

The role of community size in the emergence of linguistic structure

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Acknowledgements

First Author is a PhD student supported by the Max Planck Society. We thank Gary Lupyan, Kevin Stadler and other members of the Language Evolution Group at the Max Planck Institute for Psycholinguistics for their helpful input.

Keywords: Language Evolution; Communication; Group Size; Compositional Structure;

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Over the last decade, several diachronic and typological analyses showed that the structure of languages spoken in esoteric societies is different from the structure of languages spoken in exoteric societies [1-5]. It was therefore proposed that different linguistic structures emerge in different communities depending on their social properties. In particular, it has been argued that increased population size, sparser community structure and higher proportion of adult L2 learners in the community lead to morphological simplification. However, these three community properties are confounded in the real world, making it hard to evaluate their role separately. Additionally, no study to date has examined these claims experimentally.

In the current study, we focus on population size, using a novel group communication game with an artificial language. We examine changes in linguistic structure, linguistic stability, linguistic convergence and communicative success over time for 12 groups of different sizes (4 vs. 8 participants), who interacted in alternating dyads for 7 rounds followed by a test. At this point in time, groups of 8 had the same amount of interaction as groups of 4, but less shared history between each two members of the community. To equate the degree of shared history, big groups were given 7 additional communication rounds and an additional test.

Results

We found that all groups developed compositional structure over time (measured as the correlation between labels' string distances and meaning distances, following [6]). Crucially, while there was no difference between the structure created by small and large groups after 8 rounds, when given enough time to reach the same level of shared history, big groups created more compositional languages than small groups (as predicted by [1-5]; See Figure 1). Even though different groups created different linguistic structures, all languages were communicatively efficient. Finally, while languages of small groups were more stable and showed more convergence after 8 rounds, this advantage disappeared when big groups were given more time. This result suggests that language stability and convergence are mostly depended on the degree of shared history between participants. This is the first experimental demonstration of group size effects in laboratory settings, and has important implications for our understanding of how variability and community structure affect language evolution and change.

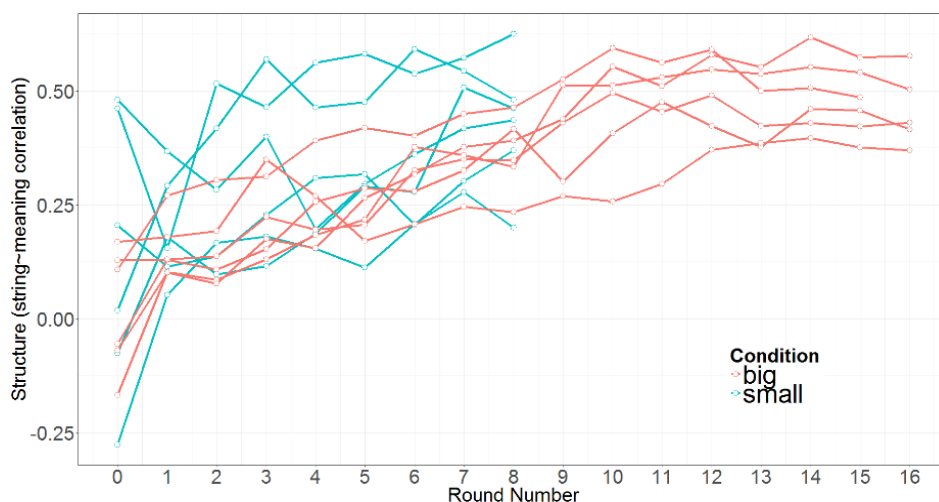


Figure 1: Linguistic structure by round and condition

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