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**“Modeling within-group male-male coalitions in primates”**

Within-group coalitions among primate males are relatively rare. They come in a variety of distinct configurations (all-up, all-down or bridging), and may change either the dominance ranks among the participants or the resource division among them. We have developed cost-benefit models for within-group coalitions among males (constant-sum situation) that have a single individual as target, in order to predict patterns in the number and relative ranks of coalition partners and targets and whether or not they change the ranks of participants. These patterns are a function of the dominance rank effect on fighting abilities and the potential to monopolize access to females.

These predictions show a reasonable fit with real-world data, including the results of a recent study on Barbary macaques by A. Bissonnette, which could also test the basic assumption about the strength of a coalition relative to its target.

The strength of the cost-benefit approach is that it helps us to understand the distribution across species of a phenomenon, but its weakness is that it assumes that the individuals have optimum decision rules. However, the limited intraspecific flexibility suggests the presence of simple, inflexible rules of thumb, which may constrain the attainment of more optimal solutions (e.g. number of coalition partners).

These rules must therefore also be studied in detail.