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Uses of self-regulation to facilitate and restrain addictive behavior

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HIGHLIGHTS

- Role of conscious control changes across stages of addiction.
- Self-regulation is used both for promoting and resisting addictive behaviors.
- Self-regulation helps maintain regular usage despite situational obstacles.
- Willpower fluctuates, and depleted willpower reduces control.

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ABSTRACT

We apply self-regulation theory to understand addictive behavior. Self-regulation and volition depend on a limited resource, and when that resource has been depleted, self-regulation becomes prone to fail. Moving beyond traditional models that have emphasized the relevance of self-regulation to quitting addiction, we propose that self-regulation is used both to facilitate and resist addictive behaviors. Self-regulation is often needed to overcome initial aversion to drugs and alcohol, as well as to maintain addictive usage patterns despite situational obstacles (e.g., illegality, erratic availability, family disapproval). Sustaining addiction also requires preventing use from spiraling out of control and interfering with other aspects of life. More generally, the automaticity and irresistibility of addictive responses may have been overrated, as indicated by how addictive behaviors respond rationally to incentives and other concerns. Self-regulation does facilitate quitting, and relapse may be especially likely when self-regulatory capabilities are depleted.

1. Introduction

Addictive behavior is today regarded by the general public and by portions of the treatment and research community as an unusual kind of motivated behavior, in which the individual is strongly attached to something harmful or undesirable and continues to use it despite mounting costs. Indeed, reigning stereotypes of addiction characterize it as marked by overwhelmingly powerful cravings that render resistance futile, even impossible. Addicts are therefore considered unable to prevent themselves from continuing to use. In this view, self-regulation operates mainly to resist the addictive cravings, and in the long run, presumably with professional help, the addict's self-regulatory capabilities may enable him or her to break free from the addiction. Even that recovery is widely regarded as tentative at best, and great vigilance is required to guard against the ever-present possibility of a resurgence of overwhelming cravings and a resumption of the addictive behavior, with all its destructive effects.

Some features of this popular view of addiction appear correct, but others have lost plausibility in the face of accumulating evidence. This manuscript lays out an alternative and broader view of self-regulation in connection with addictive behavior. After summarizing current theory on self-regulation, we shall begin by pointing out some flaws in the reigning stereotype of addiction and suggest a revised understanding of it. Our summary of self-regulation theory offers useful suggestions on how addictive behavior can be shaped and altered by it — and why many such efforts are prone to fail.

We shall then argue that self-regulation can be used to create and sustain addictive patterns — and may be essential to doing so — just as commonly as it is used to combat and resist them. This contradicts the simple but apparently widespread assumption that self-regulation is relevant only to recovery from addiction and is therefore only employed against substance abuse. The role of self-regulation changes over the life

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course of addiction, and both the addiction itself and the resistance to it make use of self-regulation. We hope that this will lead to a more balanced and integrative understanding of how self-regulation functions in addiction.

2. How self-regulation functions

Self-regulation is a process of managing and changing the self. It is often employed to alter responses, such as to change one's thoughts, emotions, impulses, or task performance behaviors from how they would unfold in the absence of top-down control (Baumeister, Heatherton, & Tice, 1994).

Self-regulatory problems often arise from inner conflict. In particular, a recovering addict may harbor desires to use and desires to abstain. Gawronski and Bodenhausen (2011) have proposed that conscious attitudes are generally composed of propositional knowledge and are subject to logical reasoning and analysis, whereas automatic attitudes are often merely associations and therefore tend to bypass analytical thought.

Psychology's understanding of self-control and self-regulation was greatly stimulated by Carver and Scheier's (1981, 1982) seminal work applying cybernetic feedback-loop theory (based on Powers (1973)). Their theories grew out of their prior work on self-awareness, building on the early work by Wicklund and Duval (1971). The crucial link was recognizing that self-regulation is one major purpose of self-awareness. Cybernetic theory proposes that a feedback loop guides self-regulation, represented by the acronym TOTE (test, operate, test, exit). That is, Carver and Scheier proposed that the loop begins with comparing self against various standards such as ideals, norms, values, goals, peers, and one's past self. If the test reveals an unwanted discrepancy, the self-regulator performs an operation to reduce it and then tests again. This continues until the test indicates that the discrepancy has been ended, whereupon one exits the loop.

The feedback loop thus monitors the process of self-regulation. It calls attention to several areas of vulnerability that can cause self-regulatory failure. When standards are unclear or conflicting, self-regulation is hampered, because it is not clear just how to perform the test to evaluate the current status. This is presumably one reason that alcoholic anonymous and other treatment regimens insist on complete abstinence, because the standard is perfectly clear and one can easily evaluate whether one has had zero versus any alcohol. In contrast, trying to pursue moderate drinking requires the person to evaluate (indeed while inebriated) whether one more drink would be too many. Even if the person establishes a three-drink rule, it may be difficult to compare a shot against a mug of beer, or a martini against a rum-and-coke. With illicit drugs of variable and unknown potency, it may be all but impossible to calculate dosage levels and adhere to present limits.

Another implication is that anything that reduces self-awareness will weaken self-regulation, because it compromises the monitoring process. Distractions (e.g., social settings), intense emotions, and other factors may reduce self-awareness and contribute to self-regulation failure. In particular, Hull (1981) showed that alcohol consumption reduces self-awareness. In an early and exploratory survey of multiple self-regulation literatures, Baumeister et al. (1994) observed that alcohol users had been shown to have impaired self-regulation in many different spheres: they ate more, smoked more cigarettes, spent more money, left bigger tips (after controlling for the size of the bill), were less modest, and consumed more alcohol, as compared to people who had not had any alcohol. Thus, loss of self-awareness from alcohol use (and possibly other substances) can impair self-regulation, creating a vicious cycle of increasing consumption.

The "operate" phase of the TOTE cycle received less initial attention, but in recent years many researchers have begun to study it. One theory has proposed that operations on the self that alter the self's responses consume a limited energy resource, as implied by the folk term "willpower." The hypothesis that self-regulation operates as if based on a limited resource was proposed speculatively by Baumeister et al. (1994) and was soon confirmed by laboratory experiments. Muraven, Tice, and Baumeister (1998) and Baumeister, Bratslavsky, Muraven, and Tice (1998) introduced the dual-task method to show that after engaging in self-regulation on one task, participants performed worse on a second, seemingly unrelated task, as long as it too required self-regulation. Such findings supported the theory that some energy or strength was reduced during the first task, leaving the person in a state called ego depletion that led to the poor performance on the second task.

Many studies have replicated ego depletion effects (for meta-analysis, see Hagger, Wood, Stiff, & Chatzisarantis, 2010), though there have been attempts to offer competing explanations for some findings (Inzlicht & Schmeichel, 2012). Several refinements to the initial theory have been necessary (see Baumeister & Vohs, submitted for publication). Depletion effects do not indicate that a resource has been exhausted, merely that partial depletion stimulates a tendency to conserve (just as with physical energy) (Muraven, Shmueli, & Burkley, 2006). Thus, when mildly depleted, the person has ample resources available and is capable of effective self-regulation but often prefers to conserve rather than expend more resources. Selective allocation rather than resource exhaustion is thus vital to understanding self-regulation (see Beedie & Lane, 2012).

The self-regulatory resource appears to be domain-general, as indicated by the dual-task design. Hence any demands on self-regulation will detract from any subsequent self-regulatory effort, at least until one recovers. There is some evidence linking the resource to glucose, a chemical in the bloodstream that supplies energy to the brain and other body parts (Gailliot & Baumeister, 2007; Gailliot et al., 2007). Glucose problems can increase vulnerability to self-regulation failure. For example, women experiencing premenstrual syndrome (PMS) typically have a shortage of glucose, because the reproductive demands of the luteal phase of the menstrual cycle consume extra glucose, leaving less for self-regulation (Gailliot, Hildebrandt, Eckel, & Baumeister, 2010). PMS has long been associated with increases in substance abuse. In fact, alcohol itself lowers blood glucose, which may contribute to its detrimental effects on self-regulation.

Other refinements include evidence that self-regulatory capability can be gradually improved over time by regular exercise, analogous to how a muscle becomes stronger (e.g., Muraven, Baumeister, & Tice, 1999). More ominously, the subjective (phenomenal) consequence of ego depletion is that all manner of feelings and desires are felt more strongly than usual (Vohs et al., 2014). Hence ego depletion poses a double risk to the recovering addict who frequently self-regulates to stifle urges to use: One's resistance is weaker than usual, and one's desire to use may feel stronger than usual. Moreover, if one does lapse and indulge, the pleasure may be felt more intensely than usual.

Although ego depletion is a major cause of self-regulation failure, there are others. Most important, when people feel bad, they give priority to feeling better quickly, and so in a sense they use their self-control to regulate feelings rather than maintain control over appetites (Tice, Bratslavsky, & Baumeister, 2001). As addictive substances generally bring immediate pleasure, use and abuse may increase when people experience stress or other distress. In this sense, taking addictive drugs may be a form of self-regulation.

3. Addiction

A full theory of addiction would be beyond the scope of this paper, but some understanding of the concept is necessary. Addiction originally meant simply strong desire for something, but more recently it has meant problematic desire. For example, Orford (2000) noted that the term has changed from referring simply to attachment: now it means conflict about attachment. The changing meanings as well as the accumulation of popular connotations may be one reason that many clinicians have begun to avoid the term.[1]

[1] We thank an anonymous reviewer for bringing this rising avoidance to our attention.