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▶ Computer-assisted delivery of cognitive-behavioral therapy for addiction: a randomized trial of CBT4CBT.

Carroll K.M., Ball S.A., Martino S. Request reprint

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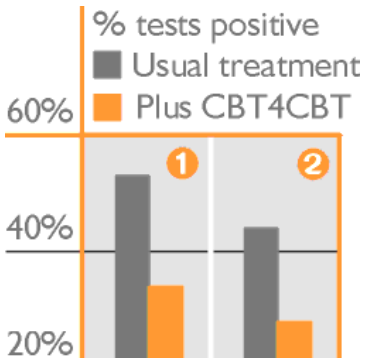
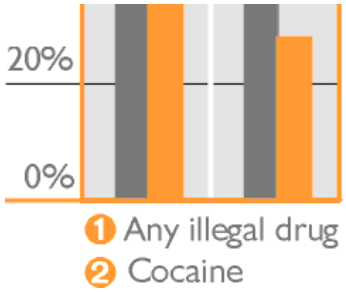
An interactive computer program may offer a way to overcome the shortage of trained cognitive-behavioural therapists; supplementing routine counselling by program access twice a week reduced substance use by a third.

Abstract This randomised clinical trial evaluated the efficacy of a computer-based version of cognitive-behavioural therapy for substance dependence. Excluding only those with untreated psychoses or about to move or be imprisoned, the study recruited individuals seeking treatment at an outpatient community setting who met criteria for dependence and had recently used alcohol or drugs. The 77 who joined the study were mainly dependent on cocaine and/or alcohol. At the time they joined the study were on average using substances every two or three days. They were randomly assigned to the clinic's standard weekly individual and group drug counselling sessions, or to this plus access twice a week for eight weeks to computer-based training in cognitive-behavioural skills. The program known as CBT4CBT was built on a widely researched manual developed by the study's first author. Its six interactive modules, each intended to take roughly 45 minutes, explained and presented in simple language and images video scenarios in which the outcome was changed through the application of skills such as assertive refusal. A research associate guided participants through their initial use of the program and was available to answer questions and assist participants each time they used it.





On average the program was well received by the patients, just over four of its six modules were completed, and retention and attendance at counselling sessions were equivalent across the groups. Urine tests taken twice a week revealed that patients assigned to the CBT4CBT program were significantly less likely to have used illegal drugs. Without access to the program, 53% of tests were positive compared to 34% with it. This difference was most marked (44% versus 28%) for cocaine, the most common drug of dependence used by the patients ▶ chart. Urine test results largely confirmed the patients' own accounts of their substance use, but the gap on the self-report measure was smaller (just over 6%) and not statistically significant. The difference in the longest time patients reported sustained abstinence (21 versus 15 days) was greater and neared significance. Without access to the program, pre-treatment substance use severity (notably days used in the past month) was strongly related to more substance use during treatment. Access to the program weakened this relationship. The authors concluded that while further study was needed, the program showed promise as an effective adjunct to standard outpatient treatment which could be made widely available in services otherwise unable to offer expert cognitive-behavioural therapy.

A later report reassessed at some time 60 of the 73 patients who had initiated treatment at the clinic one, three and six months after the end of the eight weeks of the study. Urine tests for any illegal drug use continued to favour those offered the program, but significantly so only at the first follow-up. Nevertheless, the difference of 62% versus 46% drug-free at the final follow-up remained substantial. The patients' own accounts of their substance use revealed a month by month increase in drug-free days among those offered access to the program, but a falling off among the usual care patients, resulting in a statistically significant difference in trends between the two groups. Moreover, as during the study, on average program patients sustained a significantly longer period drug-free. However, over the entire follow-up there was no difference in the proportion of drug-free days.

FINDINGS An interview with the lead author of the study affords insights in to the motivation for undertaking it – to overcome the difficulty and expense of training therapists to a high degree of competence.

Access to the program seems to have been effective in its own right, not because it enhanced engagement with the clinic's core service. Not only did it improve outcomes overall, but people who would otherwise have been destined to have poor outcomes associated with their immediate pre-treatment cocaine use were rescued from this trajectory. Commonly the main influence on cocaine use outcomes is whether patients had been willing and able to cut down *before* treatment, suggesting that treatment itself is a relatively inactive ingredient. In the featured study, this was the case without access to the program, but not with it, in turn carrying the opposite implication; that working through the program was a more active therapy which disrupted the typical pattern.

From this perspective it may have been the inadequacies of the standard treatment to which CBT4CBT was added which allowed it to shine. Given the usual counselling schedule at the clinic, encounters with the research team for computer access might have seemed to the patients a considerable addition to the clinic's therapeutic programme. Set against or added to (as other studies have done; see below) a more active treatment, the program may have made less difference. In the event, neither group of patients made a radical advance on their pre-treatment drug use. In the four weeks before starting treatment, patients were abstinent on about 65% of days; during treatment this rose to 81% with the program and 75% without. Despite its undemanding and short-term nature, a third of patients who started treatment did not complete it. These statistics perhaps reflect a challenging caseload of single, unemployed men and women commonly under criminal justice supervision and with a history of mental illness.

Inevitably there are questions over whether the gains associated with the CBT4CBT program would be replicated in normal practice. Access to the program seems to have coincided with the twice-weekly research assessments. This bundling together of the two activities may have raised usage of the program beyond that to be expected in normal conditions. As the authors cautioned, the study is unable to disentangle whether extra attention from research assistants overseeing program access was the active ingredient, the program itself, or some combination of the two. Finally, the study was led by the creator of the manual behind the program, raising the possibility of 'allegiance' effects.

A different issue is raised by the follow-up study. This indicated a growing advantage for program patients even after they had stopped using the program (reminiscent of other studies of cognitive-behavioural therapies; see below), but only in terms of the patients' own accounts of their substance use, not urine test results. It was the reverse during the eight-week treatment period. By choosing to focus on different outcome indicators, the program can be portrayed as demonstrating its efficacy during both phases, during one but not the other, or as showing questionable efficacy in both phases. However, insisting on statistical significance with such a small sample may be overly fastidious. On both measures there was an advantage in both phases of the study, which with a larger sample might have been consistently significant.

Cognitive-behavioural approaches are perhaps the world's most commonly used and widely researched formal psychological therapies, applied often with good results to a range of psychological problems. For substance use too, these therapies have an impressive research record (for example for problem drinking), but this is partly because more good quality studies have been done than in respect of competing approaches. It is by no means clear that cognitive-behavioural therapies are more effective than other similarly extensive and coherent approaches. Studies which have directly tested this proposition often found little or no difference, even when the competing therapy amounted simply to well structured medical care (1 2). Reviewers too have broadly reached this conclusion in respect of the use of substances in general, cannabis in particular (1 2), methamphetamine, and these and other stimulants, including cocaine. In respect of alcohol problems, a recent analysis has concluded that any differences between outcomes from psychosocial therapies are likely to have been due to chance or the allegiance of the researchers.

These findings fit with the discovery that, despite in theory working through very

different psychological processes, in practice cognitive-behavioural and other therapies create change through similar mechanisms. Studies have rarely confirmed that the theoretical mechanisms behind cognitive-behavioural therapies actually were responsible for substance use outcomes.

Where cognitive-behavioural approaches sometimes do score better than alternatives is in the persistence of their effects. Gains relative to other therapies have been found to emerge only after the end of therapy and to grow over the follow-up period. This has been observed for some psychological problems, for cocaine use problems (1 2), and recently in respect of cannabis dependence. There is also some evidence that more severely dependent cocaine users particularly benefit from cognitive-behavioural as opposed to other approaches.

Recent guidance from Britain's National Institute for Health and Clinical Excellence (NICE) recommended against cognitive-behavioural therapy as a routine treatment for drug problems, suggesting its main role was in tackling accompanying depression and anxiety. However, the analyses on which this was based did not show that cognitive-behavioural therapy is *in*effective, just that (as other reviewers have concluded) it is not convincingly *more* effective than other well structured therapies. If this is the case, then the decision between such therapies can safely be taken on the grounds of what makes most sense to patient and therapist, the therapist's training, availability, and cost. In respect of cost and availability, cognitive-behavioural therapy may (more evidence is needed) prove to have two important advantages. The first is that effects persist and even amplify without having to continue in therapy. The second is that it lends itself to manualisation to the point where, as demonstrated in the featured study, it can be packaged as an interactive computer program and made available in services lacking trained therapists – potentially a crucial advantage for widespread implementation. In the UK implementation has been held back by the shortage of therapists, an obstacle currently being addressed by a government-funded training initiative. The program offers an another way to overcome this shortage, as long as further studies find no dramatic loss in effectiveness compared to in-person delivery.

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