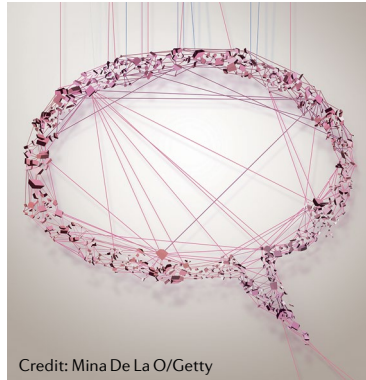


LANGUAGE

A universal network

Despite the tremendous diversity of the 7,000 spoken and signed languages used daily worldwide, most of our understanding of language processing comes from studies focusing on a few dominant languages. Therefore, to what extent the language system in the brain is cross-



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linguistically consistent is unknown. Here, Malik-Moraleda et al. reveal that the brain responds in the same manner to typologically diverse languages and that this response is supported by the same fronto-temporo-parietal network.

To test whether core features already attributed to the language network — including location, lateralization, functional integration and selectivity — extend to less dominant languages, the authors used a ‘shallow sampling’ approach. They tested native speakers of 45 languages (two speakers per language) using functional MRI (fMRI). During fMRI, the native speakers for each language, who were all fluent in English, performed two language ‘localizer’ tasks, one in which they read English sentences and nonword sequences and another — the ‘Alice localizer’ — in which they listened to short passages in their native language, acoustically degraded passages or passages in an unfamiliar language from the book *Alice in Wonderland*. Participants also performed a non-linguistic memory task and a story comprehension task in their native language.

The authors found activity in the same lateral surfaces of the left frontal, temporal and parietal cortex across all languages. Within this language network, analysis of data obtained using the Alice localizer revealed that listening to one’s native language elicits a reliably greater activation than listening to a degraded or unfamiliar language. The authors also found that the language network was lateralized to the left hemisphere, functionally integrated and selective for linguistic versus non-linguistic tasks. In addition, within-language-network activity correlations were reliably greater than correlations between the language network and the executive function network during story comprehension, and therefore the language and executive function networks are distinct from each other. Finally, the authors showed that the cross-linguistic variability in brain activity among individual speakers of different languages was similar to the inter-individual variability of native speakers of the same language.

Overall, these shared core features of the language network indicate that language processing in the brain is universally consistent across languages and language families.

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