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Selfish punishers

An experimental investigation of designated punishment behavior in public goods

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HIGHLIGHTS

- Designated punishers mitigate free riding while contributing less than non-punishers.
- Punishers undercut their own enforced norm.
- The discrepancy between punishers and non-punishers grows over time.

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ABSTRACT

We show that a second-party punisher forces his peers to contribute to a public good while contributing significantly less himself. This effect increased over time and casts doubt on the prevalent prosocial interpretation of (designated) punishment behavior.

1. Introduction

Imagine working with a supervisor on a common project: Everyone benefits from working on it, yet only one enforces contributions. From monarch to managers, many more real-world examples are conceivable. Yet research has concentrated mainly on situations where everyone can enforce contributions. In this situation participants reliably use (peer) punishment to solve social dilemmas (Fehr and Gächter, 2002), even though it constitutes a second-order public good in theory. This interpretation has extended to third-party (Baldassarri and Grossman, 2011) and second-party (O'Gorman et al., 2009) single punishers, who solve the social dilemma efficiently as well. Additional prosocial motivations range from equality concerns (Dawes et al., 2007) to retributive fairness (Falk et al., 2005). However, punishment can also be destructive: Some punishment decisions are motivated by spite and retaliation (Herrmann et al., 2008; Houser and Xiao, 2010; Falk et al., 2005).

Traditionally, philosophers have been skeptical of the prosocial use of power and argued for a state monopoly on punishment (Hobbes, 1998). Often, punishment can be self-serving as well as prosocial. Especially a second-party punisher profits from his own use of power. Although he provides a public good among the other players, he could abuse his power by undercutting his enforced contribution norm. Therefore, not only withholding punishment

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can be selfish (Leibbrandt and López-Pérez, 2012), but also punishment itself.

The aim of this paper is therefore to investigate the behavior of a second-party single punisher in a public-good game. As we are only interested in a comparison of punisher and non-punisher behavior, we used a single treatment with no feedback on individual contribution and costless punishment to have the cleanest angle at selfish and prosocial behavior, excluding inequality, reputational, and leadership concerns, and to give selfishness its best shot. To ensure our results were robust and due to punishment rather than informational asymmetries, we additionally ran a full information treatment.

We hypothesize that:

H1 *Punishers contribute less than non-punishers.*
H2 *This effect increases over time.*
H3 *Punishers enforce higher contributions than their own contribution.*

Consistent with previous studies in which the punisher changed every round (O'Gorman et al., 2009), we find that punishers stabilize cooperation by enforcing a high contribution level. However, they enforce a double standard by failing to contribute accordingly. They contribute less than their peers and additionally reduce their relative contribution over time, even though this behavior is overwhelmingly condemned (Cubitt et al., 2011; Reuben and Riedl, 2013). This highlights the importance of instrumental motivations for punishment and casts doubt that various prosocial motivations (Leibbrandt and López-Pérez, 2012), reputation, leadership (O'Gorman et al., 2009), equality concerns (Johnson et al., 2009; Dawes et al., 2007), or retributive fairness (Falk et al., 2005) are the main drivers in repeated second-party punishment scenarios. Instead, a punisher might simply mitigate the social dilemma for his own benefit.

2. Materials and methods

2.1. Measurements

2.1.1. Public goods game task

All participants were randomly assigned a role (punisher, non-punisher) and to a group of four in which they remained for the duration of the public goods game. Each session consisted of thirty rounds. Participants were instructed that each round would consist of three stages. In the first stage, participants were asked to allocate 20 tokens to a private and public account (1 token = 25 euro cents). Tokens allocated to the private account were theirs to keep. The tokens that were allocated to the public account (c_i) had a marginal per-capita return (MPCR) of 0.5, so that each group member would receive 0.5 times the total contribution to the public goods game. The payoff π_i of the participant i can therefore be formalized in the following way:

$$\pi_i = 5 - c_i + 0.5 \cdot \sum_{j \in \{1,n\}} c_j. \tag{1}$$

In the second stage, only the punisher (who was referred to as "D") was informed about the contributions of all group members in the first stage. The participants were shown in random order to the punisher each round anew to rule out reputation effects from previous rounds. D (the punisher) was now asked to indicate how much she would punish subject i (ς_i, $i \neq D$).[1] For this purpose she was equipped with 30 tokens. Each token could be used by the punisher to deduct one token of the payoff of a targeted subject. Unused tokens were not added to the payoff of D to rule out equality concerns,[2] so the contributions of the punisher could be compared to the contributions of others directly. The other three group members were just shown a blank screen asking them to wait for the decision of the punisher. The payoff π_i of the participant $i \neq D$ can therefore be formalized in the following way (the payoff of the punisher is described by Eq. (1)):

$$\pi_i = 5 - c_i + 0.5 \cdot \sum_{j \in \{1,n\}} c_j - \varsigma_i. \tag{2}$$

In the third stage (feedback stage), participants were informed about their own contribution to the private and group account, the overall group contribution, their own punishment (reduction), and their payoff. Participants were informed neither of the contributions of other group members nor of punishment meted out to others — this was made public in the instructions to avoid leadership and reputational concerns.

Only one of the thirty rounds was payoff-relevant in case the public good was drawn to be payoff-relevant for the respective subject.

2.1.2. Additional measurements

We also collected data on spite (Marcus et al., 2014), social dominance orientation (SDO) (von Collani, 2002), rivalry & narcissism (Back et al., 2013), and social value orientation (SVO) to increase the robustness of our results.

To measure SVO, we used the 6-items primary ring matching version of the Slider Measure (Murphy et al., 2011). At the end of the experiment, only one of the 6 items was randomly chosen to become payoff-relevant in case this task was paid. Either the slider-measure or the public goods game task was chosen with equal probability to be payoff-relevant, while the three questionnaires (Spite, SDO, rivalry & narcissism) were not incentivized.

2.2. Participants and design

96 participants (47% female) were recruited with the online registration software Hroot (Bock et al., 2014). The experiment was conducted at the BonnEconLab and consisted of 4 sessions, each with 24 participants. The participants' age ranged from 16 to 57 years (Mdn = 22). Most students were bachelor students (Semester Mdn = 5). The average earning was 14.58 € (including a 4 € show-up fee) and the experiment lasted 1.5 h (including setting, video instructions, payoff etc.). All measurements were computerized with the experimental software z-Tree (Fischbacher, 2007).

Participants were randomly assigned to computer cubicles. They received video instructions separately and the opportunity to ask questions for each task in the experiment.[3] First, they were asked to complete SVO measurements. Then, they participated in a public goods game for 30 rounds. After that, they completed questionnaires and filled in socio-demographics. At last, they were presented with their payoff information and received their payoff privately.

3. Result

As each observation is nested within a group, we study only the means of each group over all rounds as the test statistics.

[1] To avoid framing and demand effects, we referred to the act as "reducing the payoff".

[2] In case of payoff-relevant equipment, the punisher could contribute more in stage one, anticipating extra gains in the second stage. If there was no extra equipment, the punisher could contribute less in stage one, compensating his extra expenditure in stage two.

[3] The video instructions with English subtitles and an English version of the handout can be found in the supplementary materials (see Appendix A).