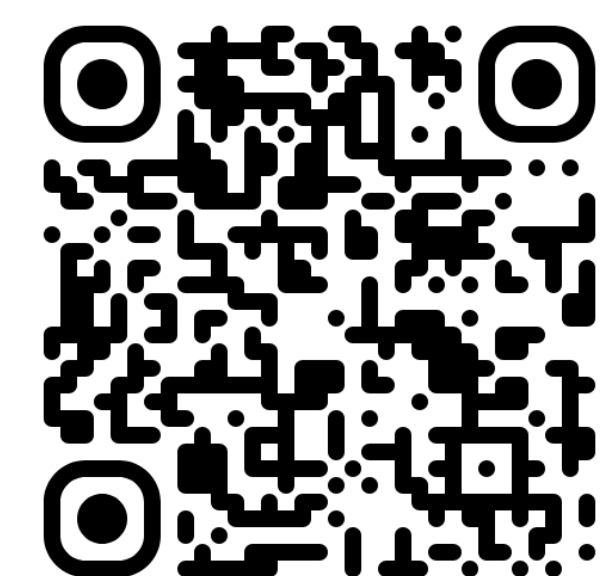


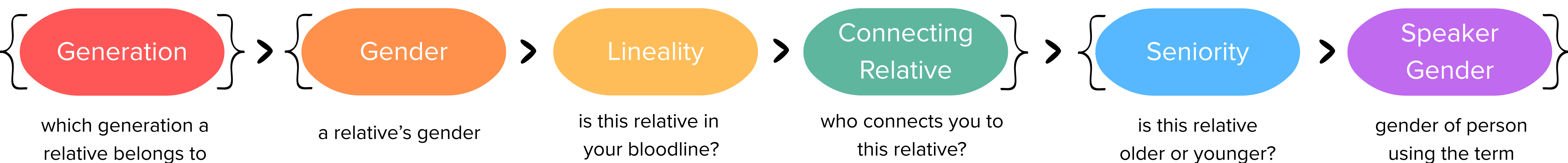
Efficient communication drives the semantic structure of kinship terminology



scan for the paper!

Maisy Hallam ♦ Simon Kirby ♦ Fiona Jordan ♦ Kenny Smith

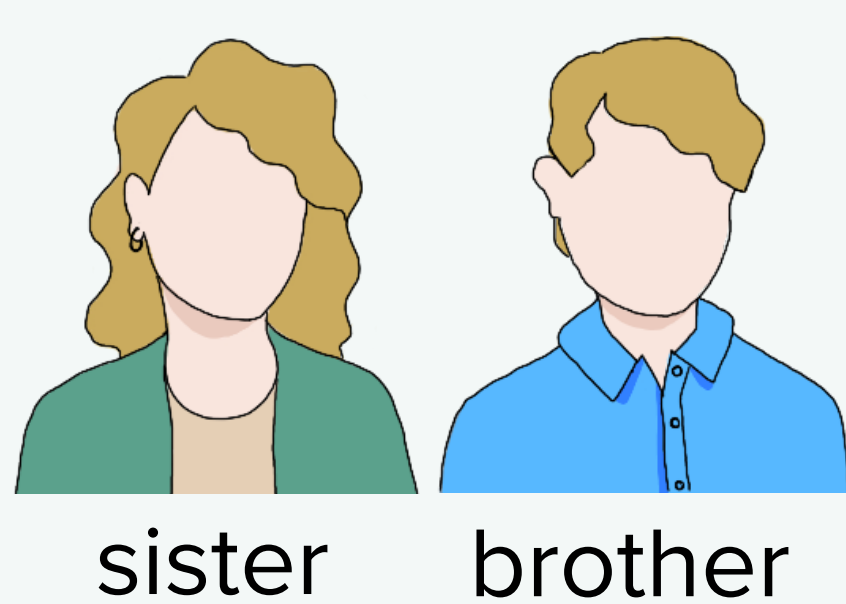
We discovered that kin term semantics are encoded in a hierarchy, where some features are encoded robustly and often, while other features are encoded minimally and rarely.



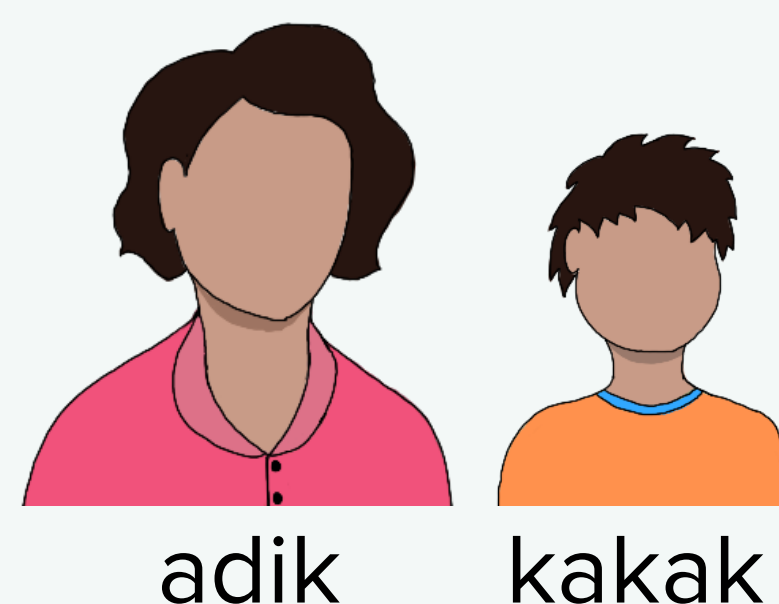
LANGUAGES DIFFER IN WHAT DISTINCTIONS THEY ENCODE IN THEIR KINSHIP TERMINOLOGY

For example:

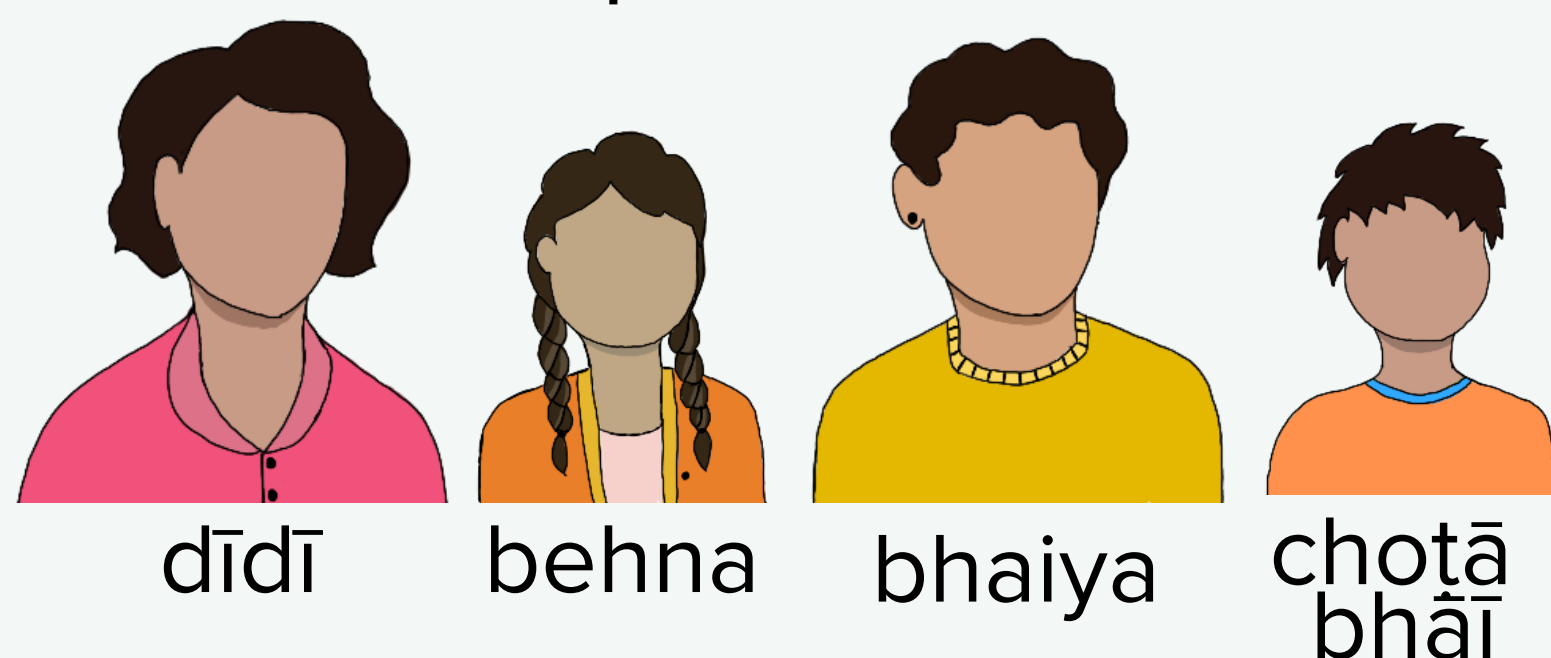
English speakers distinguish their siblings by gender,



while Indonesian speakers distinguish by who's older and who's younger.



And Hindi speakers do both!



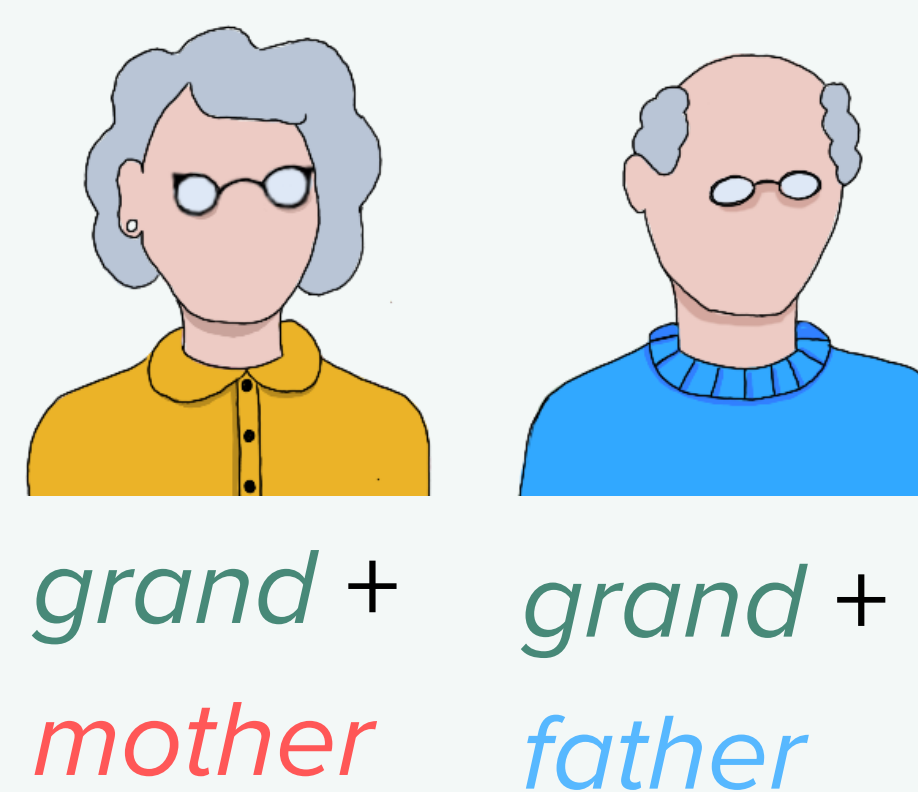
BUT KINSHIP TERMINOLOGY SYSTEMS ARE CONSTRAINED BY EFFICIENCY PRESSURES¹

For a given amount of communicative precision, kin terms are as compressible as possible...

e.g. referents of a single term share similar semantic features



"aunt"
mother's sister father's sister



and for a given amount of compression, they express as much information as possible.

e.g. their forms are composed of shared meaningful parts

Using this insight about the expected correlation between shared wordforms and meanings, we analysed which semantic features contribute most to shared category membership in >1000 languages².

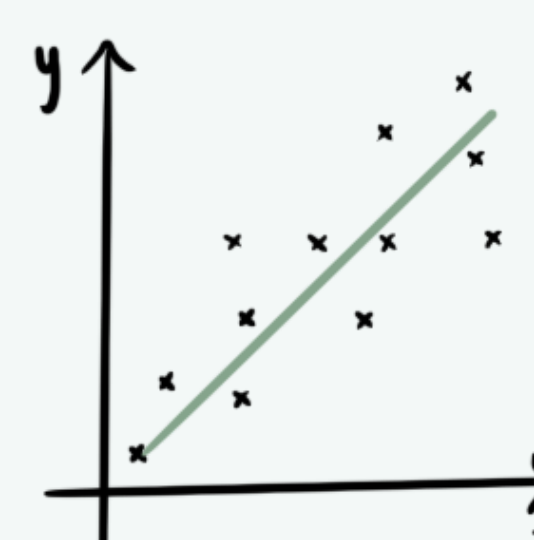
A MODEL FOR OPTIMISING THE CORRELATION BETWEEN FORM AND MEANING



Make a small change to the weights on each feature



Re-calculate **semantic similarity**



Calculate correlation between meaning and **form**



Can any single change improve the correlation?

The model output tells us:
when two people share the same kin term, what features do they tend to have in common?

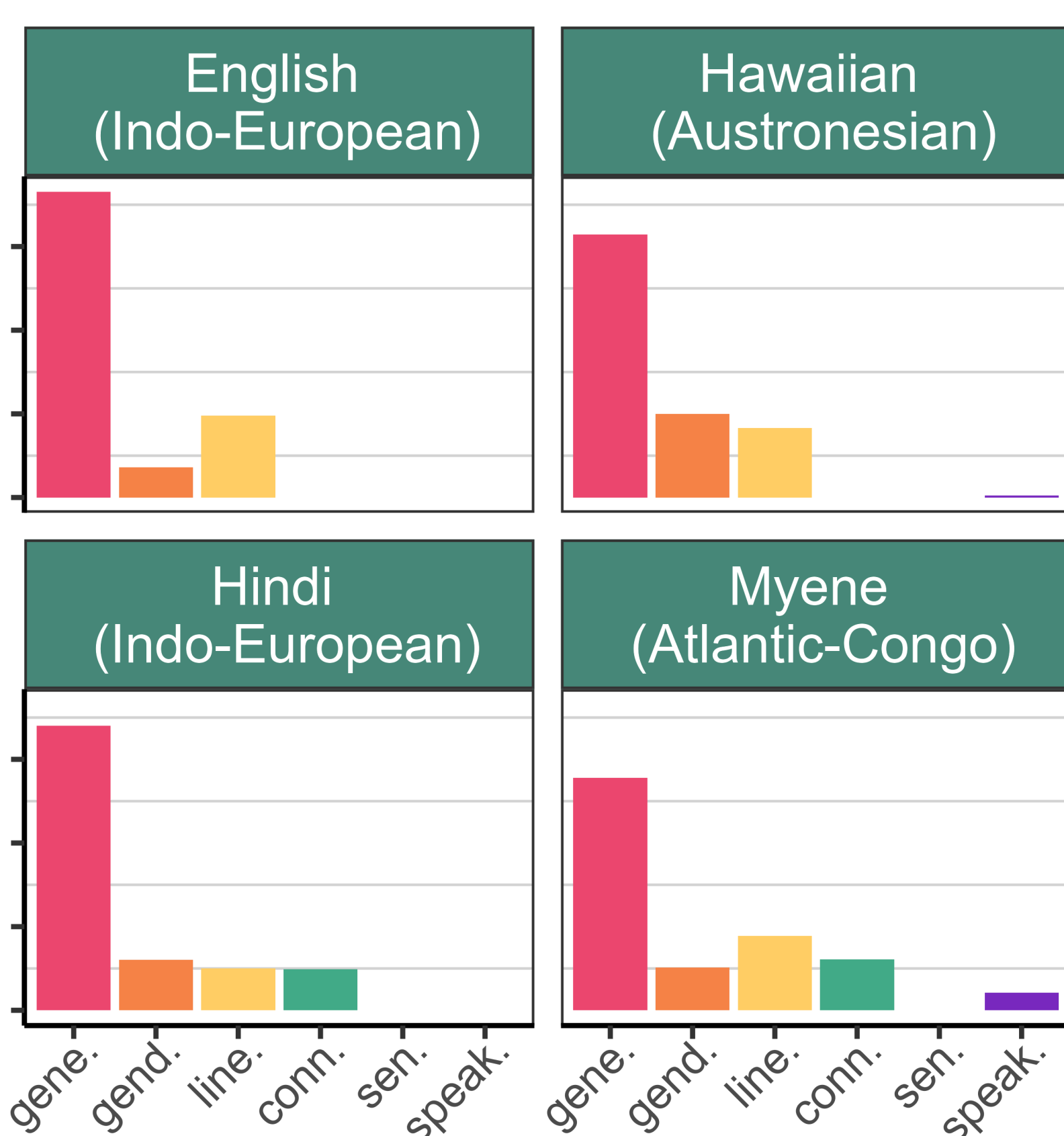
Semantic similarity is the proportion of features shared, weighted by their contribution.



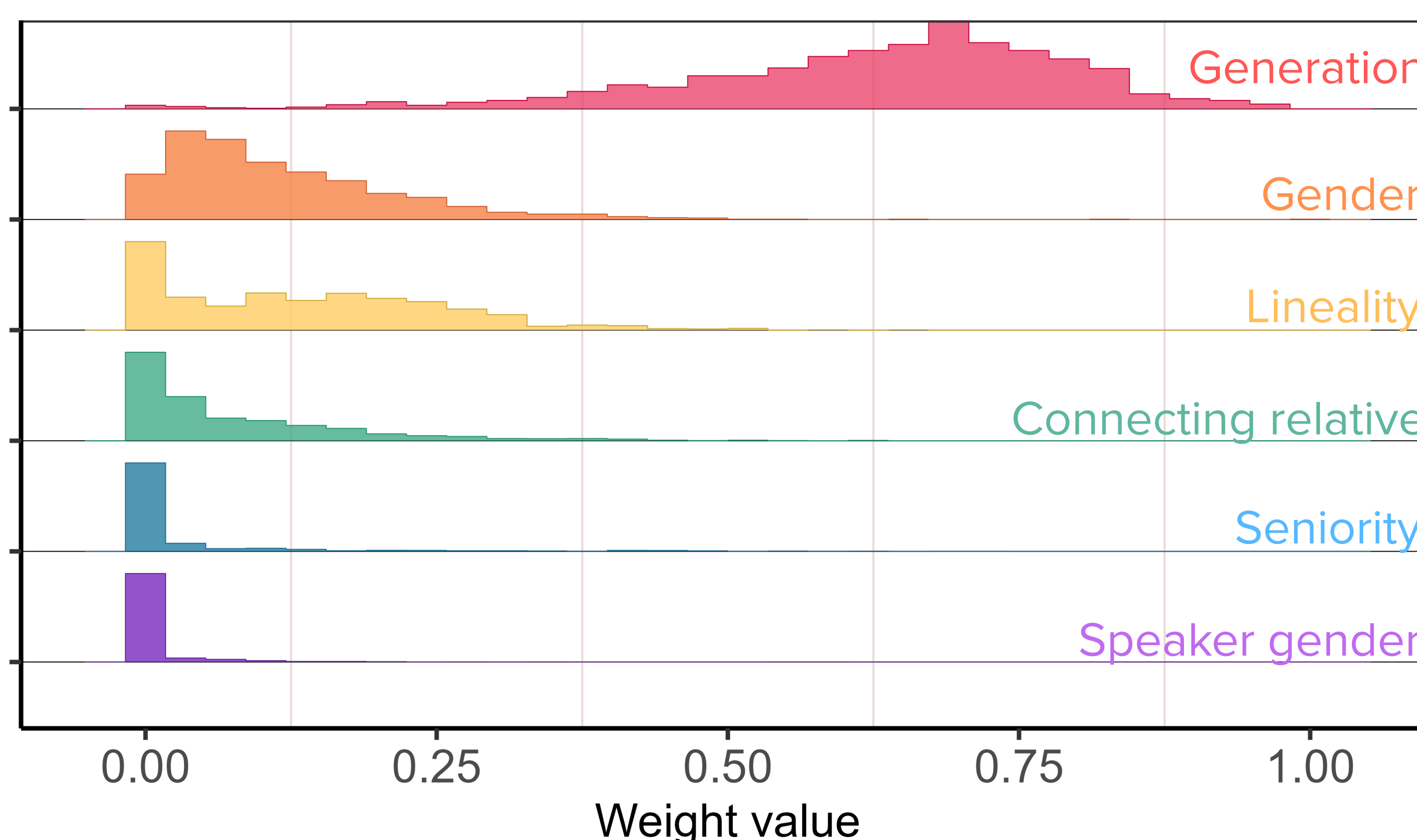
Form similarity is the proportion of the strings that is identical.

brother vs sister

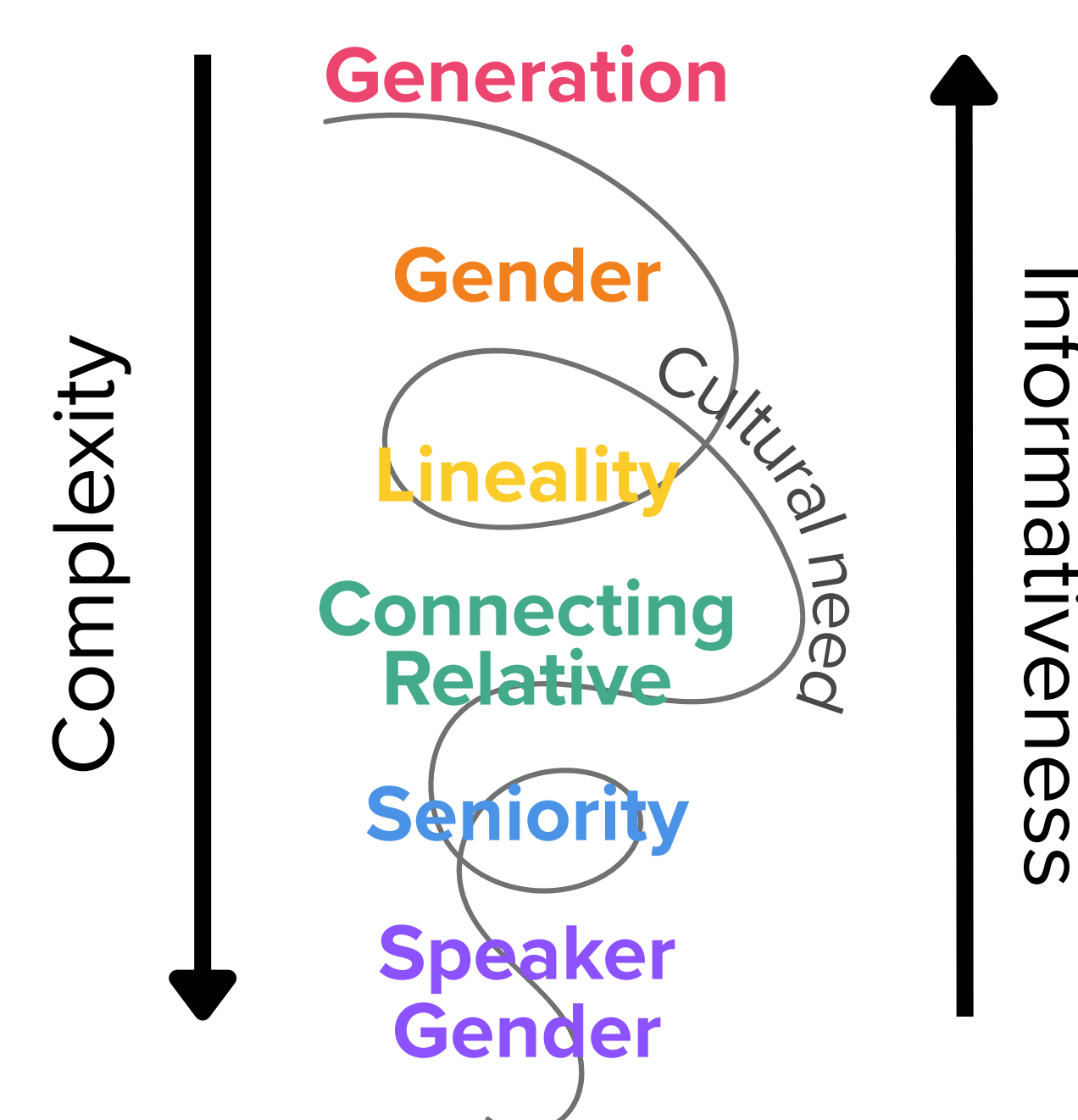
Final weights for a sample of languages



Final weights on each feature across all languages



Higher ranked features are **more informative** and **less complex**, but cultural communicative need may outweigh cognitive bias.



Greater contribution to category membership