

Areas of the brain process read and heard language differently

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The brain processes read and heard language differently. This is the key and new finding of a study at the University Department of Radiology and Nuclear Medicine at the MedUni Vienna, unveiled on the eve of the European Radiology Congress in Vienna (6 to 10 March). The researchers have been able to determine the affected areas of the brain using speech processing tests with the aid of functional magnetic resonance tomography (fMRT).

The results of the study, published in the highly respected magazine *Frontiers in Human Neuroscience*, offer the field of [radiology](#) new opportunities for the pre-operative determination of areas that need to be

protected during neurosurgical procedures – for example the removal of [brain tumours](#) – in order to maintain certain abilities. With regard to the [speech processing](#) parts of the [brain](#) in particular, individual mapping is especially important since individuals differ in terms of the location of their speech processing centres. "This also gives radiologists a tool with which they can decide whether it makes more sense during testing to present the words in visual or audible form," says Kathrin Kolindorfer who, together with Veronika Schöpf (both from the University Department of Radiology and Nuclear Medicine at the MedUni Vienna), headed up the study.

Personalised planning of radiological investigations

For the test design, the healthy test subjects were played simple nouns via headphones or shown them on a screen. They then had to form matching verbs from them. Says Kolindorfer: "Depending on whether the words were heard or seen, the neurons fired at different locations in the network."

"Our results therefore show that the precise and personalised planning of radiological investigations is of tremendous importance," says Schöpf. Following this investigation, the best proposed solution is then drawn up within the multidisciplinary team meetings with the patient.

More information: "Attention shifts the language network reflecting paradigm presentation." K. Kolindorfer, J. Furtner, J. Krajnik, D. Prayer and V. Schöpf. *Frontiers in Human Neuroscience*; [DOI: 10.3389/fnhum.2013.00809](#)

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