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## Review

# Prosociality as a foundation for intergroup conflict

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**Abstract**

Intergroup conflict can be modeled as a two-level game of strategy in which prosociality can take the form of trust and cooperation within groups or between groups. We review recent work, from our own laboratory and that of others, that shows how biological and sociocultural mechanisms that promote prosocial preferences and beliefs create in-group bounded, parochial cooperation, and, sometimes, parochial competition. We show when and how parochial cooperation and competition intensify rather than mitigate intergroup conflict.

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**Keyword**

Cooperation, Social preferences, Intergroup relations, Parochialism, Reciprocity, Threat.

**Introduction**

Humans live in interconnected networks of groups. Within and between groups, humans can be more or less cooperative with each other. Theoretically, cooperation is defined as extending a benefit  $b$  to others at a cost  $c$  to oneself, with  $c < b$ . From an evolutionary perspective, a cooperater increases their fitness when cooperation is reciprocated, because the received benefit  $b$  exceeds the cost  $c$  incurred when initiating cooperation. When others do not cooperate, the individual loses fitness both in absolute and relative terms. This defines the inherent

social dilemma of group living — cooperation serves collective welfare and the functioning of the group as a whole; not cooperating or ‘free riding’ serves personal welfare and individual fitness most [1].

Within and between groups, humans can also compete with others and inflict harm — they deceive and give misleading information, spread negative rumors about others, exclude others from potentially beneficial exchanges, or use verbal or physical aggression. Theoretically, such behaviors impose a cost  $p$  on others at a cost  $c$  to oneself. Competing reduces overall social welfare but increases relative wealth when  $c < p$  and can lead to spite and vengefulness. However, when harm infliction is aimed at free riders, it can also deter free riding and increase cooperation [1–3].

Assuming humans are strictly motivated to maximize personal wealth and expect others to be likewise, group membership should not condition decisions to cooperate and compete — costs and benefits are the same for members of one’s own group as they are for members of other groups. And yet, decades of research in the psychological, economic, and biological sciences suggest that humans cooperate more with members of their own rather than other groups (henceforth, parochial cooperation) [4,5]. At least sometimes, humans also compete more with (members of) out-groups rather than their own in-group (henceforth parochial competition) [6,7]. Alone and in combination, parochial cooperation and competition polarize intergroup relations and can trigger cycles of increasingly wasteful intergroup conflict [6].<sup>1</sup>

The question we address here is when and why humans become parochial cooperators and when and why they become parochial competitors. We discuss mechanisms underlying parochialism and review recent evidence. We conclude that intergroup conflict is often an unfortunate outcome of the human preparedness for in-group bounded cooperation.

<sup>1</sup> Parochial cooperation and competition capture what others referred to as weak and strong parochialism, with strong parochialism involving behavior that is more costly to out-groups [36]. In addition, parochial cooperation captures what social identity theory refers to as in-group favoritism and out-group derogation, respectively [8–10]. Although related, however, these earlier conceptualizations tend to conflate preferences and beliefs, on the one hand, and behavioral manifestations on the other. Here, parochial cooperation and competition pertain exclusively to behavioral expressions of benefits extended to and costs imposed on others.

## Mechanisms underlying parochial cooperation

### Mere membership and social identification

Social identity theory [8–10] proposes that humans heuristically classify themselves and others into distinct social categories on the basis of perceptual, attitudinal, or behavioral similarities [11,12]. Because of a putatively inherent need for self-enhancement [10], people ascribe and emphasize — in thought and behavior — positive features and characteristics to their own category (the ‘in-group’) and negative features and characteristics to other social categories (the ‘out-group’).

As stronger (need for) in-group identification associates with stronger in-group favoritism and out-group derogation [8], it may be that mere social categorization suffices for parochial cooperation and competition to emerge [11]. Recent work casts doubt on this possibility. First, experiments show that the effect of group membership is not explained by mere categorization processes or self-enhancement but rather by in-group bounded cooperation that emerges because humans expect reciprocity more from in-group members and because they anticipate future benefits from cooperation more with in-group members [13,14]. Second, meta-analyses [15,16] revealed that parochial cooperation emerges especially when participants are interdependent with in-group or out-group recipients (as in, e.g. trust games and public good provision games; [1] and less so when such interdependence is lacking (as in e.g. dictator games [1]) (also see [14–23]). Finally, recent work suggests that group identification often does not predict the extent of parochial cooperation in social dilemmas [13,17,18]. Identification follows from rather than causally triggers parochial cooperation and competition.

### Reputation and (in)direct reciprocity

An alternative mechanism for parochialism is suggested by group bounded reciprocity theory (GBRT) [25]. Drawing on evolutionary game theory, it is assumed that humans need others to survive and prosper. To maintain and secure opportunities for potentially beneficial interactions, humans not only initiate and reciprocate cooperation with others but also adjust their cooperation when their reputation is at stake and prefer and select partners with a known reputation for being reliable, trustworthy, and cooperative. The need to build and maintain a positive reputation and engage in repeated interactions with familiar others creates social groups and group boundaries. Through such sorting mechanisms, people are likely to be less cooperative with unknown others, lone strangers, and members of distant out-groups alike [26–29].

As per GBRT, what matters for parochial cooperation to emerge is an underlying interdependence structure and

ability to identify someone’s reputation; familiarity cues that serve as the basis for social categorization in social identity theory are, as per GBRT, a consequence of repeated interactions among people. Once established they can serve as heuristic cues to quickly assess whether others belong to in-group cooperators and whether they are able to spread reputation information to potential future interaction partners [6].

Experiments support GBRT. First, meta-analyses revealed stronger parochial cooperation when group members were mutually interdependent and had opportunities for (in)direct reciprocity [15,16]. Second, parochial cooperation is seen more strongly when group members know that their choice (or group membership) is observed by and shared with other ingroup members [30,31]. Third, people are equally likely to withhold cooperation from unknown strangers as from out-group members [4,15].

### Attachment and prosociality

Both social identity theory and GBRT imply that parochial cooperation is grounded in the individual’s attachment to and reliance on others. If true, we would expect biological and sociocultural mechanisms that promote attachment to and reliance on others to produce parochial cooperation. There is good evidence for this possibility. At the biological level, both (long-term) attachment and (temporary) other concerns are increased with higher levels of oxytocin — a neuropeptide produced in the hypothalamus and functioning as both hormone and neurotransmitter [32]. Participants given intranasal oxytocin (versus matching placebo) are more cooperative with familiar rather than unfamiliar others and display more parochial cooperation [33–35].

At the sociocultural level, decades of research revealed how socialization processes and cultural exposure create persistent individual differences in prosociality [1,36]. As prosocial individuals are more willing to establish and maintain cooperative relations, individuals with stronger prosocial traits are more likely to display parochial cooperation [13], [37–39]. At least sometimes, prosocial people prefer parochial cooperation more than universal cooperation that would benefit in-group and out-group members alike [13,39] (for exceptions [40,41]).

## Mechanisms underlying parochial competition

Whereas cooperative reputations and possibilities for (in)direct reciprocity explain parochial cooperation in humans, it remains open whether and why humans (also) engage in parochial competition. And yet they do. People compete more with members of more or less rivaling out-groups than with members of their in-group

[4,5,15,16]. Indirect evidence also comes from experiments in which participants were organized in two three-person groups — an in-group and an out-group. In this Intergroup Prisoner's Dilemma-Maximizing Difference Game [1,6,42], each individual received an endowment from which they could contribute to an in-group pool from which all members of the in-group would benefit. They could also contribute to a 'between-group pool' from which all in-group members would benefit likewise but from which all out-group members would incur a cost. Accordingly, in-group welfare is served equally by contributions to the in-group and the between-group pool, and the only reason for people to invest in the between-group pool is to punish the out-group (*viz.* spite, out-group derogation, or competition). More than 20 independent experiments, performed in the United States, Europe, and the Middle East, have shown time and again that — across cultural contexts — humans contribute to the in-group pool (i.e. parochial cooperation) yet also, albeit to a lesser and more variable degree, to the between-group pool (i.e. parochial competition) [6,39].

### Status ranking

One possible reason for parochial competition is that it increases the individual's reputation for being a loyal group member who is willing to self-sacrifice for the protection and prosperity of the in-group. If true, we would expect more parochial competition when intergroup relations are competitive, and the out-group poses a threat to the in-group (also see Section 3.2), and less when intergroup relations are noncompetitive. Experiments support this possibility — individuals reward hawkish behavior toward out-groups [43] and elect individuals who display parochial competition into leadership positions [42].

Indirect support for the idea that within-group reputation and status conditions, parochial competition comes from recent studies showing that individuals with higher levels of the hormone testosterone display enhanced competition for territory and (aggressively) seek and protect status ranking [44]. A recent experiment using the Intergroup Prisoner's Dilemma-Maximizing Difference Game revealed, for example, that endogenous testosterone is associated with more contributions to the within-group pool (*viz.* parochial cooperation) and with more contributions to the between-group pool (*viz.* parochial competition) [45]. In another study, male soccer fans were confronted with (un)fair offers from either a fan of their own team (in-group) or a fan of the rivaling team (out-group). Higher levels of testosterone predicted soccer fans' generosity toward in-group members (*viz.* parochial cooperation) and the rejection of both fair and unfair offers from the antagonistic out-group, revealing a tendency to punish the out-group at a personal cost (*viz.* parochial competition) [46].

### Out-group threat

Out-group threat moderates the degree to which people engage in parochial competition. Out-group threat can be defined as the belief that out-groups are willing to invest in parochial competition or have the opportunity to do so. Some studies showed more parochial competition when out-groups could hurt the in-group more rather than less, especially when participants were motivated to protect their in-group [47]. Mifune et al. [48] showed that participants in small groups punished out-groups through pre-emptive strikes out of fear more than because of pure spite toward out-group members. Along similar lines, Ying et al. [49] found that the subjective perception of out-group threat led people to more readily punish out-groups pre-emptively and concluded that out-group punishment was primarily defensive rather than offensive in nature. Finally, a number of studies revealed that out-group threat not only induces parochial competition but also, in parallel, increases parochial cooperation [39], [47–53]. Combined, these experiments suggest that parochial competition is motivated by the desire to protect the in-group, oneself included [6,20,53].

### Carrying-capacity stress

Sometimes parochialism manifests in-group members investing personal resources to overrule, subordinate, and exploit other groups. Such out-group attacks hurt out-group members (*viz.* parochial competition) and, when attacks are successful, benefit the in-group with additional 'spoils of war' (*viz.* parochial cooperation). Experiments using Intergroup Attacker-Defender Contests [18], [50–52] have shown repeatedly that individuals invest, at a personal cost, resources in joint group attacks on out-groups. These experiments also revealed such 'cooperation to aggress' tendencies to be particularly prominent when group members went through a ritualistic bonding before the contest [51], when peer punishment could be used to reduce within-group free riding [50] and when within-group attachments were promoted with intranasal administration of oxytocin [52].

Recent experiments showed that 'cooperating to aggress' becomes especially prominent when group members are exposed to environmental risk and resource scarcities — situations in which the group's welfare is exogenously threatened (*viz.* carrying-capacity stress; [6]. In one set of intergroup contest experiments, environmental unpredictability was induced by making noninvested resources subject to risk of destruction (versus not). Environmental unpredictability increased feelings of stress and, at the same time, made out-group aggression more intense and successful. Because unpredictability did not increase in-group defense, aggressing out-groups was often successful when environmental risk was higher. Macrolevel changes that make the natural and



economic environment more threatening to the in-group can be a root cause of parochial competition and, therefore, turn otherwise benign intergroup relations hostile [54].

## Conclusions and future research

Biological and sociocultural factors that prepare for prosociality can lead humans to initiate and reciprocate cooperation with familiar others and members of their own in-group. Concerns over in-group cooperation, alongside the need to protect the in-group against outside danger, can lead humans to engage in parochial competition toward neighboring out-groups. Both parochial cooperation and parochial competition are, as such, possible instances of a deeply engrained and probably evolved willingness to serve the group on which humans depend. Both forms of parochialism also, and unfortunately, set out-groups apart from the in-group and trigger group comparisons that can create feelings of deprivation, envy, and injustice.

The research discussed herein relied on settings in which individuals were paired together in groups. There is evidence too that group functioning, in general, and cooperation, in particular, benefit from allowing individuals to freely decide whom to interact with and whom to exclude from future interactions [1,26]. In addition, there is some evidence that individuals prefer to interact with people who, on previous occasions, displayed parochial cooperation and/or competition [42,43]. Future research could examine the hypothesis that during partner selection reputations for parochialism drive the creation of groups that are inherently parochial when cooperating, and, when needed, competing against strangers and members of more or less rivaling out-groups.

## Conflict of interest statement

Nothing declared.

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