

## **Images of changing brain functions: Language**

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Many neuroscientists once believed that brain networks serve human communication in the same fashion throughout languages. But now brain imaging evidences uncovered in the past decade find that brain functions serving spoken and written language slightly differ between languages. Moreover, research in developmental cognitive neuroscience suggests that language use acts as a special brain exercise and leads to functional changes throughout the lifespan and especially in childhood. Moreover, the brain's network never stops changing and adjusting, it keeps its plasticity. One line of research is showing that changing brain functions help maintaining language processing, and this is one of the benefits of having a plastic brain.

Researchers have believed for a long time that plasticity was a characteristic feature of the brain only in the first few years of childhood. An enormous amount of animal and human data uncovered in the past decade, however, confirms that the brain retains its plasticity; it adapts and adjusts. This is particularly evident in language processing and reading. Recent findings are leading to a better understanding of the many different ways the brain can process language. During the course results originated from brain imaging and traditional brain activity measures are reviewed in order to have a deeper insight into the enormous capacity of the human brain serving language.

### Suggested readings:

De Bleser, R., Dupont, P., Postler, J., Bormans, G., Speelman, D, Mortelmans, L., Debrock, M.(2003) The organization of the bilingual lexicon a PET Study, *Journal of Neurolinguistics*, 16, 439-456. [pdf](#)

Grimshaw, G. M., Adelstein, A., Bryden, M. P. and MacKinnon, G. E. (1998) First-language acquisition in adolescence: evidence for a critical period for verbal language development. *Brain and Language*. 63, 237-255

Vorobyev, V.A., Alho, K., Medvedev, S.V., Pakhomov, S.V., Roudas, M.S. et al. (2004) Linguistic processing in visual and modality-nonspecific areas: PET recordings during selective attention, *Cognitive Brain Research*, 20,319-322. [pdf](#)