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► Preventing drug abuse among adolescent girls: outcome data from an internet-based intervention.

Schwinn T.M., Schinke S.P., Di Noia J.
Prevention Science: 2010, 11, p. 24–32.

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In this US study a substance use prevention programme for adolescent girls accessed over the internet from home had effects comparable to school-based drug education, yet occupied no classroom or teacher time and could inexpensively be replicated across the internet-linked population. Also described are later reports from similar studies.

Summary Computer-delivered prevention programmes for young people enable them to privately disclose and develop their skills in relation to sensitive issues at their own pace, and to benefit from content which can be standardised in accordance with theory and research findings. Such programmes are also inexpensive to deliver, easy to use, and allow for interactivity and data storage and retrieval.

The featured study's research team developed one such programme called RealTeen. It drew on an [earlier skills-based](#) programme delivered via a CD-ROM, but was accessed over the internet and tailored for young teenage girls. RealTeen's 12 roughly 25-minute sessions sought to develop general personal and social skills (self-efficacy, communication, assertiveness) and skills specific to dealing with situations involving possible substance use. Within each session steps were taken to generate interactivity and peer-to-peer communication. Across sessions an older female animated character guided girls through the content and practice exercises.

To test RealTeen's effectiveness the researchers e-mailed 13–14-year-old female registered users a youth-oriented social web site asking them to join the study. About 450 were interested of whom 236 received verified parental permission and joined the study. All were from the USA or Canada.

The girls were randomly assigned to have access to the RealTeen site or to a [control](#) group who were asked just to complete the same questionnaires over the internet assessing their substance use and other variables such as self-efficacy which might affect and be affected by the programme. Assessments were made immediately before the RealTeen group accessed the programme (the baseline), immediately after they finished it (post-programme – averaging a month later) or at roughly the same time for the control group, and then six months later. All but 7% and 9% respectively of the girls completed post-programme and six-month assessments. Girls allocated to RealTeen were rewarded for completing its sessions with points which could be exchanged for small gifts.

Main findings

All but 10 of the 118 girls allocated to RealTeen completed all 12 sessions. The 10 who did not also did not complete follow-up assessments, meaning that the results of the programme were based entirely on completers.

Assessed over the past 30 days and as changes from the baseline, post-programme levels of substance use among RealTeen completers did not significantly differ from those assessed at roughly the same time among the control group. However, six months later there were statistically significant differences indicating relatively lower substance use among girls allocated to RealTeen.

At all assessments the girls were asked how many times (from 0 to 40) in the past month they had used alcohol, cigarettes, cannabis, cocaine, inhalants, methamphetamines, or ecstasy. Relative to their starting use levels, at the final follow-up the RealTeen girls had on average drunk alcohol significantly less often over the past 30 days (0.45 times versus 1.08). Results were similar for using cannabis (0.04 times versus 0.42) but there were no statistically significant differences in frequency of smoking.

The researchers also amalgamated all the substance use measures to arrive at figure for the number of different types of drugs (out of seven) each girl had used over the past 30 days. This too was on average significantly lower among RealTeen than control girls (0.33 substances versus 0.68), as was a similar measure which excluded alcohol (0.13 substances versus 0.38 out of six). In each case the magnitude of the reduction expressed as an [effect size](#) was about 0.2, a small effect.

The questionnaires also assessed some psychological variables which might account for the programme's impact on substance use. Of these, after completing the programme the RealTeen girls reported fewer substance users and/or less acceptance of substance among their peers and friends, but this effect did not persist to the six-month follow-up. The reverse was the case for confidence in one's ability to resist pressure from a boyfriend (or a boy one likes) to use substances; after the programme RealTeen girls were no more confident than control girls, but they were more confident six months later. Other variables were apparently unaffected by the programme including decision-making skills, the ease with which girls felt they could refuse an offer to use drugs from a best friend, ability to manage stress, goal-setting, social skills, self-esteem, and satisfaction with one's looks.

The authors' conclusions

Findings at the six-month follow-up suggest that the study's female-specific, internet-based programme did help prevent substance use, and lend credence to the use of the internet to deliver skills-based interactive interventions. Lack of impact as assessed immediately after the programme may reflect the fact that the assessed period included days when little of the programme would have been completed, and that time and real-life opportunities to apply acquired skills are required for these to impact on substance use.

The magnitude of the impacts from the intervention are comparable to those achieved by similar classroom-based face-to-face programmes and considerably better than those recorded after older, non-interactive, knowledge-based programmes. These results were achieved without labour-intensive and costly staff training and classroom lessons, and without eating in to the time the school has available for other lessons. The programme lends itself to home rather than public delivery, but could be accessed at private computer terminals at community-based agencies, schools, or libraries.

It should however be remembered that the study would have attracted girls who were computer literate and motivated and who lived in what were then the minority of North American homes with broadband internet access. Its effects may not have been the same among a wider or different population.

FINDINGS This is one of at least three studies from the same research stable to have demonstrated the potential of computer-based prevention programming among adolescents from different sectors of US society and recruited in different ways. While its results were statistically significant, only a longer term study could determine whether the small changes ([typical](#) of online prevention) in on average very low levels of substance use would prove significant in prevention and health promotion terms. For example, the impact on drinking amounted to a reduction from drinking about one day out of 30 to about one day out of 60, with no information about the quantity drunk on each

occasion.

In all the studies it seems likely that the children and parents who volunteered for and completed the studies were particularly keen on developing the skills on offer in the programmes and on controlling the substance use of the children. In the featured study in particular an [unusually high](#) proportion of girls completed all 12 sessions, a testament perhaps to the programme's attractions and the gifts on offer, but also perhaps a reflection of the type of girls who joined the study. If, like school-based drug education, the programmes were implemented routinely across the adolescent population, it seems possible that completion rates would be lower and results might differ. Offered instead on a voluntary basis, take-up of [online health promotion](#) is low especially among high-risk groups, and concentrated among the highly educated population.

The small effects seen in the featured study must be considered vulnerable to methodological influences, such as girls who had worked their way through the programme being less willing to admit to substance use. Perhaps too the 10 who did not complete the programme and were also missing from the follow-up assessments were particularly resistant to prevention efforts; had their substance use been able to be assessed, it might have tipped the balance against the programme. Generally outcomes can more securely be attributed to an intervention if the links in between are also visible – if it can be seen not just that it worked, but that it worked via the intended mechanisms. Of 18 possibilities for the programme to demonstrate that it had worked via theorised psychological changes, in just two cases did results reach statistical significance, and in no case was the same change evident at both follow-ups. With so many possibilities, the few positives might have been due to chance.

Among the same team's other studies was one of an [interactive CD-ROM](#) tested among a very different population – primarily black or Hispanic 10–12-year olds. A three-year follow-up showed that the programme had helped prevent use of alcohol, tobacco or cannabis. Most of the same sample were also [followed up](#) when aged 17–18, revealing long-term impacts on drinking, heavy drinking, smoking and alcohol-related adverse consequences, but not on cannabis use. When the children were a year older [another analysis](#) from the same study focused on their drinking. It found that the children allocated to the CD-ROM on average nearly eight years before were still less frequently drinking or drinking heavily and also smoking far less often. In this study there were no lasting benefits from adding [parental involvement](#) elements to the programme.

Like the featured study, girls were the target of [another study](#), but this time instead of being primarily white the girls were black and Hispanic US adolescents aged 10–13 who each joined the study with their mothers. The pairs were randomly allocated to a control group, or to work together through a 10-session computerised programme. It was intended to improve communication between them and general family dynamics, to encourage parents to monitor their children and implement rules on substance use, and to help the girls manage their emotions and difficult situations, including refusing peer pressure. They also learned about the true prevalence of smoking, drinking, and drug use among their peers. As assessed at the end of what was intended to be 10 weekly sessions, girls exposed to the programme drank on average less frequently than the controls and most of the psychological and family process variables thought to underpin the programme's effect on substance use had changed in the expected ways.

Thanks for their comments on this entry in draft to research author Traci M. Schwinn of Columbia University in the USA and Andrew Brown of [Mentor](#) based in London, England. Commentators bear no responsibility for the text including the interpretations and any remaining errors.

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