­Research Review: Innovative Interventions for Alcohol Use and Misuse

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# PART I: NEGATIVE CONSEQUENCES OF ALCOHOL USE AND MISUSE

Because of its serious consequences and widespread nature, decreasing drinking among college students has become a major health objective in the U.S. (U.S. Department of Health and Human Services, 2010) In recent national surveys, approximately 80-85% of U.S. university students report consuming alcohol during the previous year, with roughly 37-50% consuming alcohol at risky levels (Johnston, 2007; Johnston, 2013). Alcohol use is also rising among adolescents, especially among adolescent girls (American Medical Association, 2004). **Responding to this growing public health concern, recent studies have sought to counter rising rates of student drinking through varied interventions in both domestic and international populations.**

Developed by Koutakis et al. (2008) to combat increasing alcohol consumption among Swedish youth, the Orebro Prevention Program found that parental engagement can be an effective method of reducing underage drinking. While the program did not raise adult-led, structured activity participation, **it was successful at boosting parental opposition to youth drinking, leading to a decrease in rates of drunkenness among study participants.** Seeking to aid adolescent girls in reducing their risk for alcohol consumption, Schinke et al. (2008) applied a computer-mediated, gender specific program designed to increase protective factors through mother-daughter engagement. It found that **a computer-based intervention involving mothers in prevention efforts targeting their adolescent daughters was an effective means of decreasing underage drinking.**

Drawing on research indicating that technology-based interventions can yield positive outcomes for harmful alcohol consumption among university students, **Gajecki et al. (2014) examined the effectiveness of two smartphone applications (apps) and investigated gender differences in alcohol outcomes toward the goal of reducing detrimental student drinking**. Study results indicated that neither app affected student drinking behavior, and one app appeared to increase consumption rates among males. Voogt et al. (2013) similarly found that their 'What Do You Drink' (WDYD) program—a web-based brief alcohol intervention targeting young adults—failed to reduce frequency and intensity of drinking among Dutch university students, **yet lowered drinking levels for certain subgroups of heavy-drinking students in the short term.**

Deconstructing the motivational interviewing with feedback (MIF) model to test the ability of MIF and related intervention formats at effecting changes in perceived drinking norms and increasing the use of protective drinking strategies, Walters et al. (2009) found that **motivational interviewing with feedback substantially reduced drinking compared to other formats.** There were no significant meditating effects from various moderators, though changes in norm perceptions did mediate the effect of the intervention.

#### References

American Medical Association, Girlie Drinks... Women's Diseases, Chicago, IL: American Medical Association, 2004. Available at http://www.alcoholpolicymd.com/pdf/girlie\_drinks\_survey%20.pdf

Johnston, LD.; O’Malley, PM.; Bachman, JG.; Schulenberg, JE. Monitoring the Future national survey results on drug use, 1975–2006: Volume II, College students and adults ages 19–45 (NIH

Publication No. 07-6206). Bethesda, MD: National Institute on Drug Abuse; 2007. Available at http://monitoringthefuture.org/pubs/monographs/vol2\_2009.pdf

Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE: Monitoring the Future National Results on Drug Use: 2012 Overview, Key Findings on Adolescent Drug Use. Ann Arbor: Institute for Social Research, The University of Michigan; 2013. Available at http://monitoringthefuture.org/pubs/monographs/mtf-overview2012.pdf

U.S. Department of Health and Human Services. Healthy People 2010: Understanding and improving health. 2nd ed. Washington, DC: U.S. Government Printing Office; 2000. Available at https://www.healthypeople.gov/2010/document/pdf/uih/2010uih.pdf

# PART II: PROMISING INTERVENTIONS TACKLING UNDERAGE DRINKING

## Article 1: Reducing Youth Alcohol Drinking Through a Parent-Targeted Intervention: the Orebro Prevention Program

### Summary

In response to a dramatic increase in alcohol consumption among 9th graders in Sweden between 1995 and 1998, Swedish researchers designed the Orebro Prevention Program, a 2.5 year-long initiative that targeted drinking among 13-16-year-olds through increased parent involvement. Recent research suggests that prevention programs targeting the family are particularly effective and efficient at reducing underage drinking. **Empirical evidence additionally links lower levels of youth alcohol consumption with strict parental attitudes against youth alcohol use, and involvement in structured, adult-led activities.** Building on these findings, the program provided information to parents by mail and during parent meetings in schools urging them to maintain strict opposition to youth alcohol use, and encourage their youth's involvement in organized, adult-led activities such as sports, hobbies, music, art, and politics (p. 1629-1631, 1635).

The program evaluation followed 900 Swedish students entering junior high school—in inner city, public housing, and small-town areas—as well as their parents, using parent and student questionnaires to determine the intervention's effects on youth drunkenness after 1.5 and 2.5 years versus a control group of similar schools. Although overall youth drinking increased in both groups over time, this increase was steeper in the control group than in the intervention group. **Analysis also showed more drunkenness and delinquency in the control group versus the intervention group**, controlling for baseline levels, and the proportion of participants who had been drunk several times during the last month was twice as high in the control group (27.0%) as in the intervention group (12.6%). Effects were not moderated by community type, and overall findings were similar for boys and girls and for early starters (p. 1632-1635).

**Measured by sustained or increased parental opposition to underage drinking and youth participation in organized activities, the program was a success at bolstering parents' strict attitudes,** but failed to raise activity participation. However, the intervention did appear to affect youth drinking behavior, as at the end of the program drunkenness and frequent drunkenness were lower in the intervention group than the control group; and **the program demonstrated that working through parents can be an effective means of reducing underage drinking and delinquency.** Advantages of the program include its easy administration through existing parent-teacher meetings, its negligible costs, and its ability to be administered with minimal training—all attributes that suggest the program has the potential for wide use, mainly with existing resources. (p. 1635, 1636).

### Reference

Koutakis, N., Stattin, H., & Kerr, M. (2008). Reducing youth alcohol drinking through a parent‐targeted intervention: the Örebro Prevention Program. *Addiction*, *103*(10), 1629-1637.

## Article 2: Gender-Specific Intervention to Reduce Underage Drinking Among Early Adolescent Girls: A Test of a Computer-Mediated, Mother-Daughter Program

### Summary

Efforts to counter rising alcohol use among adolescent girls which recognize gender-specific protective and risk factors, and inform prevention programs with gender-specific data, have demonstrated positive effects at preventing underage drinking. Research indicates that poor attachment to parents is a stronger risk factor for alcohol use among girls than among boys, and low parental monitoring and an unstructured home environment correlate more with substance abuse in girls versus boys. **Girls may particularly benefit from relationship-building interventions, as “not only are parental rules about substance abuse associated with girls' abstinence, but girls also may benefit disproportionately from parental control and supervision, strong family ties, and positive social supports” (p. 70).** Drawing on these findings the present study tested a computer-mediated, gender-specific prevention program for strengthening protective factors to help adolescent girls decrease their risk for underage drinking (p. 70-71, 75).

Researchers selected 202 pairs of 10-13-year-old girls and their mothers from New York, New Jersey, and Connecticut to take an online pretest. Intervention group participants subsequently completed 14 interactive, underage drinking-prevention modules via computer program designed to enhance mother-daughter relationships and teach girls skills for refusing drugs and alcohol, managing conflict, resisting media influences, and correcting peer norms about underage drinking. At two-month post-test and follow-up, intervention-group participants showed improved mother-daughter communication skills and methods of interpreting and applying parental monitoring and rule-setting regarding alcohol use versus the control group. **Girls further demonstrated healthier normative beliefs about underage drinking, reported less alcohol consumption and greater alcohol-refusal abilities, improved their conflict-management skills, and expressed lower intentions to drink as adults** **(p. 71-74).**

The results of the study support the viability of a mother-daughter, computer-mediated program to prevent and reduce the risks of underage drinking among adolescent girls. **Outcomes indicate the gender-specific program provided an effective means of helping adolescent girls avoid problems with alcohol, and could therefore potentially counter trends toward high rates of drinking among young women.** Such efforts to engage mothers in prevention programs targeting their adolescent daughters “can nurture and sustain powerful bonds between parents and children while encouraging parents to impose and monitor appropriate limits and controls” (p. 75). The study's positive findings imply promise for the further development of computer-mediated, gender-specific intervention and prevention programs to combat rises in alcohol and other substance use among adolescent girls. (p. 74-76)

### Reference

Schinke, S. P., Cole, K. C., & Fang, L. (2009). Gender-specific intervention to reduce underage drinking among early adolescent girls: A test of a computer-mediated, mother-daughter program. *Journal of studies on alcohol and drugs*, *70*(1), 70-77.

## Article 3: Mobile Phone Brief Intervention Applications for Risky Alcohol Use Among University Students: a Randomized Controlled Study

### Summary

Building on recent studies demonstrating that brief, technology-based interventions have beneficial effects for problematic alcohol use among student populations, Swedish researchers evaluated the effectiveness of two smartphone applications (apps) with real-time estimated blood alcohol concentration (eBAC) calculation and related feedback among college students in Stockholm, Sweden during March and April 2013. **Researchers hypothesized that using each app would lead to greater decreases in risky drinking** than seen in an assessment-only control group—as measured by a 7-week follow-up compared to baseline questionnaires—and explored gender differences for the two apps in terms of alcohol outcomes, with the goal of reducing harmful alcohol intake (p. 1-4).

The study separated 1929 participants into 3 groups: the first group used the app Promillekoll, which offers real-time eBAC calculation; the second group used the app PartyPlanner, which offers eBAC calculation with alcohol consumption planning and follow-up functions; and a third control group did not receive any intervention or feedback on risky drinking. The overall attrition rate was 29.4%, higher among heavy drinkers and highest in Group 2. Self-reported app use was higher in Group 1 (74%) compared to Group 2 (41%). At follow-up, the proportion of all group participants with a weekly consumption over the recommended level remained above 25%. Analysis revealed only one significant time-by-group interaction: Promillekoll app users showed a significant increase in drinking frequency compared to the control group, attributable to increased drinking among males, suggesting gender differences in how the apps were used (p. 5-9).

Overall, the apps studied did not seem to affect drinking among university students in any of the three study groups, and the Promillekoll app may have led to the negative effect of increased frequency of drinking among males. While the PartyPlanner app did not appear to negatively affect men, participants in this group had a higher dropout rate, consisting to a larger extent of male participants with higher alcohol consumption compared to the other groups. **Study outcomes indicate that “eBAC calculation in the app form is not effective for reducing alcohol consumption among university students” (p. 11).** Future efforts should offer additional interventions to high-risk users, explore methods of boosting user retention, investigate the effects of adapting app content to possible gender differences, and include apps allowing technical manipulation for examination of added components (p. 6-8, 11).

### Reference

Gajecki, M., Berman, A. H., Sinadinovic, K., Rosendahl, I., & Andersson, C. (2014). Mobile phone brief intervention applications for risky alcohol use among university students: a randomized controlled study. *Addiction science & clinical practice*, *9*(1), 11.

## Article 4: The Effectiveness of the 'What Do You Drink' Web-based Brief Alcohol Intervention in Reducing Heavy Drinking among Students: A Two-arm Parallel Group Randomized Control Trial

Seeking to counter a high prevalence of heavy drinking and its consequences among Dutch university students, researchers in the Netherlands developed the 'What Do You Drink' (WDYD) program, a web-based brief alcohol intervention targeting young adults. **Their study aimed to evaluate the effectiveness of WDYD intervention, predicting that exposure to the WDYD intervention would be more effective in reducing heavy drinking**, weekly alcohol consumption, and frequency of binge drinking compared with no intervention at 1-and-6-month follow-ups. Researchers further investigated whether certain subgroups would benefit more from WDYD intervention than others (p. 312-315).

The study measured heavy drinking, frequency of binge drinking, and weekly alcohol consumption in Dutch students aged 18-24 years old who reported heavy drinking in the past 6 months, were motivated to change alcohol consumption, and had daily access to the Internet. 913 participants were randomized into intervention and control groups, and six subgroup moderators were identified: gender, readiness to change, problem drinking, freshman status, fraternity or sorority membership, and carnival participation. At follow-ups there were no significant differences between intervention and control groups in any measurement. Further examination revealed that fraternity or sorority membership, freshman status, and gender did not moderate the effect of the WDYD intervention at either follow-up. Moderation analysis regarding heavy drinking and frequency of binge drinking showed no significant effects at follow-ups for any of the moderators. **Yet analysis with respect to weekly alcohol consumption found significant effects for readiness to change, problem drinking, and carnival participation at 1-month follow-up (coinciding with carnival).** These moderators increased their weekly alcohol consumption less steeply than controls did, indicating the protective role of the WDYD intervention (p. 316-318).

Contrary to initial hypothesis, there were no significant main effects of the WDYD intervention on any alcohol measures at follow-up assessments. However, though the intervention was not effective at reducing heavy drinking, frequency of binge drinking, and/or weekly alcohol consumption in heavy-drinking students, there is preliminary evidence that “the WDYD intervention is effective in lowering drinking levels for subgroups of heavy-drinking students in the short term.” (p. 319) **Such moderating intervention effects indicated that WDYD intervention can be useful for subgroups of heavy-drinking students who are most at risk and most motivated to change, as well as providing promising prevention strategies for specific high-risk drinking events (p. 317-319).**

### Reference

Voogt, C. V., Poelen, E. A., Kleinjan, M., Lemmers, L. A., & Engels, R. C. (2013). The effectiveness of the ‘what do you drink’web-based brief alcohol intervention in reducing heavy drinking among students: a two-arm parallel group randomized controlled trial. *Alcohol and Alcoholism*, *48*(3), 312-321.

## Article 5: Dismantling Motivational Interviewing and Feedback for College Drinkers: A Randomized Clinical Trial

### Summary

**Motivational interviewing with feedback (MIF) is an individual-level intervention that has gained significant support for decreasing drinking among college students.** The present study was designed to dismantle motivational interviewing (MI) and feedback to test which intervention format(s) would reduce drinking using an assessment only; whether an in-person interview (MIF) would have an effect over feedback delivered without human contact; and whether the inclusion of feedback would improve the effectiveness of MI. Two possible mechanisms of effect—an increase in the use of protective drinking strategies, and changes in perceived drinking norms—were analyzed. The study additionally examined the effects of potential moderators: sex, drinking severity, race/ethnicity, and readiness to change (p. 1-3).

After initial screening, 279 heavy-drinking students at least 18 years old were recruited from a private university in the southern U.S. during 2006-2007, then randomized into groups: 1) Web feedback only; 2) a single MI session without feedback; 3) a single MI session with feedback; and 4) assessment only. Measures were completed at baseline assessment, 3-month, and 6-month follow-ups. Results found that at 6 months, MIF substantially reduced drinking compared to assessment only. **MIF was also significantly more effective at reducing drinking versus feedback only and MI without feedback.** Neither MI without feedback nor feedback alone differed from assessment only. Lastly, the study found no moderating effects for drinking severity, readiness to change, sex, or race/ethnicity. However, norm perceptions did mediate the effect of the intervention, with participants in the MIF group “becoming more accurate in their normative drinking estimates, and changes in norm perceptions being linked to changes in drinking behavior” (p. 8).

Despite limitations such as a disproportionate amount of female and White participants, a reliance on self-report outcome data, and an inability of the results to account for the effect of the assessment on drinking, the study yielded three main implications. First, findings support the existing literature on the effectiveness of MIF. Second, findings on stand-alone feedback's lack of efficacy help substantiate previous research. Finally, study results regarding mediators and moderators are largely consistent with previous research. **Overall, outcomes suggest that MIF is a strong intervention method for reducing drinking among college students (p. 8-11).**

### Reference

Walters, S. T., Vader, A. M., Harris, T. R., Field, C. A., & Jouriles, E. N. (2009). Dismantling motivational interviewing and feedback for college drinkers: a randomized clinical trial. *Journal of Consulting and Clinical Psychology*, *77*(1), 64.

# Conclusion

Underage drinking is a national problem that carries serious consequences on account of its widespread nature, and decreasing drinking among college students has become a major health objective in the U.S. Over three-quarters of college students report drinking alcohol during the previous year, with almost 50% consuming alcohol at risky levels. Adolescent girls make up a growing demographic of people who use (and misuse) alcohol. Responding to this growing public health concern, recent studies have sought to counter rising rates of student drinking through varied interventions in both domestic and international populations.

This review aimed to provide information on emerging innovations that have been launched in the U.S. and internationally that aim to reduce the negative consequences of use and misuse of alcohol by young people. To that end, it reviewed programs, apps, and interventions that used digital media to support broader prevention goals.

This review reported a number of promising interventions that can be used to support decreasing use and misuse of alcohol by young people. For example, Koutakis et al (2008) found that parent attitudes around youth alcohol use (i.e., disapproval) and encouraging youth to participate in activities can support lower rates of youth alcohol use and misuse. The authors found that working with parents can be an effective way to support decreasing alcohol use rates, as well as delinquency. While Koutakis reported on the use of family programming, Schinke et al (2009) aimed to target adolescent girls’ dangerous underage drinking through the use of mother-daughter interventions. Schinke found that a web-based tool can support increased knowledge about alcohol, facilitate communication strategies between mother-daughter, and can provide useful strategies to users (e.g., alcohol refusal skills). This review also documented promising interventions that, while perhaps not as successful as Koutakis et al (2008) and Schinke et al (2009), contributed to an ever-expanding knowledge base in prevention; this knowledge can be integrated into the next round of prevention interventions. For example, Gajecki et al (2014) noted that two apps that simply estimated blood alcohol concentration were not effective in actually reducing alcohol consumption among college students. Voogt et al (2013) described a web-based tool that allowed college students to list their drinking habits and found a “protective role” for the web-based tool. At the same time, this report found that the use of motivational interviewing with feedback (MIF), such as the study by Walters et al (2009), was effective in reducing drinking among college students.

This report reviewed evidence-based interventions that can be used to reduce the negative consequences of alcohol use and misuse by young people. It noted a number of promising interventions and pointed the way toward greater well-being and health for young people.

#### Author Information

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