Cross-Cultural Insights into Body Part Naming

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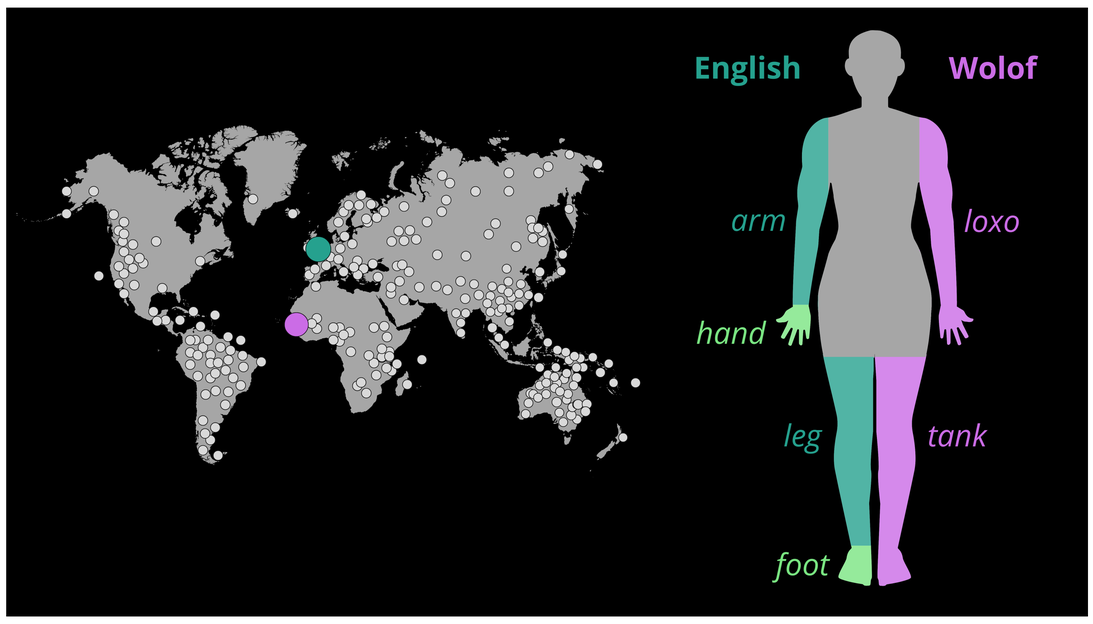

Figure 1. Illustration of the study's language sample and the words for arm/hand and leg/foot in English and Wolof.

Introduction

Every human has a body. Yet, languages differ in how they divide the body into parts to name them. The study of the variation in body part vocabularies across diverse languages has attracted the attention of researchers in linguistics, anthropology, and psychology for many years. Similar to the principles developed for the semantic domain of color, universal tendencies have been identified and contrasted with culture-specific variations. The emergence of new methods in network analysis has made it possible to conduct large-scale comparisons of vocabulary in specific semantic domains to study universal and cultural structures. In this study, we investigate the similarities and differences in naming two separate body parts with the same word, i.e., colexifications. We use a computational approach to create networks of body part vocabularies across languages. The analyses focus on body part networks in large language families, on perceptual features that lead to colexifications of body parts, and on a comparison of network structures in different semantic domains. Here, we focus on the results related to the preferences for perceptual features across language families.

Materials and Methods

The study is based on a sample of 1,028 language varieties from different geographic regions and 20 language families, see Figure 2. The largest language families are Sino-Tibetan (151 language varieties), Atlantic-Congo (117 language varieties), and Pama-Nyungan (61 language varieties). We incorporated language families with a large number of language varieties to have sufficient coverage of body part concepts.

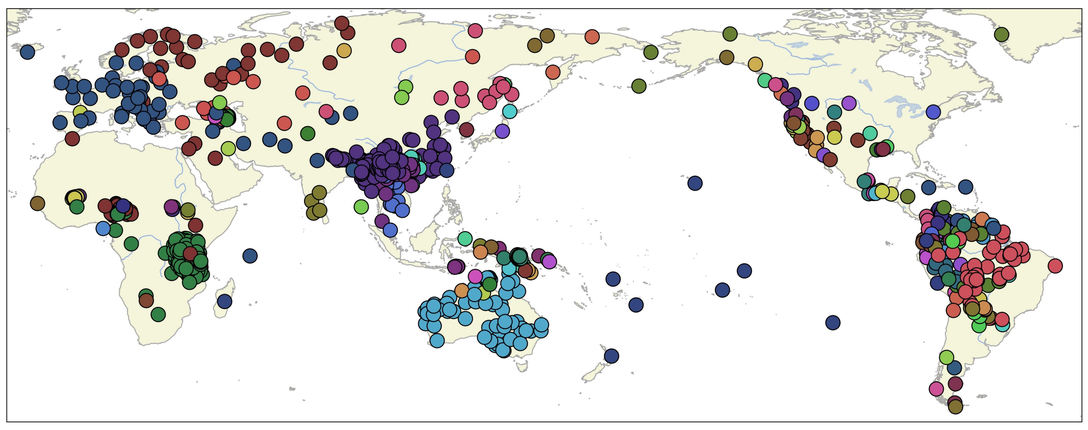

Figure 2. Distribution of language varieties in the sample. The colour indicates membership to a language family. The classification and coordinates are taken from Glottolog Version 4.727, https://glottolog.org.

Concept A	Concept B	Families	Language varieties
FOOT	LEG	57	322
HAND	ARM	37	255
CHIN	JAW	32	48
BREAST	NIPPLE	29	45
FINGER	TOE	28	104
BREAST	CHEST	19	47
MOUTH	LIP	16	78
EYEBROW	EYELASH	14	45
FINGER	HAND	14	18
FACE	FOREHEAD	12	14

Table 1. The 10 most frequent body part colexifications.

Results

Each of the 110 body part colexifications was coded for three perceptual features: contiguity, function, and shape. Figure 3 shows the networks with the body part colexifications associated with a particular perceptual feature across 20 language families. The network based on body part colexifications associated with contiguity is the densest compared to the other two networks. This demonstrates that most cross-linguistic colexifications between body parts are based on a contiguous relation. While the networks of contiguity and function include cross-linguistically frequent body part colexifications, the majority of colexifications based on shape are language family-specific.

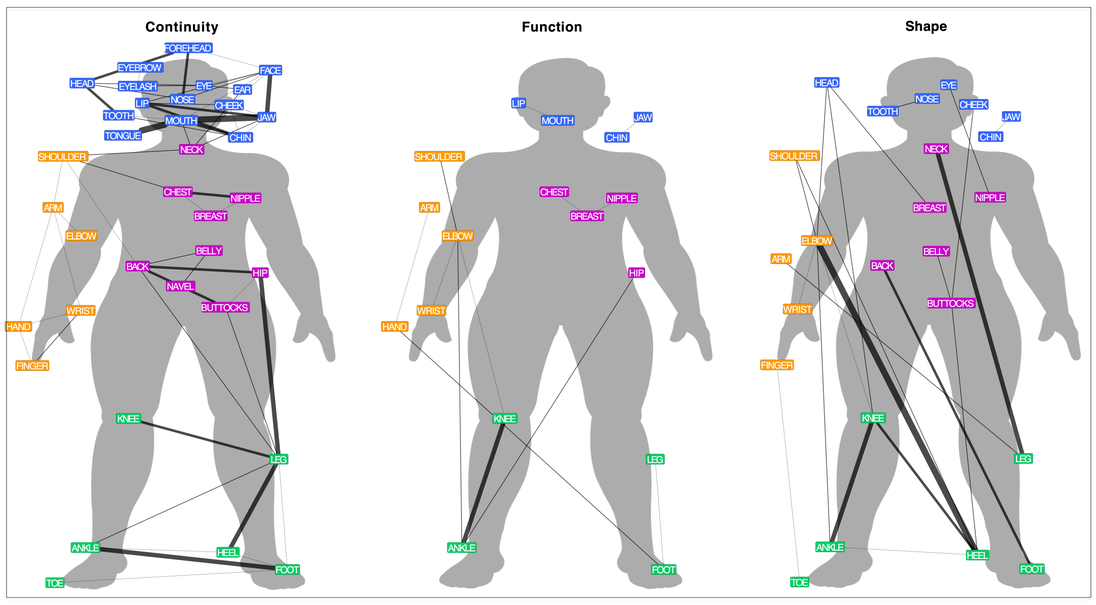

Figure 3. Colexification networks illustrating contiguity, function, and shape.

Based on the coding for contiguity, function, and shape, we determined the proportions of the categories for each language family. Figure 4 shows the pie charts with the total number of colexifications associated with each perceptual feature. The size of the pie charts illustrates the total number of colexifications. For example, Indo-European has a total of 38 body part colexifications, whereas Uto-Aztecan only has four. The map shows the geographical origin of the language families to illustrate their spread across the globe.

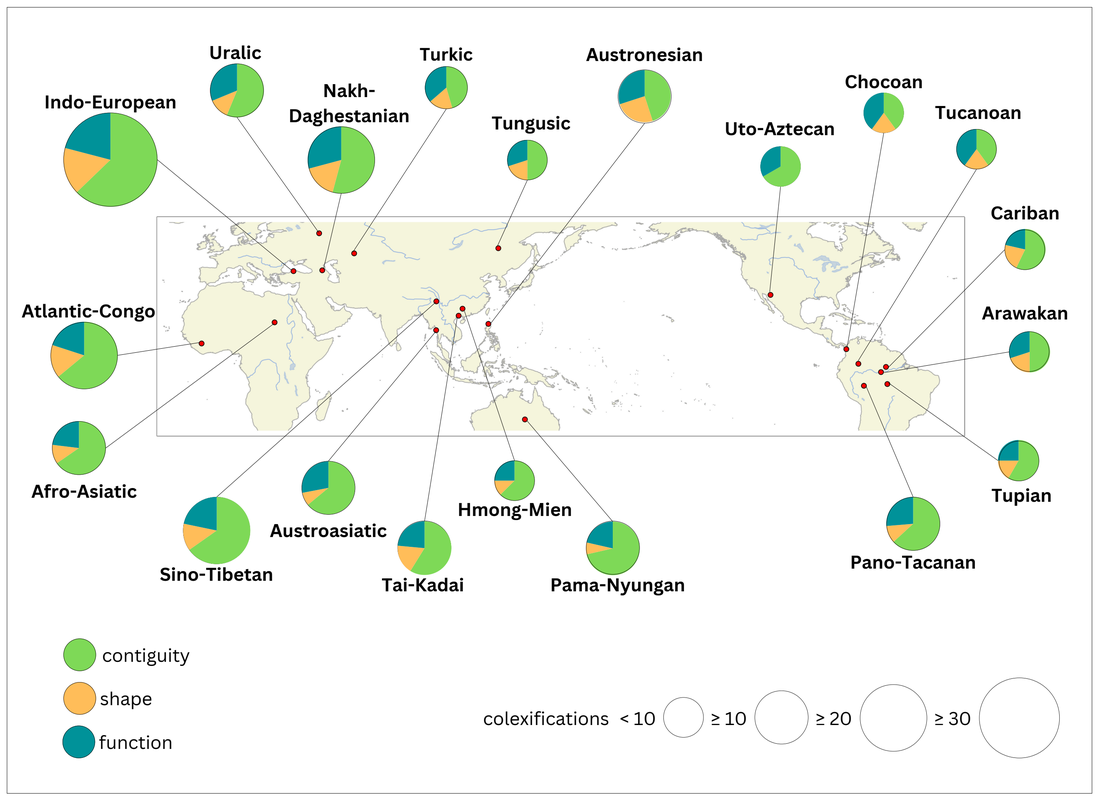

Figure 4. Distribution of the three perceptual features across language families.

Implications

The geographical distribution of perceptual features shows interesting patterns. Contiguity is a cross-linguistically stable dimension that indicates universality. In contrast, the perceptual features of shape and function are culturally varied and languages employ different systems to structure their body part vocabularies. Multiple factors may lead to different preferences. For example, languages like Wolof focus on and emphasize the functional features that connect two parts. Speakers recognize that we throw a ball with our hand and arm, or that we walk with our leg and foot. Languages like English, on the other hand, focus on visual cues like the wrist or ankle to separate parts.

Reference

Tjuka, A., Forkel, R., & List, J.-M. (2024). Universal and cultural factors shape body part vocabularies. Scientific Reports, 14(1), 1–12. https://doi.org/10.1038/s41598-024-61140-0