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### ► [Coping skills training and contingency management treatments for marijuana dependence: exploring mechanisms of behavior change.](#)

Litt M.D., Kadden R.M., Kabela-Cormier E. et al. [Request reprint](#)

**Addiction: 2008, 103(4), p. 638–648.**

Rare glimpse 'under the hood' of contingency management suggests that unless the patient sees themselves as having actively mastered their dependence and has developed anti-relapse strategies, effects of rewarding abstinence will be short-lived.

**Abstract** Achieving abstinence in the treatment of cannabis dependence has been difficult. To date the most successful treatments have included combinations of motivational enhancement treatment plus cognitive-behavioural coping skills training and/or contingency management approaches rewarding abstinence. Although these approaches are theoretically based, their mechanisms of action have not been explored fully. The purpose of the present study was to explore mechanisms of behaviour change from a cannabis treatment trial in which cognitive-behavioural and contingency management approaches were evaluated separately and in combination. A 'dismantling' design was used in the context of a randomised clinical trial. 240 dependent adult cannabis smokers who responded to advertisements attended an out-patient treatment research facility located in a university medical centre. They were randomly assigned to one of four nine-week treatment conditions:

- supportive case management, the control condition used as a benchmark for the other treatments;
- motivational enhancement therapy plus cognitive-behavioural coping skills training;
- standalone contingency management procedures rewarding cannabis abstinence with vouchers for retail goods or services, with no other therapeutic inputs;
- and a combination of contingency management with the motivational and cognitive-behavioural therapies.

The main outcome measure was total abstinence over the past 90 days based on the patients' own accounts and verified by urinalysis. These measures were recorded every 90 days for the 12 months after treatment ended. Standalone contingency management led to the highest in-treatment abstinence rate, but the lowest in the last six months of the follow-up. Regardless of the treatment, abstinence in near-term follow-ups was

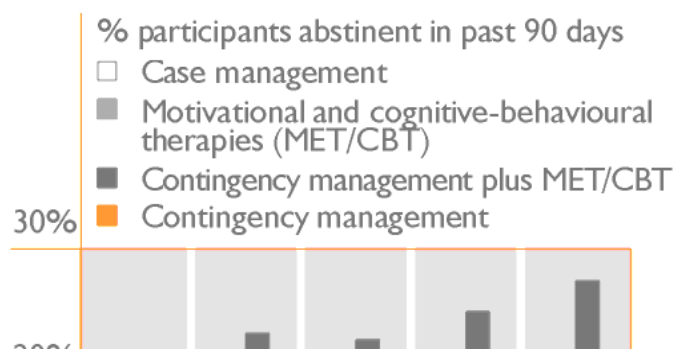
predicted most clearly by abstinence during treatment, but long-term abstinence was predicted by use of coping skills and especially by post-treatment self-efficacy for abstinence.

**FINDINGS** Though an exploration of the mechanisms of change in cannabis treatment in general, the study's **innovation** (and the focus for this commentary) was to probe the psychological processes underlying contingency management, building on **previously reported** abstinence outcomes from the same study. The key message is that these procedures do not produce lasting change simply by mechanically reinforcing the habit of non-use. More important is whether the experience fosters confidence that one can resist relapse, along with the motivation to transform 'can' in to 'will', and strategies to effectively implement this resolution. In other words, what the patient *makes of* their spell on the contingencies and how they *interpret* it determines whether it will result in a transient, reward-driven spell of reduced substance use, or more lasting change. What the patient makes of the contingencies can in turn be influenced by integrating test results and rewards in to accompanying therapy, leading to greater longer term success than either on its own.

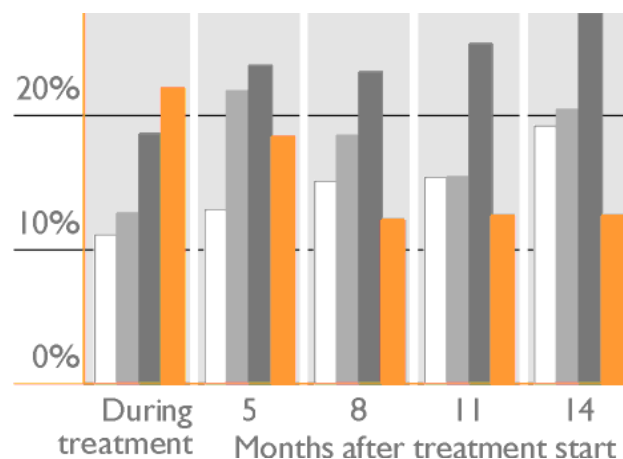
On the basis of the study, this message can only be considered a tentative working hypothesis. But it is consistent with other studies (1 2 3 4 5) which also found that the **in-treatment boost** to abstinence provided by rewards does not persist, leaving contingency management with longer term outcomes at best equivalent to cognitive-behavioural approaches, and sometimes slightly worse. More generally, when rewards end, patients **often quickly revert** to their previous behaviours. Even during the rewards period, typically impacts are limited to the targeted behaviours and/or the targeted drugs. This is what would be expected if patients interpret the procedures as a chance to do what it takes (and no more) to make some money or win some prizes. In particular, the authors suggest that lasting change is less likely if patients see abstinence as foisted on/enticed out of them by the rewards, rather than something they have shown they can achieve by their own efforts.

Within the study, this hypothesis emerged from an analysis which showed that the way contingency management enhanced cannabis abstinence *after* treatment, was by having enhanced it *during* treatment. However, when other variables were taken in to account, the distinct contribution of in-treatment abstinence was relatively weak. More significant were variables contingency management did *not* directly affect – the individual's growing confidence in their ability to resist cannabis use and their deployment of strategies to help them do so. Each bolstered the other, especially when growing motivation to change gave impetus to the process. These variables *were* directly impacted by the treatments which included motivational and cognitive-behavioural elements, especially when combined with contingency management.

The upshot it seems (► chart) was that though it led to the highest **abstinence rates** during treatment, by the final follow-up a year later patients subject only to the rewards were least likely to have sustained abstinence over the past



three months. After the **other three** treatments, abstinence rates improved, culminating in a final rate of around 20% or more. After standalone contingency management ended, the abstinence rate rapidly fell to barely more than half the level during treatment.



This transience did not apply when contingency management was combined with motivational/cognitive-behavioural therapy – in the longer term, the most effective of the options. Contingency management brought these patients in to contact with qualified and specially trained and supervised therapists who melded the urinalysis results and the rewards in to the therapeutic encounter, and who were in a position to influence the patient's interpretation of and response to the contingencies. In contrast, standalone contingency management involved relatively fleeting contact with a research assistant who administered tests and rewards.

When contingency management and cognitive-behavioural therapy have merely run in parallel (1 2 3), no longer term advantage from combining the two has materialised. But when, as in the featured study, therapists have integrated the contingency programme in to their sessions, the combination **has proved** the most powerful intervention in the longer term.

Though this study breaks new ground, others have also indicated that contingency management may not work in the same way as other therapies. Most relevant is a **study** which used vouchers to reward drug-free urine tests and consumption of the opiate blocking medication naltrexone to maintain abstinence from opiates after detoxification. As expected, during the 12 weeks of treatment the rewards encouraged patients to **take their medication** and stay free of opiate drugs. But this did not presage lasting change. Within 12 weeks of the rewards ending, there was little difference between these patients and those not offered vouchers, by another 12 weeks, virtually none. A clue to the reason came in the observation that across the 12 weeks of treatment, motivation and readiness to change drug use behaviour increased slightly among patients *not* offered vouchers, but **were significantly eroded** among those rewarded for abstinence.

In **other studies**, motivation has not been eroded relative to other treatments, but neither has it been enhanced by reinforcing abstinence, indicating that the greater abstinence rates 'bought' by the rewards do not reflect increased motivation to remain abstinent. In **one**, supplementing motivational and coping skills therapy with rewards actually halved what without the rewards was a substantial increase in confidence in ability to refrain from smoking cannabis.

The potential for contingency management type rewards to erode motivation is well recognised outside the substance misuse sector. An **analysis** aggregating results from 128 studies found that tangible rewards offered for engaging in, completing, or doing well

at a task undermined intrinsic motivation. The effect was greatest when represented by what people actually did after the rewards ended, the equivalent of post-treatment substance use in contingency management studies. However, the same analysis found that it is possible for rewards – and especially verbal recognition – to be given in such a way that they acknowledge the individual's achievements and bolster feelings of mastery rather than of being controlled. In these cases the undermining effect can be reversed and intrinsic motivation enhanced.

Such findings help explain why in several studies (1 2 3) contingent rewards or punishments for engaging in treatment did improve attendance and compliance, but, contrary to the usual pattern, 'engagement' elicited in this way did not improve substance use or other outcomes. It also helps explain why occasionally this does *not* happen, [for example](#), when rewards are experienced as a non-controlling signal of the individual's own achievements, and are embedded in a caring therapeutic environment which accompanies them with verbal and public recognition. Another exception is a [study](#) which achieved greater and more lasting abstinence by rewarding recovery-oriented activities rather than directly rewarding abstinence. In this case the rewards were delivered within a collaborative therapeutic relationship and empowered rather than controlled the patient. With their therapist, they could select activities to be rewarded in line with their own recovery plan and ability to complete the task. The [broader findings](#) referred to above also help us understand the oft-reported power of the verbal praise delivered by drug court judges to offenders, precisely the sort of unexpected, non-controlling verbal recognition which the analysts would expect to enhance motivation by reinforcing the offender's sense of control.

Current British trials have absorbed the lessons of this US research and [at least one](#) is attempting to extend the substance use reductions gained by contingency management by exploring this experience in accompanying therapy. The trial is also using a newly developed [questionnaire](#) to track how patients interpret the contingencies, including whether they attribute their successes to the rewards or to themselves, and impacts on their confidence in their recovery.

*Thanks for their comments on this entry in draft to Mark Litt of the University of Connecticut Health Center, John Marsden of the National Addiction Centre in London, and Oswin Baker of the National Treatment Agency for Substance Misuse in London. Commentators bear no responsibility for the text including the interpretations and any remaining errors.*

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