

Cooperative Behaviour Cascades in Human Social Networks

James H. Fowler, Nicholas A. Christakis

Theoretical models suggest that social networks influence the evolution of cooperation, but to date there have been few experimental studies other than those that focus on coordination rather than cooperation. Observational data suggest that a wide variety of behaviours may spread in human social networks, but subjects in such studies can choose to befriend people with similar behaviors, posing difficulty for causal inference. Here, we exploit a seminal set of laboratory experiments which originally showed voluntary costly punishment can help sustain cooperation. In these experiments, subjects were randomly assigned to a sequence of different groups in order to play a series of public goods games with anonymous strangers; this allows us to draw networks of interactions to explore how cooperative behaviour spreads from person to person. We show that in both an ordinary public goods game and a public goods game with punishment, focal individuals ("egos") are influenced by fellow group members ("alters") in future interactions with others. Furthermore, this influence persists for multiple periods and spreads up to three degrees of separation (from person to person to person to person). The results suggest that each additional contribution a subject makes to the public good in the first period is tripled over the course of the experiment by other subjects who are directly or indirectly influenced to contribute more as a consequence. These are the first results to show experimentally that cooperative behaviour cascades in human social networks.