



## Sanctioning as a social norm: Expectations of non-strategic sanctioning in a public goods game experiment

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### ABSTRACT

Sanctioning increases cooperation in public goods games, but not indiscriminately under all conditions and in all societies, and the mechanisms by which sanctioning exercises its impact on behavior are yet to be studied in detail. We show experimentally that in the presence of sanctioning, our experimental subjects adjust their behavior in order to avoid being a free rider. They do this not only in the STANDARD sanctions treatment, where they directly experience any sanctions assigned to them, but also in our main treatment, the SECRET sanctions treatment, where no information on sanctions received is available until the end of the experiment. We observe no such free riding avoidance in the treatment without sanctioning. The mere knowledge that sanctions might be assigned increases cooperation among the members of our subject pool; subjects expect that non-strategic sanctioning occurs against the free riders. Moreover, these expectations are correct as we observe a similar pattern and extent of sanctioning in both treatments. We propose that sanctioning in itself is a social norm and may be culturally dependent, as suggested in the literature.

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### 1. Introduction

Free riding in social dilemmas can be prevented if players are able to assign costly sanctions to their co-players. This is the case in cultures that sanction free riders.<sup>1</sup> In this study, we assert that sanctioning is a social norm. It is a rule that prescribes which situations merit sanctions, and it is accompanied by a set of beliefs that correctly predict punishable situations. In our experiments, we find that subjects avoid the free rider position in a public goods game and that their beliefs about the punishable behavior are correct since the actual sanctioning is targeted towards the free riders. This happens even in cases where the sanctions are not observed, i.e., when no evidence about the actual sanctions assigned is available to the subjects during the experiment. Moreover, there seems to be little attrition in the sanctioning expectations over time. In

our experiments with unobserved sanctions, subjects contributing less than others on an average increase contributions in the next period. This prevents the unravelling of cooperation; and instead, gives rise to group-specific norms. These group-specific cooperation levels are driven by initial contributions, and by contribution strategies that seek to avoid being seen as a free rider.

Several pieces of evidence in the literature have emphasized the role of the subjects' home-grown beliefs about sanctioning. For example, in experiments in which free riders are sanctioned, subjects respond to the introduction of sanctioning options into the experiment in a way that is consistent with the actual sanctioning behavior. Consequently, contributions to the public goods increase immediately after the announcement of the opportunity for costly sanctions (e.g. Fehr and Gächter, 2002). Fehr and Fischbacher (2004) find that stated beliefs reveal that subjects expect a third-party punishment to be imposed on unfair dictators. Moreover, one-shot dictators become more generous under the "threat" of receiving verbal commentary on their distributional decisions (Ellingsen and Johannesson, 2008). An interesting finding on sanctioning is the existence of a multiplicity of sanctioning norms across societies. Gächter and Herrmann (2007, 2009) study societies in which cooperators are sanctioned along with free riders. They find that this type of sanctioning is paired with a decrease in cooperation rates when the sanctioning opportunities are added

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<sup>1</sup> These are usually Western societies, where the majority of experimental studies has been performed (see for example Ostrom et al., 1992; Fehr and Gächter, 2000; Masclet et al., 2003; Egas and Riedl, 2008; Anderson and Putterman, 2006; van Soest and Vyrastekova, 2006; and Carpenter, 2007).

to the experiment, as opposed to the increase in contributions that is normally observed in studies with sanctioning of free riders. In such a society, subjects do not increase their cooperation, as they correctly anticipate that such behavior will be punished. This piece of evidence motivates our assertion that sanctioning behavior in a society is accompanied by a corresponding set of local beliefs consistent with the behavior.

Recent evolutionary approaches suggest that beliefs about sanctioning play a central role in explaining the survival of cooperation through sanctioning. For some time, sanctioning of free riders stands as a strong candidate for resolving the puzzle of human cooperation (Fehr and Gächter, 2000). Negative emotions held toward free riders are hypothesized as the proximate mechanism supporting outwardly costly sanctions (Fehr and Gächter, 2002). At the same time, the ultimate evolutionary mechanisms of sanctioning are less obvious. In a society, punishers receive lower payoffs than non-punishing cooperators as soon as free riders invade the population, which creates pressure against the survival of the punishing cooperators. Group-selection models which focus on the interactions among members of small isolated groups, would allow for the survival of cooperation by sanctioning of free riders, but these models require unrealistic assumptions (such as small group interactions, and no migration) which are unlikely to have prevailed during the course of human evolution.

Models that respond to this criticism employ a range of approaches, most of which emphasize the importance of social norms – systems of rules and shared beliefs that have been adopted by a significant part of the population. Gardner and West (2004) show that even at the level of individual gene evolution, altruistic (or non-strategic) sanctioning can survive if individuals adjust their cooperation levels to the threat of punishment that is present.<sup>2</sup> A society in which sanctioning and a cooperative response to the threat of sanctioning co-evolve ends up with high levels of cooperation that do not require kin- or group-selection arguments.

Such a relationship between the threat of sanctioning and cooperation might be created if beliefs in sanctioning get transmitted in the population parallel to the sanctioning traits themselves. In a similar vein, Henrich and Boyd (2001) sustain cooperation by using altruistic sanctioning in a model with cultural group selection in which norms evolve within groups and are transmitted from more successful groups to groups with lower fitness. Finally, Gintis (2003) presents a gene-cultural evolution model, in which the individual genetic evolution process of traits for norm internalization is coupled with norm transmission between groups. In this way, the norm of sanctioning of free riders can arise as one of the possible stable states of the evolutionary process.

An important common element in these evolutionary approaches is the relationship between sanctioning, as an internalized norm or as an individual trait, and a system of beliefs that coevolves with it and that leads to the expectations consistent with the actual sanctioning behavior. One implication of these models is that individuals in societies where sanctioning supports cooperation through the sanctioning of free riders are expected to believe that sanctioning will be used to sanction free riders, and to believe this without empirical evidence on the use of sanctions. A second, perhaps more important implication, is that sanctions can affect behavior even when not being used. As a direct consequence,

<sup>2</sup> In the literature, sanctions are referred to as altruistic if they are costly to the sender, but yield no benefits to him/her (Fehr and Gächter, 2002). The sanctioning studied in this paper is most precisely referred to as non-strategic, meaning that the sanction providers engage in sanctioning without planning to benefit from it, despite the fact that they might end up better off with than without the sanctioning option available. However, both altruistic and non-strategic sanctions are used non-strategically, without their choice being based on the expected benefit from the sanctioning decision.

when sanctioning of free riders is internalized by a society as a social norm, the overall costs incurred in sanctioning might be much lower than usually assumed.

The experimental findings presented in this paper provide evidence that the impact of sanctions assigned to the free riders is driven by expectations rather than by any direct impact of sanctions. Subjects correctly predict that free riding will be sanctioned and hence adjust their behavior accordingly. Sanctioning thus is a form of a social norm—a behavioral rule that is adhered to and that is expected to be adhered to by a significant fraction of the population.

We obtain data on the role of the subjects' expectations regarding sanctioning behavior by varying the timing of the feedback given to the subjects about the sanctions they receive in a repeated public goods game. We implement two information treatments. In both of them, subjects first play several rounds of the linear public goods game without any sanctioning, and experience the convergence of their contributions to full free riding. After re-grouping subjects for the second part of the experiment, we allow them to assign costly sanctions to other group members in each round of the game. In the STANDARD treatment, subjects receive feedback on the sanctions assigned to them in the same round in which they made their contribution to the public good, while in the SECRET treatment, sanctions can be assigned in each round, but they are revealed to their receivers only at the end of the experiment. All strategic (forward-looking) motivations for sanctioning are thus removed in the SECRET treatment. Moreover, if behavior in the public goods game is affected by the presence of the sanctioning option in the SECRET treatment, then we ascribe this effect to the beliefs subjects hold about sanctioning behavior of others. Note that we do not explicitly elicit subjects' beliefs about sanctioning but infer them from the subject's behavior, and from comparison of our experimental treatments.

Our paper contributes to the existing literature on the origins of sanctioning, and the way sanctions affect behavior. Most closely, it links to the study by Fudenberg and Pathak (2010). Using a random matching design, they compare one-shot public goods games with immediately observed sanctioning to games with unobserved sanctions, in order to differentiate between repeated-game theory motivations for sanctioning, and altruistic (backwards-looking) sanctioning. The authors report that subjects are more likely to punish, and they punish harsher when sanctions are not observed, but no explanation is offered for this effect. The wide-spread use of unobserved sanctioning has been documented in other studies as well. Abbink et al. (2004), for example, compare immediate and delayed feedback on ultimatum offer rejections in a random matching design, and report a considerable rejection rate in the covered response design, going beyond the effect of creating a group reputation for toughness in order to eliminate unfair offers. Non-strategic sanctioning in a one-shot public goods game is observed by Walker and Halloran (2004). In their true one-shot experiment, sanctions do not disappear, although it seems that subjects are not able to anticipate correctly the level of contribution they will be sanctioned for. Note that so far, no conclusion can be made about the impact the unobserved sanctions would have on behavior over time, and whether unobserved sanctioning is a temporary or lasting phenomenon. In our experiments, we therefore study a repeated public goods game, which allows us not only to analyze the origins of sanctioning, but also the way subjects incorporate the threat of the (unobserved) sanctioning into their contributions in a public goods game.

In brief, we find that expectations of sanctioning enforce cooperation. Our data corroborates the widespread use of non-strategic (backward-looking) sanctions in public goods games. Sanctioning occurs in both of our experimental treatments, and similar levels of free riding in the public goods game are punished to a similar

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