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‘Emergence of coalitions in a model’

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In most primate societies individuals help others in fights by forming coalitions.
Since supporting another involves risks, a supporter is supposed to receive something in exchange (e.g. support or grooming). Indeed, evidence for reciprocation of support and its exchange for something else has been found in many primate studies.
However, the cognitive processes underlying reciprocation and exchange are debated: they may involve record keeping or simpler cognitive processes. However, which simple processes may suffice, is still an open question.

The aim of this study is to investigate an extreme case. We study whether even in the absence of rules to form a coalition, coalition patterns may still emerge by self-organization in a model of dyadic aggression and affiliation. In the model, GrooFiWorld, coalitions are recorded if two individuals are observed to attack the same target one after the other. It appears that in GroofiWorld, similar to primates, support is observed, it is reciprocated, and exchanged for grooming. These results appear to be partially a side-effect of dominance rank, of attack being risk-sensitive and of interactions being based on proximity.
In conclusion, our model shows that little cognition is needed to generate the patterns of coalition observed in primates. Therefore, the model can be used as a null-model for the generation of hypotheses to guide empirical studies of primates.