



## Brief articles

## Reducing alcohol use among 9th grade students: 6 month outcomes of a brief, Web-based intervention



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## ABSTRACT

This study tested a brief, Web-based personalized feedback program aimed at reducing alcohol use and alcohol-related consequences among 9th grade students ( $N = 513$ ). Results indicated no differences between the control group and intervention group on either frequency of drinking or alcohol-related consequences at the 6-month follow-up. Reductions in alcohol use and the associated consequences found at the 3-month follow-up were not sustained across the academic year. Results indicate that brief, Web-based feedback programs may not be sufficient to provide a sustained impact on alcohol use and alcohol-related consequences over time, suggesting either booster sessions or adjunctive interventions, such as parent-based interventions, may be warranted for this age group.

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### 1. Introduction

Underage drinking represents a significant problem in the United States, with alcohol use increasing substantially during the transition from middle school to high school. According to national survey data, lifetime prevalence rates for alcohol use among 8th and 10th grade students are 29.5% and 54.0%, respectively (Johnston, O'Malley, Bachman, & Schulenberg, 2013). Additionally, 11.6% of 8th grade students report alcohol use in the past 30 days compared to 27.6% of students in the 10th grade (Johnston et al., 2013). More concerning is the escalation in heavy drinking during this transition, with reports of being drunk in the past 30 days increasing from 3.6% in the 8th grade to 14.5% in the 10th grade (Johnston et al., 2013). The significant increase in alcohol use occurring between the 8th and 10th grade points to the importance of developing evidence-based prevention programming for students transitioning to high school.

Research indicates that school-based programs targeting alcohol use that use motivational enhancement and cognitive-behavioral principals are effective in reducing alcohol use among high school students (Conrod, Stewart, Comeau, & Maclean, 2006; O'Leary-Barrett, Macie, Castellanos-Ryan, Al-Khudhairi, & Conrod, 2010; Sussman, Dent, & Stacy, 2002). These types of programs, however,

are time intensive, require extensive training, and may be difficult for schools to implement. Thus, it is important to assess the efficacy of brief interventions that require minimal training, few resources, and will be appealing to adolescents. Web-based interventions may be particularly useful within the high-school setting as Web-based programs are inexpensive, require minimal training, and are easy to disseminate to large groups of students within the existing framework of the educational setting. Additionally, Web-based interventions can be infused into the school curriculum and can improve program fidelity (Schinke, Di Noia, & Glassman, 2004).

A growing number of controlled studies indicate that Web-based programs delivered to adolescents (Newton, Andrews, Teesson, & Vogl, 2009; Schwinn, Schinke, & Di Noia, 2010) or adolescents and their parents (Koning et al., 2009; Schinke, Cole, & Fang, 2009; Schinke, Fang, & Cole, 2009) are effective in reducing alcohol use among adolescents. The Web-based interventions used in these studies, however, included 4–12 modules or sessions, with each session taking up to 40 minutes. Because schools with limited resources may not be able to adopt such programs, research is needed to examine the efficacy of brief, school-based interventions that require fewer resources to implement and less time for administration.

More recently, Doumas, Esp, Turrisi, Hausheer, and Cuffee (2014) tested the efficacy of a brief, Web-based intervention program, the eCHECKUP TO GO, in reducing alcohol use and alcohol-related consequences among 9th grade students. Results indicated a reduction in frequency of alcohol use and alcohol-related consequences in the intervention group relative to the control group at a 3-month follow up. These results provide evidence for brief, Web-based personalized

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feedback as a promising approach to reduce underage drinking and the associated consequences for this age group. The purpose of this study is to extend the literature by examining whether or not the reductions in alcohol use and alcohol-related consequences found at 3-months (Dumas et al., 2014) would be sustained across the academic year.

## 2. Method

### 2.1. Participants

For a detailed description of participant recruitment and procedures, see Dumas et al. (2014). Participants were recruited from two junior high schools in the northwest. All 9th grade students with parental consent who were present during the baseline assessment ( $N = 538$ ) were given an opportunity to participate in the study. Of these, 513 (52% female, 48% male) students agreed to participate in the study. Participant ages ranged from 13 to 16 ( $M = 14.21$ ,  $SD = 0.47$ ). Participants were primarily Caucasian (74.5%), with 9.9% Hispanic, 5.5% Asian, 4.2% African-American, 3.6% American Indian/Alaskan Native, 1.5% Hawaiian/Other Pacific Islander, and 0.8% other. Sixty-nine percent ( $N = 358$ ) of the 518 participants completed the 6-month follow-up assessment. There were no differences on any demographic or outcome variables between those who completed the 6-month follow-up assessment and those who did not.

### 2.2. Procedure

Two schools were randomly assigned to either the intervention group or control group (usual alcohol and drug education). All 9th grade students registered at the two schools were eligible to participate. All parents of 9th grade students were contacted by the school in late September via letter by mail at their permanent addresses provided by the registrar's office. Passive consent procedures were used.

All students were recruited by the schools during regular class periods. Participants completed the baseline survey in October, the 3-month follow-up survey in January, and the 6-month follow-up survey in early May. Each survey took approximately 15 minutes to complete. The eCHECKUP TO GO intervention and alcohol and drug education both took place in October. All students who participated in the baseline survey were invited to complete a 3-month survey and a 6-month survey. Students at the intervention and control schools completed the baseline survey within 2 weeks of each other, the 3-month survey within 3 weeks, and the 6-month survey during the same week. Variations in timing were due to scheduling the school computer lab where procedures took place. All study procedures were approved by the school district research board, and the university institutional review board approved secondary analysis of the database.

### 2.3. Measures

Frequency of drinking was assessed using the quantity/frequency/peak questionnaire (QFP; Dimeff, Baer, Kivlahan, & Marlatt, 1999; Marlatt et al., 1998). Participants were asked to indicate the frequency of drinking on an 8-point scale with options ranging from 0 (do not drink alcohol at all) to 7 (every day). Alcohol-related consequences were assessed using the Rutgers Alcohol Problem Index (RAPI, White & Labouvie, 1989). The RAPI is a 23-item self-administered screening tool for assessing adolescent problem drinking. Participants were asked "how many times have the following scenarios happened to you while you were consuming alcohol or as a result of your drinking in the past 30 days." Responses were measured on a 5-point scale ranging from never to more than 10 times. A total consequence score was created by summing the 23 items. Cronbach's alpha for this sample was .96.

### 2.4. Intervention

The eCHECKUP TO GO (<http://www.echeckuptogo.com/usa/>) is a 30 minute intervention based on social norming theory and motivation enhancement models. The program is designed to change perceptions of peer drinking norms, alcohol beliefs, and alcohol expectancies by providing personalized normative feedback regarding alcohol use, feedback regarding individual risk factors for developing alcohol-related problems, and accurate information about alcohol and myths related to alcohol use. The program includes two sections: 1) online assessment and 2) personalized normative feedback. The online assessment consists of basic demographic information (e.g. sex, age, weight, living situation, class standing) and information on alcohol consumption, drinking behavior, and alcohol-related consequences. Immediately following the assessment, individualized graphed feedback is provided. For a full description of the eCHECKUP TO GO intervention, see Dumas et al. (2014).

### 2.5. Control school alcohol and drug education

The control school received the usual alcohol and drug education. This education is delivered by a school counselor as a classroom presentation on the health risks of tobacco, alcohol, and other drugs, why people might choose to use substances, and peer refusal skills.

### 2.6. Statistical analyses

Baseline measures between intervention and control conditions were compared with  $t$  tests for continuous variables and chi-square tests for categorical variables. Outcome variables were examined with general linear model repeated measures analyses. Outcome variables were the within-subjects factor, study condition was the between-subjects factor, and ethnic background was a covariate. Effect size was calculated by eta squared ( $\eta^2$ ). All analyses were conducted at  $p < .05$ .

## 3. Results

### 3.1. Preliminary analyses

The outcome variables were examined for skew and kurtosis at baseline and follow-up assessments. The distribution for alcohol-related consequences at baseline and follow-up assessments substantially deviated from the normal distribution ( $> 3$  skew and  $> 9$  kurtosis), so a logarithmic transformation was used to normalize the distributions (Tabachnick & Fidell, 2007). Raw descriptive statistics for the outcome variables at baseline and 6-month follow-up assessments are presented in Table 1.

We examined differences on demographic variables and outcome variables between the two study conditions at baseline. There was a significantly higher percentage of Caucasian students in the intervention condition and a significantly higher percentage of Hispanic students in the control condition,  $\chi^2(6) = 21.76$ ,  $p < .001$ . There

**Table 1**  
Means and standard deviations for outcome variables at baseline and 6-month follow-up.

	Baseline		6-Month follow-up	
	Intervention	Control	Intervention	Control
Outcomes	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Frequency of drinking	0.98 (1.39)	0.87 (1.37)	1.17 (1.60)	1.06 (1.71)
Alcohol-related consequences	2.24 (5.34)	2.67 (6.65)	2.32 (6.52)	3.39 (8.78)

were no other differences on demographic variables or outcome variables at baseline.

### 3.2. Outcome analyses

For detailed results for the 3-month follow-up, please see Doumas et al. (2014). At the 3-month follow-up, students in the intervention group reported a reduction in drinking frequency and alcohol-related consequences relative to those in the control group (Doumas et al., 2014). Analyses presented here examine differences between the two groups at the 6-month follow-up.

Means and standard deviations for frequency of drinking and alcohol-related consequences at baseline and at the 6-month follow-up are reported in Table 1. Results of the repeated measures ANOVAs indicated no significant main effect for Time, Wilks' Lambda = 1.00,  $F(1, 355) = 0.70$ ,  $p = .40$ ,  $\eta^2_p = .00$ , or interaction effect for time  $\times$  group, Wilks' Lambda = 1.00,  $F(1, 355) = 0.98$ ,  $p = .32$ ,  $\eta^2_p = .00$ , for frequency of drinking. Similarly, neither the main effect for time, Wilks' Lambda = 1.00,  $F(1, 355) = 0.13$ ,  $p = .72$ ,  $\eta^2_p = .00$ , nor the interaction effect for time  $\times$  group, Wilks' Lambda = 1.00,  $F(1, 355) = 0.01$ ,  $p = .94$ ,  $\eta^2_p = .00$ , were significant for alcohol-related consequences.

### 4. Discussion

The aim of this study was to test the effectiveness of a brief, Web-based personalized normative feedback intervention on reducing alcohol use and alcohol-related consequences. In particular, we were interested in whether or not reductions in frequency of drinking and alcohol-related consequences found at the 3-month follow-up (Doumas et al., 2014) would be sustained across the academic year. Results of this indicated no differences between the intervention group and control group for either frequency of drinking or alcohol-related consequences at the 6-month follow-up assessment. Thus, the reductions in drinking variables found at 3-months (Doumas et al., 2014) were not sustained through the academic year.

In contrast to our results, prior research evaluating online interventions delivered to adolescents shows reductions in drinking relative to control students at 6-month follow-up assessments (Newton et al., 2009; Schwinn et al., 2010). These studies, however, included significantly longer and more comprehensive interventions relative to the eCHECKUP TO GO, with interventions consisting of 2 sets of 6 40-minute sessions and 12 25-minute sessions, respectively. In addition, research evaluating combined computer-based interventions for parents and teens indicates sustained effects for 1 year (Schinke et al., 2009) and up to 22 months (Koning et al., 2009). Thus, additional intervention strategies may be necessary to augment brief, Web-based intervention programs for this age group. For example, booster sessions or repeated administration of the eCHECKUP TO GO may be necessary to achieve sustained effects. Alternatively, intervention efficacy for this age group may be enhanced by the addition of parent-based interventions as the family is more salient during this developmental period relative to older adolescence (Cleveland, Feinberg, Bontempo, & Greenberg, 2008). These parent-based interventions may be delivered online or through a mailed handbook or brochure containing information specific to parental monitoring, beliefs and attitudes toward teen drinking, and parent-teen communication.

It is also important to note the limitations of this study. These include reliance on self-report and limited generalizability due to a primarily Caucasian sample from the northwest region. Future research with objective measures of drinking and alcohol-related consequences (e.g. school alcohol policy violation reports) and more diverse samples is warranted. Additionally, differential ethnicity rates between the intervention and control conditions potentially confounded findings. Although this concern was reduced by including ethnicity as a covariate in all analyses, the difference between the control and intervention groups, however, may be indicative of other differences between the

school samples, such as socio-economic status, and the results should be interpreted in light of this consideration.

### 5. Conclusion

Results of this study have important implications for developing prevention and intervention programs for students as they transition into high school. As the transition to high school is marked by an increase in alcohol use, providing evidence-based programming through the schools for this age group is imperative. Web-based programs are well-suited for school-based implementation as they are inexpensive, require minimal training, can be implemented with high a high degree of fidelity, and are easy to disseminate to large groups of students within course curricula relative to in-person, multi-session programs. However, results indicate that brief, Web-based interventions administered once and in the absence of a parent-based intervention may be effective in reducing drinking in the short-term, but reductions are not sustained throughout the academic year. Thus, additional interventions, such as booster sessions or repeated administration may be warranted. Additionally, because familial influences may exert an equal or stronger effect than peer influences during this developmental period, incorporating individual Web-based programs into a comprehensive strategy which includes parent-based interventions may be important to increase intervention effects across the academic year.

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