

Total cooperation among people is not viable

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This picture show three hands, two of them in a cooperative situation and another one asking for a place. Credit: UC3M

A situation where a majority of people cooperate never happens. This is due to the fact that a significant number of individuals never cooperate and if they do it is in response to the decision of their neighbors to cooperate or not, or a result of their mood at the time, according to an experimental study by researchers at Universidad Carlos III de Madrid, Spain.

The objective of this research is to understand how cooperation works in nature in general, and among humans in particular. "From the evolutionary point of view it is very difficult to understand why we would help others when what interests us is helping ourselves," explained the authors of this study, which was recently published in the journal [PLoS ONE](#). One of the most striking conclusions drawn is that there are

different types of people: those who always try to help their neighbors (around 5 percent), those who never do so (35 percent), and others who cooperate depending on their mood or according to how their neighbor has behaved previously (60 percent).

"We have proved that in general decisions regarding [cooperation](#) do not reflect so much [economic incentives](#) as much as they do the fact that the individuals with whom they interact cooperate or not," summed up Professor José A. Cuesta, who carried out this research along with the Full Professor Ángel Sánchez, both from the Mathematics Department at UC3M, together with a team of researchers from the UNED (National University of Distance Learning in Spain) and the Universidad Católica del Norte (Antofagasta, Chile). The results of the study, with implications for physics, economics, psychology, and mathematics and computing, could have practical applications. For example, they can be used to optimize collaboration and innovation networks, where large groups of people or companies participate in a common task, investing their economic capacities or generating knowledge. "In these cases," Sanchez pointed out, "we must foment a generally cooperative atmosphere for the participants, which then has implications for the size of work groups and the need for timely incentives in order to avoid falling into a non-cooperative mind set".

The experiment

The question at hand was determining if, in a dilemma where someone would have to choose between cooperating or not with other persons who were connected through a network, a situation could be achieved in which all or most of the people collaborated. The theories and the computer simulations did not offer a univocal response and in many cases made contradictory predictions; because of this these scientists decided to carry out an experiment with real individuals in such a situation. For this purpose, the researchers asked for volunteers among

the student body at the UC3M Leganés campus and had them then interact through a computer programs so that they could see the persons with whom they had to cooperate or not, but keeping their anonymity at all times.

In the instructions given to 169 participants in this experiment, one of the largest carried out to date in experimental economics, words such as cooperate, betray, or let down were not employed in order to avoid inducing certain behavior, but instead choices were indicated by colors. During each round, a player obtained a certain benefit for his/her choice according to what his/her neighbors had chosen and he/she was informed what the others had done or won. The interaction was repeated a certain number of rounds and in two different situations; one in which the neighbors were always the same and another in which they changed after each round. "In this way," the researchers pointed out, "we were able to compare the result when there was an established contact network with what happens when there is not and the individuals interact with different groups."

Provided by Carlos III University of Madrid

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