



The role of loners, reputation and punishment: the evolution of cooperation in the Optional Public Goods Game.

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Abstract: Cooperation is commonly modelled as the choice between defection and cooperation, although an individual could also opt-out or walk away in many situations (i.e., be a loner). This specific setting can be studied in the optional public goods game. The «Loner» strategy radically changes the dynamics of cooperation in social groups and leads to a sustained cooperator-defector-loner cycle. We study the problem through behavioural experiments and agent-based models (ABM).

Forced to play, loners, in the experimental setup, contribute less than expected and do not change their contribution when punishment is introduced. With the agent-based model, we investigate the phenomenon further by introducing reputation dynamics and social norms. In the ABM setup, high cooperation is sustained through conditional strategies, which reduce pro-social punishment and almost eliminate anti-social punishment.