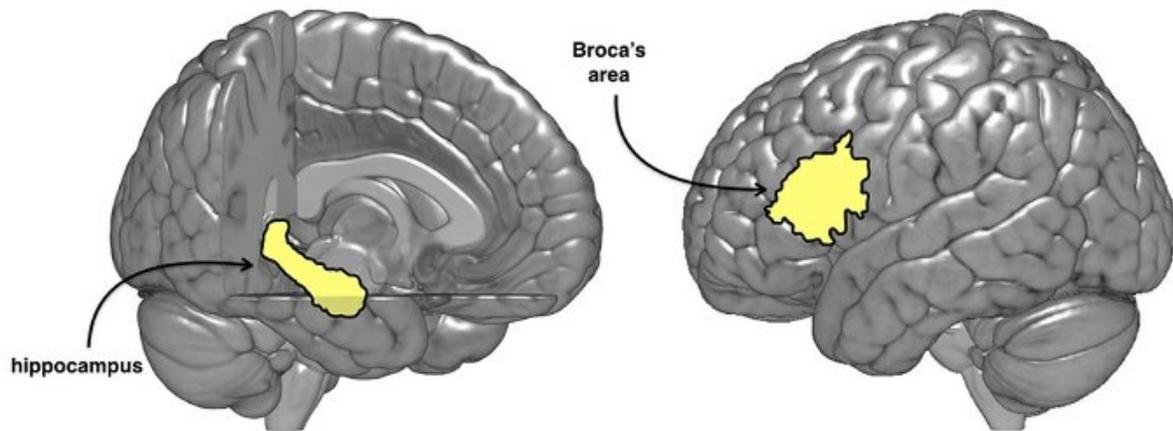


Right brain also important for learning a new language

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Credit: Leiden University

Novel language learning activates different neural processes than was previously thought. A Leiden research team has discovered parallel but separate contributions from the hippocampus and Broca's area, the learning centre in the left hemisphere. The right hemisphere of the brain also seems to play an important role.

The Leiden research team, comprising experimental linguists Olga Kepinska, Johanneke Caspers and Niels Schiller, and psychologist Mischa de Rover, published their findings at the start of October in the international journal *NeuroImage*. Olga Kepinska, lead author of the

article, says, "Language acquisition is generally associated with the left half of the [brain](#), but this research shows that in the first phase of learning a new language, the right brain hemisphere also plays an important role."

The researchers discovered that the hippocampus primarily interacts with the visual areas and for the Broca language centre a 'broad network' of connections is needed in order to remember grammar rules. Broca's centre, named after its discoverer Paul Pierre Broca, is an area in the left frontal lobe that is important in language and speech. The hippocampus, that is present in both hemispheres, plays a strong role in memory and storing new knowledge.

The team used an fMRI scan to examine the brain activity of forty adult test subjects while they were reconstructing the grammar rules of a made-up language. The degree of patterns of connections from the left and right hippocampi proved to be a strong predictor of good performance. Over the course of the session in the MRI scanner, the researchers saw an increase in the interaction between Broca's centre and the right cortex and parietal areas that act as an interim stage between different regions in the brain. Kepinska: "This shows clearly that the right brain is involved in the first phase of learning a new language."

Learning a new language is a dynamic and layered process, Kepinska explains. It is made up of different aspects: from developing a mental lexicon and learning pronunciation to fathoming sentence construction and mastering the language in practice. "Adults in particular often find it difficult to learn a foreign [language](#), and there are major differences in how quickly they learn. This research on the neural aspects of [language acquisition](#) gives us a better understanding of the learning paths in the brain."

Provided by Leiden University

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