
The pen is mightier than the sword: How third-party advice or sanction impact on pro-environmental behavior.

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Abstract

Pro-environmental behaviors are pro-social in their essence. Even if their object and outcome are invisible in the present, they will be represented by global warming of the society in the future. As a branch of economics, experimental economics looks at environmental behavior issues through the study of social dilemma as Public Good Games. Moreover, it is well recognized that incentives can influence the cooperation of individuals in providing public goods. In this paper, we experimentally adapt a public good game (henceforth PGG) to the environmental issue of waste management. In order to simulate the issue at a municipality level, we design an experiment in which groups are composed by four contributors and a third-party who has the possibility of applying an incentive to increase the cooperation. Two types of incentives are investigated in two separate treatments where an additional player that plays the role of the third-party is introduced in each group. In both treatments, third parties' payoff is correlated with the payoff of the members of the group she belongs to. The first type of incentive we examine is a communication form based on a free advice given by a third-party in order to increase the average level of contributions inside a group (Advice treatment AT). The second type of incentive is a costly punishment through a group tax implemented by a third-party depending on the average level of contributions in a given group (Sanction treatment ST). In fact, the punishment is costly for the third party as his payoff is directly correlated to group payoff. Thus, the behavioral repercussions (level of contributions in the PGG) to the common good (a shared waste management mechanism) will show the most efficient incentive to use in order to increase the individuals' cooperation. Furthermore, we control for participants' pro-social preferences by taking into consideration four individual profiles (individualistic, pro-social, competitive and altruistic) provided by the Social Value Orientation (SVO) measure (Murphy et al., 2011). Moreover, we investigate the effects on contributions by including an effort task in order to increment initial given endowments. This experimental strategy is justified by the existing literature investigating the effect of incentive taxation and advice on individual pro-environmental behavior like waste recycling. In fact, considerable literature exists concerning household recycling behavior but it mainly

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consists of theoretical (Brekke et al., 2003; 2010), empirical work (Viscusi et al., 2011; Cecere et al., 2014) or of field experiments (Schultz, 1999). To our knowledge, no existing lab experiment investigates these questions. The related environmental literature has discussed how to encourage or influence households to sort waste or to reduce waste production via the use of monetary incentives, i.e., incentive pricing. The major results of the experiment can be summarized as follows. First, in line with the experimental literature on public goods provision, we observe that individuals contribute more than predicted by theoretic models based on the pure self-interest paradigm. Second, concerning the relative impact of advice and sanction in promoting cooperation within groups, we find that advising individuals has a positive impact in increasing cooperation, but this impact fades away with time, and the advice has no added value compared to a non-incentivized situation. As explained by Chaudhuri et al. (2006), when the majority of subjects practice conditional cooperation, an inherent social norm appears in the group leading to high levels of contribution. Third, regarding the impact of sanction, the results suggest that the threat of sanction is more efficient than advice in prompting significantly higher levels of contributions both in the short and in the long run. This finding echoes results of Masclet et al. (2013) where the threat alone (i.e., without ever being carried out) pushes individuals to increase significantly their average contribution. The literature reports also that in presence of an institution, the minority of free riders adjust to the behavior of the majority by increasing their contributions. From our data, we observe that it is not the case since punished individuals in the Sanction treatment continue to free-ride. They do not seem to be influenced either by the fact of being sanctioned or by the majority of contributing partners. Quite the contrary: the more they are punished, the less they contribute in the next periods. Our interpretation is that being sanctioned is considered as a price to pay for adopting a free rider behavior. This interpretation goes hand in hand with our conjecture that sanction in a form of a tax can crowd out the motivation of pro-social individuals to contribute to the public good. Four, on the impact of wealth heterogeneity on individual behavior and altruism hypothesis, we observe that the population defined as High Wealth (with the endowment greater than the average endowment of the group) contributes more in absolute value, which confirms the altruism hypothesis. However, in relative terms, the contributions are not significantly different. An argument found in the literature is that wealthy individuals do not contribute necessarily more than less-endowed ones because of an anticipated reciprocity effect (Cherry et al., 2005). This effect stands for the idea that people expect reciprocation of their contributions. They are therefore likely to contribute more when they believe that the other members of the group will act the same. Cherry et al. (2005) links this anticipation effect with the concept of conditional cooperation of Fischbacher et al. (2001) who explain that contribution of an individual is higher as her belief about the contribution of others is optimistic. In our experiment, the High Wealth subjects can infer information about the average endowment of the group members, and thus understand that their partners cannot afford high levels of contribution, or at least not as high as their own. Furthermore, we analyze the behavior of the third-party. It appears that the amount of the advice is a function of the level of the wealth (endowment) and contributions of the subjects. To what concern the decision of sanctioning, it appears that third-parties base their decision on the earned payoffs of contributors only.

Finally, we address the policy implications on the behavioral results. Indeed, our behavioral results can help in anticipating impacts of government policy on individual's reaction to incentives. The experiment suggests some ways to limit welfare losses associated with waste sorting management conceived as a typical social dilemma. The results of our modified PGG experiment show that the threat of sanction from the advisor, which we treated here as a substitute for the State, is more efficient in strengthening cooperation than mere advising. It appears also that, contrary to what some believe, if observed relatively to the wealth level, wealthy people do not systematically cooperate more (in relative way) as shown in Van den Bergh (2008). Policy makers can thus consider alternatives to monetary incentives such as simple threats of sanctions, which can positively modify undesired behaviors in the short term. This experiment therefore illustrates the usefulness of behavioral experimental studies for designing adequate waste sorting policy.

Keywords: Publicgoodgame, Advice, Sanction, Pro, socialbehavior, Pro, environmental behavior, Incentives, Waste sorting