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Study Links Punishment to an Ability to Profit

By [BENEDICT CAREY](#)

Sociologists have long known that communes and other cooperative groups usually collapse into bickering and disband if they do not have clear methods of punishing members who become selfish or exploitative.

Now an experiment by a team of German economists has found one reason punishment is so important: Groups that allow it can be more profitable than those that do not.

Given a choice, most people playing an investment game created by the researchers initially decided to join a group that did not penalize its members. But almost all of them quickly switched to a punitive community when they saw that the change could profit them personally.

The study, appearing today in the journal *Science*, suggests that groups with few rules attract many exploitative people who quickly undermine cooperation. By contrast, communities that allow punishment, and in which power is distributed equally, are more likely to draw people who, even at their own cost, are willing to stand up to miscreants.

An expert not involved in the study, Elinor Ostrom, co-director of the Workshop in Political Theory and Policy Analysis at Indiana University, said it helped clarify the conditions under which people will penalize others to promote cooperation.

"I am very pleased to see this experiment being done and published so prominently," Dr. Ostrom said, "because we still have many puzzles to solve when it comes to the effect of punishment on behavior."

Dr. Ostrom has done fieldwork with cooperatives around the world and said she often asked other researchers and students whether they knew of any long-lasting communal group that did not employ a system of punishment. "No one can give me an example," she said.

In the experiment, investigators at the University of Erfurt in Germany enrolled 84 students in the investment game and gave them 20 tokens apiece to start. In each round of the game, every participant decided whether to hold on to the tokens or invest some of them in a fund whose guaranteed profit was distributed equally among all members of the group, including the "free riders" who sat on their money. Because the profit was determined by a multiple of the tokens invested, each participant who contributed to the fund enjoyed less of a return than if the free riders had done so as well.

The tokens could be redeemed for real money at the end of the experiment.

About two-thirds of the students initially chose to play in a group that did not permit punishment. In the other group, the students had the option in each round of penalizing other players; it cost one token to dock another player three tokens. All participants could see who was contributing what as the game progressed, and could choose to switch groups before each round.

By the fifth round, about half of those who began the study in the no-penalty group had switched to the punitive one. A smaller number of students migrated in the other direction, but by Round 20 most had come back and the punishment-free community was a virtual ghost town.

"The bottom line of the paper is that when you have people with shared standards, and some who have the moral courage to sanction others, informally, then this kind of society manages very successfully," said the study's senior author, Bettina Rockenbach, who was joined in the research by Bernd Irlenbusch, now at the London School of Economics, and Ozgur Gurek.

Switching groups frequently prompted remarkable behavioral changes in the students. Many of those who had been free riders in the laissez-faire group eagerly began penalizing other selfish players upon switching. Dr. Rockenbach compares these people to heavy smokers who are insistent on their right to light up, until they quit. "Then they become the most militant of the antismokers," she said.

Being exploited appeared to cause deep frustration and anger in most students, she said.

Other experts said the results were an important demonstration of how self-interest can trump people's aversion to punitive norms, at least in the laboratory. Out in the world, they said, it is not usually so clear who is free-riding, or even whether a given group is encouraging cooperative behavior in most people.

"The mystery, if there is one, is how these institutions evolve in the first place," Duncan J. Watts, a sociologist at Columbia, wrote in an e-mail message, "i.e., before it is apparent to anyone that they can resolve the problem of cooperation."

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