



Review

Free will in addictive behaviors: A matter of definition

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ABSTRACT

Certain people are at risk for using alcohol or other drugs excessively and for developing problems with their use. Their susceptibility might arise from a variety of factors, including their genetic make-up, brain chemistry, family background, personality and other psychological variables, and environmental and sociocultural variables. Moreover, after substance use has become established, there are additional cognitive-motivational variables (e.g., substance-related attentional bias) that contribute to enacting behaviors consistent with the person's motivation to acquire and use the substance. People who are at such risk are likely to choose to use addictive substances even though doing so entails negative consequences. In the sense of complete freedom from being determined by causal factors, we believe that there is no such thing as free will, but defined as ability to make choices from among multiple options, even though the choices are ultimately governed by natural processes, addicted individuals are free to choose. Although they might appear unable to exercise this kind of free will in decisions about their substance use, addictive behaviors are ultimately always goal-directed and voluntary. Such goal pursuits manifest considerable flexibility. Even some severely addicted individuals can cease their use when the value of continuing the use abruptly declines or when the subjective cost of continuing the use is too great with respect to the incentives in other areas of their lives. Formal treatment strategies (e.g., contingency management, Systematic Motivational Counseling, cognitive training) can also be used to facilitate this reversal.

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Free will can be characterized in a number of different ways. According to Baumeister's (2014) definition, resting on that of Haggard, Mele, O'Connor, and Vohs (2010), free will is "the capacity for free action [which means] that the person could do different things in the same situation" (p. 236). This definition is susceptible to varying interpretations.

First, one could take "could do" to mean that nothing in the physical environment or range of the person's physical capabilities could prevent the alternative actions and that there are no other constraints. A second interpretation of "could do" might focus on the process of choosing and rule out self-destructive choices that run strongly contrary to the chooser's values, such as drawing a gun on police officers (assuming that suicide is not valued positively) or publicly engaging in behavior that would inevitably be viewed by others as offensive, such as violating

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one's society's strict codes of dress or conduct (assuming that the person positively values social acceptance).

The distinction between these two interpretations is between free will in the sense of choosing according to one's preferences without regard to situational constraints, such as social pressure, versus in the sense of choosing according to one's preferences *realistically*, that is, in light of the foreseeable consequences, given the situational opportunities and constraints, if any. In other words, the exercise of *free will* is construed in the present article as choosing from among actions that are feasible given the existing physical limitations or insuperable social constraints. The physical constraints include those imposed by the limitations of brain functions, including brain pathologies (Fenton & Wiers, 2016) but also by the “balance between impulsive and reflective processes” (Wiers, Field, & Stacy, 2014, p. 39) that may be the result of the addictive substance itself. Otherwise, however, choices are determined by additional causal factors, such as reward sensitivity (Jonker et al., 2016; van Hemel-Ruiter, de Jong, Ostafin, & Wiers, 2015), executive processes such as goal inhibition (Goldstein, Volkow, Wang, Fowler, & Rajaram, 2001; van Hemel-Ruiter et al., 2015; Wiers, Boelema, Nikolaou, & Gladwin, 2015), goal motivation, goal value, and even goal prediction and availability (Volkow, Fowler, & Wang, 2004), memory associations (Ames et al., 2014) for the addictive behavior relative to associations for alternative goals to choose from, and, the alternative goals' values (Kalivas & Volkow, 2005), availability, and levels of automaticity. Ambivalence attributable to conflicts between foreseeable outcomes of a decision, for example between brief strong enjoyment and subsequent loss of an alternative opportunity, may render a decision difficult to make. It is nevertheless made “freely” in the sense of free will employed here.

A third possibility might be to interpret “could do” as making choices free from psychological determinants of action. Such determinants would include genetic determinants of neural and hormonal functions and situational elicitors of behavioral responses that have been previously shaped by environmental influences. This interpretation of free will would, however, deny a role for causality. It would accordingly be inconsistent with scientific understanding of human behavior (see also Baer, Kaufman, & Baumeister, 2008). In this latter sense, free will would not, from a conventionally deterministic scientific viewpoint, exist.

A critic might point to the human capacity for originality, for thinking of creative solutions, even surprising ones, including circumventing seemingly daunting obstacles to a goal pursuit. Having created a solution, the person then continues the goal pursuit in the newly indicated direction. From a scientific perspective, such solutions would result from previously established associative pathways in the brain, perhaps along with quasi-random confluences of stimuli that might lead to experiencing those associations in new ways. That is, the original or creative insights would still have been determined by the flow of prior events. In what sense, then, does this portray *freely* willed action?

Baumeister (2014) also noted that causality takes place at a variety of levels, from the atomic to the social; that the path from one level to another is often hard to trace; and that there is often a probabilistic factor that defies precise prediction of outcomes. None of these considerations, however, seems determinative regarding the existence of free will. The fact that at this time the relationships between levels are poorly understood cannot demonstrate the existence of free will. Neither can the existence of unexplainable probabilistic variation, inasmuch as will presumably directs behavior stably at particular outcomes that have certain properties of value and probability of attainability, as described briefly in a subsequent section. Does it make sense to equate “free” with irreducibly unexplainable?

In considering the role of free will in addiction, it is necessary to make some important distinctions. One of these is between free will and conscious choice, or conscious will, as Wegner (2002) puts it. It is entirely possible to view the causal chain that leads to actions, such as imbibing addictive substances, as either determined by concrete, predictive precursors or as freely chosen, unpredictable courses of action,

without committing to a position regarding the role of consciousness. Therefore, the very useful discussions regarding the causal role of consciousness in choice or will (e.g., Baumeister, Masicampo, & Vohs, 2011, 2015) are not necessarily relevant to the consideration of *free* will.

It should also be noted, however, that individuals' preferences to engage in one behavior versus another will have been shaped by their genetic endowment in interaction with their past experiences. As discussed in the next section, scientific advances now permit specifying physiological, psychological, and cultural differences among individuals, which together shape their preferences regarding their use of addictive substances. Whether one wishes to characterize the resulting choices as truly “free” depends on how one understands such freedom. Yes, people generally have a number of possible choices before them, in which case their choices are made freely, but in our view their ultimate choices are formed by the various physical and experiential determinants that we later describe.

In any event, to say that their choices have been predetermined is in no way inconsistent with the view that people can think critically and can often devise creative, even surprising solutions for reaching their goals. After all, individuals' patterns of thought, including their associative pathways that affect their creative solutions, rest on a foundation of brain functions and previous experiences that enable them to envision and map out their futures.

To obtain a sense of how free will is experienced in everyday life, Stillman, Baumeister, and Mele (2011) asked undergraduate student volunteers to describe instances in which their actions reflected the exercise of free will and other instances in which free will was not a factor, as, for instance, when the action was perceived as completed under duress. Raters then assessed the narratives with regard to a set of dimensions. The characteristic that best distinguished the two classes of action was described as goal attainment, which was rated much higher in narratives of freely chosen actions than in narratives of more constrained actions. This finding meshes nicely with the goal theory of current concerns (e.g., Klinger & Cox, 2011), which avoids pondering the concept of freedom of will but recognizes the centrality of goal pursuits in the brain's architecture and more broadly in the capacity for survival of members of the animal kingdom.

The sections that follow explore what is known about the motivational factors and constraints regarding alcohol use. It does so in order to assess the extent to which excessive alcohol consumption can be considered a free choice versus one over which the drinker lacks control.

1. The value of drinking alcohol

Cox and Klinger (1988, 1990, 2004, 2011a) have proposed a motivational model of alcohol use. The model summarizes the major variables that contribute to—or detract from—the value of drinking alcohol, and it shows how these variables pass through a motivational track that culminates in a person's decision to drink—or not to drink—alcohol. The decision to drink, or not to do so, is voluntary in the sense that the drinker can exercise control over it. Nevertheless, the nature of the control is itself predictable and determined. That is, for example, insofar as variables that increase the value of drinking alcohol apply to a particular individual, weight will be added to that person's decisions to drink alcohol as opposed to not doing so. Conversely, if variables that detract from the value of drinking alcohol apply to an individual, weight will be added to this person's decisions not to drink.

It is important to clarify how *value* is defined in the science of motivation. *Incentives* are the objects, events, or situations that have positive or negative value, in the sense that a person would like to get, obtain, or retain them (in the case of positive incentives), or the person would like to prevent, avoid, or be free of them (in the case of negative incentives). The value attributed to an incentive is, therefore, the expectation that a desirable change in the person's feeling—i.e., his or her *affect*—will occur if he or she acquires a positive incentive or gets rid of a negative incentive. Drinking alcohol might be a positive incentive for one person; it

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