Face-to-face versus computer-delivered alcohol interventions for college drinkers: a meta-analytic review, 1998 to 2010
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CRD summary
The authors concluded that available evidence suggested computer-delivered interventions could reduce harmful alcohol consumption among college students, but remained less efficacious than face-to-face interventions. These conclusions reflect the evidence presented and appear reliable.

Authors' objectives
To compare the efficacy of face-to-face versus computer-delivered alcohol interventions for college drinkers, and to test the predictors of intervention efficacy.

Searching
Six databases (including PubMed and The Cochrane Library) were searched to May 2010. Search terms were reported. Reference lists of relevant manuscripts, electronic content of professional journals, relevant databases held at Brown University, and responses to list-serv requests were also searched.

Study selection
Randomised controlled trials (RCTs) or quasi-experimental studies that evaluated individual-level alcohol interventions delivered to college students were eligible for inclusion. All studies had to contain an assessment-only, wait list or no-treatment control condition, and had to measure and report alcohol behaviour in a format that allowed calculation of effect sizes. Studies that did not specifically focus on alcohol use only were excluded, as were those that used an active control condition (such as education only) or included a mass media or structural level intervention component.

Most included studies targeted heavy drinkers and were conducted in large public universities, located in various regions of the US. The mean age of participants was 19 years in the face-to-face intervention arms and 20 years in the computer-delivered interventions. Just over half of participants were women and most were Caucasian. Several intervention components were reported in the review. Provision of general, alcohol-related materials and/or challenging of alcohol-related expectancies was significantly more common in face-to-face interventions, whilst feedback on consumption and/or normative comparisons were more common in computer-delivered interventions.

The authors did not state how many reviewers selected studies for inclusion.

Assessment of study quality
Two reviewers independently assessed study quality according to 12 criteria (not stated) adapted from standardised measures. Scores ranged from 0 to 17 (which indicated highest quality). Any disagreements were resolved through discussion.

Data extraction
Data on alcohol consumption outcomes and alcohol-related problems (all defined in paper) were extracted by two independent reviewers to calculate mean differences for continuous outcomes and odds ratios (transformed to $d$ using the Cox transformation) for dichotomous outcomes. All effect sizes were estimated with 95% confidence intervals. During calculations of $d$, baseline differences were adjusted for where pre-intervention measures were reported. Authors were contacted for any additional information. If no statistical information could be obtained and the study reported a non-significant between-groups difference, the effect size of the study was estimated as zero. If a study reported multiple measures for one outcome, the effect size was averaged by assessment interval.

Methods of synthesis
Effect sizes were pooled using fixed-effect and random-effects meta-analyses. Statistical heterogeneity was assessed using $I^2$. Results of face-to-face and computer-delivered interventions were compared using the $Q_B$ measure (defined in paper) and a mixed-model approach. Modified weighted regression and multiple regression analyses were performed to
investigate the relationships between study characteristics and the magnitude of effect sizes. In the multiple moderator models, continuous variables were mean-centred to reduce multicollinearity, and missing values of significant moderators were imputed from the mean of other studies to retain all studies.

Results of the review

Forty-eight studies were included in the review (37,480 participants): 22 RCTs of face-to-face interventions, 25 RCTs of computer-delivered interventions, and one quasi-experimental study of a computer-delivered intervention. Methodological quality scores ranged from 8 to 16.

Compared with controls, participants in the face-to-face interventions significantly reduced their quantity of alcohol consumed (per week/month and per drinking day), frequency of heavy drinking and levels of peak blood alcohol concentration, and reported fewer alcohol-related problems at short term-follow-up (13 weeks or less). At intermediate follow-up (14 to 26 weeks), intervention participants were still found to have significantly greater reductions than controls in quantity of alcohol consumed (per drinking day) and in levels of peak blood alcohol concentration. By long-term follow-up (27 weeks or more), significant differences were only observed between controls and intervention participants in relation to quantity of alcohol consumed (per drinking day). No substantial statistical heterogeneity was observed in any of the analyses (I² values were all 0%).

At short-term follow-up, participants in computer-delivered interventions reported significantly greater reductions in quantity of alcohol consumed (per week/month), frequency of heavy drinking, and in levels of peak blood alcohol concentration, compared with controls. Levels of statistical heterogeneity were substantial in these analyses (I² range: 60 to 80%). No other statistically significant differences between the groups were found (reported fully in paper).

Eight studies directly compared face-to-face interventions (878 participants) with computer-delivered interventions (864 participants). At the last assessment, participants in the face-to-face interventions reported significantly greater reductions in quantity of alcohol consumed (per week/month and per drinking day) and levels of peak blood alcohol concentration, and fewer alcohol-related problems than participants in the computer-delivered interventions. There were no significant differences between the interventions for frequency of heavy drinking at the last assessment.

Indirect comparisons of the two interventions revealed that face-to-face interventions had significantly greater reductions in levels of peak blood alcohol concentration at intermediate follow-up. At long-term follow-up, computer-delivered interventions had significantly greater reductions than face-to-face interventions in frequency of heavy drinking. No statistically significant differences were found for the other outcomes assessed. Moderator analyses demonstrated that some participant and intervention characteristics influenced intervention efficacy; all results were reported fully in the paper.

Authors’ conclusions

The available evidence suggested that computer-delivered interventions could reduce harmful alcohol consumption among college students, but remained less efficacious than face-to-face interventions.

CRD commentary

The review question was clear and supported by well-defined inclusion criteria. Relevant data sources were searched, but it was not reported whether any language or publication status restrictions were applied. Efforts were made to reduce reviewer error and bias for the processes of data extraction and quality assessment, but this was unclear for the study selection process. The summary quality scores indicated that study quality was variable. Study details were presented and the methods of synthesis seemed appropriate. Moderate to high statistical heterogeneity was indicated in all of the significant pooled results for computer-delivered interventions. Overall, the authors' conclusions reflect the evidence presented and appear reliable.

Implications of the review for practice and research

Practice: The authors did not state any implications for clinical practice.

Research: The authors stated that further research should try to improve the magnitude of effect sizes through development and evaluation of theoretically-based components, and should investigate whether effective components of face-to-face interventions might be equally effective in computer-directed interventions. Identification of computer-
directed intervention components that might be more attractive or efficacious in face-to-face interventions was also recommended, as was further research into how gender differences influence response to computer-delivered interventions. Finally, the authors stated that research was needed to determine how conditions under which intervention content was delivered might affect attention, depth of processing, and managing resistance.

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