COGNITIVE SCIENCE FROM THE PERSPECTIVE OF LINGUISTIC DIVERSITY

MAX PLANCK INSTITUTE
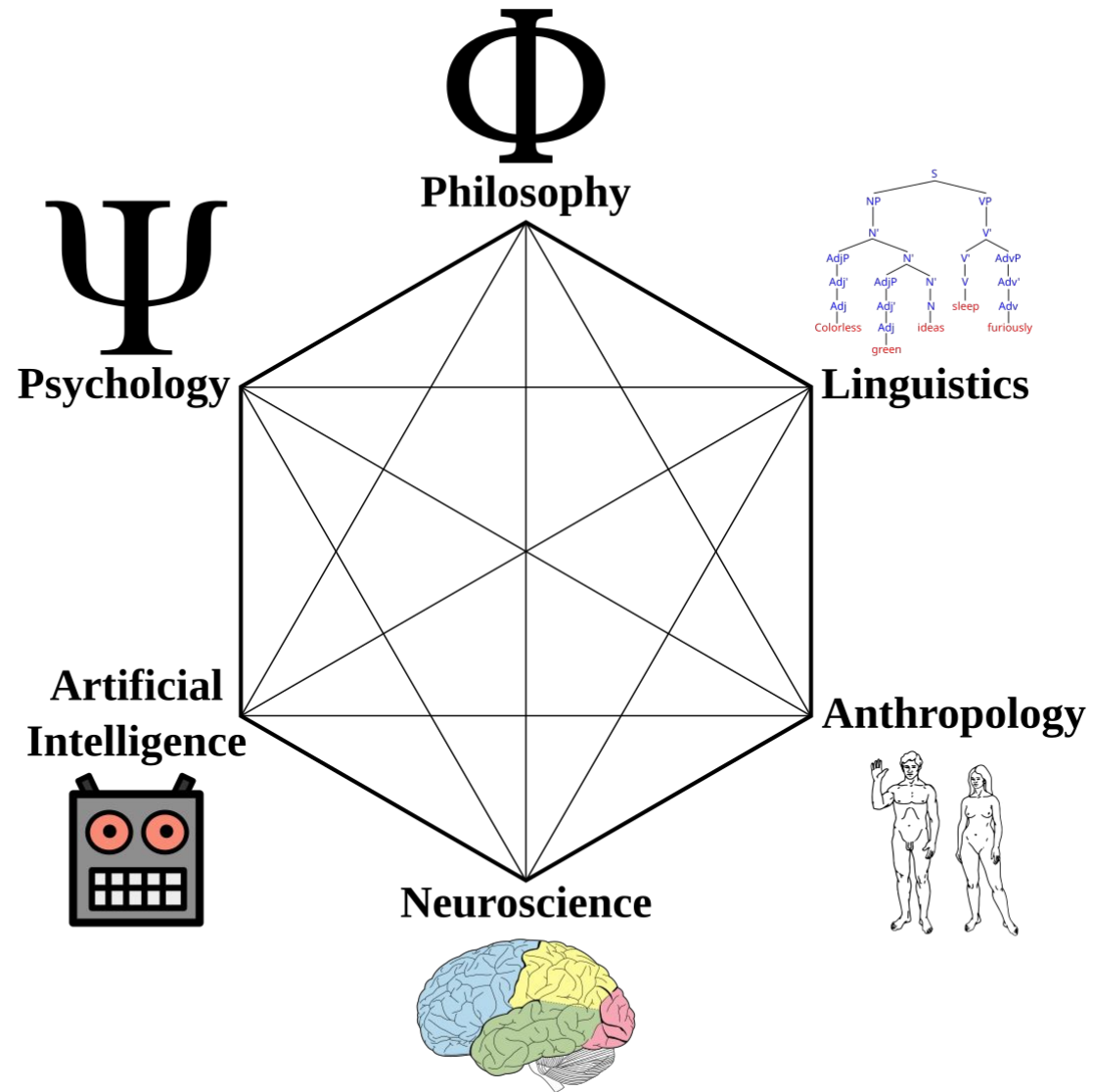FOR EVOLUTIONARY ANTHROPOLOGY

Annika Tjuka (DLCE)

AGENDA

About me

- Postdoc in DLCE since April
- Doctorate at Friedrich-Schiller-Universität Jena
- IMPRS alumni
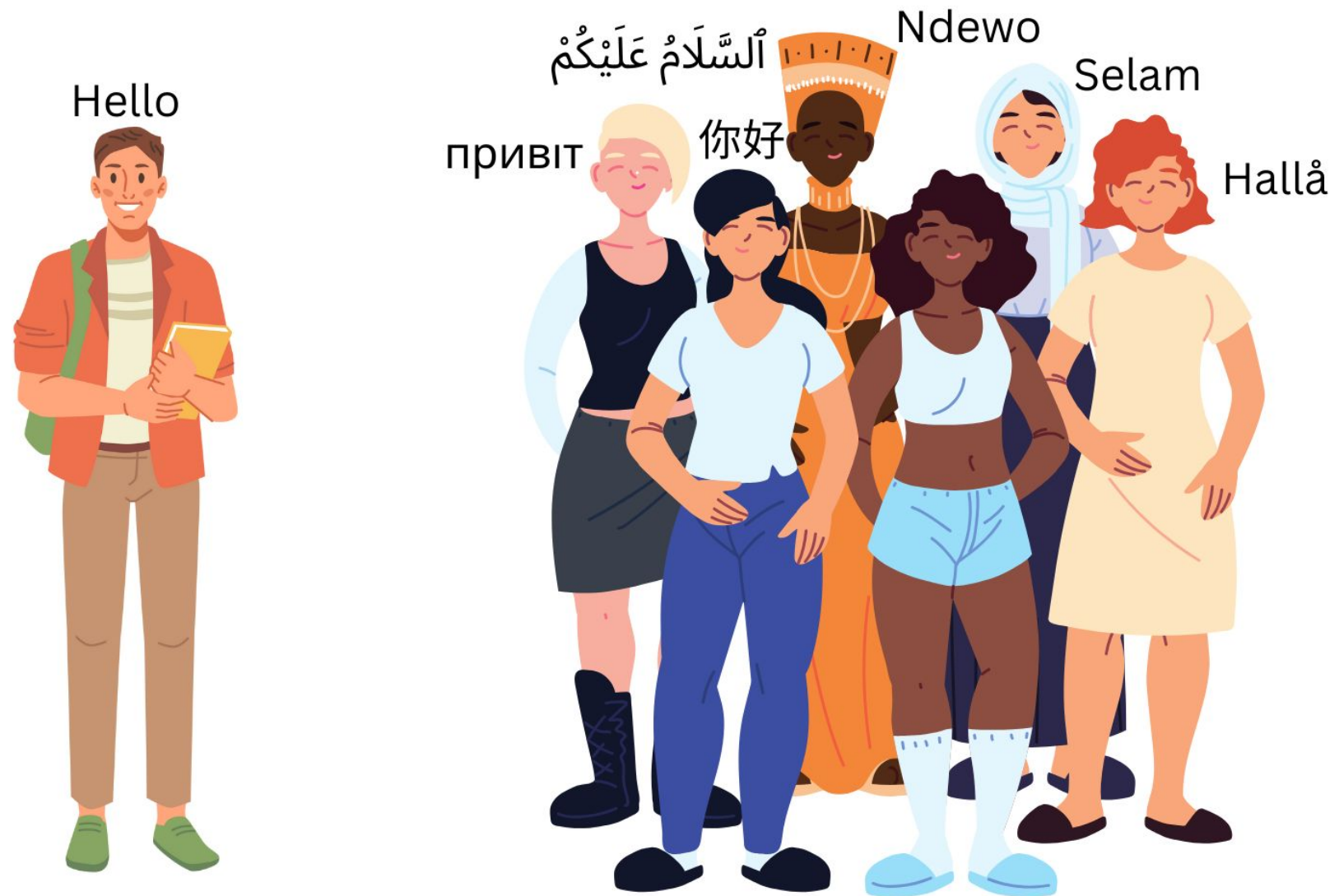- I study how languages differ, especially in the way they encode meanings into words.

Introduction

Cognitive Science

Bender (2022); Levinson (2012)

So WEIRD (Western, Educated, Industrialized, Rich, and Democratic)

Hello

привіт

你好

ٱلسَّلَامُ عَلَيْكُمْ

Ndewo

Selam

Hallå

Henrich et al. (2010); Blasi et al. (2022)

Relevance of linguistic diversity

- universal and language-specific effects
- the interplay between language and thought
- cognitive flexibility and adaptation
- brain plasticity
- language acquisition
- AI and computational models
- language loss = losing the knowledge of what's possible

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Where is North?
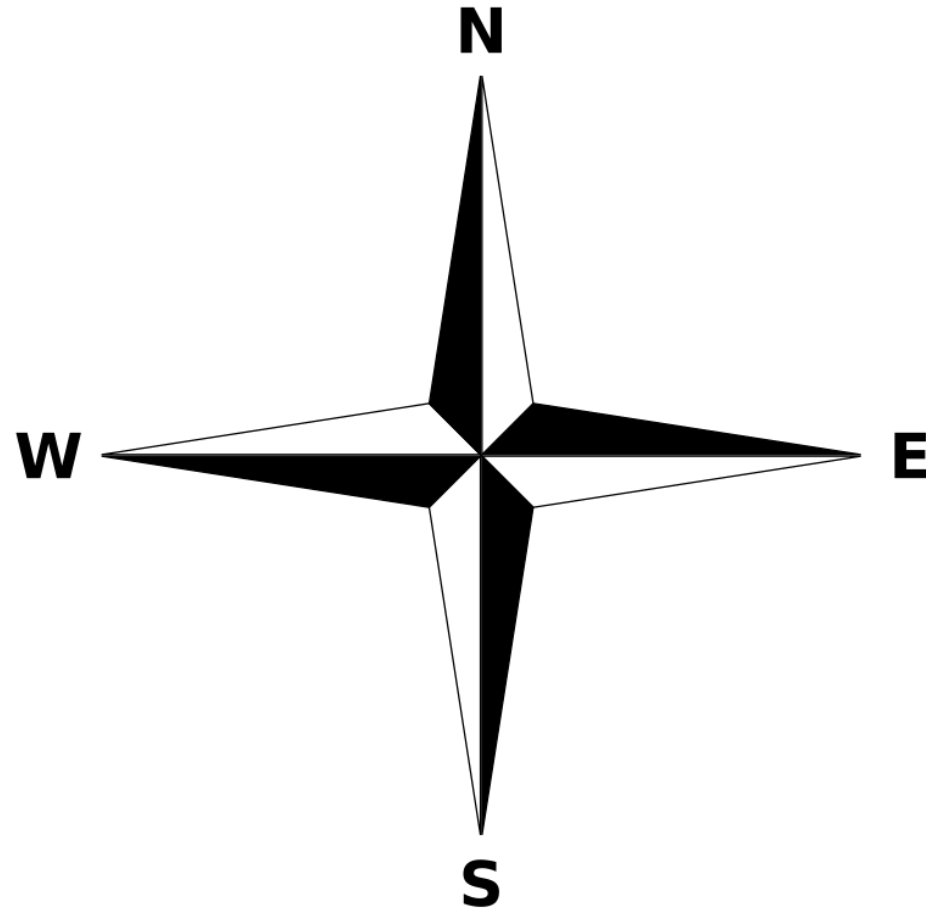
Where is North?

- If you encode spatial relations in your language, it is more likely that you can orient yourself better.

Where is North?

- If you encode spatial relations in your language, it is more likely that you can orient yourself better.
- If your language encodes spatial relations using geocentric or absolute reference systems, it is more likely that you have better orientation skills in tasks requiring navigation or spatial awareness.

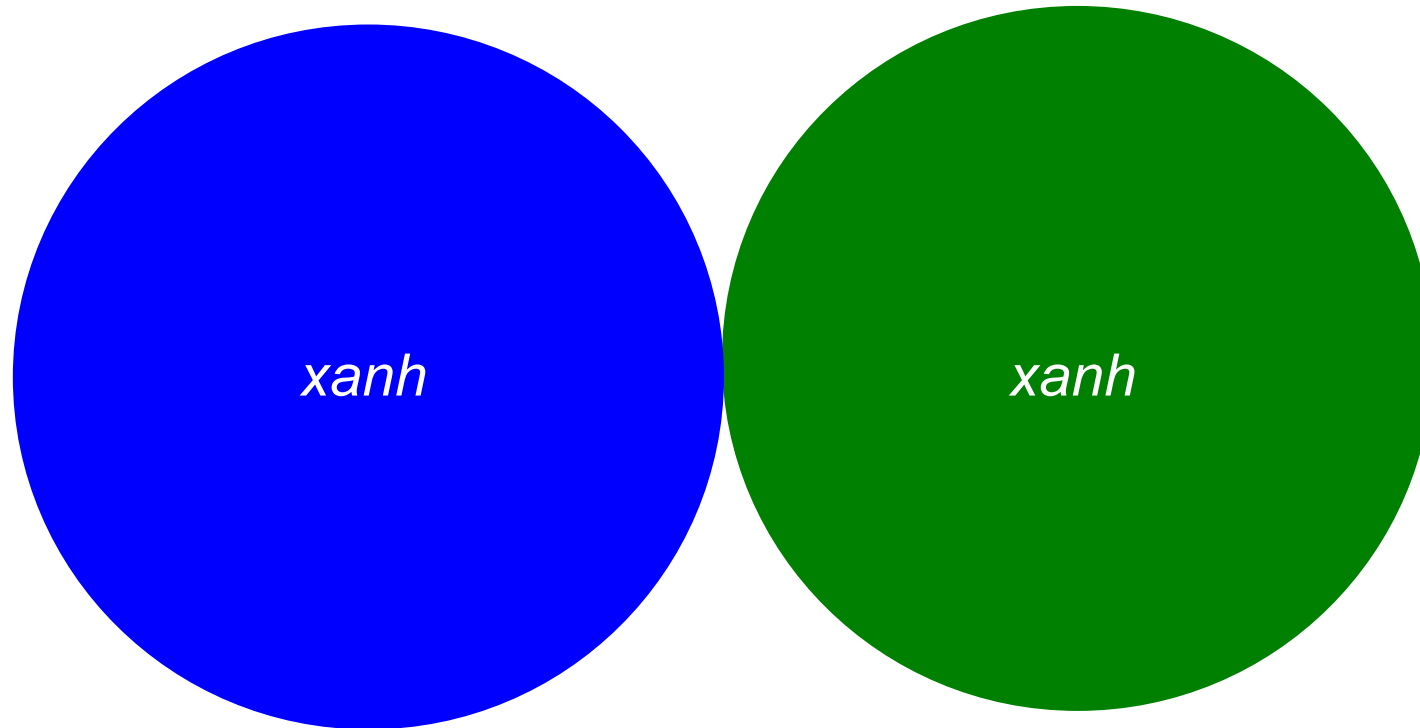Majid (2004); Levinson (2003)

What color do you see?
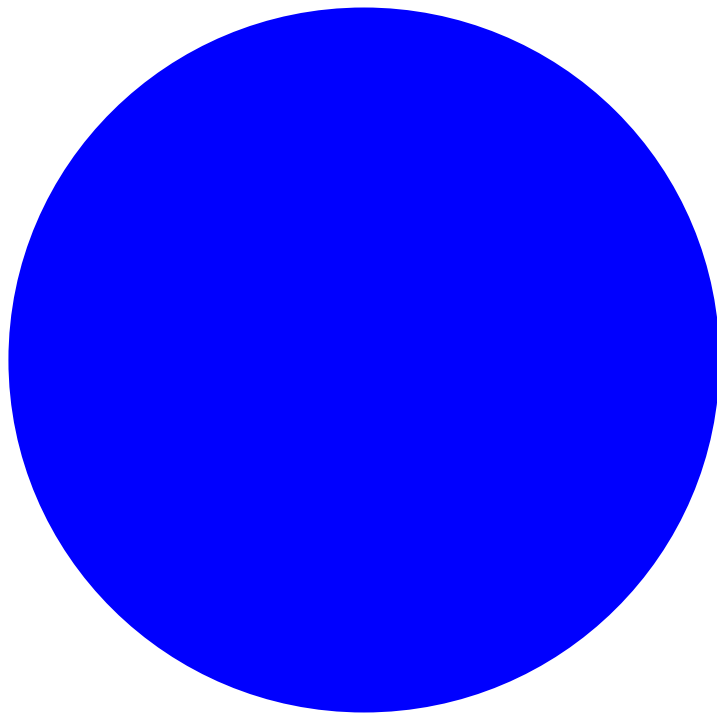
What color do you see?
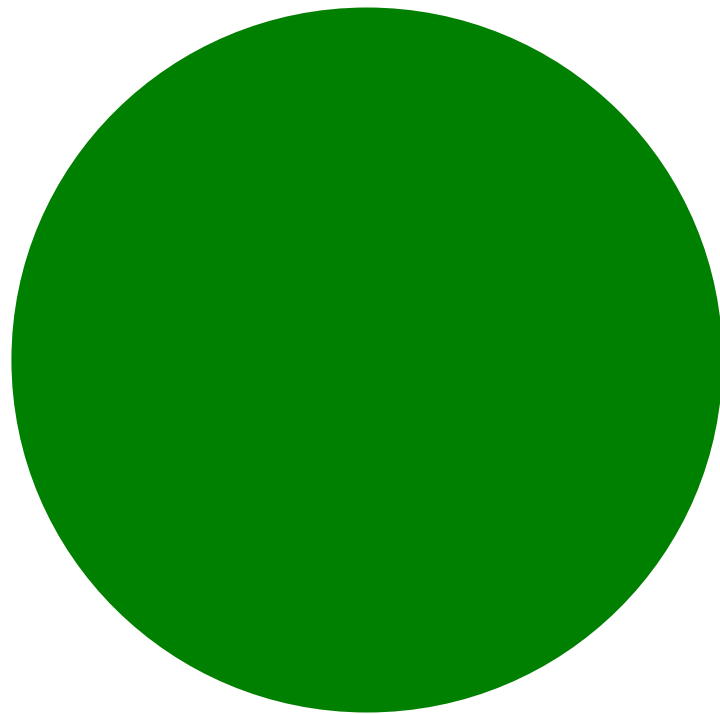
GRUE

GRUE

- If you have two lexical items for two hues, it is more likely that you can discriminate the two with more ease.

Lindsey & Brown (2004); Hardey et al. (2023)
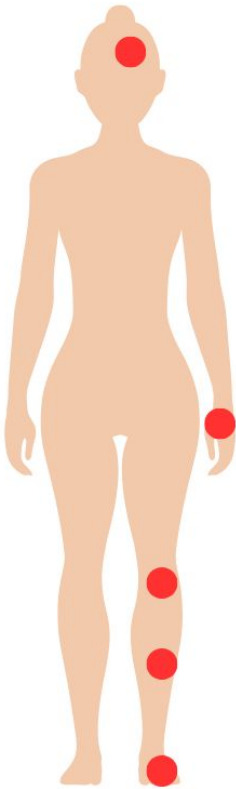
Relevance for human origins

- How did the categories in our mind develop?
- How did the environment influence the formation of these categories?
- How did linguistic and cognitive abilities co-evolve?

Methods

Methods

non-linguistic task

word list

KNEE	Knie
HAND	Hand
LEG	Bein
HEAD	Kopf
FOOT	Fuss

text

As she climbed the hill, her **knee** ached, and she steadied herself with her **hand** against a tree. Her **leg** muscles burned, but she pressed on, sweat dripping from her **head**. Finally, her **foot** reached the summit, and she gazed out at the stunning view.

Methods

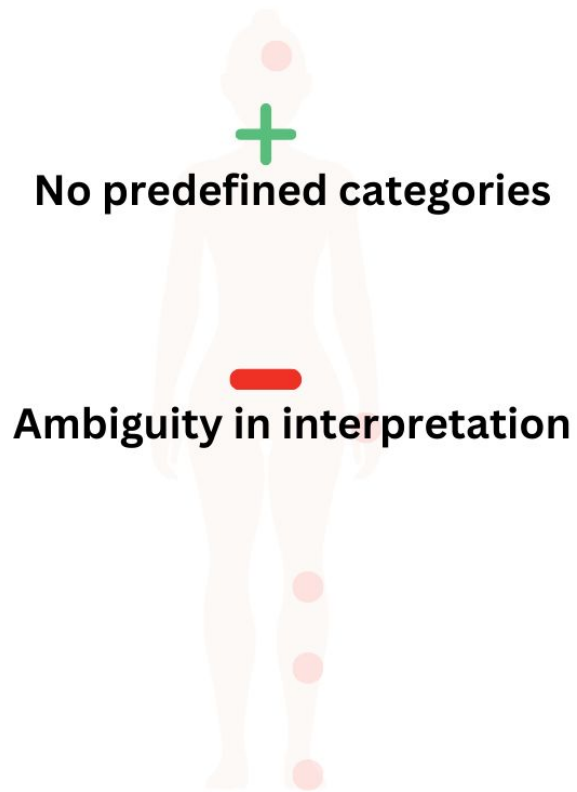| non-linguistic task	word list	text
+ No predefined categories **—** Ambiguity in interpretation	KNEE Knie HAND Hand LEG Bein HEAD Kopf FOOT Fuss	As she climbed the hill, her **knee** ached, and she steadied herself with her **hand** against a tree. Her **leg** muscles burned, but she pressed on, sweat dripping from her **head**. Finally, her **foot** reached the summit, and she gazed out at the stunning view.

Methods

non-linguistic task

+

No predefined categories

—

Ambiguity in interpretation

word list

+

Standardisation

KNEE	Knie
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—

Lack of context

text

As she climbed the hill, her **knee** ached, and she steadied herself with her **hand** against a tree. Her **leg** muscles burned, but she pressed on, sweat dripping from her **head**. Finally, her **foot** reached the summit, and she gazed out at the stunning view.
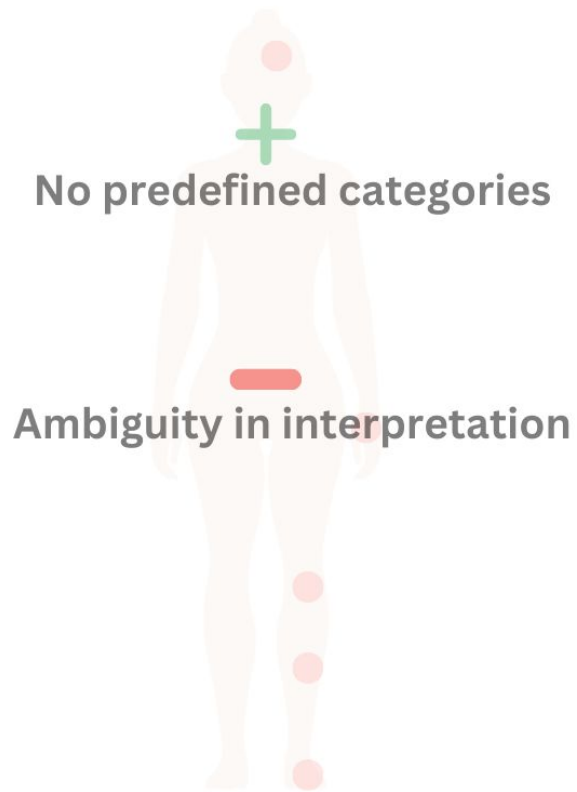
Methods

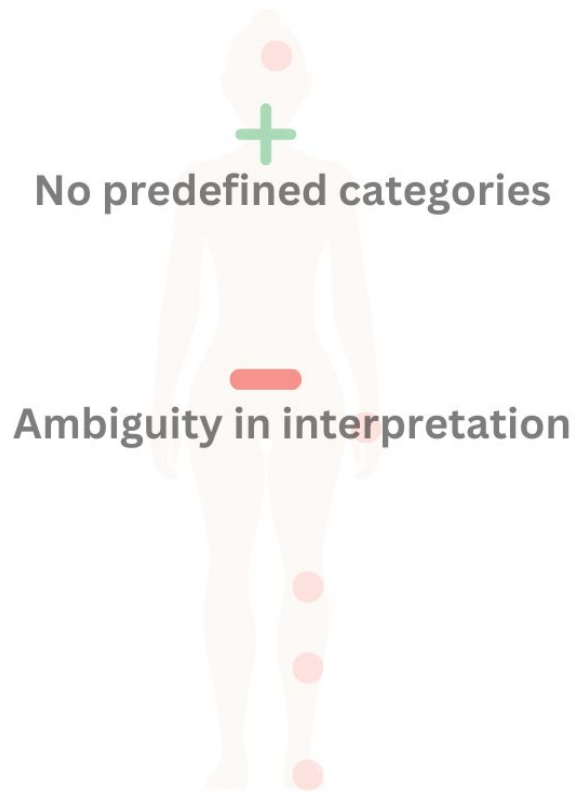| non-linguistic task	word list	text
+ No predefined categories	**+** Standardisation	**+** Large-scale
− Ambiguity in interpretation	**−** Lack of context	**−** Metaphors

As she climbed the hill, her **knee** ached, and she steadied herself with her **hand** against a tree. Her **leg** muscles burned, but she pressed on, sweat dripping from her **head**. Finally, her **foot** reached the summit, and she gazed out at the stunning view.

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Methods

word list

KNEE	Knie
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Methods

word list

KNEE	Knie	Polvi
HAND	Hand	Käsi
LEG	Bein	Jalka
HEAD	Kopf	Pää
FOOT	Fuss	Jalka

...

Methods

word list

| KNEE	Knie	Polvi	Коліно
HAND	Hand	Käsi	Рука
LEG	Bein	Jalka	Нога
HEAD	Kopf	Pää	Голова
FOOT	Fuss	Jalka	Нога

...

Human Body Parts
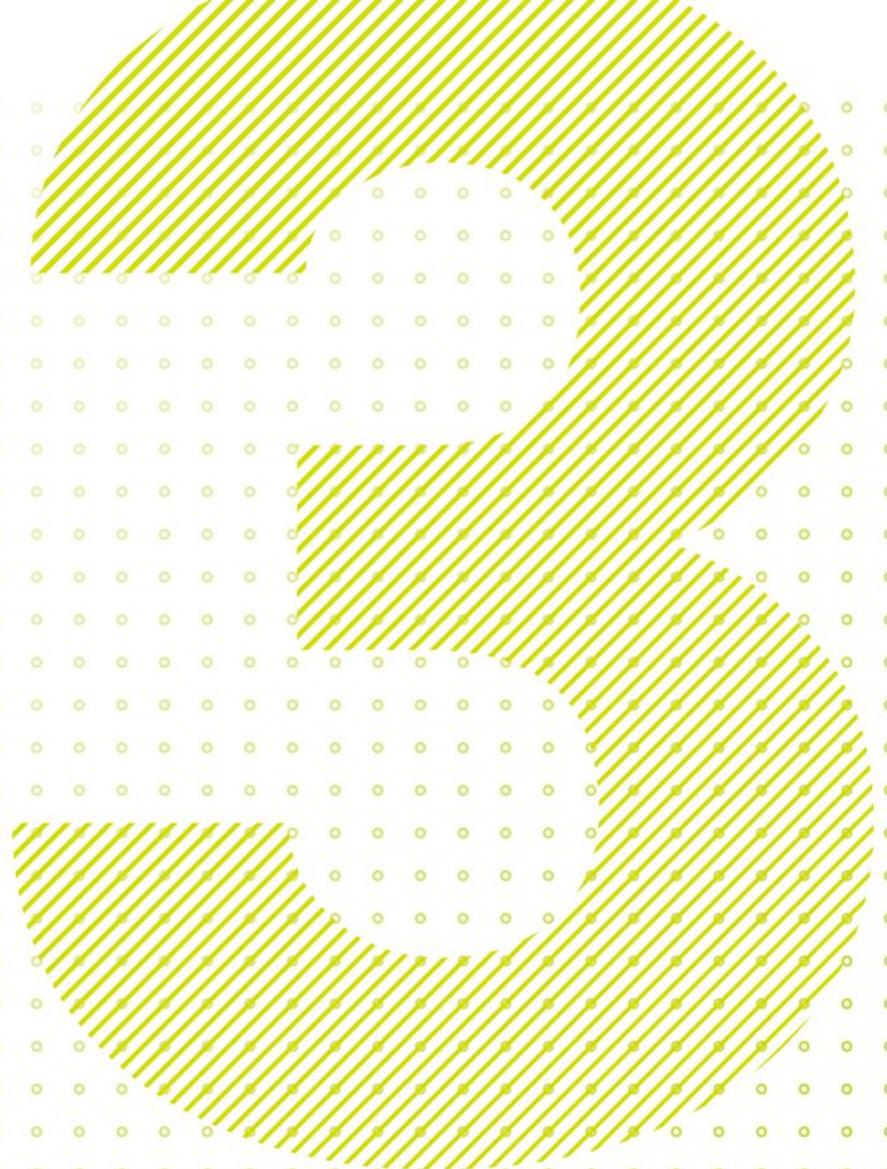
Colexifications

The same lexical form is used for two different concepts in at least two genealogically unrelated languages (François 2008).
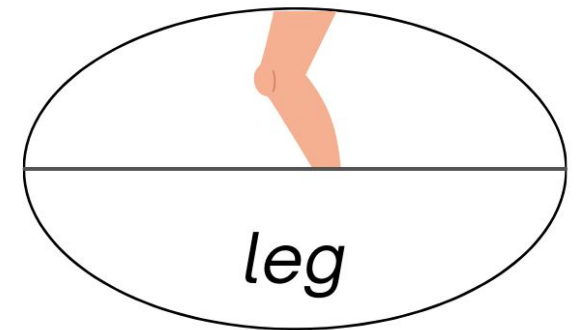
The analysis is based on cross-linguistic data.

Colexifications

foot

English
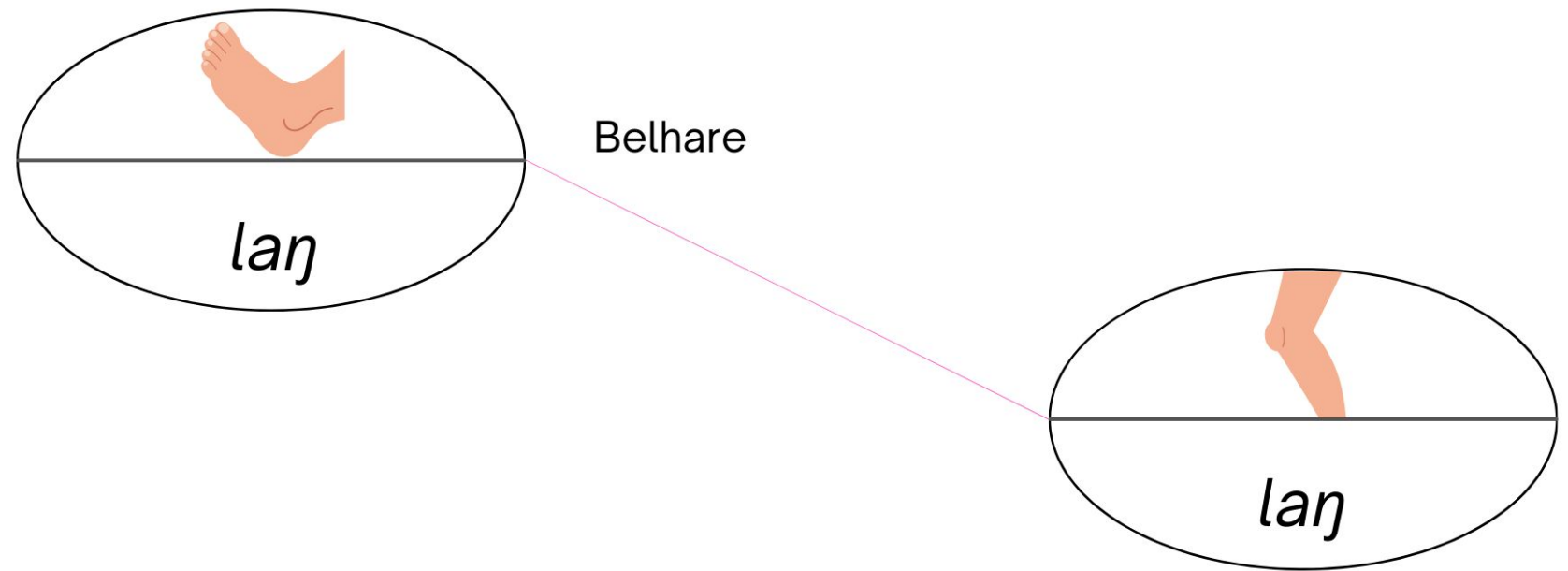
leg

Colexifications

Belhare

laŋ

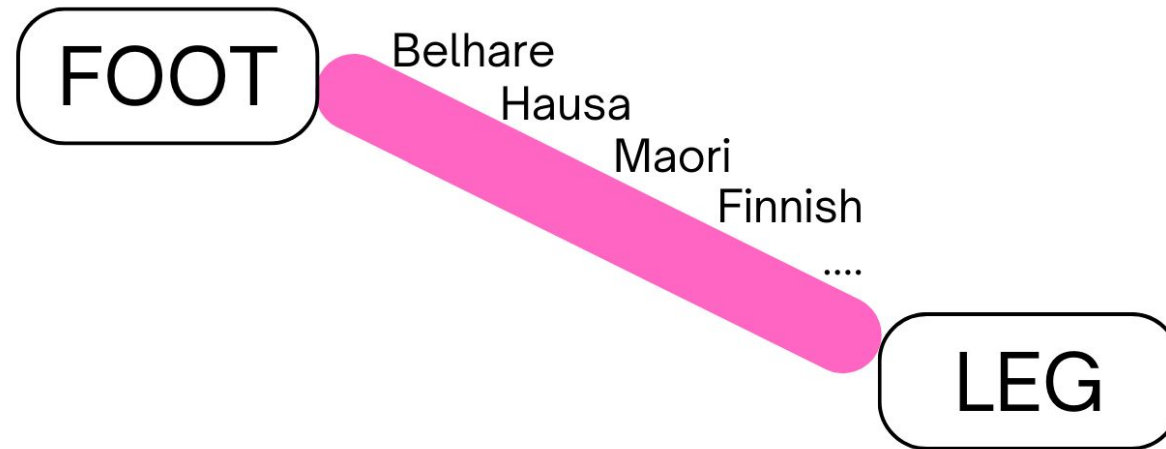*laŋ*
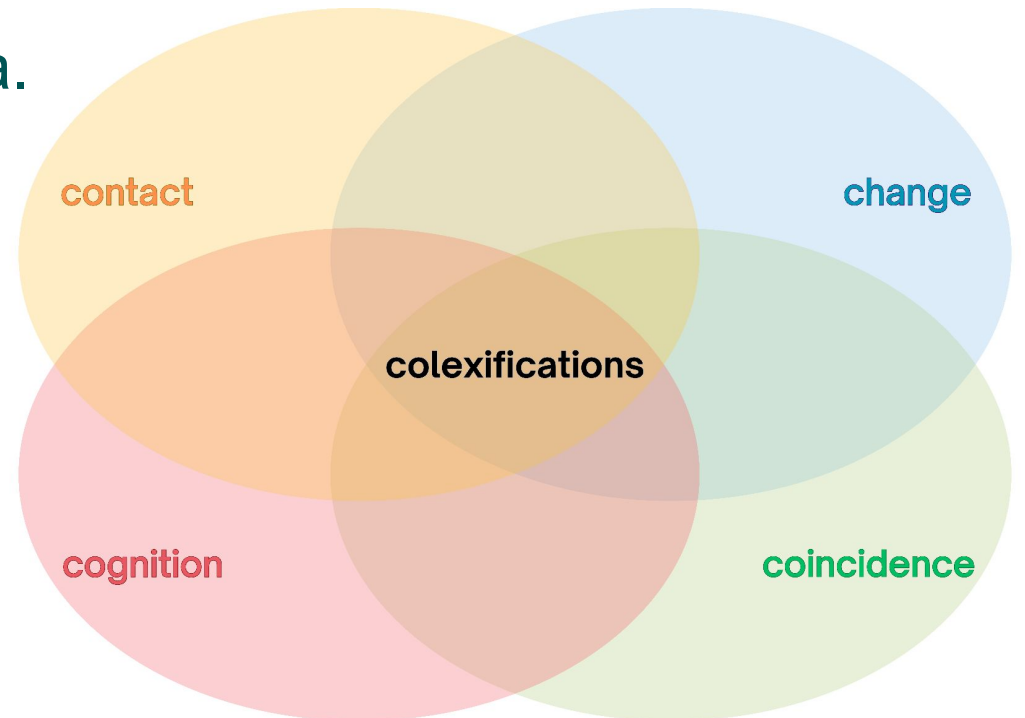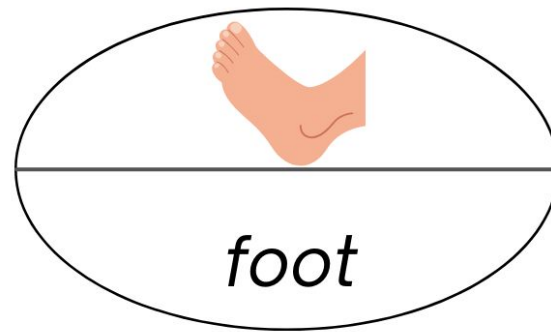
Colexifications

Body part vocabularies

Analysis of perceptual features:

- contiguity, function, shape

English **Wolof**

arm *loxo*

hand

leg *tank*

foot

Tjuka et al. (2023)
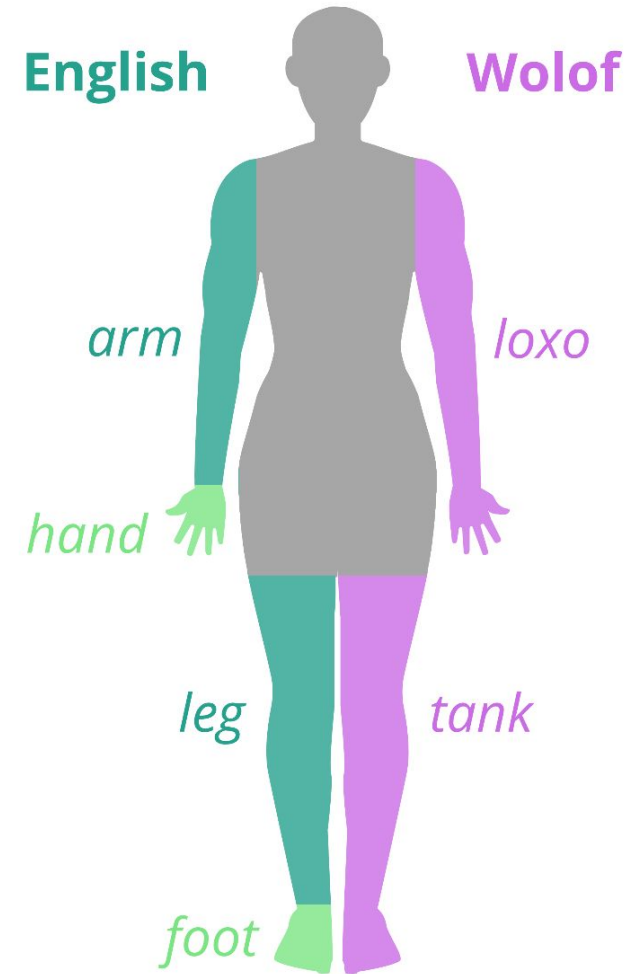
Body part vocabularies

Few widespread,

many language-specific colexifications.

Tjuka et al. (2023)

Family networks

Indo-European   Sino-Tibetan   Afro-Asiatic

Tjuka et al. (2023)

Family networks

Tjuka et al. (2023)
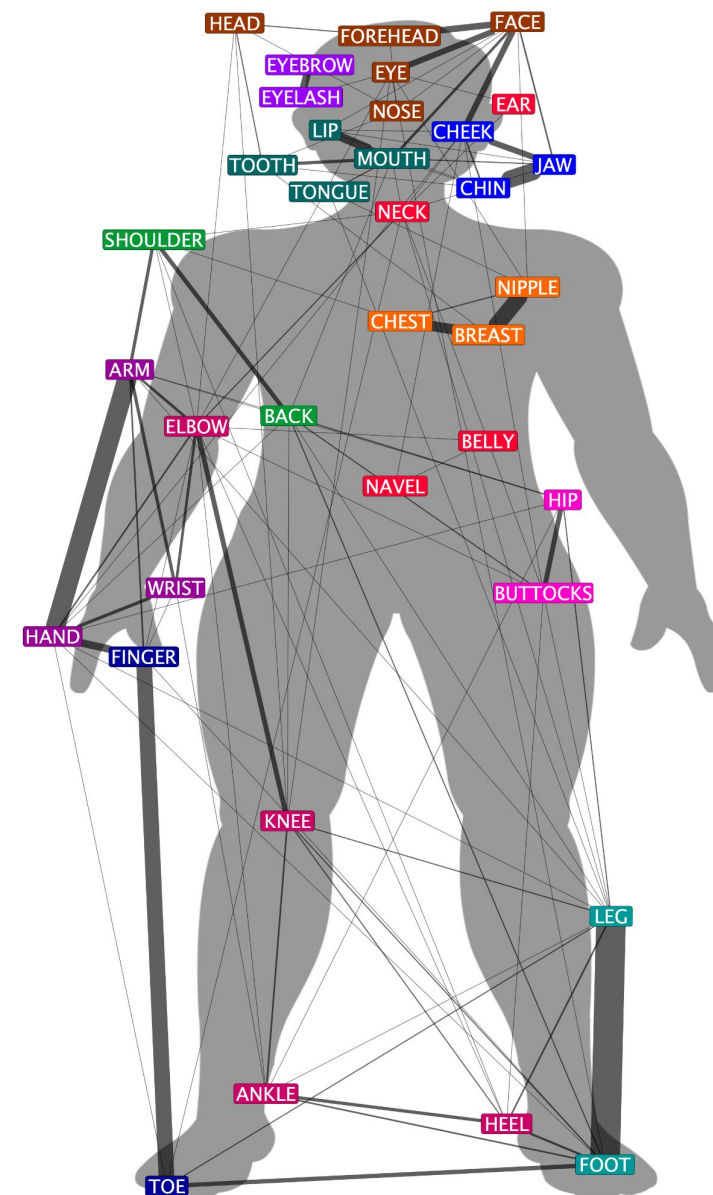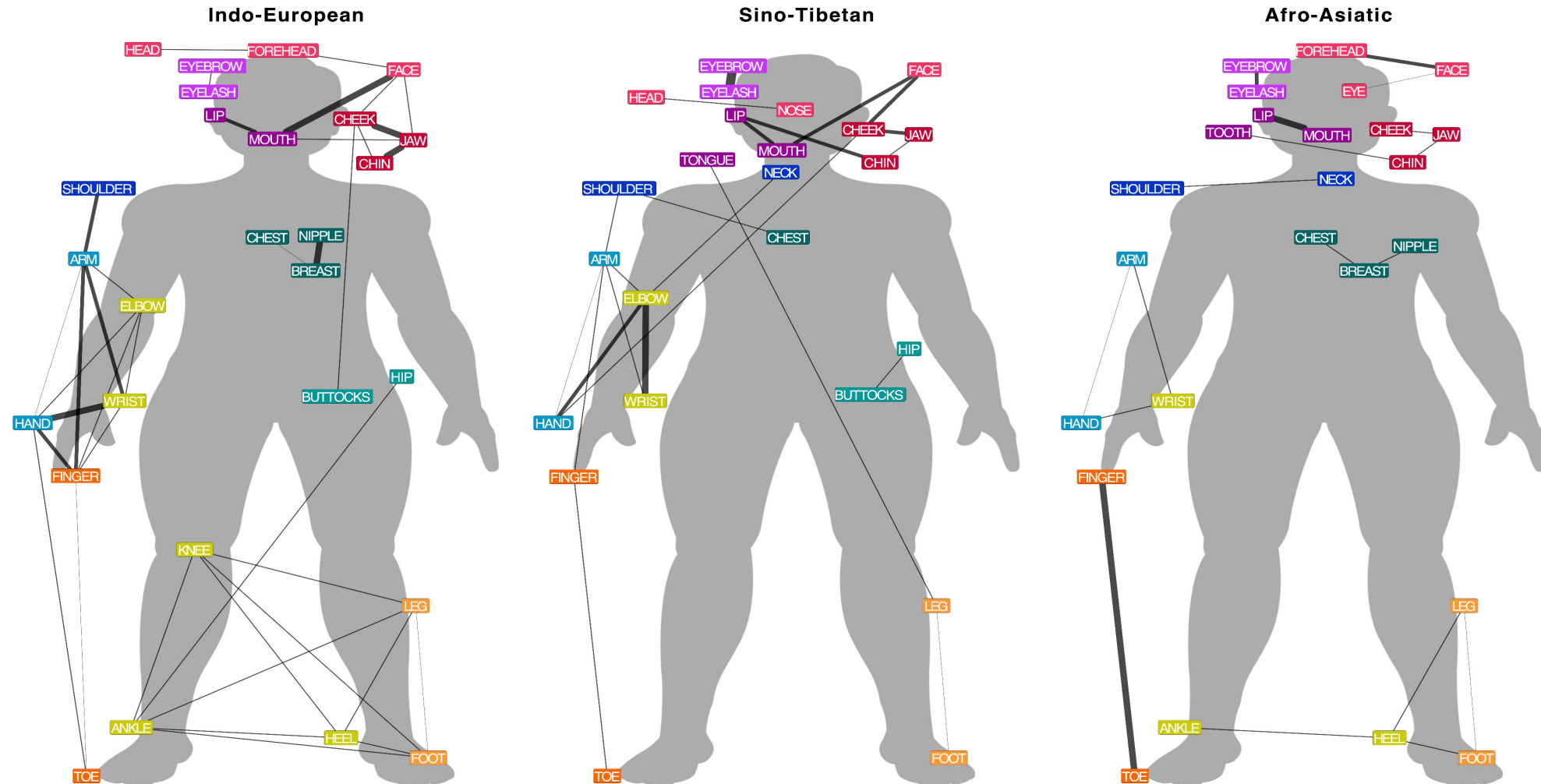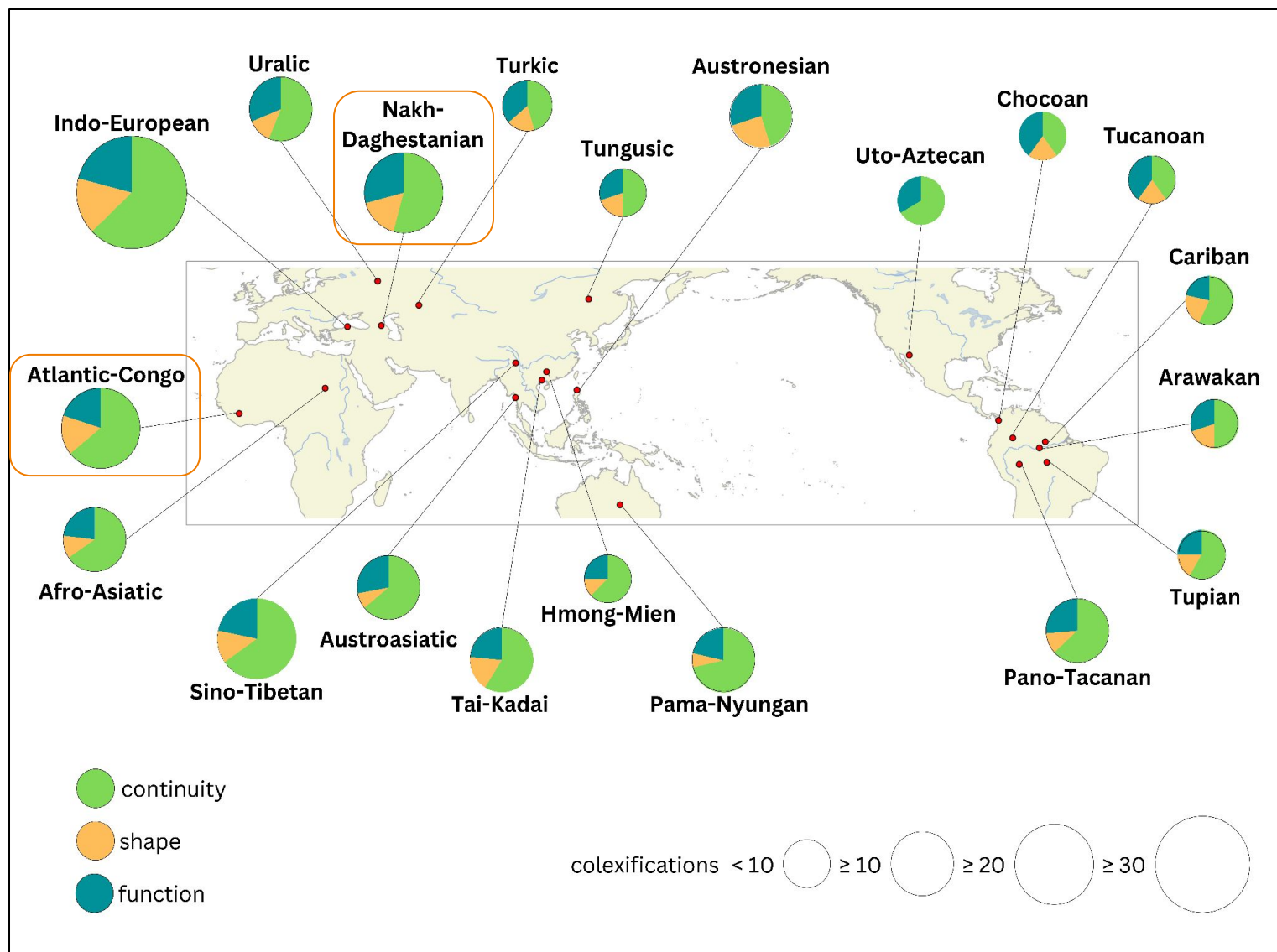
Conclusions

- Contiguity drives most colexifications between body parts.

- Preferences for perceptual features differ across languages.

Summary

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- There are similarities across languages.

Summary

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- However, there is also a lot of variation that needs to be explained.

Summary

Investigating linguistic diversity…

- challenges the notion of a universal mind.

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Summary

Investigating linguistic diversity…

- challenges the notion of a universal mind.
- helps to identify universal mental processes and language-specific effects.
- reveals the interplay between language, thought, and culture.
- highlights the complexity of language as a system.

Why should you care?

Why should you care?

Because science uses all kinds of languages.

Embrace the diversity of minds

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