



# The impact of self-control depletion on social preferences in the ultimatum game



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## ABSTRACT

We study the interaction of different motives and decision processes in determining behavior in the ultimatum game. We rely on an ego-depletion manipulation which consumes self-control resources, thereby enhancing the influence of default reactions, or in psychological terms, automatic processes. Experimental results provide evidence that proposers make higher offers under ego depletion. Based on findings from a closely related dictator game study, which shows that depleted dictators give less than non-depleted ones, we discard the possibility that other-regarding concerns are the default mode. Instead, we conclude that depleted proposers offer more because of a strategic ‘fear of rejection’ of low offers, consistent with self-centered monetary concerns. For responders, ego depletion increases the likelihood to accept offers, in line with unconditional monetary concerns being more automatic than affect-influenced reactions to reject unfair offers.

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## 1. Introduction

Only few human beings are completely altruistic or completely selfish. Many people donate to charity, but few will risk their livelihood to help others. Most of us are torn between selfish and other-regarding motives, and for each altruistic action there might be a selfish one waiting down the road. Many humans strive to behave in a fair way, but why should they *strive* if it came to them naturally? Each of us knows the feeling of having to control an impulse in order to live up to our ideals, and many of us know the feeling of *failing* to control it. There is no doubt that economic decisions are often the result of the interplay between several, clearly differentiated motives including selfish concerns and prosocial ones. How do individual decision makers actually balance multiple motives?

A basic assumption regarding the interplay between different motives in human decision making is that the joint determination of behavior through multiple motives involves mechanisms of self-control. Self-control plays an important role in a

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wide range of economic problems, ranging from intertemporal decision making (Laibson, 1997; Thaler & Shefrin, 1981) to worker performance in firms (Kaur, Kremer, & Mullainathan, 2010) and consumer behavior (Achtziger, Hubert, Kenning, Raab, & Reisch, 2015; Baumeister, Sparks, Stillman, & Vohs, 2008).<sup>2</sup> Self-control and the multiplicity of motives in economic decision making have also been explicitly incorporated in the theoretical literature on dual selves (e.g., Bénabou & Tirole, 2002, 2003, 2004; Benhabib & Bisin, 2005; Fudenberg & Levine, 2006).

One of the most prominent psychological models of self-control is the “strength model” of Muraven, Tice, and Baumeister (1998) and Baumeister (2002). This model assumes that the same self-control resource is used in an array of different tasks, including thought control, control of affect, inhibition of impulses, persistence in complex cognitive tasks, etc. Moreover, this resource is limited and acts of self-control consume it. Limiting the underlying resource by exerting self-control induces a state of *ego depletion*. In this state, people are temporarily less able or less willing to exert self-control.

The question we address in this paper is whether self-control and its possible depletion play a role for the interplay between egoistic and prosocial motives determining behavior in the ultimatum game (hereafter UG). Using an ego-depletion manipulation, which taxes self-control resources, we aim to identify the “default mode of behavior”, or in other words, the underlying dominant response of participants.

Our experiment consists of two parts. The second part is a standard ultimatum game (Güth, Schmittberger, & Schwarze, 1982). In this game, the proposer offers a split of a fixed monetary amount and the responder decides whether to accept it (in which case it is implemented as proposed) or reject it (in which case both players receive nothing). We investigate both proposer and responder behavior. The first part is an *ego-depletion manipulation* which induces a state of diminished self-control in participants before their interaction in the game. Following the logic of the strength model of self-control (e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister, Vohs, & Tice, 2007; Bayer, Gollwitzer, & Achtziger, 2010), both parts require self-control for participants in the depletion treatment. Participants in the control treatment also complete two parts, with the main difference being that the first part requires no self-control.<sup>3</sup>

Results show that proposers with exhausted self-control resources made higher offers. At first glance, these results can be interpreted as evidence for fairness concerns being more implicit and being implemented more automatically than “cold” monetary/egoistic concerns. This is, however, not the only motive prescribing more generous offers: it is well known that proposers strategically make higher offers to avoid rejection (e.g. Ochs & Roth, 1989). Based on offers in a closely related dictator game (Achtziger, Alós-Ferrer, & Wagner, 2015a), in which strategic concerns of proposers are removed, we can rule out the conjecture of higher offers being driven by pure fairness concerns. Since depleted dictators are regularly shown to give less (e.g., Achtziger et al., 2015a; Halali, Bereby-Meyer, & Ockenfels, 2013; Xu, Bègue, & Bushman, 2012), we can conclude that higher offers of depleted proposers are rather a result of an (implicit) strategic element of “fear of rejection” of low offers. Our explanation is also consistent with the observation that the effect of higher average offers made by depleted proposers wears off almost completely with enough repetitions of the game. Depleted responders exhibited lower rejection rates, which is evidence for automatic money valuations (“take the money and run”) being more pronounced than the automatic emotional reactions (“reject unfair offers”), but effects of the manipulation are more subtle than those for proposers.

Our study contributes to the literature in a number of aspects. We explicitly employ monetary incentives (in the depletion task and in later decision tasks), and our design captures not only one-shot behavior but also its dynamics over time. The latter has, to the best of our knowledge, not been investigated even though many economic interactions and self-control problems are of a repeated nature. Results of the repeated game hence shed light on the persistence of the depletion effect in the presence of other effects, most prominently learning. Furthermore, our findings add to the robustness of previously found ego-depletion effects, as our study relies on a relatively large sample size ( $N = 288$ ) compared to previous experiments on ego depletion in psychology (e.g. Carter & McCullough, 2013, 2014; Schimmack, 2012).<sup>4</sup> In summary, and in line with previous studies, our results show that weakened self-control has a significant effect on behavior.

From a more general point of view, we pursued in this paper the idea that the distinction between automatic and controlled processes can also be useful for understanding the different motives underlying economic decisions. In contrast to psychology, economics has only recently started to recognize the need to look beyond purely behavioral data and identify

<sup>2</sup> Self-control has been shown to have strong benefits in a broad range of everyday life issues. For instance, students high in self-control achieve higher grade-point averages in college (Duckworth & Seligman, 2005) and experience less stress in their first three months at university than students low in self-control (Achtziger & Bayer, 2013). Mischel, Shoda, and Peake (1988) and Baumeister, Heatherton, and Tice (1994) maintain that many personal and social problems involve some degree of failure in self-control. These problems include addiction (e.g., alcohol abuse), eating disorders, debt accumulation, failure to save, criminal behavior, underachievement in school and at work, and procrastination.

<sup>3</sup> The literature on ego depletion reports a large number of different manipulations along these lines. Hagger, Wood, Stiff, and Chatzisarantis (2010) review over 80 studies involving ego depletion. It is well established that depleted subjects have more difficulties exercising willpower than non-depleted controls, and are hence more likely to give up in tasks requiring persistence (Baumeister et al., 1998), overeat (Vohs & Heatherton, 2000), shop impulsively (Vohs & Faber, 2007), give up sooner on unsolvable puzzles (Baumeister et al., 1998), exhibit lower performance in creativity tasks (Bayer et al., 2010), rely more on heuristics in decision making (Masicampo & Baumeister, 2008), and even cheat when reporting their own performance (Mead, Baumeister, Gino, Schweitzer, & Ariely, 2009).

<sup>4</sup> Carter and McCullough (2013) for instance presented evidence showing that the effects of self-control depletion in psychological studies might have been overestimated due “small study effects”, which amounts to publication bias favoring small studies with large effect sizes. See, however, Hagger and Chatzisarantis (2014).

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