Addiction
ADDICTION AND ITS SCIENCES
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Addiction and its sciences—philosophy

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ABSTRACT

Philosophers have been writing about addiction continually since the 1990s, and a number of much older, broader philosophical theories are of direct relevance to the study of addiction. Yet the developments in the philosophical study of addiction have seldom been incorporated into the science of addiction. In this paper I focus upon two issues in the scientific literature: the disease classification of addiction and the claim that addictive behaviour is compulsive. While each of these views is open to debate on empirical grounds, there is a long history of philosophical work which must be engaged if these claims are to be justified in a philosophical sense. I begin by showing how the conceptual work of philosophers such as Boorse and Nordenfelt can be used to critique the claim that addiction is a disease. Following this, I demonstrate how deep philosophical concepts of freedom and willpower are embedded into scientists' claims about compulsion in drug addiction. These concepts are paradoxical and difficult, and they have consumed numerous contemporary philosophers of mind, such as Audi, Arpaly, Frankfurt, Mele, Wallace and Watson, among many others. I show how problems can arise when scientists sidestep the work of these philosophers, and I explain where scientists should seek to include, and sometimes exclude, philosophical concepts. **Conclusions** Many philosophical concepts and theories can be of use to addiction science. The philosophical work must be understood and acknowledged if the science is to progress.

Keywords Addiction, compulsion, disease, philosophy.

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INTRODUCTION

Why do we study addiction? From the perspective of health-care providers, the answer is that we wish to help people to stop performing unwanted and unhealthy behaviours. If we are scientists, the answer is that we wish to explain the mechanisms involved in the generation of anomalous consumptive behaviours. Philosophers study addiction because it poses a problem for traditional philosophical models of action, in which our judgements over what we should do are supposed to have some power over our actions. Addicts frequently use drugs despite claiming that they would prefer not to use them, or that they know it would be better if they abstained. The philosophical challenge is to explain why the preferences and intentions of addicts seem to come unglued from their addictive choices. However, addiction is also a case which must fit into a broader philosophical discourse about self-control, desire, free will, agency and responsibility in non-addicted people. We want to know whether and how our desires can rob us of control or of rationality.

The answers to both the broad and narrow philosophical questions bear a profound practical relevance for addiction medicine and neuroscience as well as for philosophy. These concepts are paradoxical and difficult, and they have consumed numerous contemporary philosophers of mind, such as Audi, Arpaly, Frankfurt, Mele, Wallace and Watson, among many others. Yet psychologists, doctors and—in particular—neuroscientists seldom use these concepts in the same ways as philosophers, and only very rarely acknowledge the developments and debates in the philosophical literature. In this paper, I will sketch some of the philosophical issues surrounding addiction and explain why it is not at all unreasonable to suggest that neuroscientists understand the philosophical aspects involved in the scientific study of addiction.

ADDICTION AS A DISEASE

For decades, the orthodox view in neuroscience and psychiatry has been that addiction is a psychiatric disease [1]. In 1968 it was included in the second revision of the *Diagnostic and Statistical Manual of Mental Disorders*

(DSM), positioning it explicitly as a mental illness for the purposes of diagnosis and treatment [2].

In the 1990s, however, following new advances in neuroimaging, some of the biological mechanisms of addiction became apparent and some scientists conceptualized addiction as a disease of biological, rather than purely mental, origins. For example, in his capacity as the director of the National Institute on Drug Abuse (NIDA), Alan Leshner wrote that the reason we ought to think of addiction as a disease is that it 'is tied to changes in brain structure and function' [3]. This reasoning is echoed in the work of several other authors [4].

Heyman, Heather and Alexander, among others, have challenged the disease status of addiction on primarily empirical grounds [4–6]. However, it is the jump from changes in brain structure to disease that I wish to discuss here, for this is an area in addiction research where philosophical methods and concepts can also be of use. Disease is an excellent example of a vague, obscure concept which is none the less employed widely in making practical research and policy decisions. Philosophical accounts of disease, which attempt to clarify the concept, come in many shapes and sizes. For example, Boorse argues for a naturalistic conception of disease in which a disease must be reflected in a loss of function (relative to statistical norms) in an organ [7]. At the other end of the spectrum, Nordenfelt argues for a normative conception, which defines diseases as conditions which prevent us from meeting our 'vital goals' [8].

It is still an open question whether Boorse's view, Nordenfelt's view or some other view gives the best rendering of what we mean when we call something a disease, but none of the published accounts can support the claim that changes in brain structure and function are enough to constitute a disease. Plasticity is a normal and largely beneficial characteristic of human brains, and thus if we made 'changes in brain structure and function' a sufficient criterion for disease we would define everyone as diseased. Nevertheless, the concept of addiction as a neurobiological disease has taken hold, thanks largely to the efforts of neuroscientists, and it is now the official position of both NIDA and the World Health Organization (WHO) that addiction is a disease [9,10].

There are important practical consequences to defining something as a disease. Among other things, we do not normally hold people morally or legally responsible for the symptoms of a disease, even when the disease is self-inflicted. When the symptoms in question are behaviours, as they are in the case of addiction, we cannot hold a diseased person responsible for enacting those behaviours. Of course, the official application of the disease label has not freed addicts of moral or legal responsibility in any beneficial sense. Unlike many other diseased people, they are denied disability payments and protection against work-place discrimination under US law [11,12]. Indeed, they are jailed for drug-taking, supposedly the symptom of their disease, and their addiction provides them with no legal excuse.

Yet we view addicts as irresponsible in a way that makes them worse off. Husak has argued that recreational drug use is of value to drug users [13,14]. Mill's 'harm principle' dictates that when a person chooses to pursue some valuable good, even if their pursuing it will be hazardous, we ought to respect their liberty to do so [15]. We can only justify infringing upon this liberty if the behaviour in question infringes significantly upon the liberties of others. In other words, the harmful nature of drugs is not enough on its own to justify their prohibition. If drug use is the symptom of a disease, addicts lose their presumptive right to take drugs. The disease label transforms drug-taking from an autonomous, responsible choice into an external phenomenon, something which happens to the addict against his or her will. Using this rationale, we can justify preventing drug users from taking drugs and even forcing them to undergo treatment without worrying about infringing upon their autonomy [16].

It is hard to say, ultimately, whether we make life better or worse for addicts when we proclaim them to be diseased because of changes to the structure of their brains. However it is clear that, in so doing, we ignore an important philosophical controversy and make the claim on false grounds. It could still be true that addiction is properly thought of as a disease, but this cannot be demonstrated through arguments which ignore the philosophical literature on the nature of disease.

COMPULSIVE DRUG USE

Identifying addiction as a brain disease is just one of several means by which addicts may be identified as irresponsible for their drug use. Addicts, whether or not we say they have a disease, are often said to be characteristically 'out of control'. When we say that someone is 'out of control' or acting 'compulsively', it is more than an abstract scientific claim used to identify a disorder. Like the claim that addiction is a disease, it is a claim with extensive practical and moral repercussions. Perhaps the most important repercussion is that if a person acts truly compulsively they are excused of moral responsibility for their drug-seeking behaviour, either partially or in full.

Neurological and psychological 'evidence' for compulsion

The idea that drug use is 'compulsive' appears to enter the scientific discourse as an unchallenged observation rather than as an empirical or analytical result. Jaffe's

influential 1965 paper is often cited as the origin of this idea; Jaffe simply equates 'compulsion' with 'craving', and concludes that the cravings experienced by chronic drug users give rise to 'compulsive drug use', 'characterized by a preoccupation with the use and procurement of the drug' [17]. The same year, in an equally widely cited piece, Eddy equated drug-oriented compulsion with an 'overpowering desire' for the drug [18]. By the mid-1990s the orthodox view was that drug addicts, in addition to experiencing the physiological symptoms of tolerance and withdrawal, would also experience 'compulsive' drug use. In the diagnostic manuals used by psychiatrists, drug-oriented compulsion is identified and understood in terms of its behavioural and experiential correlates—a repeated failure to regulate drug use, drug use in excess of the user's intentions and so forth [19,20]. Today, the idea that drug users use compulsively is thoroughly entrenched in the science of addiction. Stephen Hyman, for example, opens his paper by claiming that 'addiction is defined as compulsive drug use despite negative consequences', even though his specific claim is, more modestly, that drug addicts come to value drugs more than they should [21]. Along similar lines, Modell's study influentially defines drug craving as involving 'obsessive' thoughts and 'compulsive' behaviour [22].

Since the 1960s, the claim that addictive drug-taking is compulsive has been a matter of definition, but there is no exact agreement upon what this means. It appears that addictive behaviours have been defined as compulsive for four distinct reasons: first, addicts appear to act compulsively because addicts appear to be insensitive to the costs of their drug use. Secondly, they appear compulsive because they regret and fail to reduce their drug use. Thirdly, they appear compulsive because they report feeling strong desires which they feel unable to control. Finally, neuroscientists have claimed that addicts behave compulsively because their actions have identifiable neurological processes as their root cause. The scientific and factual basis of these claims has been challenged by a vocal minority in the scientific and popular literature. John Davies, for example, has questioned the significance of behavioural evidence using animals [23]. Stanton Peele has spent years highlighting the natural recovery of drug addicts [24]; but the claim that addicts behave compulsively is also open to challenge on philosophical grounds. None of the four reasons I have identified would be considered uncontroversial proof of compulsion within the philosophical discourse.

Philosophers have long been concerned with the problems around the concept of what it takes for a person to act compulsively and how compulsion can reduce responsibility. These sorts of problems are live issues in the philosophical literature which cannot, for the most part, be solved or avoided simply by identifying the neural correlates of a behaviour that appears outwardly 'compulsive' or 'intentional', or by pointing to the fact that addicted people frequently attempt (often unsuccessfully) to reduce or regulate their drug use. In what remains of this paper, I will try to show how consideration of the relevant philosophy is required, in order to show that addicts behave compulsively, on each of the four rationales found in the scientific literature.

Compulsion as evidenced by insensitivity to costs

One piece of neuropsychological evidence used to confirm the compulsivity of addictive drug use is 'price inelasticity'. That is, as an animal becomes more habituated to drug use, it seems to be willing to do more and more work for the same dose of drugs; it will accept greater punishments for drug-taking without stopping [25]. This is apparently mirrored in the behaviour of human addicts, who suffer greater and greater costs to their health, happiness and freedom as they increase their drug use. Sometimes the phenomenon is described as insensitivity to cost, and at other times it is described as an 'overvaluation' of the drug-related pleasures [26]. Either way, this change in sensitivity to cost and benefit is cited frequently in the science as an essential aspect of the 'compulsive' nature of addictive drug use [27].

In the philosophical literature, too, such insensitivity to costs (or hypersensitivity to benefit) is sometimes cited as evidence that a person acts in a compulsive or 'unfree' manner, but the philosophical case is significantly more demanding. To assume that increasing insensitivity to cost represents a loss of control requires a prior assumption, that the 'correct' valuation of drugs is absolute and unchanging. However, real human beings change their valuations of goods constantly. A drug, therefore, may simply become more valuable to the addict as their desires for it grow stronger. For this reason, the philosophical literature has directed a great deal of effort to determining how a self-controlled, uncompulsive actor ought to respond to counter-incentives. For example, Fischer & Ravizza's influential account of responsibility suggests that a responsible person must be capable of altering their behaviour in response to a well-structured and sane set of counter-incentives, but it allows that certain counter-incentives (including one's health and wellbeing) can recede in significance as other goods become more salient [28].

How should we determine whether an addict is responding to the costs of drug use in a way that is well-structured and sane? It will not be enough to note that drug use is unhealthy and costly, as non-addicted people very frequently accept severe costs and harms associated with other voluntary behaviours, and their valuations of consumptive goods change very frequently. If being

addicted simply meant valuing drugs very highly, then it may be thoroughly rational and sane for an addict to accept health risks and personal suffering in the pursuit of drugs. To show that addicts are compulsive based on their reaction to the costs of their addiction, the science needs to do more than show that addicts sometimes value drugs very highly. It needs to show that addicts relate to costs and counter-incentives in a way that is structurally different and disordered, compared to a non-addict who places an extremely high value on drugs or some other good. Unless this objection can be answered by the neuroscience, the costs associated with drug use ought not to be taken as evidence that drug use is compulsive.

Compulsion evidenced by regret

While it is true that addicts often state that they regret the consequences of their drug use and wish to reduce their consumption, and while it is true that they frequently make failed attempts to reduce their drug use, neither of these facts is enough to establish that addictive behaviours are compulsive rather than merely weak-willed, as non-addicted people engage very frequently in weak-willed behaviours which are harmful, regrettable and unplanned. In the philosophical study of action, weak-willed actions are defined as those which run contrary to an agent's better judgement. The study of weakness of will is one of the oldest topics in philosophy—some 2400 years ago, Plato struggled with the problem of how a person could choose willingly to pursue bad or regrettable outcomes [29]. This problem is still undergoing vigorous debate in the current philosophical literature, because it is not clear whether weak-willed behaviours are chosen freely or whether they are the symptom of a loss of self-control.

Among modern philosophers, it is argued frequently that we succumb to weak-willed actions voluntarily and freely [29]. If this view is correct, then the fact that an addict regrets using drugs, or that they judge it unwise to use them, does not provide us with evidence that their drug-taking is compulsive, or even that it represents some lesser loss of control. Similarly, the addict's failed resolutions to abstain from drugs have been taken as evidence of diminished responsibility by some philosophers [30], but certainly not by all. Most philosophers have taken the view that weak-willed choices, in general, are irrational or imprudent choices, but that they are not by themselves evidence of a lost capacity for making rational choices. To take one example, Donald Davidson thought that when we act in a weak-willed way it is because we have mistakenly judged it best to do so, failing to take into account the good reasons for resisting temptation [31]. Others, such as Audi and Arpaly, have rejected this view, arguing that an action can be rational even if we judge it not to be worthwhile [32,33]. For all three, however, an addict's weak-willed choices are not enough to establish that they lack the capacity for rationality. On these accounts, we can make these irrational weak-willed choices freely and deliberately, and we can hold people responsible for making these kinds of deliberately irrational choices. Weak-willed actors might just be 'lazy' or 'reckless' on these views, and are certainly not compulsive in any sense. Hence, in order to establish that addicts act compulsively in a way that excuses them of responsibility, it will never be enough to say that drug-taking is irrational or regrettable; we must also show that an addict is incapable of rational behaviour when it comes to drugs. To be sure, some arguments have been put forward by both philosophers and scientists on this account and I will review several of them below, but it should be clear by now that the regret of addicts, and their failed resolutions to quit, are not sufficient on their own to show that addictive drug use is compulsive.

Compulsion as evidenced by neurological mechanics

Neuroscientists often appear to argue that, as we know that neurobiology underpins the addict's recurring drug-seeking behaviour, we may conclude that their behaviour is compulsive or involuntary [3,34,35]. This argument could be seen to suggest that human behaviour can only be free if it has no identifiable biological cause. There was once a lively philosophical debate over whether we can be acting freely and responsibly when our actions have identifiable biological causes [36]. Today, despite some notable dissenters [37,38], the debate has settled on the side of 'compatibilism', which claims both that free will and responsibility exist, and that they are compatible with our behaviours having identifiable and irresistible biological causes at their root [39]. One of the implications of this progression in philosophical thinking is that it is no longer enough to suggest that a person acts compulsively or automatically just because the behaviour has some biological cause. It is not even enough to point out that a person's actions have biological causes which are abnormal or exotic. The important questions concern whether or not the biological causes of a person's behaviour (whether normal or abnormal) have functional characteristics which make their actions free or compulsive.

Sometimes it will be clear, in light of neuroscientific or psychological experiments, that a biological system is incapable of supporting responsible choice. The brains of acutely intoxicated addicts, for example, are not capable of making the kinds of reliable judgements that are required for moral responsibility, according to every popular philosophical account. Their actions are driven by the type of cause which limits responsibility, by popular acclaim. As far as I am aware, no scientific

experiment has yet shown that the neural mechanics that cause addictive behaviour among *non-intoxicated* addicts are less capable of supporting responsible or free action than the neural mechanics of normal behaviour. To show this, we would first need to have a clear scientific consensus on the ways in which the causes of addictive behaviour differ from the causes of non-addictive behaviour. Secondly, we would need a clear philosophical consensus that this difference was sufficient to render addicts irresponsible for their behaviour. Neuroscientists are in a position to fill in half of the puzzle.

Compulsion as evidenced by overwhelming desire

The first scientific model of addiction to emerge was an automatic model of drug use, in which the drug addict fails to control their behaviour because they have been conditioned to respond in an automatic way to drug-related cues [40]. A competing view, proposed by Tiffany and others, emerged in the 1990s: that addictive drug use was not compulsive in the sense of being automatic, but rather that it was driven by powerful drug-orientated desires, or 'cravings', which would overwhelm the addict's ability to make rational choices [41,42].

The question of whether strong desires can rob us of our self-control is one of the most long-standing and difficult questions in philosophy. At the heart of this problem is the question of whether we give in to our strongest desires voluntarily or whether we have a capacity for 'willpower' which can fail in the face of a powerful urge, making these actions involuntary. This question is not settled either in the scientific or philosophical study of self-control. A number of approaches have been explored in an attempt to settle this question. Velleman suggests that our actions always reflect our strongest desires, whether they appear 'weak'- or 'strong'-willed. Such a view implies that addicts might be completely deliberate and controlled in their drug use no matter how 'overwhelming' their desires are [43]. Feinberg, by contrast, argues that no desire is strictly irresistible, because we could resist even a very strong desire simply by 'trying harder' [44]. Finally, there are those who think that we have a finite, exhaustible capacity for overriding our desires, and that we make weak-willed choices when this capacity is exhausted by powerful desires or by prolonged resistance [45,46]. Others have attempted strategies to avoid these troublesome questions entirely. Some suggest that we do not act involuntarily when we give in to a strong desire, but that we may none the less be excused of responsibility because strong desires place us under a kind of duress that 'compels' us to satisfy those desires [47,48]. On these accounts, cravings become so unpleasant that it becomes unreasonable to expect addicts to continue to suffer them.

Finally, philosophers have suggested a range of ways in which our desires might have the capacity to limit our rationality, rendering us less responsible without making our actions compulsive. Morse, for example, suggests that addictive cravings might limit an addict's capacity for rational choice because they are distracting, making it hard to reason about what it is best to do [48]. Wallace, along related lines, suggests that powerful desires can distort our evaluative judgements, leading us to overvalue the object of our appetites relative to the evaluations we make when we are free of those desires [49]. These grounds may be sufficient to show that addictive drug use involves a diminished capacity for rational choice, and perhaps diminished responsibility, but they do not show that drug use is 'compulsive' in any meaningful sense. To simply assume that powerful cravings are enough to make a person act compulsively begs a number of important and controversial questions in philosophy. It is unclear that craving-driven 'preference reversals' are not just voluntary decisions, and furthermore it is not clear how a desire is supposed to defeat one's capacity for self-control.

This is a problem that could be solved either by philosophers or by neuroscientists, but neither group has yet succeeded in doing so. Future experiments in neuroscience may show exactly how self-control works, and how decisions can (or cannot) be overwhelmed by strong desires; such results would bring about a sea change in the philosophy of mind. By the same token, an overwhelmingly compelling philosophical theory might show that desires and decisions, properly conceived, are not the kinds of things that can be measured with an electrode or an imaging device. In the meantime, it is important that the science does not overreach itself—if it is unclear that strong desires can lead to compulsion, then scientists should refrain from suggesting that strong desires provide evidence of compulsion. Neither regret, nor strong desire, nor imprudent choices, nor changes in brain biology can establish without further argumentation that addicts behave compulsively, in the sense that these would diminish their responsibility for their choices. Scientists make a philosophical mistake with important practical and scientific ramifications when they take these things to be sufficient proof that addicts lack control.

CONCLUSIONS

When the philosophical issues are as complex and unsettled as they are around addiction it can be hard to see how the scientists and policy makers ought to make use of philosophical work, but this is a problem that cannot simply be forgotten or sidestepped.

When authors write that addiction is a disease because it involves neurological changes, or when

Hyman charges that addicts suffer compulsion because they overvalue drugs, they skip over difficult philosophical questions with real practical consequences for both the science and policy of addiction. Further, these problems are only the two most prominent ones—they form the tip of a sizeable and hazardous iceberg threatening scientific and medical progress in the study of addiction.

Philosophers may soon need to incorporate new data from the social and biological sciences into their accounts of what makes a condition a disease, or of what makes a person responsible for his actions. In turn, it is crucial that these philosophical advancements begin to be understood and incorporated into addiction science, medicine and policy.

Declaration of interests

None.

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