Quitting drugs: quantitative and qualitative features.

Heyman G.M.

Annual Review of Clinical Psychology: 2013, 9, p. 29–59.

Innovative re-analysis of US national surveys reveals that no matter how long ago someone became dependent on an illegal drug or alcohol, their chances of achieving remission remain the same. The findings challenge models which assume that progressive neural, lifestyle or psychological changes increasingly lock someone in to addiction.

Summary This review draws on four major national US surveys of psychiatric disorders and problems related to substance use to determine whether the pattern of remission from dependence on illicit drugs best fits the model of addiction as a chronic disease, or as a phase in life from which people typically 'mature out'. Essentially it discovered that both models fit some people, but are best seen as ends of a continuum rather than distinct forms of dependence.

The surveys were conducted between the early 1980s and the early 2000s. Each tried to interview a representative sample of the US population. Of greatest interest was the National Epidemiological Survey of Alcohol and Related Conditions (NESARC) conducted in 2000 –2001, which focused on drinking disorders but also asked about other forms of drug use problems. The review also analysed follow-up studies of the minority of people with substance use problems who enter treatment.

Addiction was defined as meeting the dependence criteria of the applicable version of the American Psychiatric Association's diagnostic (DSM) manual. If at least three specific signs of this syndrome are present, dependence is diagnosed. Because this was the data available in the surveys, generally remission from dependence was defined as having met these criteria at some point in one's life, but not in the past 12 months. The NESARC survey also permitted calculations based on the year when someone last stopped meeting criteria for dependence on the drug being asked about, and had continuously been in remission for at least a year until interviewed for the survey – essentially, the most recent lastingly *successful* remission, at least from that drug; they may have developed dependence on another category of drug and/or later relapsed. Also available was the year someone first met criteria for dependence. It was on this basis that the review calculated remission rates for individual substances and related them to years of dependence.

Main findings

Generally not 'chronic' Although addiction is often described as a chronic, relapsing disease, population-wide surveys suggest this is not the case. These find that around 80% formerly dependent on an illegal drug, or on a medicine used for non-medical purposes, have been in remission from dependence on any of these substances for at least a year, remission rates much higher than for other psychiatric disorders. Regarding specific drugs, the NESARC survey found that just two years after developing dependence on cocaine, 27% of people had successfully remitted for at least a year and sustained this until interviewed for the survey, rising steadily to 76% after nine years. According to the same criteria, for cannabis 55% had remitted after six years and 75% after 12 years. Since dependence typically starts around age 20, by age 30, for each of these drugs most people who had once been were no longer dependent.

Probability of remission the same each year of dependence Generally the probability that someone would have ceased being dependent on a particular drug remained the same no matter how long ago they had first become dependent. For different drugs and different population groups, in the NESARC survey these proportions differed, but within these categories, the accumulation of years since becoming dependent made no difference to the chances of remission.

For some theories of addiction, this is a surprising result. Any theory which claims a large role for pharmacology in (non-)remission (for example, attributing addiction to drug-induced neural adaptations) predicts that the longer drug use continues, the greater the impact of this use, meaning that remission must become less likely. Yet remission probabilities were seemingly unrelated to the cumulative amount of drugs consumed. Other theories assume that taking drugs progressively undermines the value of competing rewards, yet a constant remission rate after onset of dependence suggests the relative value of taking the drug also remains constant.

Once remitted, someone can of course relapse, but there are several indications that having lasted the past year (the criterion in the national surveys), remission is generally stable. In the national surveys the proportion in remission cumulates over the years since the onset of dependence and also increases steeply with age, incompatible with remission usually ending in relapse. Also, treatment studies with several follow-up points generally find the proportion in remission higher at each successive follow-up.

One limitation of the surveys is that more addicted people are missed than non-addicted, partly because some surveys did not sample prisoners. If these missing cases remit at a different rate they would affect the overall picture. However, so many would have to have been missed, and their rates of remission have been so different from the sampled populations, that this is unlikely to have substantially affected the findings.

Treatment generally not needed Belief that addiction is a disease characterised by compulsive drug use goes hand in hand with the belief that addicts require lifelong treatment and/or that treatment is necessary for recovery. However, in these surveys, most people who are or were dependent had not taken advantage of treatment, yet most had achieved remission. The implication is that remission from drug dependence does not require treatment, one supported by the literature on 'natural' recovery.

Dependence on legal drugs lasts longer Remission rates were substantially lower for legal (alcohol and tobacco) than for illegal (cocaine and cannabis) drugs. Remission can be expected within about six years after developing dependence on cocaine, eight for cannabis, 20 for alcohol, and 42 for cigarettes. These differences suggest drug availability is important in the persistence of dependence.

Racial/ethnic differences Addiction is sometimes characterised as an 'equal opportunity' disease. However, there are some large racial/ethnic differences in remission rates and addiction duration. For example, in the NESARC survey, after eight years about 50% of African Americans had sustained remission for at least a year; white Americans reached the same milestone in three years. Likewise, each year fewer African Americans had successfully stopped smoking at dependent levels. However, there were no significant differences in remission from dependent drinking or cannabis use. An analysis of data from the same survey showed that taking alcohol and other drugs together, the longer dependence careers of black versus white Americans was associated with their having less social and socioeconomic resources, signified by fewer being married and fewer having completed their schooling. Once these were taken in to account, racial differences were no longer significant. The same variables were also strongly related to remission in other US national surveys.

Remaining issues

Why does remission remain equally probable over time? For this there is no ready explanation. It means there was no systematic

relationship between remission and post-dependence duration/amount of exposure to drugs and also none with further exposure to the problems that heavy drug use causes. These findings are, however, compatible with the idea that addiction is a steady but fragile state (often a way of life which involves a social network and social roles as well as drug use) which can abruptly shift to a new state – recognised in idioms such as 'kicking the habit'. If this is the case, the reviewed data suggests that over time this state becomes neither more nor less embedded and no more or less likely to end abruptly.

What is the role of values and attitudes? Ex-addicts, often stress that values and moral considerations (particularly in regard to family) played a large role in why they eventually quit or cut back on drugs. But personal values are correlated with other factors, such as education and gender, which may themselves influence remission rates.

Is treatment a significant predictor of remission? Treatment is certainly not an essential or usual route to remission. But it could be that treatment makes remission more or less likely, or instead that drug dependent people who enter treatment are from the start more or less likely to remit than those who do not enter treatment.

Why was the substance's legal status strongly related to its associated remission rate? For instance, the 'half-life' (by when 50% of people were in remission) of alcohol dependence was about four times that of cocaine. The simplest explanation is that alcohol is legal and therefore more available. However, during Prohibition, when alcohol too was illegal, rates of drinking eventually crept back up to about 70% of their former level, suggesting that even if cocaine were legal, dependence on alcohol might still be more persistent than on cocaine.

FINDINGS In a freely available article the author has expanded what he sees as the implications of these and other findings. Foremost is that they are at odds with 'brain disease' and similar medical models of addiction which assume that (in the words of the US government's National Institute on Drug Abuse) "drugs change the brain to foster compulsive drug abuse ... [which] if left untreated, can last a lifetime". If this was the case, more drug use over a longer period would equal more brain changes and a deeper addiction harder to extricate from, yet this is not what the data show. After many years since starting dependent use, someone is just as likely to stop being dependent as after just a few years.

For the author the model which better fits the data is that addiction is the result of the same preferences which in everyday life lead people to prioritise short-term and easy-to-reach ('low-hanging fruit') rewards over broader and longer-term benefits, for example, eating sweets or lounging on the sofa instead of gaining broader and longer term health benefits through healthy eating and exercise. One way people change these patterns is through processes which lead them to prioritise longer term and broader gains such as the welfare of their children or the respect of their partners and parents. This can result in abrupt changes for the better – the opposite of 'falling of the wagon'. Another way to understand a tendency to all or nothing in post-dependence drinking is when these are at a high level, relatively stable risk factors mean that small changes in one's current circumstances precipitate large changes in drinking.

The article challenges influential and widely accepted visions of addiction and remission, and the common sense view that the longer a habit continues, the deeper the rut it forms in the individual's life. But it remains possible that longer dependence careers are harder (or easier) to *more completely* extricate oneself from, and/or to do so in a way which lasts, and the analysis could not be sure that what looked like remission was not simply switching dependence between drugs. Also, compared to the previous system, the diagnostic system on which the 'invariance of remission rate' finding was based probably narrowed in on the most high risk drug users. Their chances of remission perhaps had less to do with the ingraining of a habit over the years than with their family histories, personalities, and other relatively unchanging features of their make-ups and environments. A different diagnostic system and a different way of defining remission might not have produced the invariance finding. The findings on black versus white Americans suggest also that remission rates depend on socioeconomic factors; sampled at another period in the USA's economic cycles or in respect of drugs used predominantly by more or less advantaged sections of the population, remission rates too might differ, and look more or less like the chronic disease model. These comments are elaborated on in the following text.

Diagnostic system affects remission rate

Much in this analysis depends on the definitions used in the four national surveys. Notably the first two used a version of the diagnostic criteria (DSM-III) which registered past or present dependence when the respondent recalled experiencing at least three symptoms of dependence at some point, but not necessarily concurrently. They may have experienced withdrawal symptoms one year, often taken more of the substance than intended the next, and five years later repeatedly but unsuccessfully tried to cut their consumption.

This was changed in the next version, which required respondents to have experienced at least three symptoms *within the same 12-month period*. Together with other variations, it meant that appreciably fewer people were now diagnosed as dependent. In respect of drinking, the argument has been made that many of the drinkers who under the previous system would have counted as dependent are little different from the more restricted set counted by the new version, and that excluding them (some also escaped classification as 'abusing' alcohol) from disorder diagnoses was incompatible with the severity of their current drinking and other symptoms. However, on average the drinking and related problems of people who had experienced at least three symptoms in the same 12-month period were more severe than those who had experienced these symptoms in different years, and more had alcoholic mothers and fathers.

For illegal drugs too, change to requiring 12-month clustering of symptoms may have narrowed in on the most dependent and highest risk users, perhaps those whose vulnerability to dependence was most strongly related to unchanging or relatively unchanging features of their family histories, genetic make-ups, personalities, or of their environments, and least related to the accretion of habit over the years. If so it would help explain why their remission rates too remained constant regardless of the number of years since the onset of dependence.

Requiring 12-month clustering of symptoms also meant that now the states of being dependent at some time, and of being dependent in the last 12 months, were judged according to the same criteria. For both, the symptoms had to cluster in a 12-month period. In the first two surveys, someone could still be experiencing one or two of the symptoms which led them to be diagnosed as dependent at some time, yet not be diagnosed as dependent in the last 12 months. In turn this meant that remission – the *absence* of dependence in the last 12 months – was assessed in a different way to the past *presence* of the same state. People who tended to experience different symptoms of dependence sequentially rather than all together would now be declared remitted, though exactly the same pattern of symptoms would lead them to declared dependent in the past.

Was recovery really as likely after long as short dependence careers?

What the previous section means is that the last two national surveys benefited from a diagnostic system which judged the presence and absence of dependence by the same criteria, that they may have missed many people with very severe drinking or drug problems, but those they did identify were probably on average at the severest end of the continuum of substance use and related problems. One of these was the NESARC survey from which the featured article deduced its key finding – that no matter how long since someone became dependent, the chance that they will remit remains the same.

Specifically, what the review found remains invariant is the chances that someone will for the past 12 months have dropped below experiencing three or more dependence symptoms together in respect of the same drug. From the NESARC survey, it is known for alcohol that many will still be consuming heavily, experiencing symptoms of dependence such as withdrawal and compulsive use, and suffering poor physical and mental health (1 2). Had the remission line been drawn elsewhere, the rate might no longer have been invariant. For example, if remission had been defined as non-problem moderate use or abstinence (as commonly in NESARC reports on drinking; 1 2 3 4), perhaps this is more likely to be achieved after a short dependent phase during early adulthood when family and occupational obligations enforce a change, than after decades of heavy substance use.

It is also at least theoretically possible that 'remission' may partly reflect the lack of noticeable change or struggle as with the years dependence becomes more deeply embedded and dominant in one's life, and the change processes probed by some diagnostic questions cease to be live issues – not a sign of recovery, but of the lack such a prospect and the narrowing of life to substance use. For example, having plateaued in their use levels, long-term dependent users may no longer (or not for the past 12 months) have found themselves needing to take more of the drug to feel the desired effects, or taking more than they intended. Perhaps too in the past they had tried unsuccessfully to stop using, or had at least persistently wanted to, but now no longer tried or even wanted to. Ensuring a steady supply of drink or drugs they made no attempt to interrupt would minimise experience of withdrawal. They may also have no important interests and activities left to sacrifice to their dependence – all among the symptoms used to diagnose dependence.

Some findings on alcohol from NESARC are consistent with this possibility. In the three years between the first interview and a re-interview, the dependence symptoms which fell away most often and most consistently across different types of drinkers were "taking alcohol often in larger amounts or over a longer period than was intended", "a persistent desire or unsuccessful efforts to cut down or control use", and withdrawal.

The key 'invariance of remission rate' finding derived from data which did not show whether the user had simply become dependent on another drug. Within the illegal drugs and medicines on which the analysis focused, this seemed uncommon, because the *total* remission rate was so high. But it seems more than possible that some who matured out of illegal drug use instead took up heavy drinking, in social and legal terms, a dependence easier to live with as an adult.

The relevant remission rate data also comes with no indication of the length of the remission, other than it must have lasted at least a year. It remains possible that early remitters had more sustained remissions than later remitters. In this scenario, addiction *would* become more embedded the longer it lasted – undermining the conclusions the author drew from the data – but this would be signified by the chances of a *long-lasting* remission, rather than remission as such.

There is reason to believe this may have been the case. As the author observes, typically dependence on illegal drugs starts young. For any given age group, it means that a shorter time since becoming dependent entails on average a longer-lasting remission, as counted by the NESARC survey from which rate invariance was deduced. Imagine, for example, two sets of 100 people who became dependent on cannabis aged 20. Aged 50 they were interviewed by NESARC. The first set had a five-year dependence career before finally remitting, the second, 28 years. The same proportion of both sets may have remitted, but for the former this remission must have lasted about 25 years, for the second, one or two. Given a similar age of onset, in order for remission rates to be invariant with the length of a dependence career, people with shorter careers must at the time of the survey have sustained their remission for longer.

The authors of the NESARC-based analysis on which the featured review largely relies warn that "the irregular course of addictions punctuated by remissions and relapses" mean the high remission rates they found should be treated with caution; they may signify a break in rather than an end to dependence. If remission becomes more embedded with time (as in NESARC it seemed to for drinking), the featured review's findings are compatible with extended dependence careers being punctuated by relatively short-lived breaks, while shorter careers are easier to truly recover from in the sense of a lasting change in lifestyle which completely precludes relapse, or at least does so for an extended period.

While these considerations raise questions over the invariance hypothesis, they do not definitively invalidate it. If it is a valid account of remission, a model elaborated for drinking based on cusp catastrophe theory offers one way to understand the finding (1 2). For drinking (and the same could apply to other drugs), the model predicts that people with a high predisposition to dependent substance use will tend to the extremes of heavy use and abstinence or near abstinence, and can 'flip' between these states in response to small changes in current risk factors such as mood and confidence in one's ability to control substance use. Such a model provides a mathematical account of why relapse and recovery rates may stay constant; if predisposing factors such as family history of alcoholism, a high tendency to dependence and a poor environment remain constant, then the individual remains reactive to small changes in mood or environment, no matter how long they have been dependent or how long in remission.

Treatment's impact

In respect of dependence on alcohol, some findings from the NESARC survey are consistent with formal treatment promoting recovery characterised by abstinence or low-risk drinking and no symptoms of abuse or dependence, but another and perhaps more reliable analysis found no such association. Both however found that when treatment had been accompanied by attendance at 12-step mutual aid groups, recovery was more likely – especially abstinent recovery. These analyses could not however disentangle the possible effects of the motivation and conditions which drive someone to seek help, from the effect of actually receiving that help.

Complicating the picture is the fact in this survey, the most severely affected and multiply comorbid drinkers with many years of dependence behind them were far more likely to seek treatment than less severely affected types of dependent drinkers. Despite seeking help, they were by a large margin the ones most likely to still be dependent when the survey was repeated three years later.

What about heroin and other opiates?

A notable omission from the illicit drugs included in the featured review was heroin and other opiates. Fortunately these were the subject of the greatest number of relevant studies in another review of follow-up studies of remission from dependence on amphetamine, cannabis, cocaine or opiate-type drugs. It included only studies of general populations or people who entered treatment in the normal way rather than enrolling in treatment trials.

Across the ten studies relevant to opiate-type drugs, every year on average between 22% and 9% of people were either abstinent or no longer dependent; the higher figure is the average of the proportions remitted among people who could be followed up, while the lower estimate includes cases who could not be followed and assumes they are still dependent. Generally the subjects were patients in treatment. Based mainly on patients in treatment, corresponding figures for cocaine were between 14% and 5%. The single study (from the USA) of a general population sample of cocaine-dependent people found that 39% had remitted four years after initially surveyed. For cannabis, the estimate was 17% per annum based on general population surveys and assuming people not followed up were still dependent.

In accordance with the featured review, such figures imply that within 10 years most dependent users of these drugs will no longer be dependent and may have entirely ceased use.

Related studies

The NESARC-based analysis on which the featured review largely relies has also been analysed for the Effectiveness Bank. The authors' broad conclusions were that the vast majority of people in the USA once dependent on nicotine, alcohol, cannabis or cocaine stop being dependent at some point in their lives, and this happens after fewer years for cannabis or cocaine than for nicotine or alcohol. Black Americans stay dependent longer on nicotine and cocaine than white Americans, and the probabilities of remission are associated with the social and psychological characteristics of the individual and also their dependence on other substances. The national surveys on which the featured review was largely based are included in a synthesis of hundreds of studies analysed for the Effectiveness Bank which concluded that "Recovery is not an aberration achieved by a small and morally enlightened minority of addicted people. If there is a natural developmental momentum within the course of [these] problems, it is toward remission and recovery". Both documents echo the featured review's findings that remission from dependence on illegal drugs is the norm.

Thanks to Shaun Shelly of Hope House in the Cape Town area of South Africa for bringing this paper to our attention, and for their comments on this entry in draft to review author Gene Heyman of Boston College in Chestnut Hill USA, and to James Bell of the National Addiction Centre in London. Commentators bear no responsibility for the text including the interpretations and any remaining errors.

Last revised 28 October 2013. First uploaded 15 October 2013

Top 10 most closely related documents on this site. For more try a **subject** or **free text** search

Probability and predictors of remission from life-time nicotine, alcohol, cannabis or cocaine dependence: results from the National Epidemiologic Survey on Alcohol and Related Conditions STUDY 2011

Recovery/remission from substance use disorders: an analysis of reported outcomes in 415 scientific reports, 1868–2011 REVIEW 2012

Drug treatment and recovery in 2010–11 DOCUMENT 2011

Vietnam veterans three years after Vietnam: how our study changed our view of heroin STUDY 2010

Systematic review of prospective studies investigating 'remission' from amphetamine, cannabis, cocaine or opioid dependence REVIEW 2010

Performance-based contracting within a state substance abuse treatment system: a preliminary exploration of differences in client access and client outcomes STUDY 2011

Substance misuse among young people: 2010–11 DOCUMENT 2011

Substance misuse among young people 2011–12 DOCUMENT 2012

The SUMMIT Trial: a field comparison of buprenorphine versus methadone maintenance treatment STUDY 2010

HIV infection during limited versus combined HIV prevention programs for IDUs in New York City: the importance of transmission behaviors STUDY 2010