

# Addiction, agency and affects – philosophical perspectives

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## ABSTRACT

**AIMS** – In the recent neuroscientific research addiction has been defined as a brain disease in which the addict's brain is "hijacked". The research indicates how the addictive cravings function in the brain's reward system. At the same time growing support has emerged to a view of addiction as a matter of choice. This viewpoint claims that those with addiction lack either willpower or the moral capacity to make the right decisions. In this article, we problematise these two models and argue that neither of them succeeds in providing successful and adequate means of tackling personal problems associated with agency and responsibility in relation to addiction. **METHODS** – The article uses means of social ethics and empirically informed analytical philosophy. **RESULTS** – After showing that the two prominent models are not sufficient in capturing the problematique of addictive behaviour, we propose a new approach called *the affective choice model*. **CONCLUSIONS** – As the disease model and the choice model fall short, we illustrate why the affective choice model is more capable of capturing the problematique of addicts' agency than the existing models are. **KEY WORDS** – addiction, disease model, choice model, agency, affect

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## Introduction

Depending on the field, the phenomenon of addiction has been the focus of interest from intrapersonal and social perspectives. Neurosciences are increasingly focused on finding the neural mechanisms characteristic of addiction, while social sciences look for the social mechanisms and factors constituting and behind the addicts' problems. On the spectrum between these two modes of explanation, one can find a myriad of models on addiction (see

West, 2006). This article identifies two prominent views that present addiction in fundamental opposition to each other. These views as such are not committed to any specific field of study in particular, but can both be promoted in various disciplines. They are the so-called disease model and the choice model of addiction. Roughly, the disease model of addiction portrays the addict as a victim of disease thus lacking control required for respon-

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sible agency, whereas the choice model of addiction views addicts as agents making more or less rational choices.<sup>1</sup>

The first part of the article introduces the disease view and the choice view of addiction in more detail. It places the debate between these theories into a societal context that involves the interests of those who advance certain viewpoints, both in the scientific study and in the treatment of addictive behaviours (Russell, Davies & Hunter, 2011). We highlight the influence of professional interests and particular research agendas on theory formation by contrasting the extent to which addicts are seen as responsible for their addictive behaviour and/or recovery in the two models of addiction.

In the second part of the article a conceptual analysis illustrates how the disease view faces serious problems and that the choice model falls short of capturing the problems addicts face in their agency. The analysis shows how addicts' agency and action is conceptualised in both of the models in terms of control (or its lack).<sup>2</sup> We argue that also in light of recent neuroscientific research on addictive cravings, addicts do have the kind of control over their addictive action required for responsible agency over that action. The disease model is thus rejected. However, we acknowledge that the notion of control used here is problematic in conceptualising addictive action and capturing the difficulty of addicts' action.<sup>3</sup> It seems to lead to implausible views on their responsibility. This, in turn, gives reason to reject the simplified choice model too.

In the last part of the article we propose a feature to the choice model that succeeds in capturing the relevant char-

acteristic of addiction, namely affective motivation. Addictive cravings are strong desires whose objects and motives are affective states. Addicts illustrate this in their behaviour in seeking hedonically positive (exciting and/or stimulating) affective states by means of substance abuse or addictive behaviours while the strength and compelling nature of these desires emerges in part from the hedonically negative affective states in which addicts find themselves, due to personal problems or as the result of withdrawal symptoms. This Janus-faced affectivity of addictive desires explains their power of reversing an addict's preferences in favour of addictive behaviour. Cognitive distortions motivated by the need to experience positive affects serve the same function by rationalising addictive choices from the agent's point of view. This phenomenon is more clearly visible in gambling than in any other addiction and therefore our discussion of the affective choice model uses gambling as an example.<sup>4</sup>

In conclusion, we argue that the two existing models of addiction fail to capture the problems associated with addicts' agency in an adequate manner, whereas our affective choice model succeeds in this task.<sup>5</sup>

### **The debate between the disease and choice model of addiction**

The medical concept of disease has been disputed mainly by those advancing the role of choice in addiction.<sup>6</sup> The difficulty in evaluating claims and viewpoints advanced by both parties is that many of those who participate in the discussion (therapists, researchers, policy makers) have either fiscal interests or a strong, often

preconceived and thus mostly ideological, personal opinion about the status of the disease model. Neuroscientific research literature, in particular, often advances the view that addiction is a chronic medical illness (Hyman & Malenka, 2001; Gutman, 2006; Kincaid & Sullivan, 2010).

The disease model treats addiction as a brain disease in which the addict's brain has been "hijacked". The research indicates how the addictive cravings function in the brain's rewards system. The proponents of the disease view argue that these changes in the brain cause the hijacking (Leshner, 2005; Hyman, 2007; Ross, Sharp, Vuchinich, & Spurrett, 2008). They also suggest that addiction develops gradually and is a progressing illness, acquired through consumption of a particular substance depending on certain contingent matters including genetic factors, and is less a matter of personal choice. The disease model is often used in relation to the development of certain lifestyle-related somatic diseases. These include Type II diabetes, hypertension and asthma in which individual choice and the way of perceiving the disease is similar, both conceptually and phenomenologically (Sellman, 2009, p. 8). More recently, neurobiological research that promotes the disease model has introduced the "brain hijacking" metaphor for addiction. It can, for instance, be argued that "drugs may capture control of brain mechanisms that control motivations and emotions" (Russell et al., 2011, p. 152). In the same vein, it has been suggested that to a certain extent antecedent "neurophysiological forces" work in addicts' brains, affecting motivation, even before they enter situations involving either addictive substance or behaviour ca-

pable of producing gratification (Koob & Moal, 2008).

In contrast to the disease model, the choice model of addiction starts from the assumption that all people make choices in their lives, including those that may lead to addictive behaviour (Heyman, 2009; Foddy & Savulescu, 2010; Ainslie, 2011). There is no need to presuppose the existence of a somatic or psychosomatic disease in order to explain the nature of addictive behaviour, as the theoretical framework used to explain the nature and scope of choice suffices for the purpose. In fact, according to this view, addiction is not much more than "a latent property of the rules of choice" (Heyman, 2010, p. 159). The choice model does not claim that the addicted person actively chooses to become an addict to begin with. Nevertheless, due to the consequent choices the person can be labelled "as if addicted". A paradigmatic example is drug addiction that is understood as "repeated failures to refrain from drug use despite prior resolutions to do so" (Heather, 1998, p. 3). Although supporters of the choice model often exploit theories of economics, they do not deny the role of medical symptoms in the forms of addictive behaviours. In many cases the addicts have problems of medical nature, but this is not enough to conclude that biological factors lead to addiction: the logic of choice is capable of explaining it, as those with addiction lack either willpower or the moral capacity to make the right decisions or their rationality is deficient.<sup>7</sup> This reference to rationality usually implies defect in rationality that concerns the goals of the agent rather than merely instrumental, means-to-an-end kind of, rationality.

## The personal responsibility of addicts in the two models

The responsibility of addicts is an important issue with practical relevance for both theoretical views on addiction. The disease model faces an obvious challenge in this respect. Neuroscientific addiction research is often taken to support “causally reductionist ideas” that one’s responsibility of own behaviour is greatly reduced by chemical, genetic and other biological factors that underlie the abnormal condition of addiction (Kincaid & Sullivan, 2010; Steenbergh, Runyan, Daugherty, & Winger, 2012). In contrast, the choice model suggests that personal responsibility and rational choice have a far greater role in the development of addictive behaviour, or in a decision to end the consumption of addictive substance or a situation from which the individual obtains (potentially harmful) pleasure. In the disease model, the agent is not fully responsible for the development of addiction, but has an important role in the recovery through motivation and compliance to treatment.

Almost every publication on the disease model of addiction first asserts that addiction is a disease (and in most cases offers neuroscientific evidence in support of this view). However, the literature is inconsistent in the sense that it claims that the individual is responsible for discontinuing addictive behaviour and subsequent removal of addiction: motivation is in many cases a requirement to enter the substance abuse treatment facilities. At the same time, addiction is seen as an involuntary disease. This point can be illustrated by comparing addiction to somatic diseases in which there is no demand for motivation to recover or get better in order

to obtain care at the point of access to the health care system. Even if we accept the congruence between addiction and somatic diseases, even many lifestyle diseases may turn out to be curable unlike previously suggested. For example, there are indications that Type II diabetes may in some cases be reversed within only a few months, suggesting that a total eradication in the future may be possible (Hammer et al., 2011).

It can then be argued that theoretical differences are visible in the discussion about the role of personal responsibility. It is also important to note that without invoking discussion on the credibility of the disease/choice models of addiction, the clients of different addiction treatments are willing to adopt the theoretical stance of providers towards the concept of addiction (Koski-Jännes, 2004; see also Russell et al., 2011). Thus, it has a strong relevance for the evaluation of successful treatment outcomes although to define “outcome” in the context of addiction treatment is a matter of debate itself. Basically it is about whether one sees the recovery as a result of a treatment intervention (as is the case if addiction is a disease), or more as a result of a choice (“opting out” to be an addict, or to discontinue living a life that involves addictive behaviour). This kind of polarisation of the two models suggests that we need a better understanding of addicts’ agency and addiction, as such understanding affects the ways in which people are treated for their addictions. In particular, we need a finer model of addictive behaviour in order to capture the addicts’ agency while we also acknowledge the potential suffering of addicts. A way to proceed might be that the addictive action

should not be reduced to simply an issue of choice nor to be seen as a disease.

### **Basic remarks on addiction**

The discussion has so far concerned the different models of addiction in theoretical and institutional contexts. However, in order to focus on the details of a particular model of addiction, we need a rough characterisation of the phenomenon we are interested in. Typically, addiction is seen as a long-term dispositional condition with susceptibility to particular type of desires. The overview of the two opposing models highlights the Janus-faced nature of addiction in terms of agency; the addicts seem to be compelled to act according to their addiction, while they do have some control over their action. It is evident that the way in which one understands *addiction* affects our analysis.<sup>8</sup> It is doubtful whether a rigid definition with necessary and sufficient conditions can be found; one that covers satisfactorily the phenomena involved. Therefore, we present a characterisation of addiction introduced by R. Jay Wallace in 1999 that captures features of the way in which one experiences addictive desires.<sup>9</sup> Unlike the two current prominent diagnostic manuals, WHO's ICD-10 and APA's DSM-IV, Wallace's characterisation covers behavioural addictions as well as substance addiction.

As Wallace points out, strong desires are not exclusively experienced in addiction, but one can undergo such desires in other phenomena as well. For instance, such appetitive desires as hunger fulfil these characteristics. The first characteristic is that these desires are typically experienced as unusually resilient. In other words, an addictive desire assails the agent when left

unsatisfied. This persistence seems to be detached from the agent's own deliberation concerning, for instance, the value the agent gives to satisfying the desire (Wallace, 1999, p. 624). In the context of addiction, it is easy to imagine a drug addict who needs a daily dose of the drug. If the desire is not satisfied in a certain time, the drug addict experiences withdrawal symptoms. The second characteristic concerns the experience of the desire being unusually intense. In fact, when describing these desires, people may generally depict them as cravings. The unsatisfied desire drowns out the agent's deliberative outcomes if they happen to be against the desire. The third characteristic of addictive desire is its multifaceted connection to pleasure and pain. For instance, drug addicts can be seen to act in order to achieve pleasure by getting high, but the addicts also need the drug in order to avoid painful withdrawal symptoms. The fourth characteristic concerns the susceptibility of addictive desire in the sense that it typically has a physiological basis. For instance, repeated consumption of a drug may alter the functions of transmitter substance in the addict's reward system<sup>10</sup> (Wallace, 1999). The susceptibility means that addicts' proneness to act in line with their addiction may be connected to the transformations in their brains. These changes are induced by continuous drug use. Robinson and Berridge (2008, p. 3137), for instance, discuss sensitisation in the brain that is drug-induced. This sensitisation in the brain mesocorticolimbic system attributes "incentive salience to reward associated stimuli" (Robinson & Berridge, 2008, p. 3137). Addicts' brains seem to be, then, wired up for detecting cues for activating

the addictive desire. Our elaboration on the experienced cravings and the disposition of susceptibility to those cravings is to illustrate the role they play in explaining the difficulty that the agent faces when dealing with addictive desires.<sup>11</sup>

### **The problem of disease model: control in one's action**

Being in control of one's action is constitutive of that person's agency.<sup>12</sup> If we accept, for the time being, that addiction is compulsive, a disease that the person seems to have no control over, we need an understanding of that compulsion. Motivational compulsion should be distinguished from intrapersonal physically compulsive forces such as seizures. It cannot be conceptualised similar to interpersonal physical coercion either. These two instances threatening the person's agency are distinct from the threat imposed by motivational compulsion. The difference seems to lie at least in that the agent subjected to motivational compulsion is not able wholeheartedly to resist the compulsive force as one can, for instance, an avalanche or a bouncer in a bar. Intrapersonal physical force, external physical forces of nature and successful interpersonal physical coercion all seem to take away the person's freedom; the overpowering force overrides the person in a way that does not leave room for the person to act according to her intentions.

A categorical understanding of compulsion is, therefore, not a plausible way of understanding the out-of-controlness of addicts. Nothing is forcing them in a sense that their control would be totally absent. However, an elaboration on the notion of control may provide a new way of understanding the out-of-controlness. John

Martin Fischer and Mark Ravizza (1998, p. 31) name two types of control over one's action in light of responsibility: regulative control and guidance control. The agent uses regulative control when she is able to choose from alternatives and act otherwise, while the agent does not need the ability to act otherwise, were she to use the latter, guidance control over her action. Leaving aside the metaphysical challenges of free will discussion about determinism and alternative possibilities, we are interested in seeing how addictive behaviour looks in relation to these notions.

In light of regulative control, addicts' out-of-controlness would be understood as being categorical: since the addict is out of control, she is not able to act otherwise. This form of compulsive action maintains that the agent does not literally have a choice. It may be that the addict cannot but will and judge that she should satisfy the desire and so she does. In case of unwilling addicts, moreover, no matter how the agent decides, judges or wills, she cannot but act according to the addictive desires. The agent is bypassed in a fundamental sense by the addictive desire, so it is not a question of choice in the same way as in physical compulsion with external force defeating the person. It seems clear that addiction is not this kind of case. Basically, addicts do have two alternatives available to them: to engage in their addictive action or abstain from it. It is, then, a question of choice in this sense. There is ample empirical evidence for addicts being capable of choosing and, for instance, there is literature on whether heroin addicts are able to give informed consent to trials in which they are being given heroin (see more about empirical evidence and

informed consent in Foddy & Savulescu, 2006; Levy, 2006).

### **The problem of choice model: insufficient explanatory features**

If the problem of control in addiction does not involve pure force or the strength of desire overpowering the agent and thus eradicating her alternative ways of action, the focus shifts to the addict's deliberation. The US's National Institute of Drug Abuse (2010, p. 20), for instance, states in their report that "[d]rug addiction erodes a person's -- ability to make sound decisions --". It seems that the choices addicts make do not qualify as sound decisions. We analyse the ability to make sound decisions by using the second notion of control introduced above, namely guidance control. This control is reason-responsiveness. Fischer and Ravizza (1998, p. 89) define moderate reason-responsiveness as consisting in "regular reasons-receptivity, and at least weak reasons-reactivity, of the actual sequence mechanism that leads to the action". If addiction as motivational compulsion impairs the agent's sensitivity to digest reasons and react to them, the addict is not reason-responsive enough for having control over her action and cannot be seen to have made choices concerning her action.

Addicts seem to have the first feature, reasons-receptivity, in terms of understanding the pros and cons of their addictive action. Of course, addicts could be unable to understand the facts about the harm they are causing themselves (and others) by feeding the addiction or they may be disillusioned about some false beliefs concerning their addiction. This may well be the case in some instances, but

typically addiction is not a question about the person's inability to understand facts or about disillusion. Nevertheless, addicts may be self-deceptive in some sense thinking that they can easily quit whenever they want. Having an addiction *per se* does not seem to undermine addicts' ability to understand reasons if receptivity is considered only in terms of having an addiction. Furthermore, it seems unlikely that experiencing addictive desire just suddenly demolishes one's ability to take in reasons even if the desire may dispose one to favour reasons that support the satisfaction of the desire.

As for reasons-reactivity, it may be the case that addiction lures the agent in committing actions that she would not have otherwise done. This could be done by making the reason to act in an addictive way seem more attractive than it would be in non-addicted circumstances. There have, nevertheless, been studies which show how addicts react to reasons such as price changes in the market (Levy, 2006; Foddy & Savulescu, 2006). This indicates that addicts do react to reasons. Furthermore, it can be asked that if the addictive desire provides such an overwhelming reason, how it is possible that heroin addicts may actually decide by themselves to experience withdrawal to lower their tolerance (see Ainslie, 2000, p. 80). Their decision to lower tolerance and the execution of that decision suggests that addiction contains more than addictive desires that need to be satisfied. These decisions indicate that addicts do react to reasons.

It should also be stated that it is not only in the case of addiction that certain reasons appear more attractive, maybe even irresistible, to the agent than the rest. It

seems that every action that is committed with a strong vocation, value or other strong motivation, fits to the same kind of description of not being moderately reasons-reactive. It seems odd to consider that our urge to finish this paper at the cost of being late from meetings with our families and friends is due to compulsion even if it fails to be moderately reasons-reactive. Reason-responsiveness seems to encounter problems in independently distinguishing between actions that are usually considered free and unfree (or compelled) when the motivation is so strong that other reasons are overridden (Watson, 1999, p. 9).

The choice model of addiction appears to treat addicts' choices on a par with choices made by non-addicts. This evaluation is made on the basis of rationality of the choice involved; what are the utilities of future goods in relation to each other and the agent with or without her past actions. This kind of view misses the possibility that addicts may encounter difficulty in dealing with issues concerning their addiction. If the difficulty of addicts, as we argue, lies somewhere else than in rationality, the model leaves an essential feature outside of its scope and is thus insufficient in capturing the problems of addicts' agency.

### **The motivation of addictive behaviour in light of *affective choice model***

If addicts are responsive to reasons for cessation or modification of their problematic behaviour, but nevertheless often fail to act on those reasons, then an obvious question is how to explain this failure. If the problem is not in the addicts' cognitive

abilities, it must lie in factors that weaken their ability to act on reasons that are rational or sound in a longer term without still cancelling their agency. In philosophy and psychology, such role has traditionally been given to affective states: emotions, feelings, and strong desires. Indeed, the disease view of addiction recognises the role of positive affect, substance- or activity-induced reward, as the main motive of addictive behaviour. Even so, this view undermines the psychological aspect of affect by treating it as causally superfluous in comparison to the neurophysiological and neurochemical levels on which the actual causal mechanisms of behaviour are supposed to operate (Hyman, Malenka, & Nestler, 2006; Hyman, 2007).

We believe that it is possible to give a more important motivational role to affects by focusing on their influence on the addict's decision-making. Instead of overriding an addict's capacity of voluntary choice as the disease model suggests, affect conspires with her thinking and reasoning in support of choosing addictive behaviour. This is the key idea of our *affective choice model* of addiction that identifies two main ways in which affective states motivate addictive behaviour. The first mechanism focuses on the capacity of emotions and feelings to skew an addict's cognitive and volitional perspective by influencing the parameters of rational choice. The second mechanism concerns the contribution of affect to the formation and maintenance of epistemic distortions. We claim that this interplay of affect and cognition is most conspicuous in behavioural addictions even if all addictions involve a psychological dependence to the intrinsically rewarding activity. One such



addiction is problem gambling in which cognitive distortions also play a significant role. Thus, our discussion on the second mechanism heavily relies on problem gambling.

### **Affective motivations in decision-making**

Affects are capable of influencing rational choices in at least two ways. First, anticipated positive affect raises the probability of choosing types of behaviour that yield such affect to the agent. In this way, anticipated reward motivates addictive behaviour. Second, existing negative affects such as depression, anxiety, restlessness, irritability or shame raise the expected utility of behaviours that offer the agent an escape from the present misery. In this way, psychological withdrawal symptoms and other negative affects motivate addictive behaviour, including relapses. Affects are also capable of influencing an addict's parameters of choice in ways that make substance abuse or addictive behaviour a rational choice for the agent at the moment.

George Ainslie (1992) presents a theoretical solution to the ambivalence of addicts by reference to the phenomenon of *hyperbolic discounting*. Ainslie argues that addiction need not involve weakness of the will, i.e. acting against one's own better judgment *at the time of acting* because there is a preference reversal due to the hyperbolic discounting of the future. Thus, an addict prefers the larger payoff of abstinence to the smaller payoff from substance use or addictive activity before they become available. However, since the payoff of abstinence lies in the future, it is discounted to present value at earlier times.

Since the discount function of future payoffs is hyperbolic rather than exponential in shape, it follows that the value of a smaller present payoff can exceed the value of a larger but delayed payoff when the smaller payoff becomes available (see Figure 1). Ainslie suggests that this phenomenon explains why addicts decide to have a drink, inject a shot, place a bet, and so on when these behaviours become available to them even if they sincerely prefer to abstain from these activities at earlier points of time and between their relapses. Insofar as hyperbolic discounting of the future is a hardwired feature of organisms from pigeons to humans, as Ainslie suggests, it may be pointless to deem it irrational in all cases.

We leave it open whether or not hyperbolic discounting is an adequate account of the decision-making of addicts.<sup>13</sup> Insofar as the model is correct, however, emotions, feelings, and moods seem to contribute to this kind of preference reversal in several ways. All these affective states share the tendency to narrow the subject's perspective of salience to the present situation and immediately foreseeable future. This tendency is associated with the general function of affective states and emotions in particular: to alert subjects to objects and events in their present environment that are significant to their survival, well-being or other vital concerns as well as to motivate adaptive responding to these situations. Emotions can thus be characterised as hasty evaluations of objects and events on the basis of their perceptually salient qualities. The fact that emotional evaluations may conflict with the agent's reflective and considered evaluative judgments shows that emotional

FIGURE 1

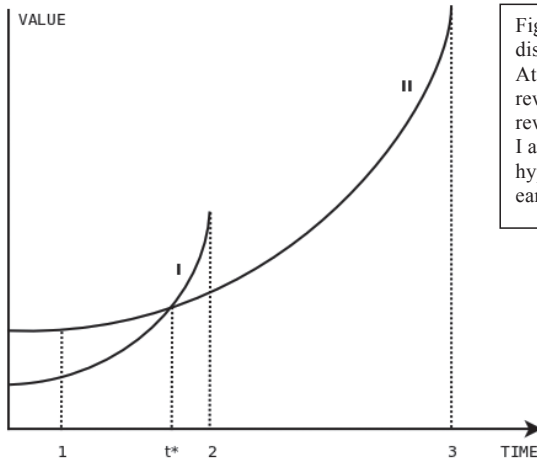


Figure 1: Preference reversal due to hyperbolic discounting. At time 1 the agent has a choice between a small reward that will be available at time 2 and a larger reward that will be available at time 3. The curves I and II show how these future rewards are hyperbolically discounted to present value at earlier times.

evaluations typically operate with a limited set of evidence. Yet the affective arousal and valence of emotions marks present situations as more important and urgent in comparison to the affectively faint and not yet present future prospects. This explains why the short-term choice with concrete, perceptually salient options often outweighs the long-term choice with abstract and hypothetical options as our strategy of decision-making; affect tips the balance between local and global frames of reference in favour of the former, adding an affective surplus to available smaller payoffs that raises their present value over the discounted value of larger future payoffs (Elster 1999b; Baumeister, DeWall, & Zhang, 2007; Gailliot & Tice 2007).

There is empirical evidence that intense affect motivates addictive behaviour by modulating information processing and decision-making. Baker and others (2004) invoke a distinction between cold and hot modes of information processing, introduced by Metcalfe and Mischell (1999) in

their account of addiction motivation. The cool system is cognitive, integrative and reflective, and it predominates when the organism operates close to an affectively neutral state. In contrast, high levels of stress and associated negative affect activate a hot information processing system that is fast and bottom-up in nature, and relatively modular in the sense of being unaffected by pre-existing declarative knowledge. The hot processing system also involves “a strong attentional bias that directs attention to stimuli or events that are associated with stress or emotional activation” (Baker, Piper, McCarthy, Majeskie, & Fiore, 2004, p. 42).

Baker and others (2004) maintain that affective incentives to addictive behaviour come mainly from withdrawal symptoms even if other stressors and negative affects may also become associated with addictive motivation. Addicts have learnt that they can alleviate and escape withdrawal by self-administration of the substance to which they are addicted, and this regula-

tion strategy may also generalise to other affective stressors as Khantzian (1997) in his self-medication model of addiction has argued. When negative affects mount, cues associated with substance use become more vivid and compelling, overriding declarative memory and controlled cognitive processes or enlisting them to the service of promoting and rationalising substance use. In this transition from cold to hot cognition, short-term hedonic goals ascend over long-term eudaemonic goals, reversing the addict's preferences in the situation.

It is important to observe that the affective rearrangement of goals need not hamper the agent's instrumental rationality in achieving her goals; indeed, addicts can be as good as other agents in this respect. Hot cognition operates at another level as it contributes to the frame-change from long to short-term goals and mutes or deranges the somatic markers whose function is to protect us from recurrent adverse choices by highlighting those choices with anticipatory negative affect (Damasio, 1994). Strong affect thus impairs the decision-making of addicts in a manner that is consistent with choice models of addiction that portray addicts as maximisers of their short-term utility. However, Baker and others' affective processing model complements the choice model by describing an affective mechanism and an adjacent type of information processing that make it so difficult for addicts to break free from this frame.

### **Affective motivations of cognitive distortions**

Emotions and feelings undermine an addict's decision-making more severely when they not merely reverse an agent's

preferences but also contribute to the formation and maintenance of irrational beliefs. Strong feelings tend to elicit a search for supporting beliefs, and emotional feelings are treated as internal evidence for the associated beliefs whose plausibility and probability estimates are liable to affectively motivated bias. This empirically well-known phenomenon is called *motivated irrationality*. "The emotional person acts like a prosecutor or a defence lawyer seeking by any means to find evidence for the belief", as Clore and Gasper (2000, p. 33) eloquently emphasise (see also Elster, 1999b). Biased and irrational beliefs are important for addicts as rationalisations and justifications of their addictive behaviours at the time of acting. Moreover, cognitive distortions motivate addictive behaviour by offering the agent *ad hoc* reasons for acting on her reversed preferences. Problem gambling provides a particularly illustrative example in this respect even if all addicts are prone to affectively motivated cognitive distortions.

Addicted gamblers are liable to several irrational beliefs concerning their activity (see Toneatto, Blitz-Miller, Calderwood, Dragonetti, & Tsanos, 1997; Ladouceur, Sylvain, Letarte, Giroux, & Jacques, 1998; Elster 1999a; Ladouceur et al., 2001; Mitrovic & Brown, 2009). They often believe that they can control game machines or learn to calculate probabilities and regularities even in games of pure chance. Control over one's own moves in the game gives rise to an illusion about the possibility to control the game itself. To support this illusion, gamblers apply such reinforcement mechanisms as the "psychology of the near-win". Here an outcome that on some logic is sufficiently close to the gam-

bler's bet is interpreted as evidence of the gambler's ability to predict the outcome and thus control the game. In games of pure chance, such as roulette, the concept of near-win is pure superstition, whereas in games that involve a mix of chance and skill, such as sports betting, near-wins show that the gambler was at least onto something. Yet even here near-wins can produce overly optimistic assessments of one's gambling skill as they are interpreted much the same way as actual wins. Gamblers do not willingly share most of these beliefs with other people because the delusiveness of those beliefs would become evident to themselves and others. In this way, problem gamblers are able to stick to their fallacious beliefs.

Dickerson and O'Connor (2006) argue that cognitive distortions serve a problem gambler's strong desire to pursue the intrinsically pleasant activity of gambling even in the face of losses. Cognitive distortions serve this desire by providing post-hoc explanations and justifications of impaired control over gambling. In order to explain and justify their loss of control to themselves as well as to others, problem gamblers try to portray their behaviour as more rational and controlled than it is. Thus, players have a systematic tendency to "ascribe their wins to the superiority of their own skills and losses to 'natural variance', 'a bad run of cards', or simply 'bad luck'" as Bjerg (2011, p. 124) remarks. In this way, players purport to take emotional credit for their wins while avoiding emotional costs of their losses. However, this strategy of emotion regulation backfires in a manner that highlights the role of emotions as motives of a gambler's cognitive distortions.

Everyone knows that winning is fun. However, it is even more fun when one can attribute the outcome to one's skill and competence in mastering the game and/or triumphing over one's adversaries, as this causal attribution allows one to take pride in one's success. This strategy of emotion regulation feeds epistemic distortions about skill and competence. However, taking emotional credit from all wins and attributing all losses to "bad luck" is a detrimental emotion regulation strategy in the long run, as it results in an appearance that chance is always against the player (Tendler, 2011). This appearance gives rise to feelings of moral indignation about unexpected or consecutive losses that also gnaw at the player's positive self-images of skill and competence, inducing feelings of shame and humiliation (Rosenthal, 1995). These negative emotions dispose players to tilting, characterised by deteriorated decision-making in gambling, loss of control over the activity, and chasing losses. Chasing is not directed merely at recouping monetary losses but also positive self-feelings by restoring a "fair balance" between wins and losses (Lesieur, 1984; Rosenthal, 1995; Rugle, 2004; Palomäki, Laakasuo, & Salmela, submitted). Unfortunately, chasing in an emotionally upset state leads to further losses which aggravate feelings of anger, humiliation and self-blame and bring on other costs; financial and social (Browne, 1989; Ricketts & Macaskill, 2004). Superstitious beliefs in the influence of Lady Luck or other metaphysical agents that are held responsible for bad luck emerge here to protect the player's positive self-images and emotions that associate with those images.

Accordingly, it seems that problem gam-

blers differ from non-problem gamblers by having more frequent and/or intense *self-focused* emotions such as pride, anger, shame and humiliation about themselves as *winners* or *losers* in addition to such *game-focused* emotions as excitement, disappointment and joy during gambling. Negative self-focused emotions are more difficult and exhaustive to regulate during play than similar game-focused emotions, as they demand either actual or symbolic undoing of the “harm” inflicted on the self. Furthermore, the self-focused emotions of problem gamblers associate with their cognitive distortions about skill and competence—either about the player’s own skills and competence, or about the role of skill and chance in the structure of the game, or both (Bjerg, 2010). These and other cognitive distortions allow players to savour positive feelings about their wins, while avoiding or suppressing negative feelings about losses. Nevertheless, the more emotional credit the player takes for her wins, the harder her losses backfire in the long run in the form of anger, humiliation and self-blame, which increase the probability of chasing losses and positive self-feelings by the means of further gambling.

### Concluding remarks

This article has tried to provide a view on addiction in terms of socio-ethically contextualised and neuroscientifically informed philosophy. It is clear that whilst discussing the context of the policies and research on addiction gives us valuable information on the interests and objectives of those agents, it does not provide us with “a correct answer” to some definitional questions on addiction. Moreover, merely by looking at the mechanisms of addiction

in the brain’s reward system does not provide answers extensively to the theoretical challenges brought about by addiction, nor does it imply that the agent’s control is undermined in the sense that the addicts are deprived of reasons to resist the addiction and responsibility for doing so.

The two models discussed here fail as such to capture the challenges in addicts’ agency when analysed in terms of control *qua* reason-responsiveness. There seems to be no clear reason why addicts would fail to fulfil the criterion for regular reason-receptivity, as addiction seems hardly characteristic of disillusion or problems of understanding in that sense. As regards “at least weak reason reactivity”, addicts seem to react to reasons in their action. They consequently appear to be reason-responsive and, in this sense, in control. They do not differ from non-addicted agents in this framework. In particular, even in the cases in which the agent’s self-control is challenged by constant craving, it should be considered that the agent is *free* to act in whichever way. Addictive desires do not incapacitate the agent.<sup>14</sup> What we want to suggest is that while the disease model is flawed, the choice model needs to account for the difficulties addicts face in their agency. Without this acknowledgement the choice model, we argue, remains insufficient. What is therefore called for is a model that captures addicts’ agency while acknowledging difficulty—that difficulty in particular which involves affects.

From the perspective of our affective choice model, addictive behaviour appears as a maladaptive means of emotion regulation. Addicts purport to escape from hedonically negative states into hedoni-

cally positive, exciting, stimulating and/or soothing, affective states by means of substance abuse or addictive behaviour, as the self-medication model of Khantzian (1997) suggests. Unfortunately, addictive behaviour is a maladaptive means of emotion regulation, as its long-term consequences almost always exceed its short-term benefits. Our affective choice model specifies the ways in which an addict's emotions and feelings conspire with her reasoning and decision-making in support of continuing addictive behaviour. When this conspiracy succeeds, the utility of consumption "now" with its immediate hedonic consequences outweighs the long-term costs for health and well-being that disappear out of sight. In this way, affective influences on reasoning and decision-making make it difficult for an addict to quit or modify her behaviour even if she could do so were she so to decide. Alternative means of emotion regulation may help an addict to modify her behaviour in light

of reasons that support abstinence, and the ability to act on those reasons renders an addict responsible for her actions. Accordingly, the talk about the compulsiveness of addiction is misleading, as it distorts the problems addicts encounter in their agency. Instead, the difficulty in addicts' agency is explainable in terms of affects and their impact on the agent's motivation.

**Declaration of Interest** None.

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## NOTES

- 1 It may be argued that the contrast between these models is too sharp and, especially, that the concept of disease is implausible. Indeed, we agree that the concept of disease would benefit from a finer analysis. Nevertheless, we do not question here the plausibility of the dichotomy but take it simply as given. An unequivocal exemplar of the existing dichotomy can be found, for instance, in the first issue of 2012 of *The Lancet* where the Director of the US National Institute on Drug Abuse Nora Volkow is quoted as saying "[a]ddiction is a disease not a choice" (Jones, 2012, p. 20).
- 2 As our anonymous reviewer points out, the concept of control is complex. We have, however, chosen the notion we are using by taking into account the context and thereby using the kind of notion that is in philosophical literature considered to be relevant in light of responsible agency, i.e. the factor on which the dichotomy rests.
- 3 The scope of the article does not allow us to deal with the notion of control in terms of self-governance, for instance. We concentrate on this notion that is determined by the difference between the two models. For recent discussion on the complexity of

- self-governance and the “true” self, see, for instance, Andreou (2012).
- 4 We assume that behavioural addictions such as gambling are addictions even if we are aware that this assumption is controversial. Recent studies have, however, explored the common neurobiological basis for substance addictions and behavioural addictions with at least some success (see Kaasinen, Halme, & Alho, 2009, p. 2075; Petry, 2006; Potenza 2006; Potenza 2009).
  - 5 As our anonymous reviewer pointed out, different models serve different purposes and may thus differ from each other. We agree that the purpose of the model obviously affects its constitution and its use should be taken into account. Our purpose is to develop a general philosophical model of addicts’ behaviour that succeeds in explaining addicts’ actual behaviour and that can be further developed and explicated for various purposes of, for instance, therapeutic nature and policies.
  - 6 The medical concept suggests lack of control required for responsibility. Of course this is not the only possible notion of the concept. However, we apply this notion because of its use in the dichotomy. For a more elaborated view on the disease concept see, for instance, Ries, Fiellin, Miller and Saitz (2009).
  - 7 Depending on the particular choice model of addiction in question, the models have different takes on what is in error, if anything, with addicts’ choices. For instance, Becker and Murphy’s (1988) rational choice theory of addiction assumes that nothing is in error, i.e. addicts act according to their stable preferences, while Ainslie (2000) suggests that a model of addiction needs to account for addicts’ changing their preferences. While the standard rational theory suffers from quite grave problems of accounting for unstable preferences, relapse or sudden shifts to heavy consumption, Ainslie’s hyperbolic discounting faces problems too, as we explicate later in the paper (for more detailed criticism on rational choice theory, see Skog (1999, p. 192). All in all, the choice model we characterise here rests on the point that these different choice models all assume that addicts choose and this choosing relies heavily on some kind of notion of rationality. Our criticism is that these models leave an important feature of addiction out.
  - 8 There is an ongoing discussion whether it is useful to have an umbrella term such as addiction to cover all the varieties of the phenomena we ordinarily call addictions with their variety of intrinsic and extrinsic features and characteristics (see Foddy & Savulescu, 2006).
  - 9 Having addictive desires is obviously not sufficient for the phenomenon of addiction. One needs other indicators such as genetic and social factors as well.
  - 10 Of course, non-addicted people also have reward systems that regulate and control the behaviour relating to pleasure.
  - 11 Drug and alcohol dependencies are associated with a cognitive processing bias: substance use is associated with enhanced attention to drug-related stimuli, which has been suggested to be related to craving. Dopamine seems to play an important role in this mechanism, and it has been suggested to be central to the core mechanism(s) of addiction. (Franken, Hendriks, Stam, & Van Den Brink, 2004; Robinson & Berridge, 2008; see also Lewis, 2011).
  - 12 There are obviously different ways of understanding what this control involves and how it works (cf. Lowe, 2008, pp. 195–196).
  - 13 The main problem with the hyperbolic discounting model is that it is incapable of explaining the behaviour of unwilling addicts who act against their preferences *at the moment of acting*. If such behaviour is empirically possible, then Donald Davidson (1980) is correct in claiming that at least some addictive behaviours involve weakness of the will. However, this question is not relevant to our affective choice model because strong emotions and feelings have been invoked in the explanation of the weakness of the will since Aristotle’s seminal discussion of this phenomenon.
  - 14 There may well be instances of intense withdrawal that literally incapacitate the agent, but these cases are hardly the paradigm case of addiction.

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