

Willpower and Ego Depletion: Useful Constructs?

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It is widely recognized that the ability to exert will and defy the temptation of short-term rewards in favor of long term goals has many significant implications and is predictive of increased well-being across many domains. The American Psychological Association characterizes willpower as “the psychological science of self-control”, and their recent survey regarding Americans’ perception of their own self-control, cited the lack of will-power as the primary reason they fail to follow through with making healthy life-style changes. The “strength” model of self-control conceptualizes willpower as a limited resource which cannot be sustained indefinitely. According to the model, expending effort to exert self-control results in a reduced ability for individuals to exert self-control in a subsequent task—a psychological state known as *ego depletion*. Numerous investigations have replicated this effect across multiple domains and have also examined the influence of variables that moderate ego depletion. However, recent regression analyses have strongly suggested that the effect size for ego depletion is substantially smaller than was originally computed. In addition, despite widespread acceptance in both the popular press and the scientific study of psychology, the strength model has come under criticism that it has evolved into an over-reaching and unfalsifiable theory that should be subsumed under a more comprehensive theory of self-control that integrates traditional influences on self-control, including motivation, learning, and self-efficacy.

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It should not be surprising that psychologists—as students of human behavior—have long been interested in understanding processes related to self-control (Skinner, 1953; Mischel, Ebbesen, & Raskoff Zeiss, 1972), given their longstanding attention toward facilitating behavior change when it is problematic. Self-control and self-regulation are terms often used synonymously in psychological research; along with the term willpower. This paper briefly explores *ego depletion* (Baumeister, Bratslavsky, Muraven, & Tice, 1998): a construct linked to willpower firmly embedded in the psychological literature regarding self-regulation that has attracted great interest in recent years.

The Importance of Willpower and the Nature of Ego Depletion

The ability to exert will and defy the temptation of short-term rewards in favor of long term goals has many significant implications and is predictive of increased well-

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being across many domains, including less psychopathology and increased interpersonal functioning (Tangney, Baumeister, & Boone, 2004). In the US, it is estimated that dangerous habits related to lack of self-control such as smoking, alcohol, drugs, obesity, risky sex, etc. underlie more than half of annual fatalities that could have been prevented, or at least delayed (Akst, 2011). In 2005, tobacco smoking and high blood pressure alone were estimated to be responsible for about 862,000 deaths; about one in every five or six US adult deaths (Danaei et al., 2009).

A recent survey by the American Psychological Association (APA) regarding Americans' perception of their own self-control cited *lack of will-power* as the primary reason they fail to follow through with making healthy life-style changes (American Psychological Association, 2012a). The APA also characterizes the willpower as "The psychological science of self-control" (p.1), noting that willpower involves multiple aspects, one of which is that it is "a limited resource capable of being depleted" (American Psychological Association, 2012b, p.1).

The idea that willpower is a limited self-regulatory mental resource that is subject to depletion (under certain conditions) is known in the psychological literature as *ego depletion*, a term that originates from the seminal research by the social psychologist Roy Baumeister (1998). Drawing on a clever experimental paradigm that had subjects initially resisting a tempting treat; Baumeister's study demonstrated that subjects were less able to perform on a subsequent difficult puzzle task than those who were not made to resist the treat, providing the first experimental evidence for this phenomenon. The implication was that volitional acts (acts of willpower) require an expenditure of energy from some limited mental resource, and therefore subsequent acts of volition will become more difficult as the resource becomes increasingly depleted. Baumeister's continuing research on ego depletion led to his development of a theoretical model known as the Strength Model of Self Control, which posits that willpower is analogous to a muscle, in that willpower can become fatigued (depleted) after use—and also that it can be strengthened through proper conditioning. (Baumeister, Vohs, & Tice, 2007). The research also suggested that in addition to volitional acts, counter-attitudinal behavior also draws down the same energy resource. (Baumeister et al., 1998).

Since Baumeister's finding and conceptualization of willpower as a limited resource, numerous researchers have supported the ego-depletion effect and extended the original findings in over 100 experiments based on the basic paradigm of observing acts of self-control at Time 1 and measuring decrements of performance on unrelated tasks of self-control at Time 2 (Inzlicht & Schmeichel, 2012). The ego depletion effect has been observed in a variety of contexts and in conjunction with a variety of variables that moderate the effect on subsequent tests of self-control in both positive and negative directions, including the influence of induced positive and negative emotional states (Inzlicht, McKay, & Aronson, 2006; Tice et al., 2007), peoples' beliefs about ego-depletion (Job, Dweck & Walton, 2010), social goals and influences, cash incentives (Baumeister, Vohs, & Tice, 2007), and blood glucose levels (Gailliot et al., 2007).

Criticisms of Ego Depletion and the Strength Model

Given that numerous studies have replicated the phenomenon known as ego depletion the construct has gained widespread acceptance, but also in part because the strength model and its related analogy to muscle fatigue and conditioning implies a great deal of face validity. As is often the case with interesting findings in social psychology, exaggerated claims or premature interpretations make their way into public discourse (a recent Google search of the internet using the search string “willpower is a muscle yielded 20,700 entries) despite inconclusive data; and in the case of ego-depletion, even into an official publication of the American Psychological Association (2012b). Of particular concern is the claim that exerting self-control depletes blood glucose levels, an assertion that is firmly contradicted by Kurzban (2009), and again in a more recent study (Boyle, Lawton, Allen, Croden, Smith, & Dye, 2014).

Kurzban also offers a compelling alternative explanation to willpower as a limited resource with a conceptualization that effort toward task performance varies according to a summative cost-benefit analysis of mental representations about the task (Kurzban, Duckworth, Kable, & Myers, 2013). Given that the strength model of ego depletion has undergone significant revisions from its inception up to the present date, Kurzban rightly asserts that Baumeister’s adjustments to the model in order to accommodate the plethora of interactions with moderating and mediating variables effectively render the model as unfalsifiable (Kurzban, 2011).

Another compelling line of criticism that questions the model’s validity comes from a group of three experiments and a longitudinal field study that investigated the effect of people’s beliefs about whether or not willpower is indeed limited. Likening ego depletion to a placebo effect, the researchers conclude that rather than true resource depletion, decrements in self-control performance are more likely a reflection of the beliefs people hold about the availability of will-power (Job, Dweck, & Walton, 2010).

Yet another criticism of ego depletion theory derives from the aggregation of data in meta-analyses. One such meta-analysis compiled data from ego depletion studies in over 198 tests, yielded a medium sized ($d = 0.62$) effect size overall, and concluded that the data suggested preliminary support for ego depletion and the strength model (Hagger, Wood, Stiff, & Chatzisarantis, 2010). The authors also suggested that the conceptualization of motivation and fatigue as moderators support alternative hypotheses for decrements in self-control, and indicate a need to integrate the strength model with other models of self-control.

However, in a subsequent research report, these same authors concede that regression analyses on their data challenge their original findings (Carter & McCullough, 2013, as cited in Hagger & Chatzisarantis, 2014), and indicate that the effect size for ego depletion is substantially smaller than was previously computed. In reaction to this finding, Hagger and Chatzisarantis replicated the same analyses on their data and found essentially the same results. The authors conclude with the observation that these data could be ascribed to multiple interpretations, including the possibility of publication bias, methodological error, and true heterogeneity in the ego depletion effect.

Conclusions

Taken as a whole, the pattern of data is difficult to interpret conclusively at the present time. Specific studies appear to unequivocally demonstrate that a counter-attitudinal task at Time 1 reliably will result in a decrement on performance in a self-

control task at Time 2. Yet, the multiplicity of variables that influence performance suggest that the notion of willpower as a singular resource is simplistic. An alternative view of willpower suggests that it is comprised of a summative amalgam of elements that collectively influence human motivation, along the lines of Kurzban's conceptualization (Kurzban et. al, 2013).

Essentially, framing willpower as a limited resource may have some merit, but self-control likely involves more than willpower, and taps numerous psychological processes that affect our goal-directed behavior. While true that one can build upon and strengthen one's willpower "muscle", so does learning and motivation increase one's ability to self-control across all life domains. Haggan et. al. (2010) make the observation that self-control in of itself is a multifaceted concept, and often involves diverse tasks including suppressing impulses, overriding ingrained response patterns, and engaging in complex cognitive processing requiring multiple processes.

Implications for Future Research and Professional Practice

Given that the strength model of ego-depletion has garnered so much face validity, it is imperative that psychologists do not succumb to a simplistic model of self-control. Researchers must continue to test this model, and bear in mind that some studies provide evidence that directly contradicts the notion of willpower as a limited resource. In this vein, Miller and colleagues (2012), found that participants who believed willpower as a non-limited resource sustained learning on a strenuous mental task longer than those who believed it to be a limited resource. While ego-depletion remains an appealing explanatory model for individual differences in self-control, the challenge remains for psychologists to develop a more acute understanding regarding the interactions of variables that moderate and mediate willpower and to create a more integrative model of self-control.

However, the larger challenge may well be in distilling the research findings into unequivocal and actionable practices geared toward preventing responses to the allure and immediacy of short term goals that tend to foster psychopathology, and undermine positive health behaviors which clearly support our overall well-being. While clinicians may find that the *willpower is like a muscle* analogy can be instructive in psycho-educational efforts toward creating behavior change with clients, they should also refrain from overreach, and attend to individual differences of clients, especially in consideration clients' implicit beliefs about whether it is a limited or non-limited resource.

And finally, one important consideration about willpower worth mentioning is that clinicians should plan on devoting some session time to an explicit discussion of willpower with their clients, especially if clinicians are attempting to facilitate behavior change. The recognition by clinicians that enhancing self-control and willpower will go a long way toward improving the well-being of their clients, and also that lack of self-control is possibly the biggest barrier people face every day in their efforts toward behavior change should make this discussion a fundamental component of every treatment plan. Clinicians must realize that the highly prescriptive nature of the work we ask clients to do between sessions will be ineffective without first exploring clients' self-efficacy toward overcoming their challenges to exerting willpower, As an example, the frequently used practice by clinicians of recommending exercise as an evidence-based means of reducing symptoms of depression (Parker & Guthmann, 2015) will be

efficacious only insofar as the client finds the will to overcome their sedentary inertia and initiate a sustainable exercise program.

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