Online Interventions for Alcohol and Other Drugs

A Review of Recent Research, Part II

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Introduction

Alcohol use among adolescents is associated with multiple alcohol-related consequences including performing poorly in school, attempting suicide, using other substances, being a victim of dating violence, and having negative interpersonal interactions (Arata et al, 2003). Risky patterns of drinking established in high school are additionally predictive of heavy drinking and alcohol-related consequences in college. (Kenney et al, 2010). Subsequent alcohol consumption among college students is also a major health concern, with an average of approximately 66% of all college students drinking alcohol over a period of a month, and approximately 37% engaging in binge drinking (Johnston et al, 2010).

Computer- and Internet-based prevention programs have the potential to overcome common treatment obstacles for adolescents and offer many advantages over traditional drug prevention methods. In current studies, researchers have sought to examine how to harness such online strategies toward effective prevention of harmful drug and alcohol use.

Research by Champion et al (2013) found that school-based prevention programs offered online demonstrated success as a strategy addressing harmful drug and alcohol use among adolescents. A study by Rodriguez et al (2014) similarly found that computer-based, serious educational games showed the potential to educate young people about, and alter attitudes and behaviors toward, alcohol and drug use.

Investigating different types of online alcohol intervention programs, Brendryen et al (2013) concluded that combining a brief online screening intervention with an intensive online intervention effectively reduced alcohol consumption in a stepped-care framework.

An examination by Doumas et al (2016) on the effectiveness of a brief, online alcohol intervention offered to high school seniors led to evidence that a web-based, personalized feedback program in a school setting decreased alcohol use among high-risk drinkers. Donovan et al (2012) similarly found that a universal, online, parent-based intervention program given to parents of incoming college first-year students was an effective and efficient means of reducing risks associated with alcohol consumption.

Article 1: A Systematic Review of School-Based Alcohol and Other Drug Prevention Programs Facilitated by Computers or the Internet

Summary

The use of alcohol and other drugs among youth has risen to become a critical concern, and the need for effective programs is clear. Recent years have seen a substantial tandem increase in the development of school-based prevention programs. Despite this, the majority of such programs have shown limited effects, particularly in terms of impacting behavior and reducing or preventing substance use. To address this shortcoming, this first study of its kind reviewed the efficacy of school-based drug and alcohol prevention programs delivered online or via computers.

Researchers identified 12 trials of 10 different programs delivered to all students in a particular grade level (regardless of their risk status for alcohol and drug use), identifying programs largely based on principles of social influence theory. Results found that two interventions were associated with lowered intentions to use tobacco, two significantly increased knowledge of drug and alcohol risks, and six achieved reductions in cannabis, alcohol, or tobacco use at post-intervention and/or follow-up. These findings compare favorably with traditional, non-computerized programs, **suggesting that internet- and computer-based interventions can be as effective—and even more effective—than school-based programs delivered without computers**, and are a potentially efficacious method of offering drug and alcohol prevention to adolescents.

Study outcomes support the use of Internet- and computer-based programs as a potentially effective means of **overcoming obstacles associated with the implementation of traditional prevention programs, with such programs offering increased accessibility and feasibility of use, as well as high implementation fidelity**. As such, they "appear to be a promising framework for the provision of school-based education and prevention in the future" (p. 121). Factors that may be associated with program success include the number of intervention sessions provided, and program orientation rooted in social learning or social cognitive principles. Overall, positive results suggest that programs facilitated via computer or online "offer a promising delivery method for school-based prevention" (p. 115).

Article 2: A Randomized, Controlled Trial to Test the Efficacy of an Online, Parent-Based Intervention for Reducing the Risks Associated with College-Student Alcohol Use

Summary

Universal, online interventions designed to lower risks associated with college students' alcohol use have been found to be effective in minimizing high-risk use and its consequences. Studies indicate that another effective strategy to reduce harmful drinking is to involve parents through booklet-delivered information educating them on how to better communicate with college-bound teens about alcohol-related risks. Investigating elements of both methods, researchers tested the efficacy of an online, parent-based intervention designed to reduce student risks associated with alcohol use, and increase alcohol-related communication between students and parents before and after the beginning of college freshman year.

The study resulted in two primary findings. **First, parents who utilized the online intervention "were more likely to talk with their college-bound teens about specific and effective ways to protect themselve**s, particularly with regard to stopping/limiting drinks and manner of drinking" than were parents in the control group who received only education e-newsletters (p. 11). Additionally, **teens whose parents reviewed the intervention website were more likely to report using protective behavioral strategies.** Second, the program was not associated with reduced binge drinking, possibly because teens did not receive direct intervention, and reported lower initial binge drinking than the national average, making it hard to detect change.

Study outcomes have several implications for alcohol and drug prevention efforts:
- preliminary evidence suggests the online, parent-based interventions are an effective way to change student behavior;
- parents are willing and enthusiastic participants in alcohol and drug prevention;
- such interventions have extensive reach; and
- though much attention has been paid to high-risk students, lower-risk students would also benefit from intervention as problems reported by students occur most often at moderate drinking levels.

A universal, online, parent-based intervention program including information for parents of incoming first-year students may be a cost-effective and efficient way to reach large numbers of students and parents, and an effective method of reducing risks associated with alcohol consumption. Given the present study's positive results associated with parent-teen communication as an effective protective behavioral strategy, "parent-based intervention may represent a valuable component of a college's comprehensive prevention effort" (p. 13).

Article 3: Balance—A Pragmatic Randomized Controlled Trial of an Online Intensive Self-Help Alcohol Intervention

Summary

To gain greater insight into how different types of online intervention for alcohol use should be implemented in a naturalistic (e.g., real world) setting, researchers investigated linking brief and intensive self-help intervention formats together into a stepped-care framework. To date, no study has compared brief intervention alone to brief plus intensive self-help in an online setting. To address this gap, this study undertook a controlled trial comparing two versions of the online intervention named Balance: the brief intervention-only versus the full version comprising both the brief and intensive self-help.

The Balance program supports continued self-regulation throughout the behavior change process, involving:

- goal-setting and consumption tracking;
- relapse prevention;
- emotion management, and;
- alcohol education.

Study participants in both the control and treatment groups received an online single-session screening procedure involving personalized normative feedback. The control group then received an online booklet about the effects of alcohol, whereas the treatment group received the online, multi-session follow-up Balance component. **Comparison of both groups at six months showed that intervention significantly affected alcohol consumption at six months after screening**, with participants in the intensive self-help treatment group consuming approximately three fewer drinks during the previous week compared to participants in the brief self-help control group.

Study results demonstrated that the intensive Balance intervention, added to a brief online screening intervention, may assist in reducing alcohol consumption compared with the screening intervention and an educational pamphlet. **These findings "provide partial evidence for the benefit of intensive self-help over and above traditional, brief interventions, and adds promise to the joining of two distinct intervention formats, the brief and the intensive, into an online stepped-care setting."** Though the public health impacts of these findings must be viewed relative to the potential cost and reach of treatment, evidence indicates that "intensive self-help can be added to online brief interventions to exhaust the potential of online

automated interventions prior to introducing more resource intensive treatment." (p. 224) (p. 224) (p. 222-224).

Article 4: A Systematic Review of Computerized Serious Educational Games About Alcohol and Other Drugs for Adolescents

Summary

As a method of education, video gaming is gaining attention due to its popularity with younger audiences, and **"serious educational games" (SEG) have demonstrated efficacy in educating young people about a range of topics.** Positive outcomes found from using SEGs include increased motivation and knowledge, accelerated learning, and longer retention of information. Considering these benefits, and the importance of initiating and implementing effective drug and alcohol education and prevention in adolescence, researchers identified the use of computerized SEGs in drug and alcohol education and assessed their impact on prevention.

The study reviewed 1180 articles, identified eight computerized SEGs targeting substance use, and evaluated gains in knowledge from baseline to post-test. **Games that adopted an educational approach offered students knowledge about the science of drug use, while games that used a social influence approach taught resistance skills and provided drug-related information.**

Of the six games that took an educational approach, five showed an increase in content knowledge from the game, and two were associated with more negative attitudes toward the targeted drug. Of the two games which adopted a social influence approach, one was associated with retention of content knowledge and reduced frequency of smoking, drinking, and marijuana use, while the second produced an increase in perception of harm and assertiveness skills. Overall, six SEGs reported increased content knowledge, two reported increased negative attitudes toward the targeted drug, and one reported a decrease in the frequency of drug use. (p. 130-132)

Results show that **SEGs "can be a potentially effective method for teaching and perhaps even changing attitudes and behaviors toward alcohol and other drug use," and could reduce the harms of use**, particularly if they are able to delay the initiation of drug use by young people. Study findings suggest that SEGs may have the ability to inform adolescents about and prevent alcohol and drug use.

Article 5: A Randomized Controlled Trial Testing the Efficacy of a Brief Online Alcohol Intervention for High School Seniors

Summary

Seeking to identify effective interventions for high school students that disrupt patterns of heavy drinking, researchers examined the impact of the brief, web-based personalized feedback intervention eCHECKUP TO GO on alcohol use and related consequences among high school seniors. Such school-based interventions are an opportunity to reach large groups of adolescents who may not receive services elsewhere, and **computer-based interventions show potential based on their cost-effectiveness, novelty, improved access, and treatment fidelity.**

Study participants were high school seniors who received either the eCHECKUP TO GO intervention or assessment only, with students completing online surveys at baseline and 6-week follow-up. Results demonstrated several findings favorable to students who used the intervention versus students who received assessment only. Intervention participants reported a significant reduction in peak drinking quantity, weekly drinking quantity, and frequency of drinking to intoxication relative to the assessment-only group.

High-risk students (students having one or more episodes of heavy episodic drinking in the past two weeks at baseline) in particular benefited significantly from a greater reduction in alcohol use relative to students in the assessment-only group. High-risk students in the intervention group reported a 15% reduction in weekly drinking, a 42% reduction in peak drinking, and a 33% reduction in drinking to intoxication, versus a 37% increase in weekly drinking, a 7% reduction in peak drinking, and a 17% reduction in drinking to intoxication in the assessment-only group. Although there was a significant decrease in alcohol-related consequences for all participants, there were no differences in alcohol-related consequences between the intervention group and assessment group.

Overall, the eCHECKUP TO GO intervention showed significant effects in reducing alcohol use among high school seniors engaged in risky drinking behavior. Because the progression through high school is marked by an increase in alcohol use, identifying programming for this age group is critical. **Study outcomes suggest that "providing a brief, web-based personalized feedback intervention in the school setting is a promising approach for reducing problems alcohol use among high school seniors who report recent heavy episodic drinking" (p. 706).**

Conclusion

Overall, this review of literature found that online prevention initiatives and interventions have a valuable place in the public health ecology of prevention, intervention, and treatment efforts. The studies in this review described a range of computer and internet-based preventions and interventions, from those aimed at parents of college aged drinkers, to those offering basic interventions, to those utilizing emerging approaches, such as "serious educational games."

The first study in this review, conducted by Champion et al (2013) found that internet- and computer-based interventions can be as effective—and even more effective—than school-based programs delivered without computers, and are a potentially efficacious method of offering drug and alcohol prevention to adolescents. In addition, this meta-analysis found that such programs offered increased accessibility and feasibility of use, as well as high implementation fidelity.

In the second study, Donovan et al (2012) explored the use of an online program aimed at curbing college students' drinking, and associated negative consequences, through a parent-based intervention program. Parents who utilized the online intervention "were more likely to talk with their college-bound teens about specific and effective ways to protect themselves, particularly with regard to stopping/limiting drinks and manner of drinking." This online intervention, it was found, might be a way to provide access and information to large numbers of students and parents, and to lower the risk of problematic alcohol use.

The third study, by Brendryen et al (2014), explored how brief interventions, including one that included intensive self-help, provided self-regulation strategies in an online setting. The authors were cautiously optimistic that these interventions, conducted in a naturalistic setting, could provide support above and beyond traditional brief interventions.

In the fourth study, Rodgriguez et al (2014), investigated how "serious educational games" (SEGs) could both provide information and education about the use of drugs, as well as strategies to resist alcohol and other drug use. The authors found a number of promising outcomes from the use of such games, including that SEGs "can be a potentially effective method for teaching and perhaps even changing attitudes and behaviors toward alcohol and other drug use," and could reduce the harms of use, particularly if they are able to delay the initiation of drug use by young people.

The fifth study, by Doumas et al (2017), explored how a brief intervention provides

personalized feedback to heavy-drinking users, and how it may support positive outcomes. The authors found that computer-based interventions, as they are capable of reaching large numbers of youth who otherwise may not receive services, show potential for their cost-effectiveness, novelty, and treatment fidelity. This intervention may be useful for heavy-drinking high school students.

Overall, this review demonstrated the potential of online prevention programming and interventions (brief, and those that offer more intensive help), in reducing the negative consequences of alcohol and other drugs.

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