

Ellen Evers

University of Utrecht

“A model of attention and spatial effects in primate social cognition”

Ellen Evers, Han de Vries, Berry Spruijt & Liesbeth Sterck

Primates employ social attention and avoidance behavior, to prevent aggressive encounters when maneuvering within a group. Several studies have shown that social attention is directed from subordinates towards dominants^{1,2,3}. Individual variation in direction and frequency of social attention has been proposed to shape spatial patterns of primate groups⁴. Using an agent-based model (inspired by *domworld*⁵), we study which socio-spatial structures arise when a) avoidance (distance regulation) and b) attention (distance checking) is directed up the hierarchy.

In our model, avoidance behavior shapes (or reinforces) a centri-peripheral spatial group structure. The group consists of *avoiders* at the periphery and *avoidees* at the group center. Active distance regulation by the subordinates decreases the overall encounter and interaction rates. Most encounters and interactions take place between *avoidees*. Employing social attention decreases overall encounters and aggression even further, due to an even more pronounced centri-peripheral group structure. Surprisingly, encounters and interactions between subordinate individuals are decreased.

Interactions between individuals structure the spatial and social properties of the whole group, determining proximity, perceived information, encounters and direction of interactions. We will discuss further implications for coalition formation in terms of recruitment and maintenance of allies and perceived information about third-party allies.

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