DRUG ALCOHOL FINDINGS Hot topic

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GO Should we offer prizes for not using drugs?

Can we dispense with counselling, therapy, with treatment as we know it, and just punish or deprive people of rewards when they use substances in undesired ways, and reward them when they behave as we and/or they would wish? For substance users (such as offenders facing prison, doctors who face being struck off, and drink-drivers who otherwise face prison or being unable to drive) whose roles and positions in society naturally offer scope for exercising considerable reward/punishment leverage, this is not just mooted, but already being implemented.

Generally imposed on people who would not voluntarily seek help, rather than offering treatment, these programmes manage the consequences of a person's actions, ensuring that something pre-determined happens to them 'contingent' on their acting or not acting in specified ways – procedures known as 'contingency management'. Similar programmes have been trialled for people who are seeking treatment, either as standalone approaches or to reinforce psychosocial therapies or medication-based treatments. In these guises, commonly rewards like shopping vouchers or the chance to win prizes are offered if the patient avoids use of the targeted substance(s) or engages more fully with therapy, and withheld if they do not. When the hold on the patient is sufficient to permit this, there may also be not just rewards but punishments, such as the imposition of onerous requirements in methadone programmes like having to attend every day to take the medication at the clinic.

These procedures derive their theoretical basis from operant conditioning – the systematic linking of an animal's – or a person's – behaviour to rewarding or aversive experiences in order to 'shape' that behaviour in the intended direction, as when the rat imprisoned in a Skinner box learns to press a lever for food or to avoid an electric shock when they hear a certain sound. Unlike Pavlov's dogs, which came to reflexively salivate to a stimulus repeatedly paired with food, these rats have to *do* something ('operate') in response to the stimulus. Applied to human clients and patients, the aim is to 'nudge' behaviour in pro-therapeutic directions, much as the usual gamut of approbation, disapproval and good or bad consequences shape how we behave in everyday life. Contingency management programmes formalise this process into a consistent and codified schedule, enabling it to be tested in evaluation studies and then tweaked to see if outcomes improve.

Contingency management was one of only two psychosocial therapies recommended by the UK's National Institute for Health and Care Excellence (NICE) for the treatment of problems related to illicit drug use. Typically the promising results which persuaded the NICE committee were seen during the time rewards and sanctions were in place, often just 12 weeks; many trials do not go beyond that time to see if benefits persist. These often transient benefits must be set alongside ethical concerns, including the possible aggravation of health inequality if only already advantaged patients qualify for prizes and benefit from any therapeutic effects, professional and public resistance to rewarding what most people do simply for their own welfare and to avoid crime, the common finding that in-treatment gains do not persist, and some evidence that intrinsic motivation may be undermined if patients see themselves as 'just doing it for the prizes'. Some of these themes are explored below.

Has improved outcomes from methadone to detoxification

Contingency management has found a conducive homeland in methadone maintenance programmes, where the leverage providing opiate substitutes gives over patients reliant on these types of drugs creates opportunities for non-material as well as material rewards and sanctions. Among these are making patients attend more often or at less convenient times, attend more counselling (a strange comment on the attractiveness of the counselling), and to submit to more supervision of their methadone consumption, rather than being able to take it at home.

At first thought effective overall, a recent review which amalgamated findings across all relevant randomised trials found such procedures made no difference to opiate use or to how long patients stayed in treatment – seemingly a testament to the power of methadone itself. However, that power does not extend so well to curbing use of the non-opiate drugs left out of the review, particularly cocaine, use which may be more amenable to contingency management's influence.

That may be part of the reason why the review's findings differed from those of an earlier synthesis of the research on methadone treatment, which combined outcomes from contingency programmes targeting different drugs, and generally several drugs at once. It found 30 relevant studies across which the systematic application of incentives led to more drug-free urine tests. Though effects were significantly smaller than in non-randomised trials, this was also the case among the 17 trials which had randomly allocated patients to contingency management versus other or usual procedures, though the effects were modest. They were even more modest in studies where urine tests had been conducted less than three times a week, giving patients more chance to 'cheat' the system.

Narrowing in on cocaine, another review confirmed that contingency management has successfully targeted use of this drug by methadone patients, while targeting heroin and cocaine together has generally been ineffective. With no recognised medication to help patients resist taking the drug, cocaine dependence itself has been an important and sometimes successful target in contingency management trials.

Detoxification programmes withdrawing patients from opiates have also benefited from combining contingency management with pharmacological treatments, significantly reducing drop-out rates, opiate use during treatment, and missed appointments. The goals and short time scales of these programmes perhaps suit them to the temporary imposition of a contingency regimen.

Just for the money?

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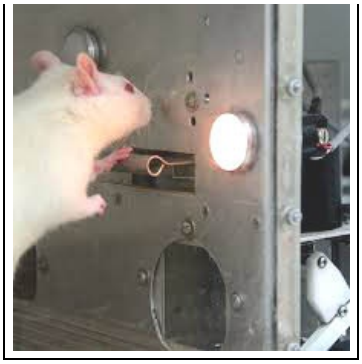
Burrhus Frederic (commonly abbreviated to B.F.) Skinner, the psychologist who developed the iconic Skinner box, downplayed the role of thoughts and understandings in human behaviour, one reason why he has been thought a contender for "The most dangerous psychologist ever". This pared-down perspective works better with an environmentally deprived rat in a box which offers little choice, than with human beings in their natural environments, who persist in trying to make sense of what is happening to them in ways which alter its impacts.



The rat in the Skinner box may cogitate little on why they have to press a lever for food, but human beings try to make sense of what is happening to them.

Substance use contingency management studies have not been immune from the confounding influence of the human imperative to form understandings. The key message of one particularly probing US cannabis treatment trial was that contingency management 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' into '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 curb in substance use, or more lasting change.

Often patients act as if they interpret the procedures not as an opportunity to kick-start a lasting end to regular substance use, but as a chance to make some money or win some prizes, doing just what it takes (and no more) to achieve these objectives. When the rewards end, generally so too do their effects, and patients quickly revert to their previous behaviours. Recent confirmation of this pattern came from a synthesis of the results of contingency management studies in substance use treatment. It registered a relatively large positive effect towards the end of the contingency period, which after treatment had ended and leading up to six-month follow-up assessments had overall diminished to just less than zero – in other words, slightly (but non-significantly) worse than never having imposed the contingencies. Even when the rewards are still in force, typically impacts are limited to the targeted behaviours and/or the targeted drugs.

Can rewards undermine intrinsic motivation and confidence?

Leading contingency management researchers have suggested that the platform for lasting change can be undermined if patients see abstinence as foisted on or enticed out of them by the contingencies, rather than something they achieved by their own efforts. The context was a US study described below which found in-treatment gains in cannabis abstinence generated by contingency management eroded after treatment ended, while other approaches better sustained reductions. Suggestive of the possible reasons was that long-term abstinence was predicted by use of coping skills and especially by post-treatment self-efficacy for abstinence – patients' confidence in their own abilities to resist cannabis use which the researchers feared contingency management could undermine.

The following year an article from the same researchers confirmed their thinking. This time the study tested whether offering the chance to win prizes for 'working the programme' – a form of contingency management – improved the effects of a 'network' treatment which encouraged affiliation with Alcoholics Anonymous as a means of gaining an alcohol-free social network and menu of activities. When supplemented by contingency management, during treatment patients did well, but the number of days they avoided drinking fell back after treatment ended. Two years later drinking had been reduced significantly more when the network treatment had been left to its own devices, and not 'reinforced' by contingency management. Especially towards the end of the follow-up period, incentives had weakened the network therapy's positive influences on how many non-drinking friends the patient had, their confidence in resisting drinking, and their strategies for doing so. Since all these partly accounted for impacts on abstinence, this too was weakened. Again the authors highlighted the influence of post-treatment self-efficacy. It seemed as if during treatment patients relied on (or at least, saw themselves as relying on) the incentives to keep them on track. When this support was withdrawn, they were left without the confidence in their own abilities forged in other patients by the experience of resisting drinking without the help of incentives.

Earlier a different set of US researchers and a very different study had also revealed the potential for contingency management to undermine what it takes to sustainably overcome dependence. In this study vouchers were offered to reward drug-free urine tests and consumption of the opiate-blocking medication naltrexone, used to maintain abstinence from opiates after detoxification. As expected, during the 12 weeks they were applied, the rewards encouraged patients to take their medication and stay free of opiate-type drugs. However, 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 one's drug use increased slightly among patients *not* offered vouchers, but had been significantly eroded among those rewarded for abstinence. A report on another US study was confined to the 14 weeks of the treatment period, during which supplementing motivational and coping skills therapy with contingent rewards for abstinence boosted abstinence rates – but also halved what without the rewards was a substantial increase in the patients' confidence that they could refrain from smoking cannabis.

Other studies have not found motivation eroded relative to other treatments, but neither has it been enhanced by reinforcing abstinence, indicating that abstinence 'bought' by the rewards does not reflect heightened motivation to remain abstinent.

Beyond substance use studies, the potential for contingency management-type rewards to erode motivation is well recognised. An analysis which aggregated results from 128 studies found that tangible rewards offered for engaging in, completing, or doing well at a task, undermined 'intrinsic' motivation – the desire to do something for the rewards inherent in that activity, not in order to gain some other advantage. The effect was greatest when assessed by what people did after the rewards ended, the equivalent of post-contingency substance use. However, the same analysis found that it is possible for rewards – especially verbal recognition – to be given in such a way that they acknowledge the individual's achievements, bolstering feelings of mastery or self-efficacy rather than of being controlled. In these cases, the undermining effect can be reversed, and intrinsic motivation reinforced rather than weakened.

Explains why treatment 'engagement' is boosted but not outcomes

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. Patients do what it takes to earn the rewards but sometimes not in the spirit of using these supposedly therapeutic activities to achieve what the treatment service would see as a therapeutic effect.

therapeutic effect.

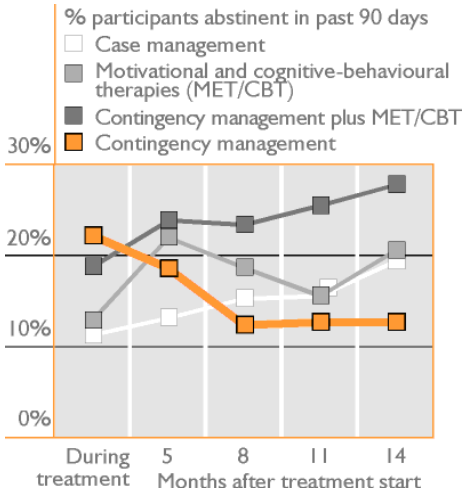
The findings also help explain why sometimes the reverse happens, and incentives to comply with treatment actually *do* result not just in improved compliance, but also improved substance use outcomes. One example was a study which achieved greater and more lasting abstinence by rewarding recovery-oriented activities than by directly rewarding abstinence. In this case the rewards were delivered within a collaborative therapeutic relationship, empowering rather than controlling the patients. With their therapists, they could select activities to be rewarded in line with their own recovery plan and ability to complete the tasks.

Though it lacked hard substance use outcomes, a particularly persuasive account has come from addiction treatment services run by New York City's Health and Hospitals Corporation. They instituted contingency management systems variously to reward attendance at counselling, drug-free urine tests, educational and vocational activities, stable housing and improved daily living skills. But much more was going on at these clinics to transform these programmes into a non-controlling acknowledgement of the individual's own achievements, and to embed them in a caring therapeutic environment which accompanied the rewards with verbal and public recognition. From seeing the rewards as a 'bribe', staff "came to see that we need to reward people where rewards in their lives were few and far between. We use the rewards as a clinical tool – not as bribery – but for recognition." Staff found something positive to say and do with patients, and patients used to denigration found themselves at the receiving end of tangible appreciation. To clinic staff and administrators, the effects were apparent in better attendance, more drug-free urine tests, and more patients completing vocational training, getting jobs, and attending colleges.

Integrate with other therapies

If how the patient interprets and what they do with their spell on the contingencies are critical, then so too may be interactions which can influence these perceptions, helping patients make the most of a time relatively free of substance use when they have shown they can resist use despite their dependence.

In a trial with cannabis-dependent volunteers, the transience characteristic of contingency management's effects did not apply when it was combined with motivational/cognitive-behavioural therapy – in the longer term, the most effective of the options ▸ chart. Contingency management brought these patients into contact with qualified and specially trained and supervised therapists who melded urinalysis results and rewards into the therapeutic encounter, and who were in a position to influence the patient's interpretation of and response to the contingencies. More transient effects were seen with standalone contingency management, which entailed only relatively fleeting contacts with the research assistant who administered urine tests and rewards. Similar results were found in another cannabis treatment trial.



Contingency management maximises abstinence from cannabis during treatment but this erodes and other approaches better sustain reductions

In contrast, when contingency management and cognitive-behavioural therapy have merely run in parallel (1 2 3), no longer term advantage from adding one to the other has materialised.

As this review of cocaine dependence treatment suggested, possibly material rewards can help initiate abstinence, while cognitive-behavioural therapy or restructuring everyday rewards and sanctions ('community reinforcement') can help sustain it by teaching enduring skills, changing thought patterns, and altering how the user's social circle responds to them.

Hill to climb

It would be a surprise if offering often destitute patients housing, employment, money or goods, and the less esteemed among our population recognition and rewards, did not have powerful effects, at least while the contingencies are in place. Realising and making the most of this potential, while avoiding unintended consequences, is the task facing the researchers and clinicians who devise the programmes.

No matter how effective in studies, those tasked with implementing these programmes will still have the hill of 'It just doesn't feel right' to climb before they become as much part of the landscape of treatment as counselling and 'talking therapies' like cognitive-behavioural therapy. When clinicians in English opiate prescribing services were surveyed in the mid-2000s, most "felt the use of contingency management raises major ethical issues". Nevertheless, NICE's positive verdict prompted the English National Treatment Agency for Substance Misuse (now absorbed in Public Health England) to organise a demonstration programme to trial implementing the approach. Larger trials are underway to evaluate the feasibility, acceptability and clinical and cost-effectiveness of contingency management in NHS drug treatment services. One fruit of this effort has been a report of a study which found that modest financial incentives delivered in routine clinical practice significantly increased the proportion of patients in opioid substitution therapy (such as methadone maintenance) who completed a course of vaccinations against the hepatitis B virus.

Endnote

Moral of this hot topic? That what seems a simple matter of rewarding the 'right' and punishing the 'wrong' may be pretty simple for a hungry rat in a stripped down cage, but is far from simple when it comes to human beings engaged in meaning-laden social (including treatment) interactions. The human 'rat' can confound the expected impact of these programmes by seeing them as disempowering impositions or a chance to milk the system, but the same programmes can also be integrated into a wider context which transforms their meaning into a recognition of achievement otherwise rare in patients' interactions with officialdom.

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