1 to 36; semester GPA, 0.0 to 4.0; and Fall-to-Spring retention, coded 0 (not enrolled for Spring semester) or 1 (enrolled for Spring) . Demographic information was collected from each participant, as were responses to the Alcohol Uses Disorder Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders & Monteiro, 2001) a self-report 10 item questionnaire, with total scores ranging from 0 to 40, addressing alcohol use and drinking behavior. Participants respond to each item

using a 0 to 4 scale, with higher numbers reflecting higher levels of reported alcohol consumption or higher levels of alcohol-related problems. The AUDIT requests responses based on the last year; for the current study, the time frame was reduced to the past six months. Sample items from the AUDIT may be found in Table 2.

Table 2

Sample items from the AUDIT

How many times during the last six months have you felt guilt or remorse after drinking?

(0) Never
(1) Less than monthly
(2) Monthly
(3) Weekly
(4) Daily or almost daily

Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?

(0) No
(2) Yes, but not in the last year
(4) Yes, during the last year

Results

Testing for Sample Bias

Assignment to the three groups was made on the basis of residence hall floor assignment; since assignment to one of the three conditions was not truly random, one concern is that students who chose not to complete the training

might be different from those who did complete it. To examine this issue, completers and non-completers in both the Alcohol-wise and AOD/E-chug conditions were compared, to see if there were a priori differences in baseline academic or alcohol-related variables. A 2 (condition) x 2 (completion) ANOVA on the AUDIT revealed no main effects for condition *(F*[1, 238] = .26, *p* = .61) or completion (*F*[1, 238] = 2.52, *p* = .11), nor was there an interaction between completion and condition, *F*(1, 238) = .02, *p* = .88. Similarly, when ACT scores were used, there were non-significant findings for condition (*F*[1, 238] = .37, *p* = .55), completion (*F*[1, 238] = .56, p = .45), and the interaction (*F*[1, 238] = 2.17, *p* = .14). In other words, students in the different conditions did not start the interventions differing on either academic ability or alcohol-related behavior.

Predicting GPA and Retention

Table 3 depicts GPA and retention rates. Fall GPA differed across the three conditions, *F*(2, 228) = 8.31, *p* < .001. Pairwise comparisons revealed that students in both the Alcohol-wise and AOD/E-chug programs had higher Fall GPAs than students in the control condition, *p*'s < .03; the two interventions did not differ from each other, *p* =.70.

Spring GPA differed only marginally across the three conditions, with observed differences failing to meet statistical significance *F*(2, 193) = 2.75, *p* = .07. Differences between intervention groups and the control mirrored that seen for Fall GPA, but the observed differences failed to obtain statistical significance.

Regarding retention, the incidence of students returning for Spring semester was examined as a function of intervention group, with a series of Chi-square analyses, comparing conditions in pairs. Students in the Alcohol-wise intervention were more likely to return than those in the control condition, $\chi^2(1) = 4.56$, $p = .03$. Similarly, students in the E-chug intervention were more likely to return than those in the control condition, $\chi^2 (1) = 7.96$, $p = .01$. Fall to Spring retention rates between the Alcohol-wise and AOD/E-chug groups were not significantly different, however, $\chi^2 (1) = .97$, $p = .33$.

Table 3

Comparing conditions

	Alcohol-wise (n = 70)	AOD/E-chug (n = 54)	Control (n = 111)
A) Baseline Measures			
ACT	21.1	20.7	21.4
Baseline Alcohol Use	9.1	8.8	9.7
B) Academic Variables			
Fall '05 GPA	2.7	2.6	2.2
Spring '06 GPA	2.8	2.8	2.6
Spring Retention	87.1%	92.6%	73.9%

Note: ACT scores range from 13 to 31; the scale for alcohol use, assessed by AUDIT, ranged from 0 to 40.

Discussion

Overall, this study found positive effects on academic performance for students who participated in individualized alcohol education programs, relative to students who did not participate in these programs. In particular, students who completed the Alcohol-wise or AOD/E-chug programs earned a GPA at the end of the Fall semester that was a half-point higher than students in the control condition. Previous research (e.g., Presley, et al., 1996) has shown a negative correlation between alcohol use and academic performance; one implication is that the less time students spend consuming alcohol or recovering from its effects, the more time they have to engage in academic pursuits. The current study suggests that even relatively modest psychoeducational efforts can yield meaningful results. It is true in the present study that the effect was most pronounced for grades earned during the Fall semester, the same semester during which the intervention took place. This finding is likely accounted for, in part, by the observed difference in retention. Students in the control group were significantly less likely to return for the Spring semester. It seems plausible that the lower retention rates of Control group students attenuated the GPA findings for Spring, by removing from the sample students with exceptionally low GPAs.

It is noteworthy that the Alcohol-wise and AOD/E-chug conditions produced very similar results. These programs have features in common: they were “one-shot” prevention efforts that incorporated personalized, online feedback on individuals’ alcohol consumption. Both were relatively brief (1-2

hours). They differed in that the E-chug program combined feedback with a face-to-face meeting with a substance abuse prevention professional, while Alcohol-wise was solely an individual, online experience.

Several limitations must be acknowledged. Assignment to condition was based on floor, and so was not truly random (although assignment of floors to condition was random). More troubling, there is the possibility of sample bias due to differential participation rates across conditions. The fact that ACT scores and baseline alcohol use did not differ across conditions lessens this likelihood, but it is true that one-quarter of the residence hall chose not to participate. These non-participating students may have been heavier or more recalcitrant drinkers, suggesting caution be used in generalizing these results.

Nonetheless, these findings suggest that college-student drinkers, most likely those with light to moderate usage, can be influenced to decrease their drinking, leading to subsequent academic improvement. Even these relatively modest interventions, involving only an hour or two of students' time, were associated with tangible changes in academic performance and retention. With repeated contact, or as part of a larger-scale alcohol prevention program, even greater effects may be possible.

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