



## Social dilemmas: When self-control benefits cooperation <sup>☆</sup>



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### ABSTRACT

Individuals in a social dilemma may experience a self-control conflict between urges to act selfishly and their better judgment to cooperate. Pairing a public goods game with a subtle framing technique, we test whether perception of self-control conflict strengthens the association between self-control and cooperation. Consistent with our hypothesis, cooperative behavior is positively associated with self-control in the treatment that raised the relative likelihood of perceiving conflict, but not associated with self-control in the treatment that lowered the likelihood. These results indicate that it is important to understand the role of self-control in cooperation.

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## 1. Introduction

The social dilemma involves a tension between the individual rationality of self-interest and the collective well-being. However, it might also represent an internal tension, a conflict of preferences within the individual. We explore the social dilemma by conceptualizing the decision to cooperate as a conflict of preferences – between the impulse of greed and the better judgment to act pro-socially. As such, the question of acting selfishly or cooperatively becomes one of self-control, and the ‘stronger’ the individual, the more cooperation we would expect to observe. However, self-control matters only to the extent that the individual recognizes the decision at hand as a self-control conflict (Myrseth & Fishbach, 2009). Following these ideas, Kocher, Martinsson, Myrseth, and Wollbrant (2012) theorized about, and found evidence of, a positive correlation between the capacity for self-control and cooperation among participants who reported feeling conflicted during the contribution decision – but not among participants who reported no conflict. In this paper, we directly test the causality of conflict identification in the public good game.

We present a simple model of rational self-control in the public good game (for surveys on public goods experiments, see, e.g., Chaudhuri, 2011; Gächter, 2007; Ledyard, 1995; Zelmer, 2003). This model captures the conflict between cooperative

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(pro-social) and selfish behavior. Specifically, we model the internal conflict between free-riding and contribution to the public good as a two-stage decision problem; first, there is an identification stage and, second, a contribution stage; self-control<sup>3</sup> determines the cost of cooperative behavior. Our framework for understanding cooperation is complementary to a range of other interpretations and findings. These include altruism, warm-glow, inequity aversion, efficiency preferences, reciprocity, logic of appropriateness, and the sheer confusion of individuals (see, for instance, Anderson, Goeree, & Holt, 1998; Andreoni, 1990, 1995; Fehr & Schmidt, 1999; Houser & Kurzban, 2002; Palfrey & Prisbrey, 1997; Weber, Kopelman, & Messick, 2004).

We test our model in a public good game, with experimental treatments to influence the identification stage in the self-control model; we do so by adopting the framing technique used by Martinsson, Myrseth, and Wollbrant (2012) to influence perceived conflict in the dictator game (see also Myrseth & Fishbach, 2010). Participants played a one-shot linear public goods game, of the Fischbacher, Gächter, and Fehr (2001) design, which elicits conditional contribution schedules through a variant of the strategy vector method (Selten, 1967), together with an unconditional contribution and an expectation of others' unconditional contributions. At the very end, participants completed a measure of trait self-control (Rosenbaum, 1980a), and they also reported how conflicted they felt during the cooperation decision.

We find support for our main predictions. Identification of self-control conflict induced a stronger positive association between trait self-control and cooperation, as measured by unconditional and conditional contributions; participants in the framing treatment that prompted relatively higher likelihood of conflict identification exhibited a positive association between trait self-control and cooperation, but the participants in the treatment that prompted a lower likelihood of identification exhibited no correlation. Furthermore, an auxiliary test verifies that our treatments influenced perceived conflict as intended; participants in the treatment intended to raise the relative likelihood of conflict identification reported that they felt more conflicted during the decision to cooperate than did participants in the treatment intended to reduce the likelihood.

We organize the remainder of the paper as follows. Section 2 reviews the literature on the relation between pro-social behavior and self-control. Section 3 derives our predictions, and Section 4 explains our experimental design. We present in Section 5 the experimental results. Section 6 discusses our findings and concludes the paper.

## 2. Self-control and pro-social behavior

### 2.1. Self-control and social dilemmas

Long essential to psychologists' understanding of cognition, dual process theories are gaining ground in the study of economic behavior (Alós-Ferrer & Strack, 2014). We adopt the dual process perspective and conceptualize self-control as a "cold" executive function that guides behavior in the face of "hot" impulses to act against better judgment (see e.g., Hofmann, Friese, & Strack, 2009; Loewenstein, 1996, 2000; Metcalfe & Mischel, 1999; O'Donoghue and Loewenstein, 2007). As such, willpower represents the resources that the executive function yields in a struggle against temptation (see e.g., Baumeister, Bratslavsky, Muraven, & Tice, 1998). The resources may include cognitive strategies to divert attention away from temptation (Mischel, Shoda, & Rodriguez, 1989), strategies of pre-commitment (Schelling, 1984; Thaler & Shefrin, 1981), or possibly the sheer strength of mind to hold back from the song of the sirens (Myrseth & Wollbrant, 2013).

The question of how pro-social versus selfish behavior relates to self-control was broached by Loewenstein (1996, 2000), who suggests that selfish behavior may be motivated by visceral urges or drive-states, resembling cravings for relief from hunger, pain, and sexual deprivation. O'Donoghue and Loewenstein (2007) offer a conceptual framework for understanding how selfish urges may conflict with the "colder," more abstract preferences for altruism.<sup>4</sup> Overall, recent empirical work is mixed, depending on experimental paradigms.

Most pertinent to our paper are studies on various forms of social dilemmas. Among these, fairly consistent evidence is reported from studies on time preferences. Curry, Price, and Price (2008) find in a standard public goods game that individuals' discount rates are negatively associated with their contributions to the public good. In other words, more "impatient" individuals contributed less to the public good than did "patient" ones. Fehr and Leibbrandt (2011) arrive at a similar pattern; they report that patient (vs. impatient) fishermen – according to time preferences elicited in the lab – were in the field less likely to over-exploit the common pool resource. Moreover, Burks, Carpenter, Goette, and Rustichini (2009) report that "short-term" patience – the  $\beta$  in the  $\beta$ - $\delta$  model – is positively associated with cooperative behavior in a sequential prisoner's dilemma.<sup>5</sup>

Rand, Greene, and Nowak (2012) and Rand et al. (2014), however, sound a contradictory message. Across a series of public good games, most administered online, they find that lower decision times are associated with more cooperative behavior and that time-pressure increases cooperation. They interpret this as evidence that giving is 'spontaneous' and greed 'calculated'. Similarly, Lotito, Migheli, and Ortona (2013) report that lower decision times are associated with more cooperation in a public good game, and Nielsen, Tyrann, and Wengström (2014) find that free-riders, classified according to the Fischbacher et al. (2001) taxonomy of contributor types, exhibit longer decision times than do conditional cooperators. Tinghög et al.

<sup>3</sup> We use the terms "willpower" and "self-control (effort)" synonymously.

<sup>4</sup> For an alternative conceptualization of the relationship between self-control and cooperation, see for example Rachlin (2004).

<sup>5</sup> For work in economics on self-control and time inconsistency, see e.g. hyperbolic and quasi-hyperbolic discounting models by Strotz (1955) and Laibson (1997), the "planner-doer" model by Thaler and Shefrin (1981), and the dual-self model by Fudenberg and Levine (2006) or the simplified version in Fudenberg, Levine, and Maniadi (2014). For work on procrastination, see e.g. O'Donoghue and Rabin (1999) and Burger, Charness, and Lynham (2011).

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