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## **Human behavior on networks: What experiments tell us]**

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For the last two decades it was believed that a population structure (induced, e.g., by a network of contact) could promote cooperative behavior. The reason is that constraining interactions only to the closest contacts in the network enhances the formation of clusters of cooperators who can resist the exploitation of external defectors. Since Nowak and May's pioneering simulations of iterative prisoner's dilemmas on lattices (in 1992), the evidence extracted from a priori modeling human behavior was inconclusive: results suggest that the details (the kind of network, the update strategies, etc.) of the model may be very relevant to the final outcome. In spite of that, in some cases (scale-free networks are prominent on that) the promotion of cooperation seemed hard to argue. In 2009 we started a research program to test this effect in real experiment involving relatively large networks (comparable to those of the theoretical models). Since then we have conducted three experiments in two type of networks (a lattice and a scale-free network) and in isolated groups, and have reanalyzed existing experimental results. The conclusion we have reached out of them is that the network of contact does not play any role in promoting cooperation; in other words, people behave within a network as in isolated groups. More than that, the collected data point to a model of human behavior in which individuals act cooperating or defecting according to what their neighbors and themselves recently did, exhibiting not just reciprocity to the received cooperation but also a personal "mood", such that they only reciprocate if they feel in a cooperative mood and ignore their neighbors otherwise. Our results ask for a deep revision of the available theoretical models and demand an answer to the question why we behave the way we do.

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