

When people know each other, cooperation is more likely than conflict

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Students are participating in the experiment at Yunnan University of Finance and Economics in China. Credit: Potsdam Institute for Climate Impact Research/Hokkaido University/Yunnan University of Finance and Economics

When anonymity between people is lifted, they more likely cooperate with each other. Playing nice can thereby become a winning strategy, an international team of scientists shows in a study to be published in *Science Advances*. The findings are based on experiments with a limited

number of participants but might have far-reaching implications, if confirmed. Reducing anonymity could help social networks such as Facebook or Twitter that suffer from hate and fake news. It might also help in conflicts about environmental resources.

"Today, it often seems that [conflict](#) trumps [cooperation](#), be it on the Internet or in national politics - likewise in evolution, Darwinian selection should result in individuals pursuing their own selfish interest" says lead-author Zhen Wang from Northwestern Polytechnical University in Xi'an, China. Yet despite this perception, there's a lot of cooperation in nature as well as in societies. "Our findings suggest that it is crucial to ask one rather straightforward question: Do the prospective cooperators know each other reasonably well? If they do, they will more likely not try to win at the expense of each other, but together."

Winners play nice - while punishment causes retaliatory sentiments

The scientists let 154 undergraduate students at Yunnan University interact pairwise in an experiment originally designed by US mathematicians in the 1950s called the prisoner's dilemma. This is a setup in which two people don't know about each other's actions. They pretend to be on trial. If one testifies against the other, he or she benefits. If both testify, both get high fines. If both do not testify, assuming the same behavior of the other one, they both walk free. The authors modified this basic setup to allow mutual punishment when a pair of non-cooperators meet.

调查问卷(Questionnaire)

在囚徒困境博弈中(见下面的收益矩阵), 你和你的对手同时进行策略选择。假如, 你当前只有一个对手, 你现在的总收益是 20, 你和你的对手在这一轮分别选择策略“1”和“3”。那么, 这轮你获得的纯收益是 -1, 这轮之后你的总收益是 19。

假如你现在有两个对手, 你现在的总收益仍是 20, 你这一轮选择策略“2”, 你的两个对手分别选择为策略“1”和“3”, 这轮你获得的纯收益是 -1, 这轮之后你的总收益是 19。

收益矩阵(Payoff Matrix)

	你	对手
策略1	-1	+2
策略2	+1	-1
策略3	-1	-4

The questionnaire used to test the basic understanding of Prisoner's Dilemma games. The English translation is as follows: Problem 1: In the PD game (see the accompanying payoff matrix), players make strategic choices simultaneously. Assuming that you have one opponent and your present total payoff is 20, if you and your opponent respectively choose strategies "1" and "3", you earn ___ in the current round, and your total payoff becomes ___ after this round. Problem 2: Now you have two opponents at the same time. Your total payoff is still 20. If you choose strategy "2", and your two opponents respectively choose strategies "1" and "3", you earn ___ in the current round, and your total payoff becomes ___ after this round. Credit: Wang et al. Sci. Adv. 2017;3:e1601444

"In our experiments, participants underwent interactions anonymously or onymously, and they faced a threefold choice: to cooperate with one

another, to defect from one another, or to punish one another," says co-author Marko Jusup from Hokkaido University, Japan. "We found that when participants knew each other, this significantly increased the frequency of cooperation. This paid out very well for all - so, winners play nice."

The scientists expected that if one participant punishes the other one's antisocial behavior, this would instigate more cooperation. "We've been surprised to see that this was not the case. The punishment seemed to cause retaliatory sentiments, often resulting in further conflict," says Jusup.

Findings might apply to conflicts on Facebook, but also about environmental resources

As with any experimental study, according to the authors there is a danger in extrapolating the results outside the narrow set of controlled conditions. However, it is reassuring that computer simulations built on a small set of straightforward assumptions successfully reproduced the experimental results.

"Since the spirit of cooperation that social cohesion is based upon is crumbling away in some places, be it on Facebook or in societies that are about to be torn apart about issues such as immigration, we sought insight into what enhances cooperation," says co-author Jürgen Kurths from the Potsdam Institute for Climate Impact Research, Germany, who contributed analyses of the statistical significance of the results. "This might also apply to conflicts about [environmental resources](#). However, we have to further explore the continuum, the many states between complete anonymity and very well knowing the other person. It will be exciting to learn what kind of information, what degree of mutual recognition is needed to promote cooperation."

More information: "Onymity promotes cooperation in social dilemma experiments," [DOI: 10.1126/sciadv.1601444](https://doi.org/10.1126/sciadv.1601444) ,
advances.sciencemag.org/content/3/3/e1601444

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