

**Can preferences for rewarding coexist
with preferences for punishing?**

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ABSTRACT

This paper studies the question under which circumstances preferences for rewarding can survive together with preferences for punishing in an evolutionary haystack model. Previous work showed that if a first moving proposer has only the options to cooperate (in which case the second moving responder can reward him or not) or to defect (in which case the responder can punish him or not) then either rewarders or punishers may survive, but not jointly. Once punishers are able to successfully enter a population they crowd out all other types. This paper considers a situation in which the proposer has the outside option to avoid any interaction. We show that then truly reciprocal players who reward cooperation and punish defection can survive jointly with punishers who punish defection, but do not reward cooperation.