



Commentary

Do addicts have free will? An empirical approach to a vexing question



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ABSTRACT

Introduction: This paper addresses two overlapping questions: Do addicts have the capacity to voluntarily quit drugs? And do individuals knowingly pursue courses of action that they realize are bad for them, such as excessive drug use?

Methods: I propose two testable versions of free will. First, the observation that activities differ in the degree to which they are susceptible to the influence of their consequences (e.g., costs and benefits) has proven a useful criterion for classifying behavior as voluntary or involuntary. Thus, we can ask if drug use in addicts is influenced by its consequences. For instance, do laws that promise legal sanctions for drug use reduce drug use in addicts? Second, the philosopher Harry Frankfurt proposed a definition of free will that takes into account desires and self-reflection. I propose that addicts who do not want to desire drugs and successfully stop craving drugs pass his test.

Results: Dependence on illicit drugs typically ends after about four to six years. Dependence on cigarettes and alcohol persists for much longer, but most smokers and alcoholics eventually voluntarily quit using. Smokers and heroin addicts can voluntarily regulate their drug cravings as a function of the availability of their drug of choice. They have the capacity to pass Frankfurt's test of free will.

Conclusions: Addicts have free will as defined by the capacity to voluntarily quit using drugs and to voluntarily regulate their cravings.

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1. Introduction

Socrates claimed that individuals could not knowingly embark on a course of action that they thought unwise or bad: “No one goes willingly toward the bad.” If we apply this idea to drug use, then we should expect that no one would relapse who had quit after careful consideration of the costs and benefits of shooting heroin or smoking crack. However, addicts do relapse. Assuming Socrates is correct then drug use must not really be an instance of what one “willingly” goes “toward;” it must be compulsive. That is, even if addicts want to abstain, they can't. This line of reasoning is not new. More than four hundred years ago in what is likely one of the earliest recorded discussions of alcoholism, British clergy labeled alcoholism a “disease” that robbed its victims of “all rules of reason” and was “so epidemical” that “all the physicians in England know not how to stop it.” (See [Jessica Warner's paper \(1994\)](#) for the original text and her discussion of addiction as a pre-industrial age concept.) Today, addiction experts, science journalists, and the informed public make the same claims, although they have a much more detailed and powerful data base for doing so than did 17th century clergymen. Anatomical investigations offer detailed pictures of drug-

altered nervous tissue ([Robinson, Gorny, Mitton, & Kolb, 2001](#)), brain imaging studies reveal correlations between drug use and brain anatomy and function ([Wang et al., 2016](#)), and familial studies reveal genetic correlates of addiction ([Palmer et al., 2015](#)).

Nevertheless, the question of whether addicts are compulsive drug users remains controversial. In a series of recent publications, clinicians, neuroscientists, and philosophers have simply assumed or explicitly made the argument that addicts remain voluntary drug users ([Ainslie, 2013](#); [Hart, 2013](#); [Higgins, Wong, Badger, Ogden, & Dantona, 2000](#); [Sinnott-Armstrong & Pickard, 2013](#)). Research on the biology of drug use and addiction is well known, yet the argument that addicts retain the capacity to say “no” to drugs has, if anything, gained more adherents in recent years ([Heather & Segal, 2016](#); [Lewis, 2015](#)). Thus, it is fair to say that today there are two versions of addiction. In the statements of the federal health agencies that support addiction research and in countless journal articles, particularly those by neuroscientists, the reader is greeted by the phrases “addiction is a chronic relapsing disease” and “compulsive drug use,” along with the implication or explicit claim that addicts want to stop using, but, against their will, get high anyway. In contrast, in many of the papers that focus on patterns of drug use, the key phrases are “voluntary,” “choice,” “alternatives” and “contingencies.” Much is at stake. How addiction is classified is critical for strategies on how to best reduce the harm it causes, health policy,

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and what people who use drugs in excessive amounts expect of themselves.

In what follows, I test two understandings of free will as they apply to individuals who meet the American Psychiatric Association criteria for “substance dependence” (the APA’s term for addiction, e.g., DSM-IV, 1994). One is based on how the term has been used in addiction research; the other is based on the philosopher Frankfurt’s (1971) discussion of what it means to be a person. In addiction research, free will is synonymous with voluntary behavior. Hence, I test the proposition that addicts can voluntarily quit using drugs. Frankfurt’s account takes into consideration the role that self-reflection might play in regard to desires and the attempt to regulate one’s desires. For example, imagine an addict who says to him or herself: “I do not want to desire drugs.” As a way of empirically testing whether this might occur or could occur, I test whether smokers regulate their cravings for cigarettes and whether heroin addicts regulate their cravings for heroin. Thus, the goal is to put widely assumed and/or discussed ideas about the nature of voluntary behavior and free will into testable forms and evaluate whether addicts have free will.

2. How to tell voluntary and involuntary behavior apart

In her blog on the National Institute on Drug Abuse (NIDA) website, Nora Volkow, the institute’s current director, wrote that the slogan “addiction is a brain disease” was not specific enough; in its place, she substituted “drugs rob the brain of the capacity to exercise free will” (<https://www.drugabuse.gov/about-nida/noras-blog/2015/06/addiction-disease-free-will>). Her predecessor, Alan Leshner, made a similar claim (1997). In an article published in *Science*, he stated that addicts start off as voluntary drug users but then as a function of drug use itself, he or she is turned into a compulsive, involuntary drug user (exactly what early 17th century clergy claimed). However, neither Volkow nor Leshner offer testable definitions of what they mean by free will, the loss of free will, or involuntary behavior. For instance, Volkow does not define any terms but instead recounts a moving anecdote about her grandfather who was an alcoholic. He kept drinking even though he was painfully aware of the harm he was bringing upon himself and his family. Given her conclusion that her grandfather had lost the ability to exercise his will, what she must have in mind is that self-destructive behavior is *prima facie* evidence of the loss of free will. Indeed, she presents no other evidence. In effect, the story is an example of Socrates’s claim that no one can act against their own best interests, with the qualifier: unless they have a disease of the will, as can be caused by alcohol or other addictive drugs.

However, the idea that self-destructive behavior is necessarily a sign of compulsion is not credible. For instance, voluntary yet self-destructive acts drive the plot line of many (perhaps most) novels, plays, and movies. Agamemnon exchanged the life of his daughter for the promise that his ships would safely leave port and more speedily carry out the plan to sack Troy. But once underway, he undermined his own plans by demanding that Achilles, his greatest warrior, turn over his loveliest female slave. As could only be expected, Achilles, furious at Agamemnon, pulls his troops from the war. In both instances, Agamemnon acted selfishly and, in doing so, caused and/or risked great harm to himself and others.

Although the Iliad dates from about the 8th century BC, the story remains fresh. Bill Clinton repeatedly risked his reputation for the sake of illicit dalliances and eventually sabotaged his presidency, and the chances of his vice-president to succeed him, for a fleeting affair with a naïve White House staffer. Agamemnon and Bill Clinton were not dysfunctional men; they were proven leaders, who, under most circumstances, made winning choices. If asked, “How should one rule?” Agamemnon would have recommended ensuring the loyalty of one’s best soldiers, just as Bill Clinton would have recommended prudence in personal conduct. Agamemnon and Clinton’s stories are dramatic, because of what was at stake. However, the manner of their actions was

commonplace: Goaded by their immediate concerns, Agamemnon and Clinton heedlessly ignored the advice of others and, likely, the advice that they themselves would have given others. Then, when the costs of their actions began to take hold, they repented. In short, self-destructive behavior does not necessarily imply compulsion. Whether or not addicts are involuntary drug users is an empirical question, one that requires measurable definitions of the key terms.

2.1. Two versions of “free will”

In what follows, I test two versions of free will. One is typical of how addiction researchers have discussed the topic; the other is representative of how philosophers have discussed the topic. The addiction version is synonymous with voluntary behavior, which is something that all animals exhibit, as described below. The philosopher’s version is defined in ways that makes it specific to humans. Consequently, it seems more fitting to refer to the addiction researcher’s version as “voluntary behavior.”

2.2. Activities differ in susceptibility to their consequences

Behavior is purposive. However, activities vary in terms of the nature of the causal relations that link behavior to its goals. Consider some familiar examples: winks vs. blinks, applying rouge, vs. blushing, spitting vs. sneezing, and kicking a ball vs. the patellar reflex. Whether we wink, apply cosmetics, or kick a ball depends on the costs and benefits associated with these acts. For instance, the soccer player kicks or fakes a kick to advance his team’s chances of winning and learns to be more effective at doing so as a function of feedback in the form of successes and failures. In contrast, blinks, blushing, and the patellar reflex are driven by stimuli. Once in motion, they proceed, even if doing so fails to achieve a desired aim. Experience appears to play little or no role in the perfection of blinking. Indeed, the simplest elicited reflexes are wired so that they can take place without input from the brain. William James summarized these ideas in an apt comparison of Shakespeare’s Romeo and iron filings (2013/1890). James points out that the iron filings are attracted to a magnet as Romeo is to Juliet, but construct a barrier and Romeo will find a way around it; he will learn to adjust his behavior according to the consequences of his efforts. In contrast, the iron filings continue to press “stupidly” forward, never deviating from their path regardless of their lack of progress.

In the lab the distinctions outlined above are typically described in terms of two contrasting causal relations. Winks, kicks, making oneself attractive, and romantic relations are under the control of feedback, as in reinforcement learning studies. Blinks, blushing, and instincts are under the control of eliciting stimuli. They are triggered, just as a WW II rocket once let loose cannot change its course, even when its target has taken evasive actions. We say activities are “voluntary” when they are controlled primarily by their consequences, and we say “involuntary” when the activity is largely under the control of eliciting stimuli. Thus, the distinction is not between causality and its absence, but between types of causality.

2.2.1. Social manifestations of the distinction between voluntary and involuntary behavior

Although the examples are everyday activities, they are important. Social practices and social policy vary markedly as a function of whether the behaviors of interest are voluntary or involuntary. During flu season, office workers are asked to wash their hands as often as possible, but no one is asked not to sneeze. In the courts, the type and degree of punishment varies as a function of the degree to which the criminal act was judged to be voluntary. In science, disciplines organize themselves as dictated by the distinction between voluntary and involuntary. Psychologists tend to study voluntary learned behavior, whereas biologists and ethologists tend to study elicited behavior. In settings in which behavior

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