Grooming, coalitions, and reciprocal altruism in primates

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The study of primate altruistic behaviours can help to shed light on the evolution of human altruism. In particular, as it provides information on patterns of altruism in species that may lack advanced cognitive abilities such as the capacity for empathy and score-keeping.

Grooming and agonistic coalitions represent two traditional examples of primate reciprocal altruism (Trivers, 1971). Seyfarth (1977) developed an influential theoretical model to explain the distribution of grooming among female primates. This model assumed females compete for accessing and grooming high-ranking group mates in order to exchange grooming for later support during aggressive confrontations.

Despite its enormous influence on the ethological literature, data supporting Seyfarth's model were until recently scantier than generally assumed. In the last few years, meta-analytical techniques have been applied to published data on primate grooming and agonistic coalitions, and have shown that primate grooming does satisfy most of the assumptions and predictions of Seyfarth's model (Schino, 2001; 2007). Primates direct their grooming preferentially to higher-ranking animals and, as a results, high-ranking animals receive overall more grooming than their lower-ranking group mates. Primates also compete for accessing high-ranking group mates, as shown by the significant relation between the groomer's rank and its ability to distribute grooming in relation to the recipient's rank. This preference for grooming high-ranking group mates is explained, as originally assumed by Seyfarth's model, by the exchange that occur between grooming and rank-related benefits, for example agonistic coalitions.

Preliminary meta-analytical data also show that primates reciprocate amount of grooming received, that is they groom their group mates in relation to the grooming received, and that the degree of grooming reciprocation is inversely related to the tendency to direct grooming up the hierarchy (Schino & Aureli, in preparation).

Knowledge of these general patterns of grooming distribution among primates is to be complemented with an improved understanding of the proximate mechanisms underlying reciprocal exchanges. Recent data on the temporal relations between grooming and agonistic support in Japanese macaques (Schino *et al.,* 2007) suggest reciprocal exchanges are not based on a short-term temporal contingency, but much more detailed data are needed on this topic. As for the cognitive basis of reciprocation, at the moment, both emotion-based and cognition-based proximate mechanisms have been proposed (Brosnan & de Waal, 2002), but their relative prevalence is unclear.

The data reviewed above highlight that nonhuman primates show a variety of altruistic behaviours whose evolution is likely to be based, beside kin selection, on the selective mechanism initially identified by Robert Trivers (1971), that is, reciprocal altruism. These altruistic behaviours are deployed strategically among group members in order to maximize received return benefits. These observations are relevant to the evolution of our own species as they provide both evidence that altruistic behaviour predates the evolution of human-like cognitive abilities, and support to the notion that the need to navigate a complex social environment favoured the initial evolution of improved cognitive abilities.

References

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