Variation in the kin term lexicon IS NOT predicted by population structure

Maisy Hallam & Fiona Jordan

Questions

how does the size of the kinship lexicon vary across the world's languages?

and is that variation conditioned by individuals' sociocultural environment?

Kinship terminology is a **category system**
used to group together and distinguish different relatives.

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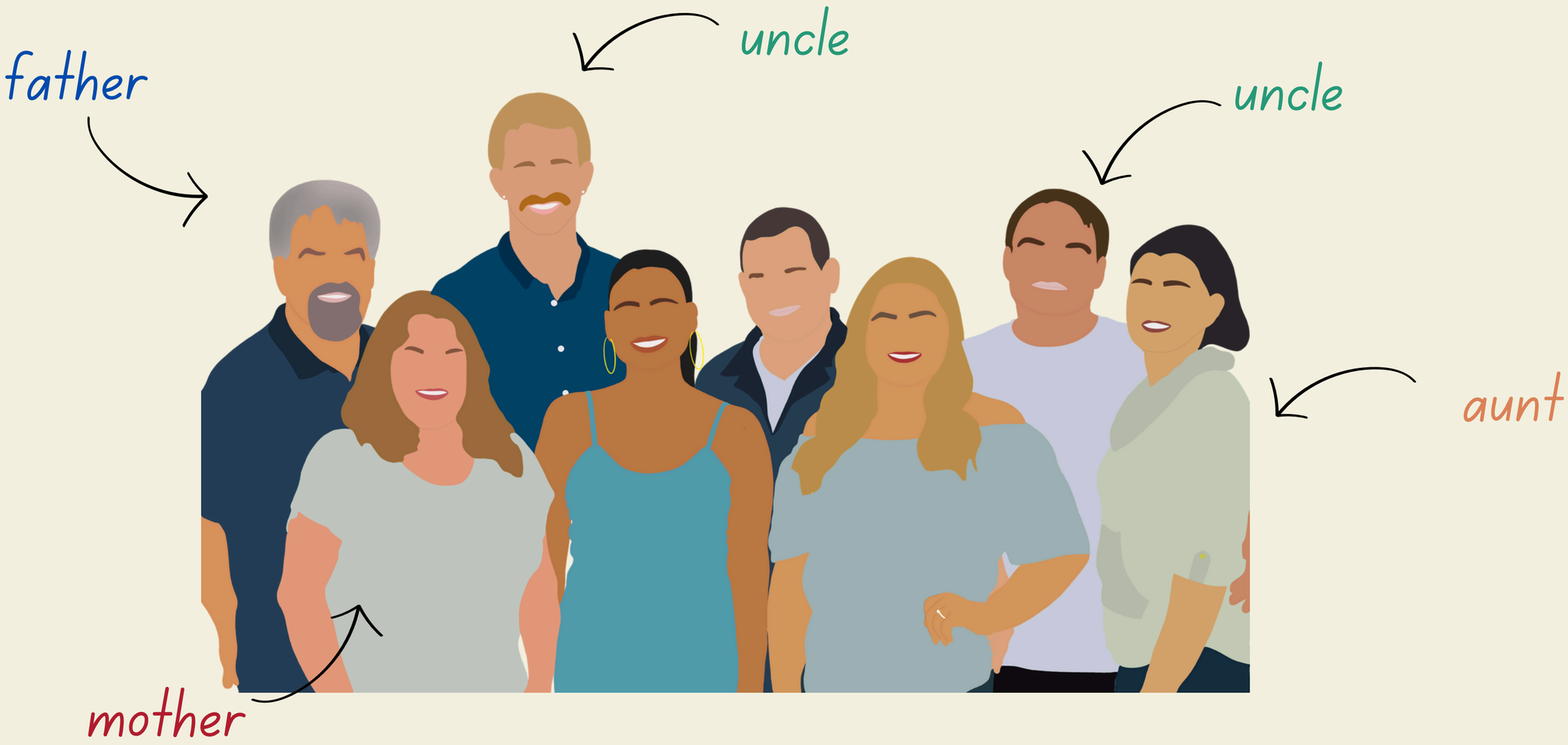

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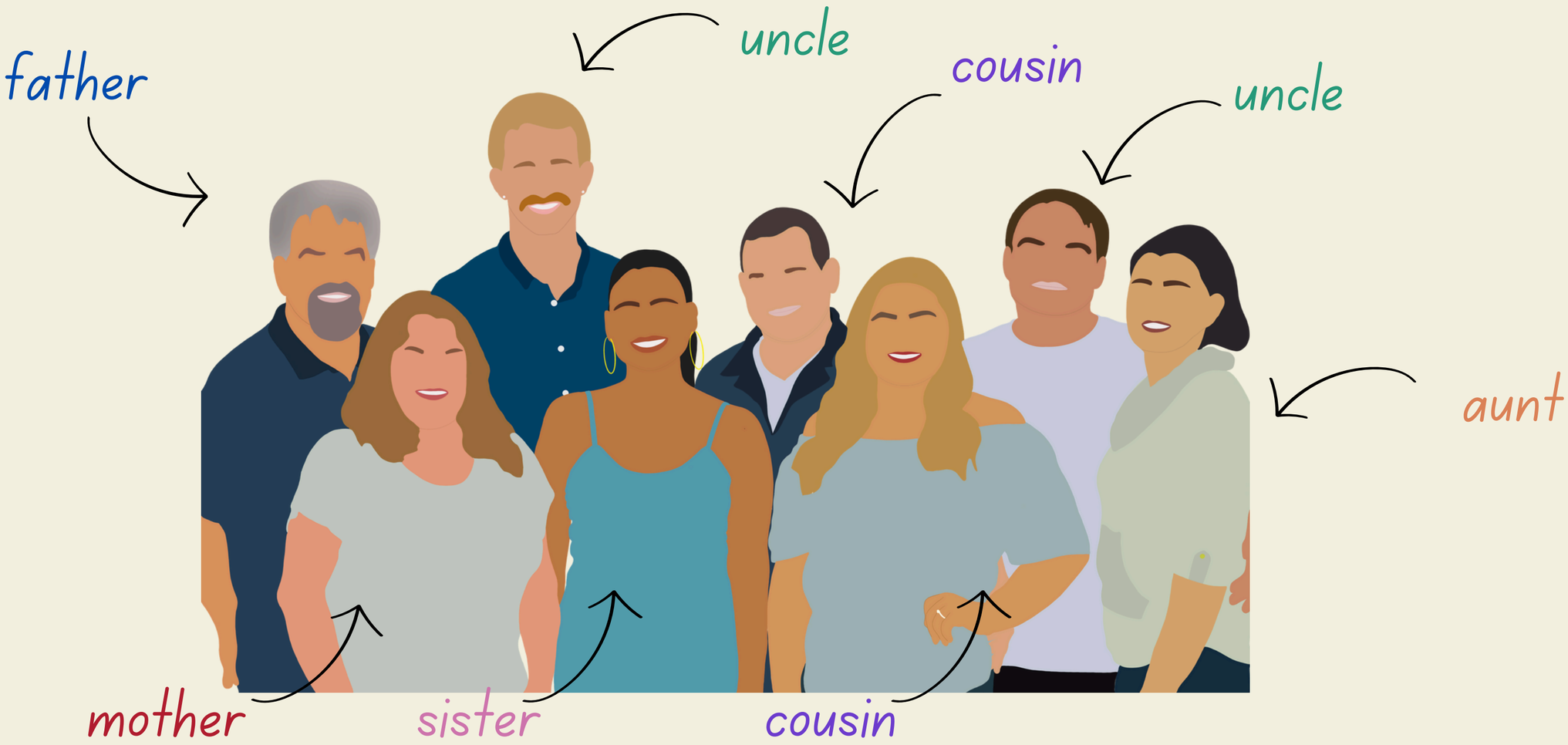

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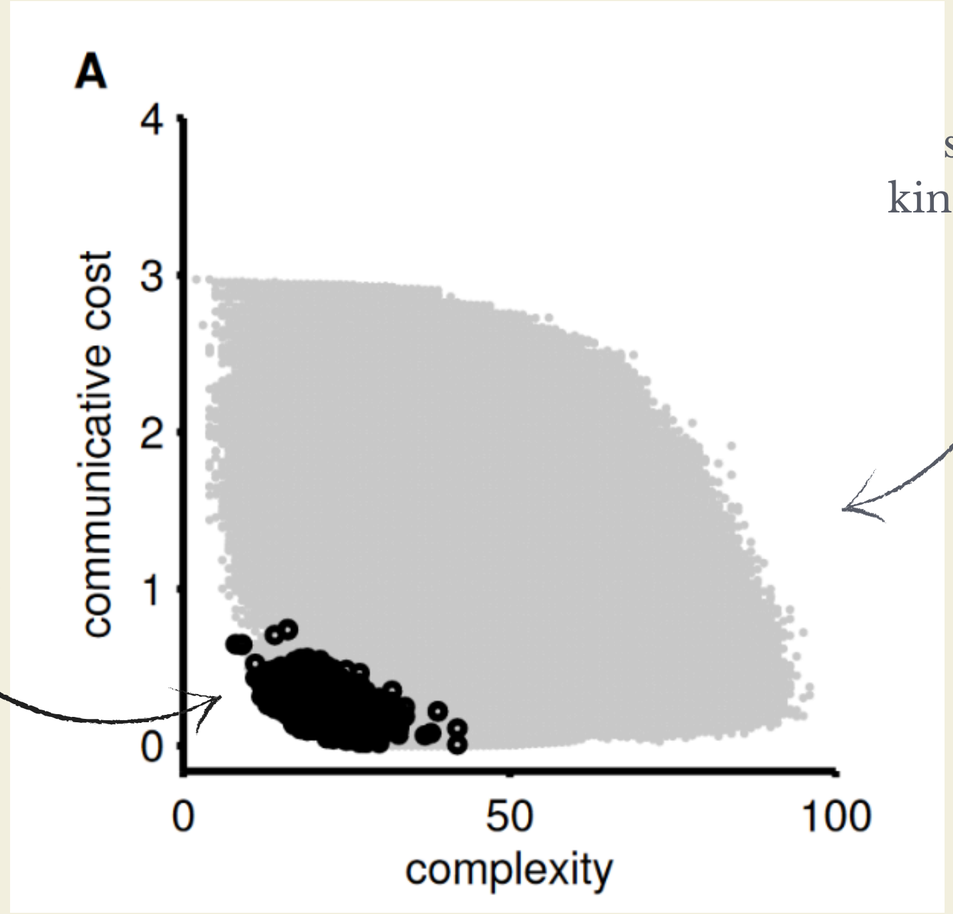
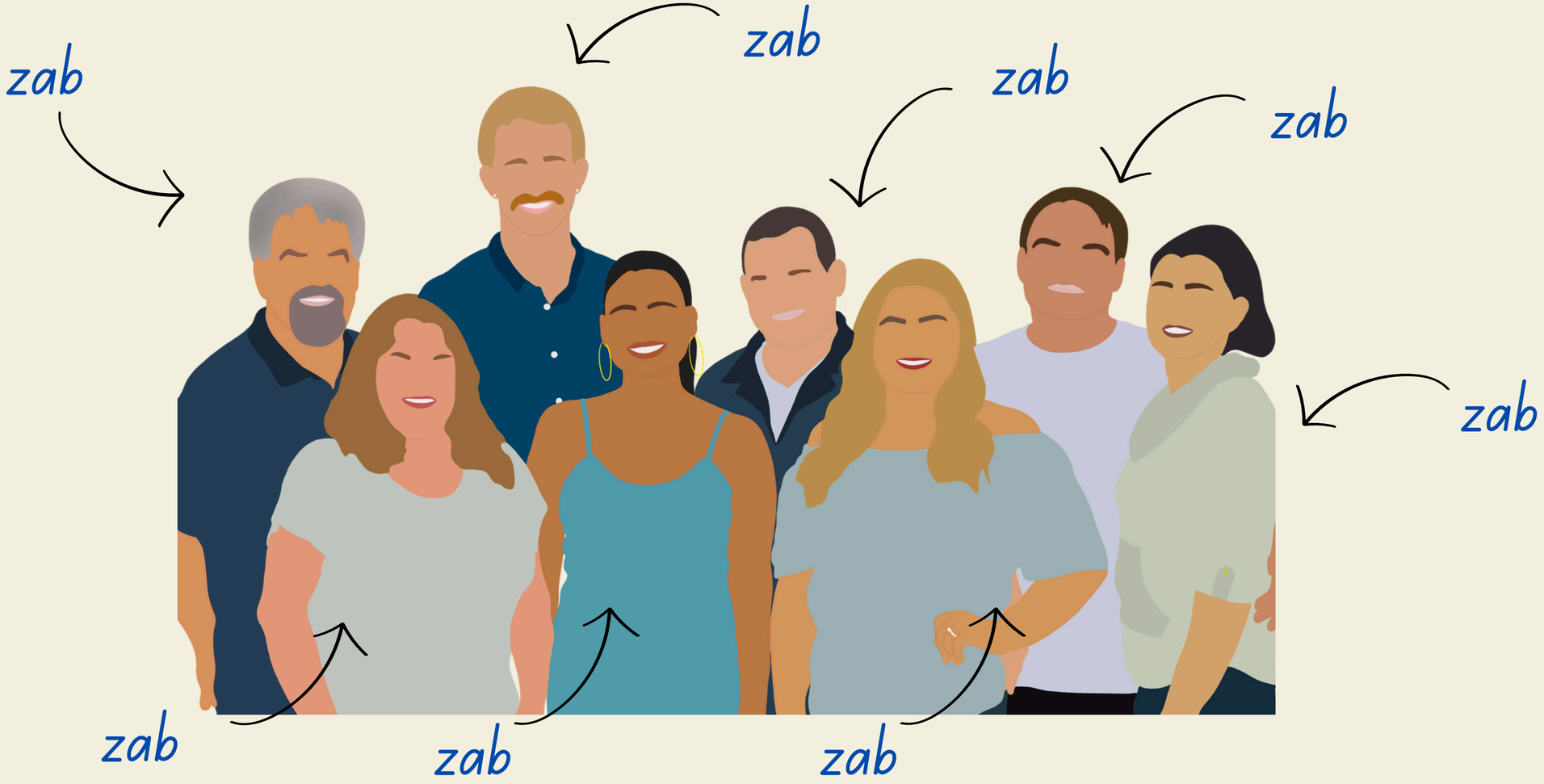
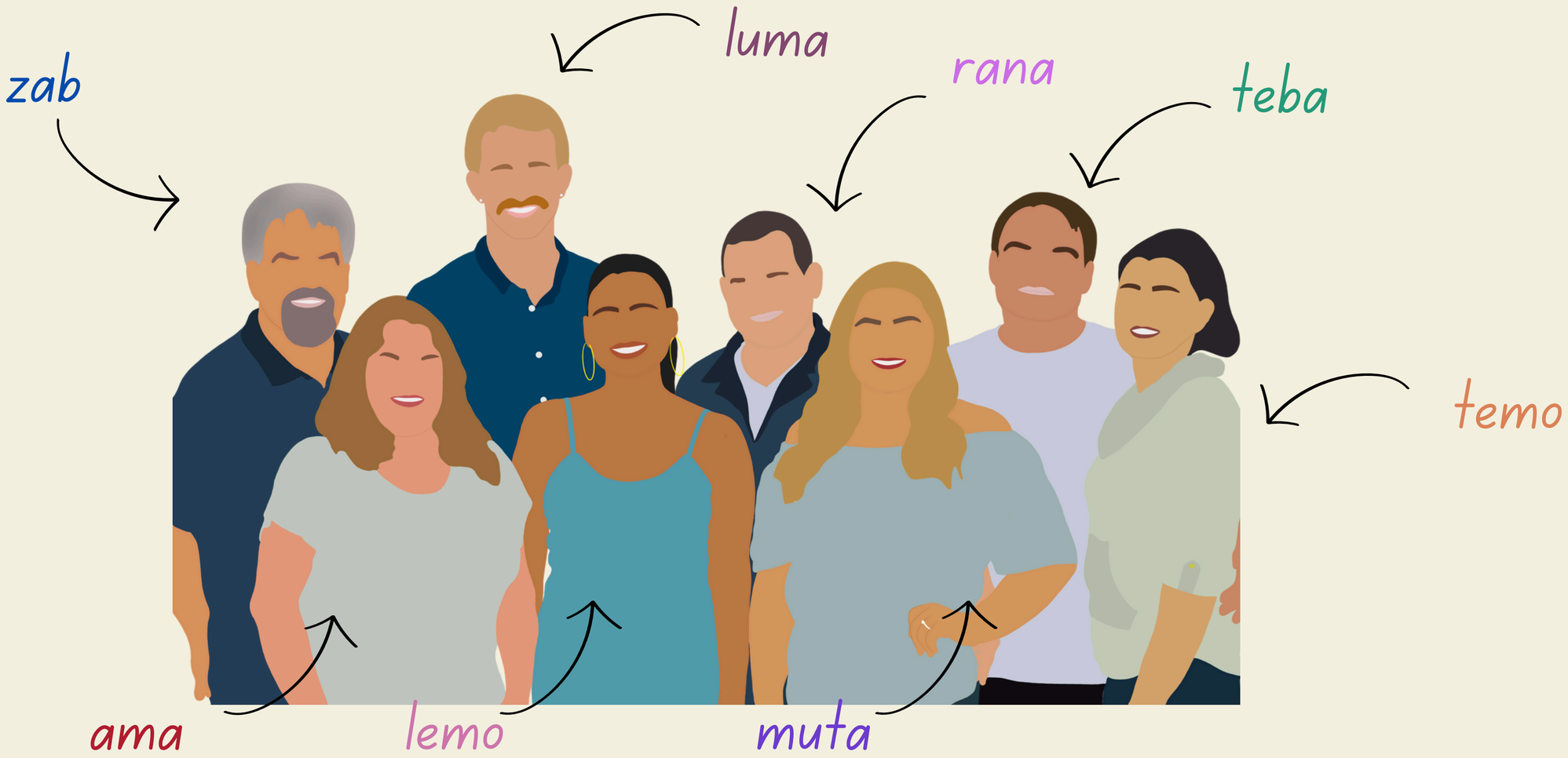


The world's kinship classification systems achieve an **optimal trade-off between simplicity and informativeness.**

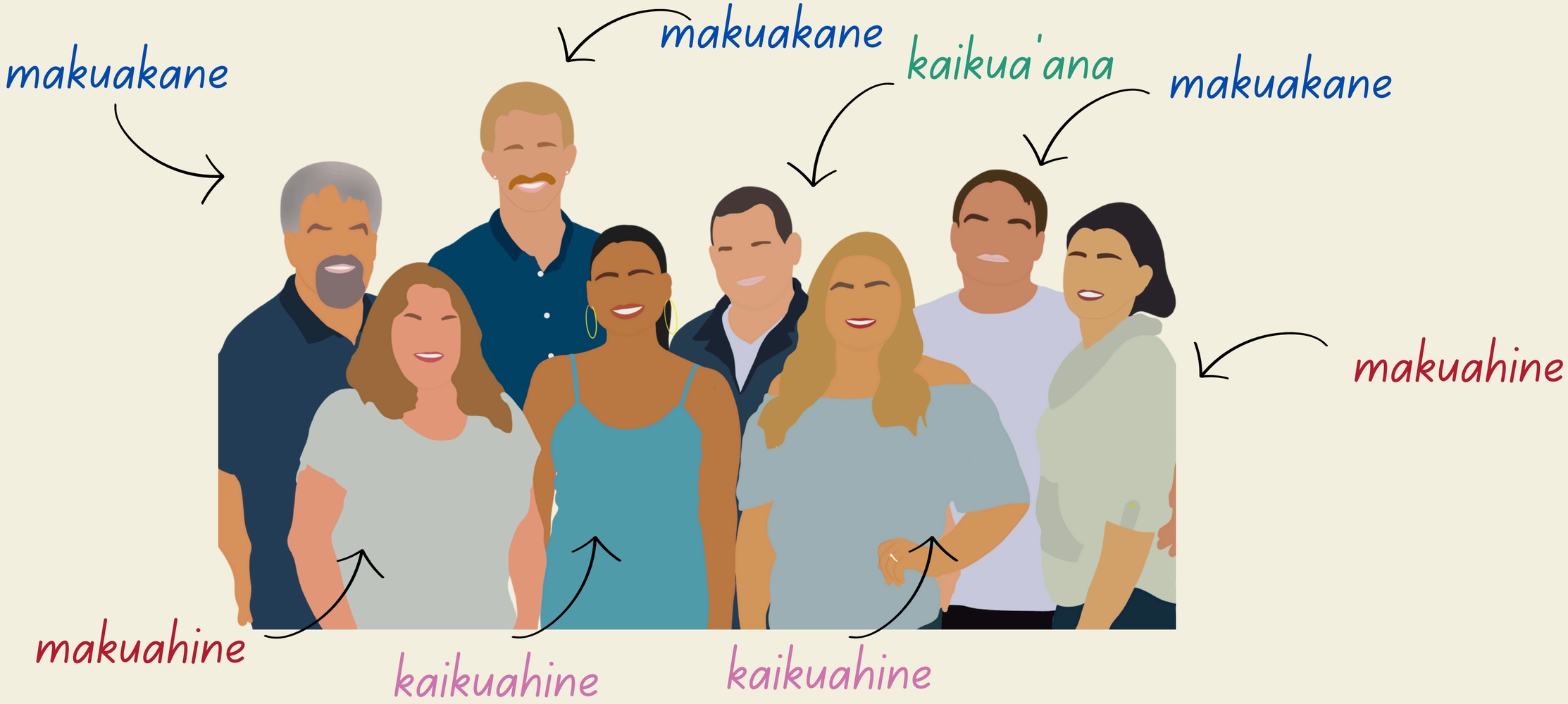
Kemp & Regier, 2012



A language with one term for all relatives wouldn’t be very expressive.

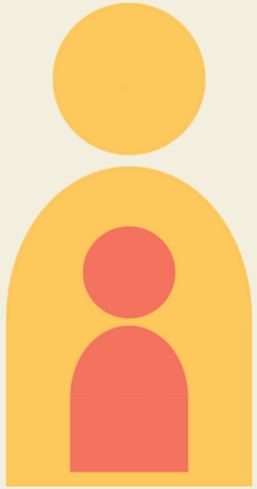


But a language with a unique term for each relative might be prohibitively complex.



In reality, languages tend to vary in size between these bounds.

Are kinship lexicon sizes more constrained than we would expect?



vs.

Data from KinBank*:

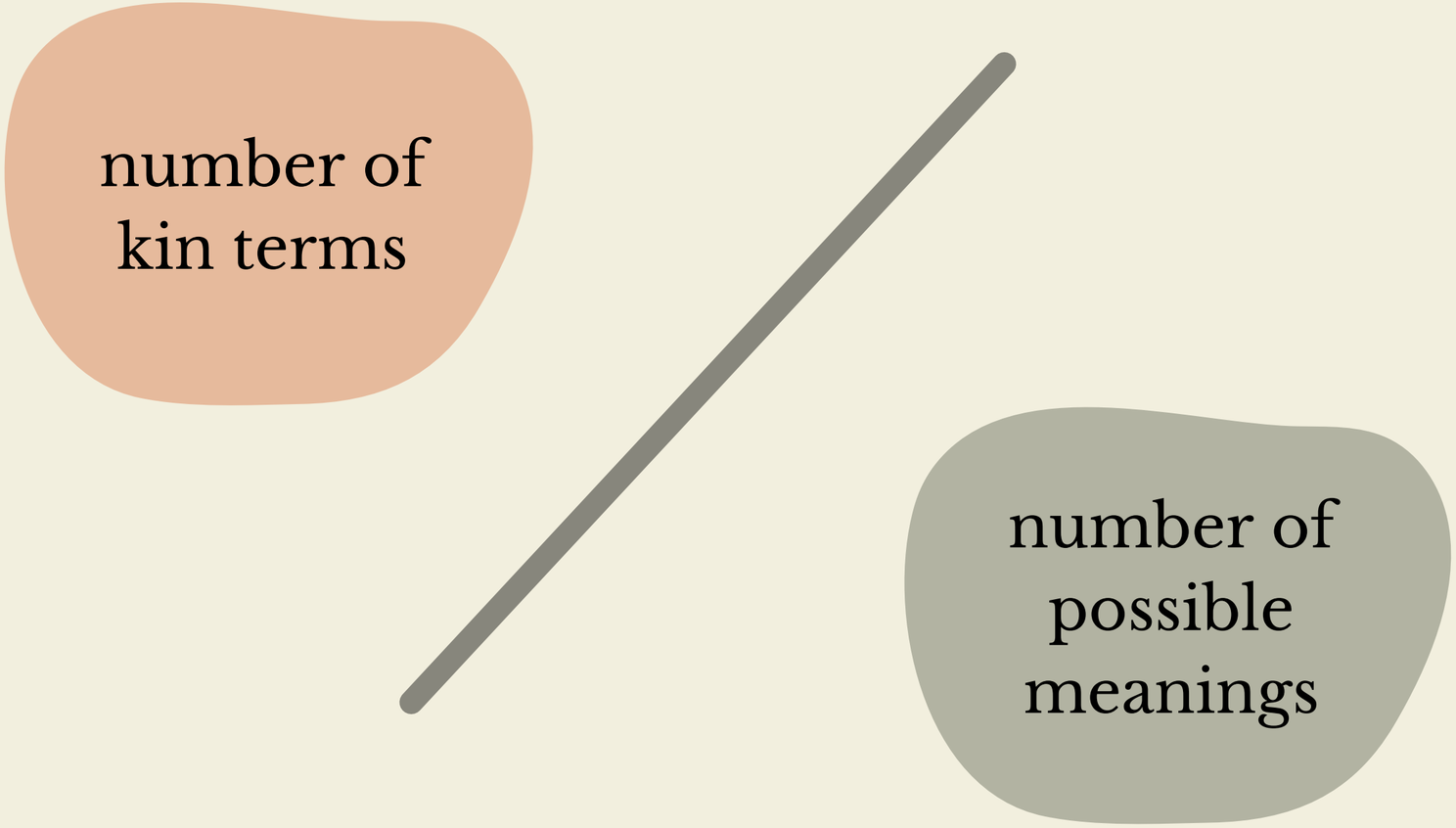
we measured the kinship lexicon size of 410 global languages

Simulated kinship data:

and compared them to hypothetical kinship systems

*Passmore, S. et al. (2023). Kinbank: A global database of kinship terminology. PLOS ONE, 18(5)

Measuring lexicon size



= 50 relatives across 5 generations

How do you simulate a kinship lexicon?

select a relative x

e.g. mother's older brother

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generate a list R for possible co-referents of x

e.g. [mother's younger brother, father's younger brother, father's older brother, ...]

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select a relative y from R

e.g. mother's younger brother

select a relative x

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does y have a label already?

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does y have a label already?

yes

add x to the existing category containing y and all co-referents of y

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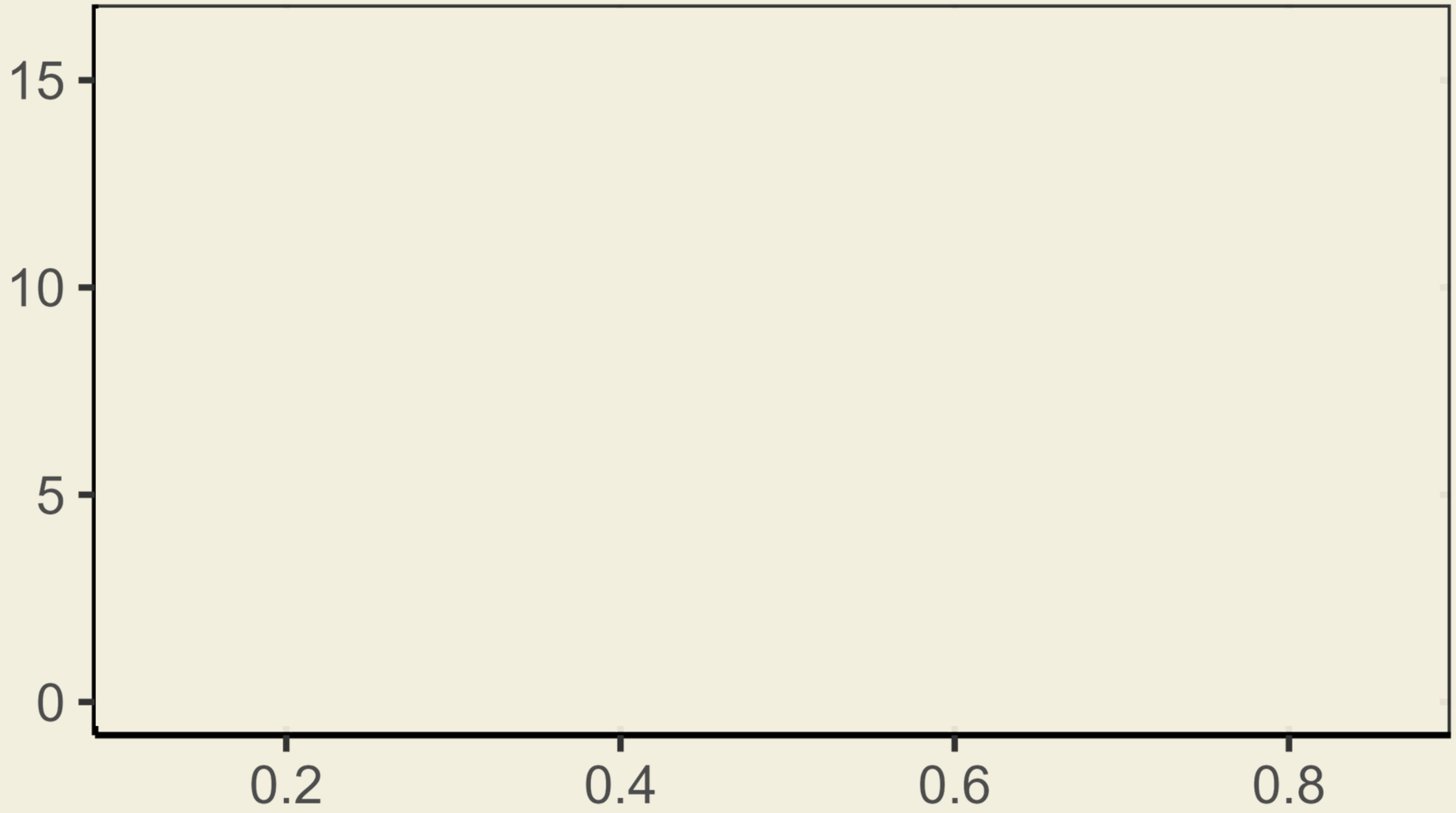
does y have a label already?

yes

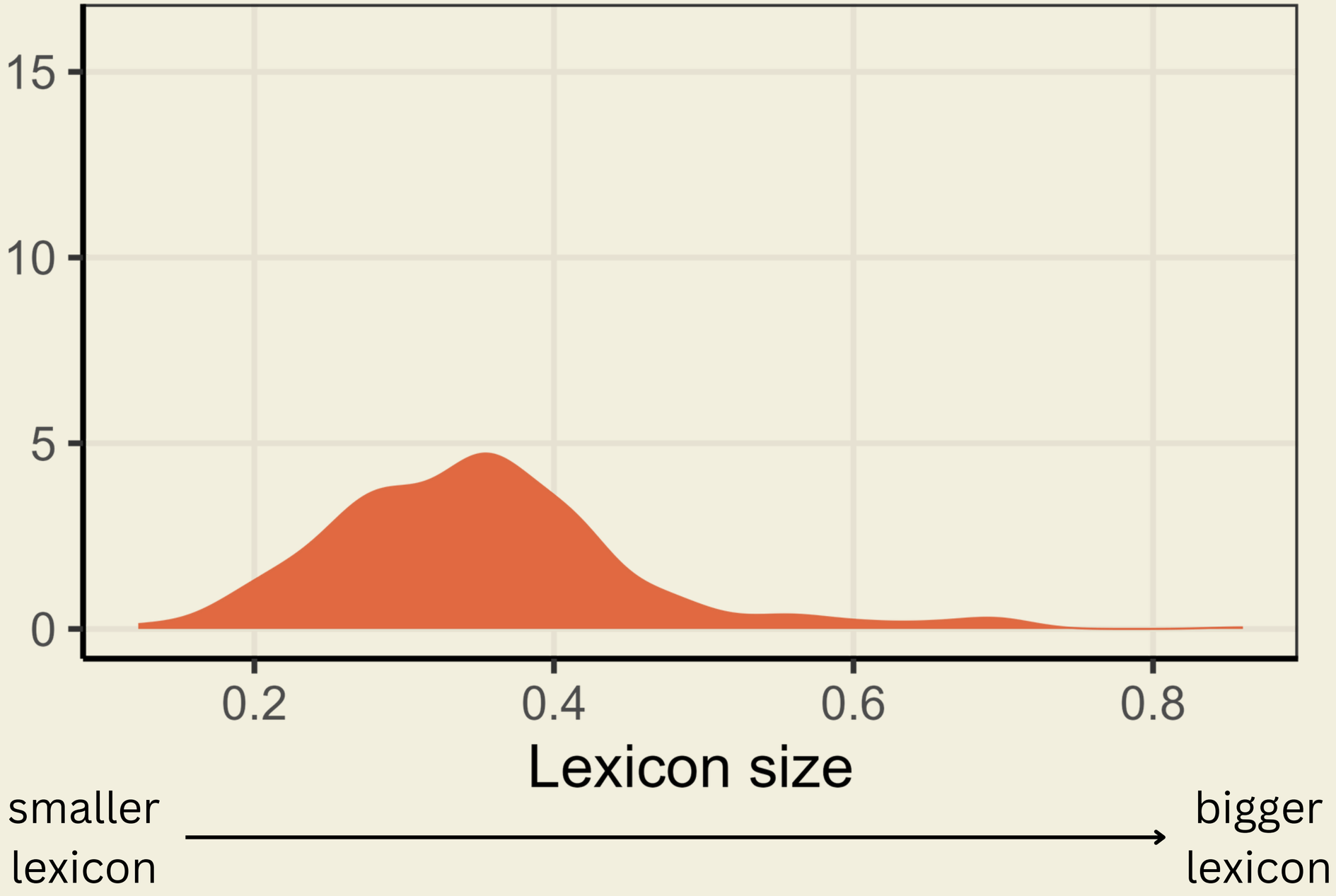
add x to the existing category containing y and all co-referents of y

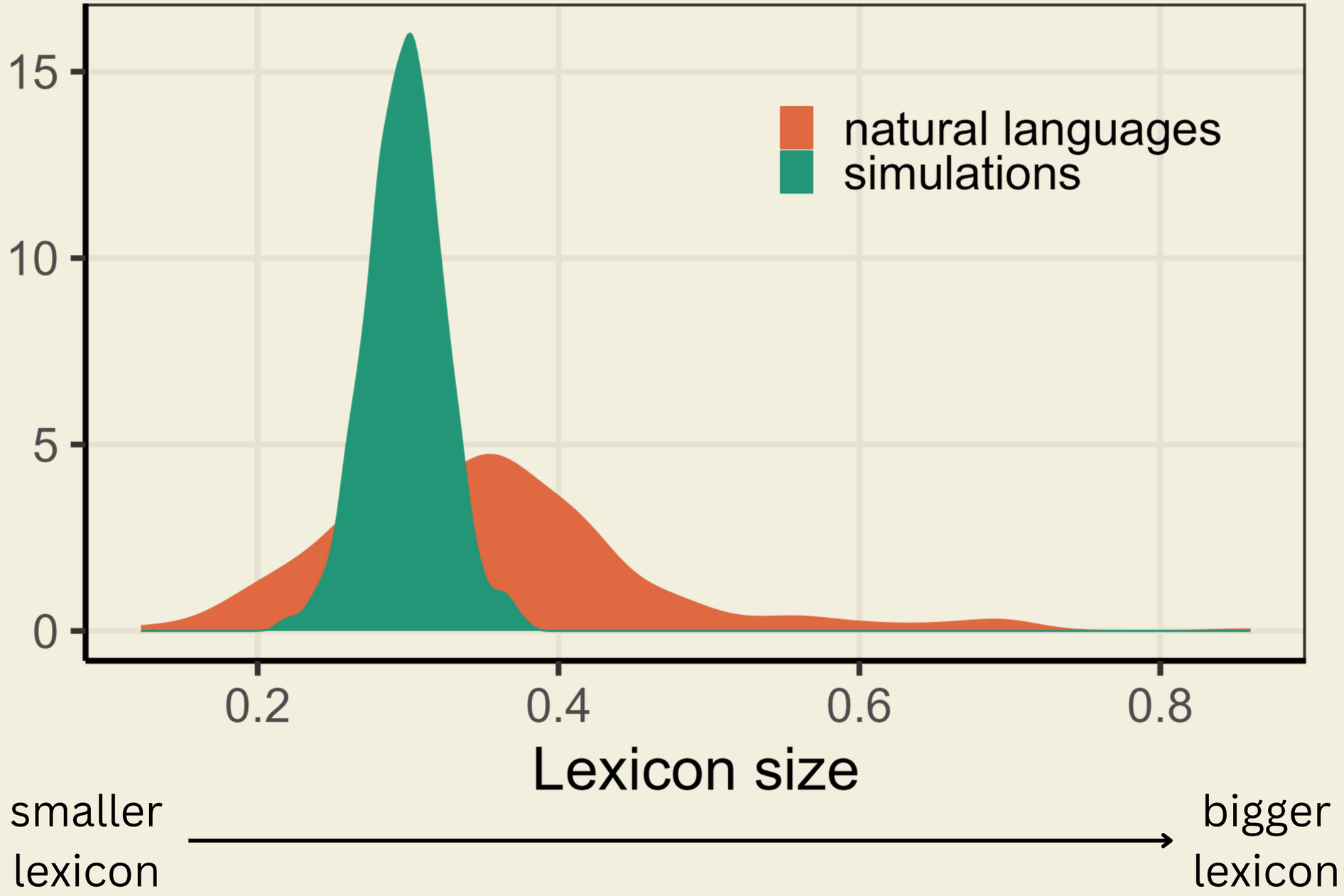
no

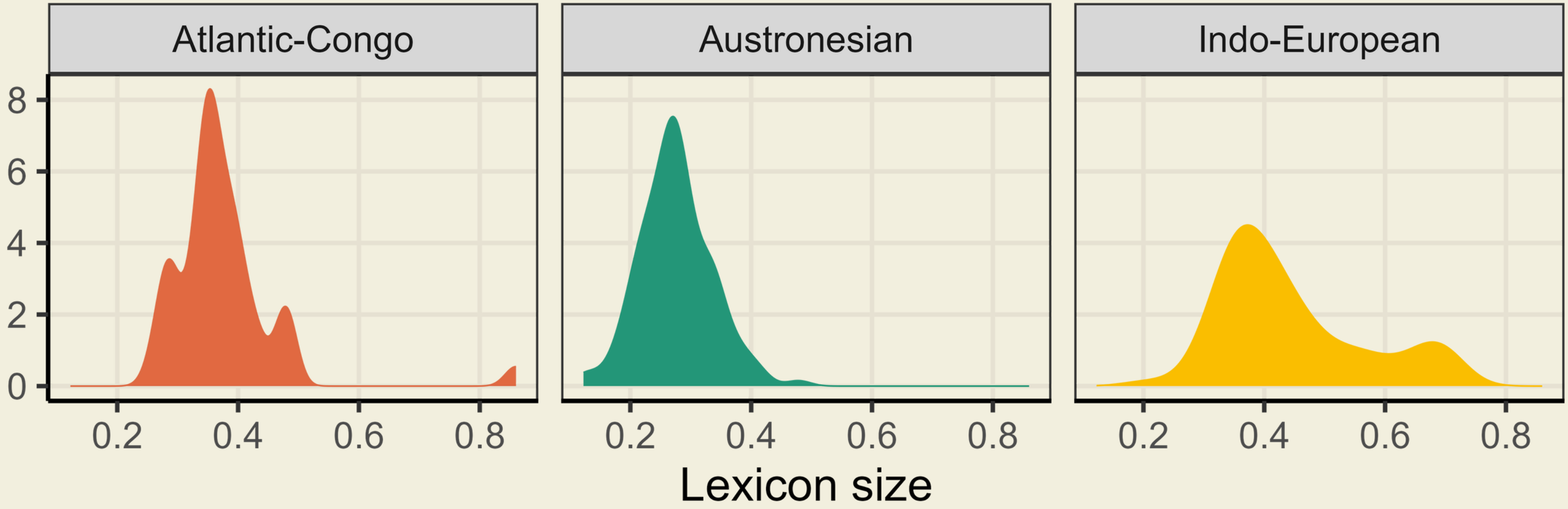
label a new category containing x and y



smaller lexicon → bigger lexicon


15
10
5
0
0.2
0.4
0.6
0.8
Lexicon size
smaller lexicon
bigger lexicon


15
10
5
0
natural languages
simulations
0.2
0.4
0.6
0.8
Lexicon size
smaller lexicon
bigger lexicon


Atlantic-Congo
Austronesian
Indo-European
8
6
4
2
0
0.2
0.4
0.6
0.8
Lexicon size

systems of kinship terminology tend to have
slightly more terms than chance.

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but the number of kin terms also
varies more than chance.

Is kinship lexicon size modulated by population demographics?

Why population size?

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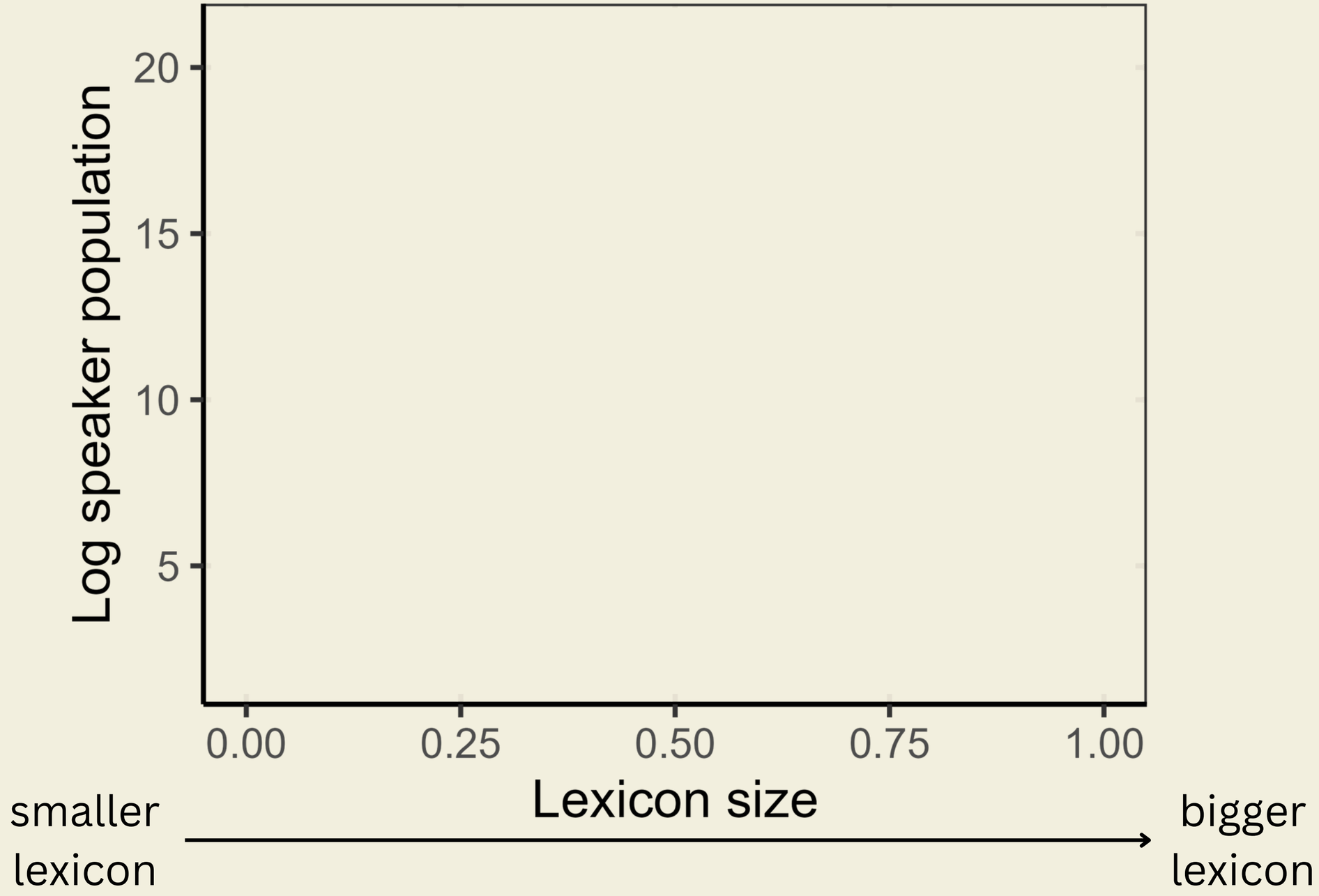
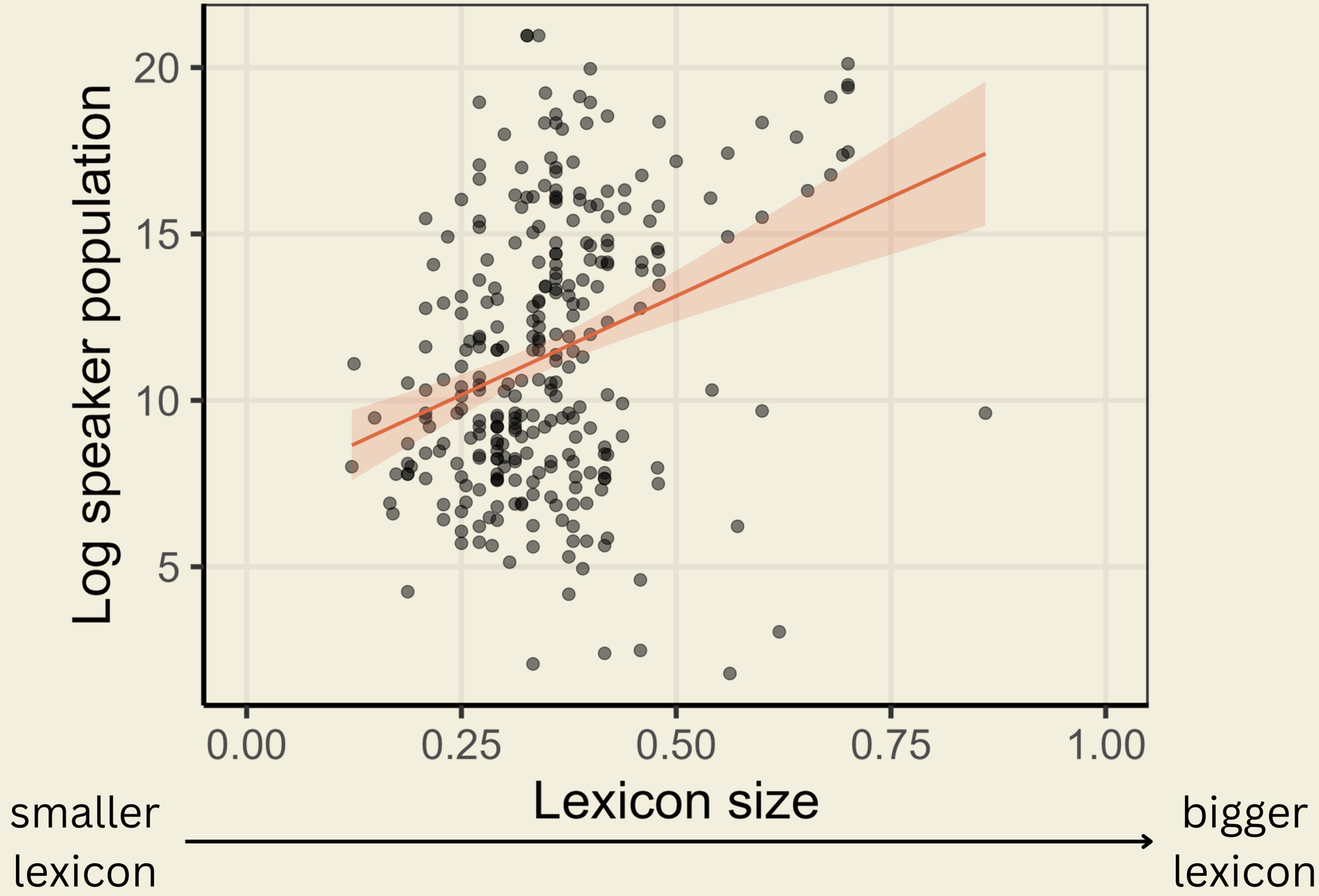
- Larger communities may have greater rates of word gain. (Bromham et al 2015; Greenhill et al 2018)
- Larger communities may develop more expressive category systems. (Lev-Ari 2024)

Why population size?

The evidence suggests that **larger communities should have larger vocabularies.**

So we expect that **larger communities will have larger kinship lexicons.**


Log speaker population
20
15
10
5
0.00
0.25
0.50
0.75
1.00
Lexicon size
smaller lexicon
bigger lexicon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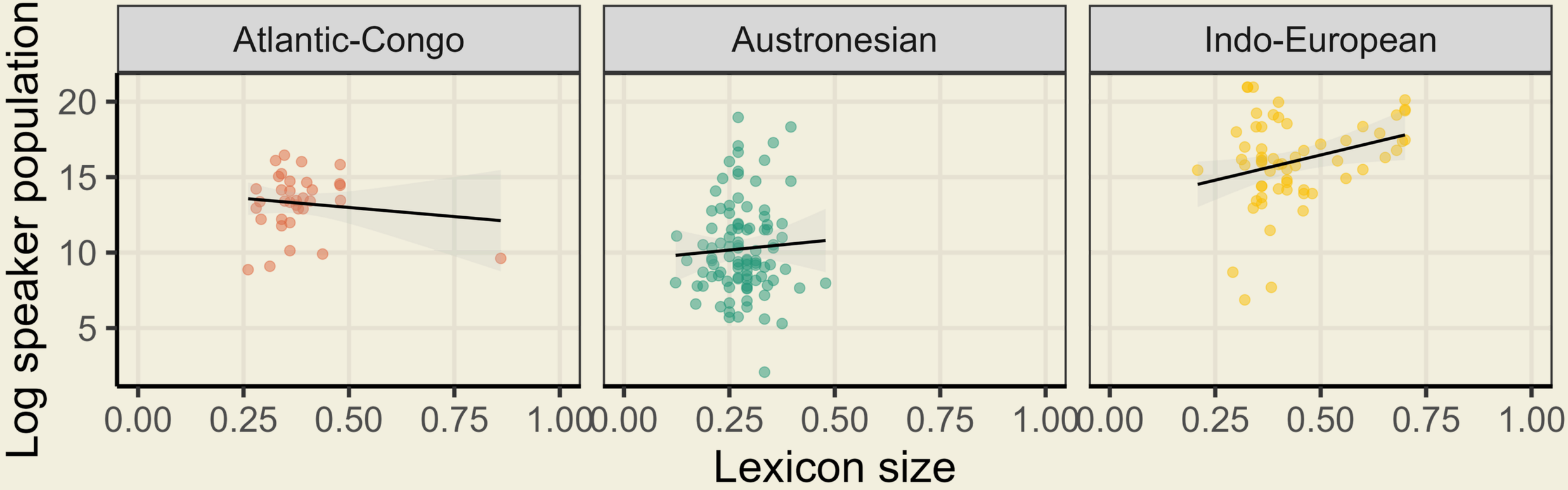
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15
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0.00
0.25
0.50
0.75
1.00
Lexicon size

Population demographics do not reliably predict the size of the kinship lexicon.

Why not?

Summary

kinship lexicon sizes are constrained, yet vary more widely than chance

but this does not seem to be conditioned on population structure

Thanks!

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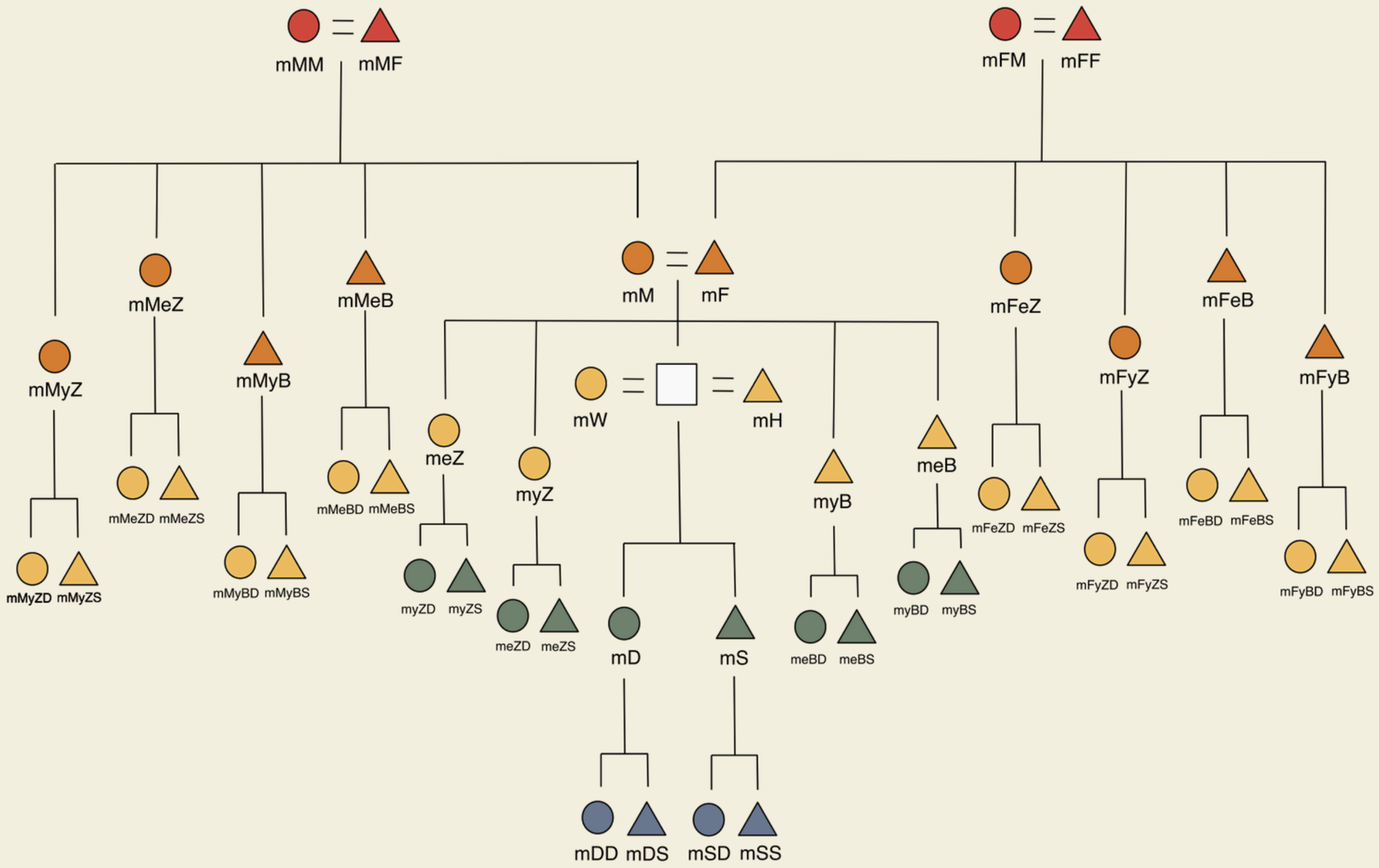
grandparents

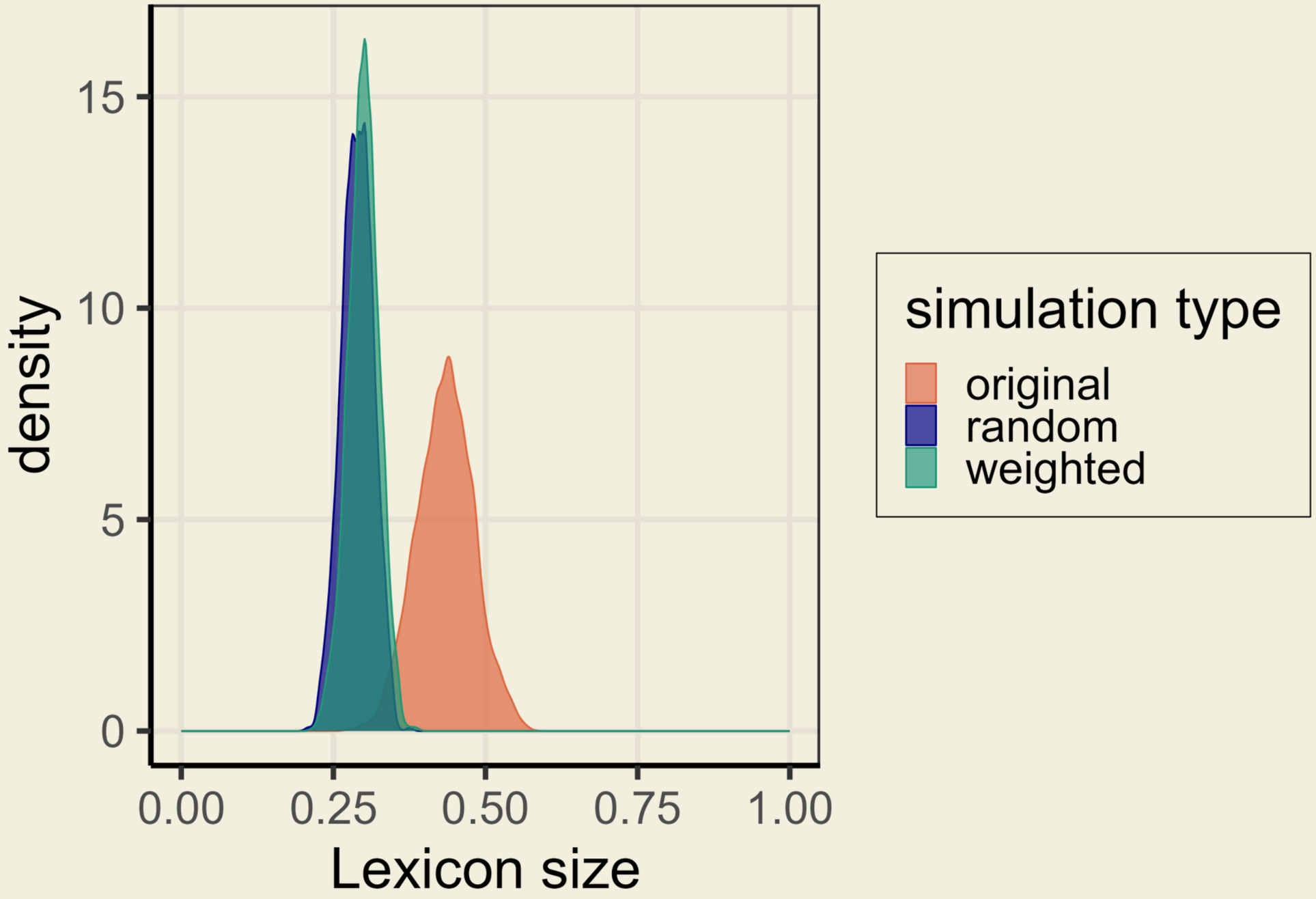
parents + nuncles

siblings + cousins

children + niblings

grandchildren




density
15
10
5
0
0.00
0.25
0.50
0.75
1.00
Lexicon size
simulation type
original
random
weighted