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THE PUZZLE OF ADDICTION

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The orthodox conception of drug addiction¹ within science and medicine is a neurobiological disease characterized by compulsive drug use despite negative consequences (cf. NIDA 2009; WHO 2004). This conception depends on three core ideas: disease, compulsion, and negative consequences. Yet the meaning of the ideas of disease and compulsion, and the significance of negative consequences, is rarely made explicit. I argue that it is only when the significance of negative consequences is appreciated that the puzzle of addiction comes clearly into view; and I suggest that there are both conceptual and empirical grounds for skepticism about the claim that addiction is a form of compulsion, and agnosticism about the claim that addiction is a neurobiological disease. Addiction is better characterized as involving choices which, while on the surface puzzling, can be explained by recognizing the multiple functions that drugs serve, and by contextualizing them in relation to a host of interacting factors, including psychiatric co-morbidity, limited socio-economic opportunities, temporally myopic decision-making, denial, and self-identity.²

The significance of negative consequences

As characterized by the orthodox conception, codified in diagnostic manuals, and of course widely known, drug addiction has severe negative consequences. These typically include the neglect of other pleasures and interests; the inability to fulfil important social and occupational roles and responsibilities; ruined relationships; the loss of social standing and community; cognitive impairment and mental health problems; physical disability and disease; and, lastly, death (cf. APA 2013; WHO 1992). In addition, addiction can be a source of terrible shame, self-hatred, and low self-worth (Flanagan 2013 and in this volume). From an ethical and public policy perspective, such pain and suffering matters straightforwardly, simply because it demands our help. However, from a theoretical perspective, negative consequences matter because they pinpoint what it is about addiction that demands explanation.

Common sense suggests that if a person knows that an action of theirs will bring about negative consequences and they are able to avoid doing it, then they do. We act, so far as we can, in our own best interests and the interests of others we care for. This is a basic folk psychological rule of thumb for explaining and predicting human action, ubiquitous in our ordinary

interaction with and understanding of each other. But this is what addicts seem not to do. Although addiction has severe negative consequences, addicts continue to use drugs. This is the puzzle of addiction: *why do addicts keep using drugs despite negative consequences?*

The orthodox conception of addiction offers a parsimonious and powerful solution to this puzzle. To use a common metaphor, the explanation is that addiction “hijacks” the brain, so that addicts lose all control and cannot help taking drugs, despite the consequences and against their best interests. Hence the puzzle of why addicts keep using drugs despite negative consequences can be straightforwardly explained. If addicts could avoid using drugs, they would – but they can’t, so they don’t. The reason is simple: they suffer from a neurobiological disease that renders use compulsive.

No doubt there are many reasons why the orthodox conception of addiction has become so dominant. These include socio-historical, political, and economic forces (Heyman 2009; Satel and Lillienfeld 2013), arguably alongside a widespread belief that framing addiction as a disease is crucial for fighting blame and stigma and getting addicts the help they need (Volkow *et al.* 2016; but for critical discussion, see Hall *et al.* 2015 and Lewis 2015; Pickard 2017b articulates how choice models can combat blame and stigma). But, from a theoretical perspective, the orthodox conception’s explanatory power is strong evidence in its support: it appears to solve the puzzle of addiction.

Compulsion

The orthodox conception’s solution to the puzzle has two parts. The first appeals to compulsion to explain use in face of negative consequences. The second appeals to neurobiological disease to explain compulsion.

Consider first the idea of compulsion. There is no agreed definition. But it is standardly understood to mean an irresistible desire: a desire so strong that it is impossible for it not to lead to action. From a folk psychological perspective, we do not ordinarily conceive of our desires as irresistible. Desires may be strong and persistent. It may require sustained effort and concentration not to act on them. Meanwhile, the alternative actions genuinely available to us may be limited and the costs of not acting may be high. As a result, our desires may be hard to resist. In addition, in many circumstances, it may be justifiable not to resist, given the balance of costs for and against acting. But this is not the same as irresistibility. Desires that are hard to resist yet leave us some power to do other than what we desire should we choose: it is possible not to act on them. This possibility is what compulsion removes. Compulsion strips a person of all choice and power to do otherwise. If the desire for drugs is irresistible, then it is impossible for addicts not to use drugs. As Carl Elliott expresses this claim, an addict “must go where the addiction leads her, because the addiction holds the leash” (Elliott 2002: 48).

The appeal to compulsion understood as irresistible desire is key to the orthodox conception’s explanation of persistent use in the face of negative consequences. Suppose that, even if the desire to use is hard to resist, it is not irresistible. Then the question of why use persists in the face of negative consequences remains. For, given the severity of these consequences, the *difficulty* of resisting – as opposed to the *impossibility* of resisting – is not by itself explanatory. We need to know more. The point is not that this cannot be explained; indeed, my aim in what follows is to explain it. The point is rather that the parsimony and power of the orthodox conception to explain the puzzle of addiction depends on an appeal to compulsion understood as irresistible desire. Softening the meaning of compulsion costs the orthodox conception its explanatory force.

Are addictive desires irresistible? Cravings are of course a central component of addiction (Auriacombe *et al.* in this volume; Robinson *et al.* in this volume). When access to drugs is

limited, the desire for them can be psychologically encompassing and distressing. When there is in addition a state of dependence, withdrawal can cause physical suffering. No one should deny that the desire to use drugs is extremely strong or minimize the very real struggle addicts face not using (for a discussion of self-control, see Henden in this volume). But there is increasing evidence that addicts are not compelled to use. They are responsive to incentives, suggesting that the desire to use is not irresistible.

Here is a brief review of the evidence. Anecdotal and first-person reports abound of addicts who are diagnosed as dependent (and so suffer withdrawal) going “cold turkey” (cf. Heyman 2009, 2013a). Large-scale epidemiological studies suggest that the majority of addicts “mature out” without clinical intervention in their late twenties and early thirties, as the responsibilities and opportunities of adulthood, such as parenthood and employment, increase (for a review of these findings see Heyman 2009 and in this volume; but for criticism of this interpretation of the data, see Anthony in this volume). Rates of use are cost-sensitive: indeed, some addicts choose to undergo withdrawal in order to decrease tolerance, thereby reducing the cost of future use (Ainslie 2000). There is increasing evidence that contingency management treatment improves abstinence and treatment-compliance, compared with standard forms of treatment such as counselling and cognitive-behavioral therapy, by offering a reward structure of alternative goods, such as modest monetary incentives and small prizes, on condition that addicts produce drug-free urine samples (Zajac *et al.* in this volume). Experimental studies show that, when given a choice between small sums of money and taking drugs then and there in a laboratory setting, addicts will often choose money over drugs (Hart *et al.* 2000; Hart 2013). Finally, since Bruce Alexander’s classic “Rat Park” experiment (Alexander *et al.* 1978, 1985), animal research on addiction has convincingly demonstrated that, although the majority of cocaine-addicted rats will escalate self-administration if offered no alternative goods, they will forego cocaine and choose alternative goods, such as sugar, saccharin, or same-sex snuggling, if these are available (Ahmed 2010; Zernig *et al.* 2013).

This evidence is strong, but we need nonetheless to be careful in drawing conclusions. There is a basic, common-sense distinction between what a person can do but won’t (because they are not motivated) and what a person wants to do but can’t (because they lack the ability) (Pickard 2012, 2017a). The evidence shows that the majority of addicts have the ability to refrain from use in many ordinary circumstances. But it does not demonstrate they have the ability in all possible circumstances. The attribution of an ability to refrain from use is consistent with there being occasions where, due to any variety of constraints, it cannot be exercised. Nor does the evidence demonstrate beyond doubt that the minority of addicts who do not respond to incentives have the ability to refrain but don’t exercise it, rather than not having the ability at all. In the absence of any clear marker between different sub-groups of addicts that would explain the difference between the majority who refrain and the minority who don’t, the evidence suggests the latter are like the former in having the ability and unlike them in not exercising it, but it does not conclusively establish this. Finally, there is the important question of how to understand conflicting self-reports from addicts, who often oscillate both intra- and inter-personally between using the language of compulsion and the language of choice (for discussion see Booth Davies 1992; Pickard 2012, 2017a). For all these reasons, caution is needed in interpreting the evidence. Nonetheless, our understanding of addiction should reflect what the evidence clearly does show, namely that, for many addicts, on many occasions, they are not compelled to use. For this reason, an appeal to compulsion understood as irresistible desire cannot be the fundamental explanation of the puzzle of persistent use despite negative consequences. It is simply not true, of too many addicts, too much of the time.

Neurobiological disease

Consider now the idea of disease. What does this mean? Our ordinary concept of disease is complicated, as well as having important social and personal consequences in our culture, including a claim to care and a removal of responsibilities in virtue of occupying “the sick role” (Parsons 1951). But, in simple terms, it typically invokes the idea of underlying pathology as the cause of observable surface-level symptoms and suffering. For example, consider the way core symptoms of Parkinson’s Disease, like tremor and slow movement, are caused by brain degeneration. With respect to addiction, the surface-level symptom is drug use, and the suffering is the negative consequences thereby caused. In characterizing addiction as a neurobiological disease, the orthodox conception explains this symptom (and hence the consequent suffering) by appeal to underlying brain pathology. Addicts use drugs because something is wrong with their brains.

The ordinary concept of disease therefore invites an appeal to compulsion because prototypical symptoms of diseases are passive occurrences – things that happen to us rather than things we do. But it is possible to reject the claim that drug use is compulsive while yet maintaining that addiction is nonetheless a neurobiological disease. Addiction could be a “disease of choice” if the neural changes and processes underlying drug choices that are found in addicts are pathological (Berridge 2017).

It is important to be clear that long-term heavy drug use has chronic effects on the brain (Zilverstand *et al.* in this volume). Drugs directly affect levels of synaptic dopamine as opposed to affecting them only indirectly via the neural states and processes sub-serving learning and reward. This can explain why cues associated with drugs trigger a desire that over-estimates their anticipated reward and hence is unusually strong in its motivational strength (Redish *et al.* 2008; see too Levy in this volume). Over time, *wanting* drugs may even come apart from *liking* them: cues may trigger cravings and strongly motivate drug-seeking and drug-taking, even though drug experience offers less pleasure than it initially did or than appears commensurate with the desire to use (Robinson *et al.* in this volume; cf. Holton and Berridge 2013). In line with what was argued above, these neural changes and processes do not establish that the desire for drugs is irresistible and use is compulsive. Rather, they explain (among other things) the intensity of the desire. But are they pathological?

The answer is that we do not yet know. Just as we cannot infer irresistibility and impossibility from descriptions of underlying neural states and processes, so too we cannot infer pathology. On the one hand, from a theoretical perspective, there is no agreed understanding in philosophy or in medicine of what makes a state or process pathological. However, this much is clear: deviation, however extreme, from the statistically average states and processes characteristic of any relevant level of explanation, whether that is personal-level, cognitive-psychological, or neurobiological, is not enough. Atypicality is neither necessary nor sufficient for pathology, as there is tremendous variation between individuals and some pathologies are near universal (cf. Boorse 1977). Rather, we need an account of *the natural or proper function* of a state or process relative to a level of explanation in order to judge whether or not the difference in question counts as pathological – not just as atypical but as *dysfunctional* relative to that level. How are the processes sub-serving learning and reward supposed to function at the neurobiological level, and does their functioning in response to drugs constitute a pathology? Although it is tempting to answer yes, the truth is that it is not possible at present to settle these questions (cf. Stephens and Graham 2009; Levy 2013; for an argument that the neural changes and processes underlying addiction represent normal learning, see Lewis 2015). On the other hand, from an empirical perspective, although our knowledge of the chronic effects of drugs on the brain is ever-increasing, we do not yet have animal or human studies directly comparing dopamine responses

in addicts caused by drug versus non-drug reward cues (e.g., sex or food), or directly comparing dopamine responses to drug cues in addicted subjects to dopamine response to non-drug reward cues in non-addicted subjects, in order to establish the difference. In other words, we do not yet know even how atypical an addicted subject's neural response to drug cues is.

The orthodox conception explains the puzzle of why addicts use drugs despite negative consequences by appeal to the claim that use is both compulsive and caused by a neurobiological disease. But the evidence is strong that use is not compulsive. And it is at present unclear whether the neural changes and processes underlying drug choices are correctly considered pathological. To avoid any possible confusion, I want to emphasise that adopting an agnostic attitude towards the claim that addiction is a *neurobiological disease* in no way entails that the cognitive and brain sciences cannot explain many aspects of addiction. They clearly can – as they can explain many aspects of the human mind and behavior more generally. Many of the factors I adduce below to solve the puzzle of addiction can be illuminated by scientific investigation. And some of the neural changes and processes underlying drug choices may ultimately prove to be pathological, as our theoretical understanding of pathology, and our empirical knowledge of the effects of drugs on the brain, increases. The point is rather that the question of disease is more delicate than the orthodox conception has acknowledged, and that, however this question is ultimately resolved, in absence of an appeal to compulsion, the orthodox conception cannot explain the puzzle of addiction.

The puzzle of addiction

Why then do addicts use drugs despite negative consequences? Given that use is not compelled, the puzzle of addiction is a puzzle of choice. We need to understand why addicts use drugs despite negative consequences *when they have choice*. To answer this question, consider first a more basic one. Why do people use drugs at all?

Strikingly, there is no puzzle at all with respect to this question. Alongside factors such as cultural expectations (Flanagan in this volume) and drug availability, drugs offer means to fulfilling many self-evidently valuable ends. Christian Muller and Gunter Schumann (2011) delineate the following seven clearly documented functions of drugs, identifying the common types of psychoactive substances and neuropharmacological mechanisms relevant to each: (1) improved social interaction; (2) facilitated mating and sexual behavior; (3) improved cognitive performance and counteracting fatigue; (4) facilitated recovery and coping with psychological stress; (5) self-medication for mental health problems; (6) sensory curiosity – expanded experiential horizons; and, finally (and in ways most self-evidently), (7) euphoria and hedonia. In addition, arguably drugs can offer socially isolated and ostracized individuals a sense of self-identity and a community to belong to (cf. Dingle *et al.* 2015; Flanagan in this volume). The relationships and reciprocal bonds between members of highly vulnerable and marginalized drug users are striking and strong (cf. Bourgois and Schonberg 2009). I discuss self-identity and community further below. The point here is that drugs not only bring pleasure but in addition serve many other valuable functions: drugs have multiple benefits.

The importance of this point is often overlooked. It is routinely emphasized in addiction research that addicts sometimes report no longer liking their drug of choice even when they persist in taking it (cf. Robinson *et al.* in this volume; Volkow *et al.* 2016); and it is no doubt the case that pleasure typically decreases as tolerance increases. Yet many, if not indeed most, addicts continue to find pleasure in drug use despite their addiction. Moreover, few if any of the other functions served by drugs are mediated by pleasure. For example, drugs can numb anxiety and other negative emotions, remove sexual and social inhibitions, counteract fatigue and stress,

relieve boredom, and provide a sense of identity and community, without inducing pleasure. In other words, whether or not pleasure persists in addiction, other valuable drug functions do (see Flanagan in this volume for first-person reports that speak to this point).

This means that there is only a puzzle surrounding use when drugs come to have significant costs, such as the severe consequences characteristic of addiction, alongside the benefits. There is nothing notable about the choice to use drugs unless the balance between costs and benefits has tipped. And, in absence of any clear underlying neurobiological pathology, there is no sharp line determining when problem use becomes addiction. Costs and benefits can only be weighed in relation to values, which differ between people, including addicts (cf. Flanagan 2016; Sinnott-Armstrong and Summers in this volume). For example, people can care less or more about the loss of relationships and social standing, as weighed against whatever functions drug use is serving. Equally, context-specific external factors, from national practices of criminalization and policing, to socio-economic status (Hammersley in this volume; Orford in this volume), can both create and protect against costs. For example, in countries where drugs are not criminalized, addicts cannot be criminally charged, convicted, and sentenced for possession; or consider how, in contrast to a poor parent, a wealthy parent may be able to protect their child from some of the consequences of their addiction by employing a live-in nanny, thereby ensuring that more of their parental responsibilities are met and their relationship with the child better preserved. The lack of a sharp line dividing addiction from problem use is reflected in diagnostic criteria (APA 2013), but it has led some theorists to claim that the negative consequences of use are ancillary as opposed to core features of addiction, and should be removed from the construct (Martin *et al.* 2014). The difficulty with this suggestion is that, given the benefits of drugs, and, again, in absence of any clear underlying neurobiological pathology, it is only when costs exceed benefits that there is any puzzle of addiction – any reason to think that something is *wrong*.

So why then do addicts choose to use drugs when doing so has costs that look from the outside to outweigh the benefits? In addition to the facts that the desire to use is strong and persistent, and drug use is habitual and so requires concentration and effort to resist (Pickard 2012), there are at least five factors that are relevant to solving the puzzle.

Self-hatred and self-harm

Some addicts may use drugs not despite negative consequences but in part because of them. The basic folk psychological rule of thumb for explaining and predicting human action that creates the puzzle of addiction in the first place – namely, that people act, so far as they can, in their own best interests and the interests of others they care for – is only a rule of thumb. Human psychology also has a self-destructive streak, often found in people from backgrounds characterized by childhood adversity and mistreatment, and who may struggle with a negative self-concept alongside a range of mental health problems associated with addiction, especially personality disorders (Maté 2009; Pickard and Pearce 2013). People with such complex needs may deliberately and directly self-harm – through self-directed violence, such as cutting and burning, but also by other means, such as sexual and other forms of risk-taking behavior, overdosing, and, arguably, drug abuse quite generally. Addicts who share this mindset may not care about themselves enough to care about the negative consequences of use – indeed, they may, consciously or unconsciously, embrace these consequences, in keeping with a self-concept as worthless and deserving of suffering. Negative consequences only offer an incentive not to use drugs *if* a person values and cares about themselves. For people who don't, the costs of drug use may to some degree count as benefits, thereby solving the puzzle.

Human misery, limited socio-economic opportunities, and poor mental health

Some addicts may choose to continue to use drugs, notwithstanding the negative consequences, because the benefits outweigh the costs given a realistic appreciation of their circumstances and the options available (Pickard 2012). As noted above, the majority of addicts “mature out” in their late twenties and early thirties. Those for whom addiction remains a chronic problem are typically people from underprivileged backgrounds who also suffer from co-morbid psychiatric disorders, particularly anxiety, mood, and personality disorders, and who of course must equally face the stigma, stress, and other problems associated with long-term poor mental health (Compton *et al.* 2007; Regier *et al.* 1990) and lack of psychosocial integration (Alexander in this volume). The “self-medication” hypothesis has long been a staple of clinical understanding of drug use (Khantzian 1985, 1997). It is common knowledge that drugs offer relief from psychological distress. This is one of the well-documented functions of drugs listed above: we “drown our sorrows”. For many chronic addicts, drugs may provide a habitual and, in the short-term, effective way of relieving suffering, caused by negative emotions alongside many other symptoms and problems typically experienced by people with mental health problems living in impoverished circumstances. Put crudely, drugs and alcohol offer a way of coping with stress, pain, and misery, when there is little possibility for genuine hope or improvement. For addicts in such circumstances there is no puzzle of addiction: the cost of abstinence is likely to be very high, while the benefits of drug use are many, and the alternative goods available or ways of relieving suffering are few.

Temporally myopic decision-making

Some addicts may choose to use drugs because, at the moment of choice, they value drugs more than they value a possible but uncertain future reward, such as improved wellbeing with respect to health, relationships, or opportunities, which is consequent on long-term abstinence. The disposition to discount the future relative to the present is a common feature of human psychology, standardly considered rational to the extent that, adjusting for the relative value of the rewards, the present reward is certain while the future reward is uncertain. But, in addition, human discount curves are typically hyperbolic, so that as a reward nears in time, its expected value increases sharply, creating shifts in preferences over time simply in response to current availability (Ainslie in this volume; cf. Heyman 2009). Addicts have steeply hyperbolic discount rates compared with the norm (Bickel and Marsch 2001; Bickel *et al.* 2014). When the drug is within immediate reach, addicts may prefer use to abstinence, even if, when the drug is not within reach, they prefer abstinence to use.

Ambivalence is characteristic of many cases of addiction. Addicts often report fluctuating desires and resolutions, alongside vacillating hope and despair, which lends a sense of psychological reality to hyperbolic discounting models. Moreover, the success of contingency management treatment (Zajac *et al.* in this volume) testifies to the role of discounting in explaining drug choices. It is remarkable that a small amount of money or a prize can provide sufficient incentive for addicts to forgo drugs, when the consequences of their addiction do not. However, the money or prize is directly and reliably available according to a fixed schedule upon the delivery of a drug-free urine sample. There is no significant delay in reward, and there is no significant uncertainty as to delivery. In comparison, the rewards of abstinence are not only temporally delayed, but also, for many addicts, extremely uncertain.

Unlike contingency management treatment rewards, the good life does not spring forth ready-made simply because an addict quits. There may be long-term physical and mental health problems that cannot be fixed simply through forgoing drugs. Equally, ruined relationships do not just snap back into shape, communities do not quickly forget, and jobs that were lost are not automatically regained. For those addicts who come from underprivileged backgrounds of poor opportunity, housing, education, and employment, opportunities do not simply materialize overnight. The creation of a life worth living requires work, and, for many addicts, the cards are stacked against them even if they kick their addiction.

Moreover, for addicts with complex needs, a “suicide option” may function to rationalize the discounting of any possible future reward consequent on a drug-free life, given the costs of abstinence in the present. The option of committing suicide can be very important to people who live with long-term psychological pain and distress, because it offers an escape that lies within their control if life becomes unbearable (Pickard 2015). In so far as drug use functions for an addict to offer relief from suffering, the cost of abstinence is very high unless and until alternative means of coping are available. The person must bear not only withdrawal and other drug-related effects of abstinence, but also the psychological pain and distress that the drugs were functioning to relieve. Hence, for addicts committed to a “suicide option”, there is a serious question whether undergoing the costs of abstinence could ever be worth it. For if life becomes too unbearable, they will take the option, ensuring that there is no possible future reward for suffering in the present, and thereby eradicating its potential relevance to present decision-making. In this respect, death is the ultimate trump.

For this reason, even if the myopic temporal horizon characteristic of addiction may be in part pathological (Verdejo-Garcia in this volume), it may also be in part rational, taking into account the life circumstances and options realistically available to many addicts (Heyman 2013b; Pickard 2017a). But, either way, discounting models can explain why addicts choose to use: the future benefits of abstinence (alongside the future costs of drug use) only provide incentive *not* to use *if* they are represented as outweighing the present benefits of drug use in decision-making. There is no puzzle of addiction if addicts are temporally myopic.

Denial

Despite the fact that addicts are notoriously prone to denial, it has received surprisingly little attention in both philosophical and scientific research on addiction. Denial is a psychological defense mechanism. It can be understood as a species of motivated belief or self-deception, whereby a person fails to believe the truth of a proposition because doing so would cause psychological pain and distress, and despite evidence in its favor that would ordinarily suffice for its acceptance (Pickard 2016). Denial can explain why addicts choose to use drugs despite negative consequences. If, despite the evidence, addicts are in denial that their drug use is causing negative consequences, then the disincentive to use that negative consequences constitute is effectively removed from their psychology, and cannot guide decision-making. There is no puzzle why drug use persists if the costs associated with it are not known, and denial blocks this knowledge.

How do people learn that their drug use has negative consequences? Although it can initially seem as if this is self-evident, it is not. One way or another, addicts have to *discover* that it does. The fact that one’s drug use is causing negative consequences is not immediately manifest in experience, but requires acquiring *causal knowledge*.

There are at least two kinds of causal knowledge relevant to addiction, typically acquired by two corresponding routes. On the one hand, there are large-scale generalizations, such as the knowledge that smoking causes disease. Acquiring knowledge of large-scale generalizations

typically depends on equally large-scale collective research efforts involving data collection and hypothesis testing and confirmation. For example, the causal link between smoking and disease was established by extensive longitudinal comparisons of smoking versus non-smoking populations, and confirmatory evidence from animal models. Once such large-scale generalizations are known in the research community, they can be disseminated to the public through channels such as the media and public education initiatives, and become available for use in individual decision-making. So, armed with the knowledge that smoking causes disease, one can choose not to smoke to reduce the risk of disease.

On the other hand, there are small-scale individual generalizations, pertaining to our own actions and their outcomes. We can often acquire this knowledge on the basis of our experience alone. If we observe an association between two events, such as an action of ours and an outcome, we can test the possibility of a causal relation, by intervening and manipulating the hypothesized cause (our action) while monitoring the effect (the outcome). For example, although we cannot discover that smoking causes disease on our own, we can potentially discover that, in our own case, smoking causes headache. We can do this by first noticing the association and then testing the hypothesis by controlling our actions: smoke a cigarette, then observe the effects; don't smoke, then observe the effects. Once this causal knowledge is acquired, it is available for use in individual decision-making, allowing us to achieve outcomes by means of interventions such as our own actions. So, armed with the knowledge that, in one's own case, smoking causes headache, one can choose not to smoke to avoid headache.

Acquiring causal knowledge of the negative consequences of drug use, and in addition putting this knowledge to work in individual decision-making, must therefore be seen as *an achievement*. With respect to large-scale generalizations such as health risks, individuals are dependent on scientific discovery and dissemination. In addition, for decision-making to be successfully guided by these generalizations, people must believe the information they are given, possess and exercise the capacity to reason probabilistically in order to assess individual risk, and overcome any tendency towards personal exceptionalism. With respect to small-scale individual generalizations, one's experience may not offer clear confirmation. Given that the causal network of relations is likely complicated and thickly interwoven, and drugs may well be contributory as opposed to single causes, interventions and manipulations may not yield knowledge. Suppose, for example, that you are an addict who opts not to use drugs on some occasion: you refrain from use. That is unlikely to mean that your problems, including those that may initially have been caused or exacerbated by drugs, disappear. For instance, the damage to your body is unlikely to be immediately reversed; the damage to your relationships is unlikely to immediately heal. Indeed, things may get worse before they get better, as life without drugs may be more of a struggle and contain more suffering than life with them. So an intervention (foregoing drugs) may not produce the effect (the disappearance of negative consequences of use) that would support the acquisition of knowledge of a causal relationship between them.

Because it is an achievement to acquire and deploy knowledge that drug use is causing negative consequences, the ground is ripe for denial to take root. There are multiple opportunities for information-processing biases and motivational and affective influences on cognition to interfere with knowledge acquisition and its use in decision-making (Pickard 2016).

Needless to say, there are also many reasons why addicts may be motivated to deny the negative consequences of drug use. These consequences are themselves frightening and upsetting. It can be shaming to acknowledge the harm one has done by one's addiction to oneself and also potentially to others one cares for (cf. Flanagan 2013). Finally, and in ways most obviously, acknowledging the negative consequences of use creates a demand, namely, *to desist from the behavior causing them* – that is, to quit drugs. Given the strength of the desire to use and the many

valuable functions drugs serve, addicts are clearly motivated to use drugs, and, as a result, to deny that there are reasons not to, namely, the negative consequences of use. But, once in denial, there is no puzzle as to why addicts choose to use despite negative consequences.³

Self-identity

Some addicts are not in denial. Rather, they self-identify as addicts. This self-identification can be part of why addicts use drugs despite negative consequences. They use because they are addicts. Who else would they be?

There are two parts to this explanation. The first invokes the consequences of self-labelling or self-categorization, whereby a person identifies themselves as a member of a social group. Labelling and categorizing people is informative. Social groups are typically defined in part by sets of beliefs and standards of behavior. These are the norms determining what it means to be a member of that kind or category and to which individuals are expected to conform in virtue of their membership. Labelling or categorizing a person as a member of a social group therefore leads others to form expectations of them, based on the defining group beliefs and behavior – the group norms (Leslie 2017). Self-labelling or self-categorizing as a member of a social group provides norms by which to self-regulate (Turner 1987; Hacking 1996). We act as members of the social groups with which we self-identify are expected to act, conforming our beliefs and behavior to group norms. This can have both an explicit and implicit dimension. Self-regulation can be deliberate and controlled, but over time may become more ingrained and automatic.

People who self-identify as addicts are therefore likely to persist in drug use almost by default – after all, that is what it is to be an addict. However, this may be further compounded if they view addiction according to the orthodox conception, as a neurobiological disease of compulsion. If addicts think of themselves as powerless over their desire to use, then the possibility of not using is unlikely to be considered let alone pursued – we cannot rationally aim to do the impossible (Pickard 2012).

Self-categorization can have consequences for people's beliefs and behavior whether or not the self-identity it provides offers a positive sense of self. Addiction can be experienced as an *identity loss* – as destructive of all that was meaningful in life before drugs dominated (Mackintosh and King 2012; Flanagan in this volume). In such cases, recovery often involves rediscovering a past self that addiction has “spoiled” (Goffman 1963). But it is important to recognize that addiction can also be experienced as an *identity gain* (Dingle *et al.* 2015). This is the second part of the explanation.

As noted above, drug user communities can offer individuals a sense of self-identity and belonging, when they are otherwise socially isolated and ostracized. Self-identifying as a member of a social group does not only provide group norms by which to self-regulate. It can also provide a positive sense of self if one values the social group with which one identifies (Tajfel 1982; cf. Becker 1963). If one's self-esteem is derived largely from membership in a social group, one is all the more motivated to conform to its norms, on pain of rejection from the group and the loss of self-identity and self-worth this would engender. In this respect, drug use may represent an identity gain in so far as it brings meaning and community that is otherwise lacking into a person's life and so has genuine value, while it is quitting drugs that, at least initially, represents the identity loss.⁴ In such cases, recovery requires fashioning what we might think of as an “aspirational” self (Dingle *et al.* 2015) – facing the question of who, if not an addict, one will be. This may be one of the many reasons why abstinence is aided by membership of recovery support groups (Buckingham *et al.* 2013). These can help to create and sustain a positive new self-identity, based on identification with group norms that do not support drug

use, together with the value of peer acceptance, positive regard, and belonging that comes with group membership.

Hence addicts may continue to use despite negative consequences not only because they self-identify as addicts, but, in addition, because this self-identification is of value. It can provide a positive sense of self and a community of rich and complicated relationships – never mind a set of daily routines and structure. Without this self-identification, addicts may not know who they would be.

Conclusion

The puzzle of addiction is a puzzle of choice. Why do addicts choose to use drugs when doing so has costs that look from the outside to outweigh the benefits? We can solve the puzzle by recognising the multiple functions that drugs serve, and contextualizing them in relation to factors including, but not necessarily limited to, psychiatric co-morbidity, limited socio-economic opportunities, temporally myopic decision-making, denial, and self-identity. In other words, there is no single and unified explanation of addiction. All addicts may have a strong and persistent desire to use drugs, but people make choices relative to the psychological and socio-economic conditions they find themselves in, which are vastly diverse. Many addicts use drugs to gain relief from suffering, misery, and chronic mental health problems, especially when they face limited socio-economic opportunities and have no real alternative means for addressing these needs. They may feel hopeless and despairing for many reasons, including but not limited to their addiction, and so do not look towards the future when acting but remain focused only on the present. They may be in denial that they have a problem. They may feel lonely and lost without the identity and structure that drug use and the social bonds of a drug community can provide. Recognizing the multiple functions served by drugs and the need to contextualize drug choices reveals how some of the benefits of consumption may be hidden to us from the outside, as well as how some of the costs of consumption may be hidden to addicts from the inside. To understand addiction, we need to move beyond the orthodox conception of it as a neurobiological disease of compulsion, and acknowledge the importance of these many, diverse factors. To address it, we need to change them.

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Notes

- 1 I include alcohol as well as criminalized and pharmaceutical psychoactive substances open to abuse in the referent of the term “drugs.”
- 2 Although my focus in this chapter is confined to drug addiction, the framework presented is potentially explanatory of behavioral addictions, despite the differences between them.
- 3 For a more detailed discussion of the nature of denial and its role in addiction see Pickard 2016 and Pickard and Ahmed 2016.
- 4 As an illustration, consider this self-report from a recovered addict: “Just as a person can feel loss of identity when they lose a long-standing job, or their children have grown and left home, it is also very common, I believe, to feel loss of identity when recovering from a drug-addicted lifestyle . . . I had established myself as a druggie. My friends and family knew me as such, and in a way I was proud of my varied life experiences and my street-smarts. I’d had an older boyfriend who had introduced me to the drug scene, and who I learnt a lot of drug-taking practices from. I took pride in the fact that I knew

more about drug taking than most my own age . . . At age 18 I already knew how to cook and filter different drugs for IV use, and how to prepare poppies to extract the opium, I knew dosages and strengths for illicit use of prescription meds, I knew all sorts about scoring and smoking dope and lots of quirky little tricks for increasing your buzz . . . Seeing as I'd not done much else with myself over those formative years of early adulthood, I didn't have a heck of a lot else going on with my sense of identity . . . I began to leave my drug identity behind, but felt like I didn't have much else to equate myself with, there was a real void . . . I felt not so much like I missed the druggie lifestyle, but that I was starting to lose my grip on who I was, and was finding it hard to function." From www.stuff.co.nz/stuff-nation/assignments/how-have-drugs-affected-your-life/9513619/Drugs-were-the-only-life-I-knew, quoted in McConnell (2016), who offers a discussion of self-narrative in addiction complementary to the analysis of self-identity presented here.

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