

The evolution of evaluative communication in group formation

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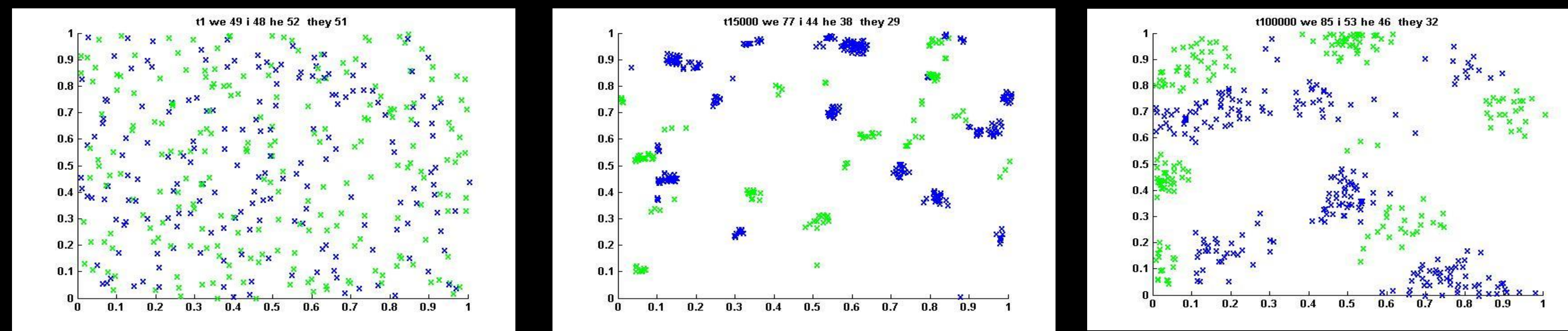
We propose the Ingroup Allocation Model that focuses on the dynamic formation of groups. This theoretical model expands and integrates previous group theories. Simulations show how groups and specific values of groups evolve, e.g. ingroup favoritism and higher values for collective identities in the ingroup but not in the outgroup.

Figure 1. Sims innate valence system

	Ingroup	Outgroup
Individual	I	he/she
Collective	We	They

Sims have two value systems: Innate valence system (V) on how they evaluate groups (see above) . This system is a result of evolution, where children inherit values from parents in selection processes. Experienced value system on group belonging and collective identity. These systems are updated in communication with others.

Figure 2-4 Group formation from simulation start (left) to 100 000 iterations (right).

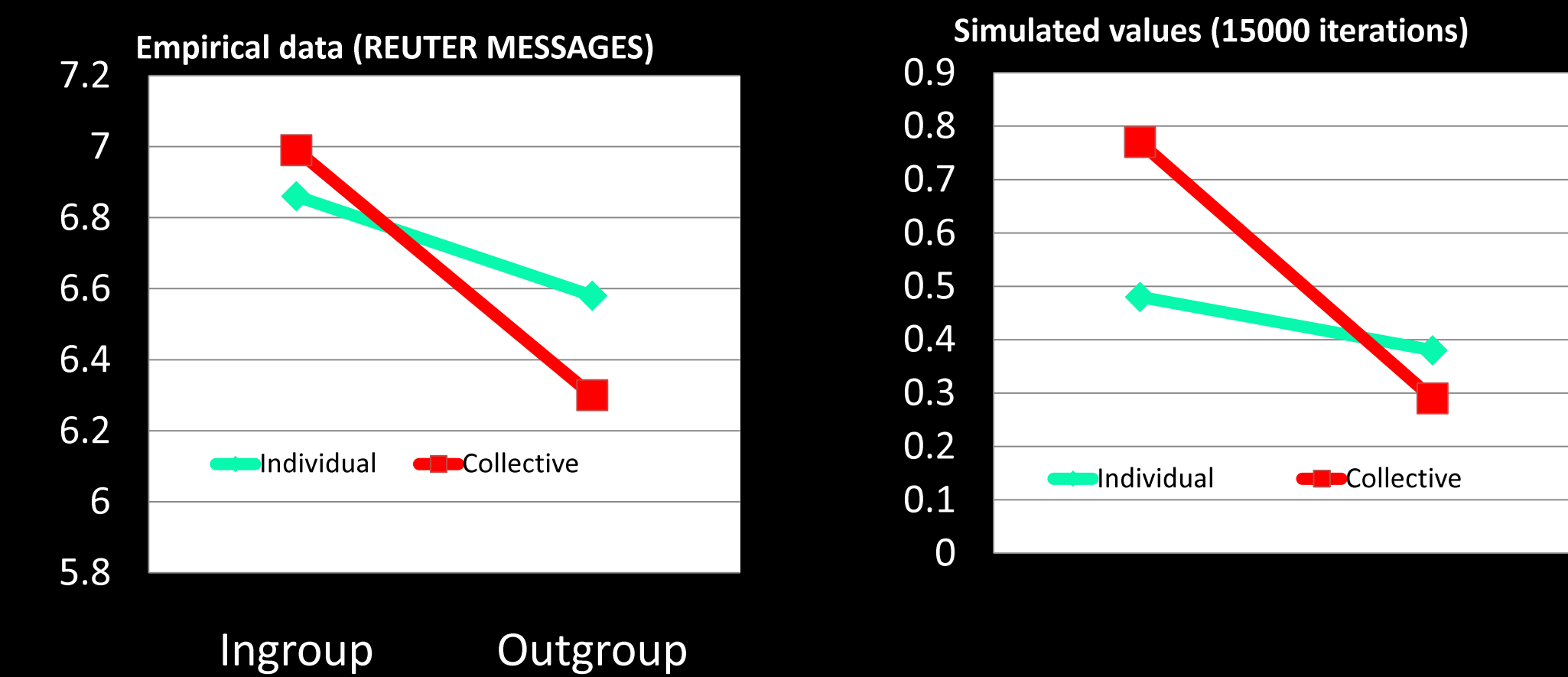


Two groups of “Sims” live in a two-dimensional world and move around and communicate with each other. At the start of simulation the values of each Sims is randomly chosen with a uniform distribution. At each time step in the computational world a random Sims is chosen and allowed to speak to the nearest neighboring Sims.

Communication where speaker and listener belong to the same group, result in collaboration and increases the resources of the speaker. Communication between speaker and listener from different groups result in competition and the speaker lose resources.

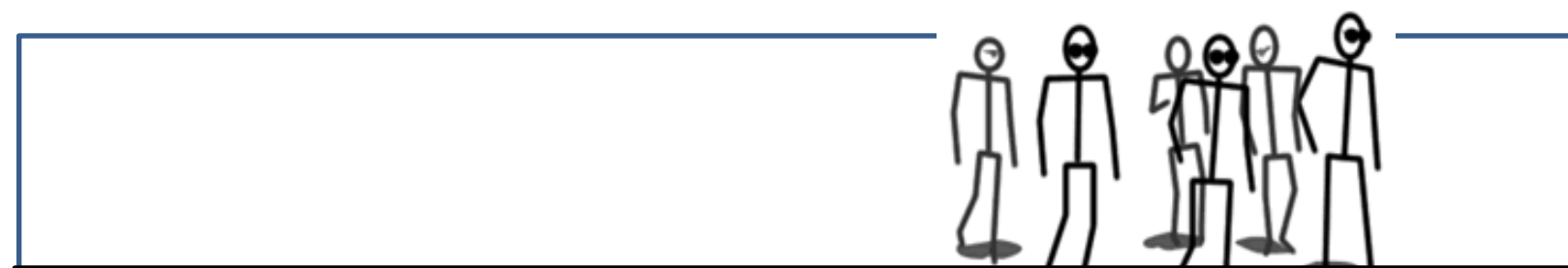
Communication also influences collective identity and group belonging (see algorithm). Resources above a threshold result in offspring, whereas scarce resources reduces survival fitness. At the end of the simulation the surviving Sims have moved toward each other in groups.

Fig 5-6. Empirical and simulated valence



At the end of the simulation Sims have evolved a valence system that rates the collective ingroup the highest and the collective outgroup the lowest

The figure to the left show how Reuter messages value social groups and identities. The figure to the right shows the results from the simulation.



Algorithms **

Speaker = listener (Ingroup Interaction)
Listener updates:
 Collective identity: $.7 * (V_{we} - V_I)$
 Group belonging: $.1 * (V_{we} + V_I) - (V_{they} + V_{he/she})$
Speaker updates:
 Resources: $+ * 0.05 * c$
Speaker ≠ listener (Intergroup Interaction)
Listener updates
 Collective identity: $.7 * (V_{they} - V_{he/she})$
 Group belonging: $.1 * (V_{we} + V_I) - (V_{they} + V_{he/she})$
Speaker updates:
 Resources: $- * 0.05 * c$
Selection
 Child is born when speakers resources > 1 .
 Child values = speakers values + random noise.
 Sim with lowest resources is eliminated.
 ** Listener update group belonging and collective identity, based on speakers values. Speakers update resources based on listeners values. All variables are limited to the range between zero and one.

One of the most fundamental findings in social psychology is that the group “we” belong to, the ingroup, is higher valued than the outgroup “they” (e.g. Allport, 1954; Tajfel & Turner, 1979). Different aspects of group belonging have been considered in numerous theories and studies (e.g. Baumeister & Leary, 1995; Brewer, 2007; Dovidio, Gaertner & Saguy, 2009). How values about groups and identities are communicated and how groups evolve have however been studied less. We propose the Ingroup Allocation Model (IAM) - suggesting that specific evaluation of social groups evolves because individuals communicating these values have a higher inclusive fitness. We argue that individuals use evaluative communication to form, improve and strengthen their groups and hence their individual selection chances.

Evaluative statements aim at recruiting commodities and human resources to the speaker’s ingroup. Communicating higher evaluations of ingroup (we) than outgroup (they) promotes the speaker’s group and attracts resources. Thus, IAM views ingroup favoritism as a result of an evolutionary mechanism. In the ingroup, communicating higher evaluations of collective (we) than individual identity (I) promotes sharing of resources with the speaker. In contrast, in the outgroup collective identity (they) is less positively evaluated than individual identity (he/she) because of competition between groups.

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