

## **Anatomical correlates for language processing in multilinguals**

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Although considerable data has been accumulated on human language organization, the brain representation of language in multilingual persons remains controversial. Schematically, one of the main issues sustaining the debate is to know whether the processing of different languages involves the same anatomical areas represented within one single system, or whether each language constitutes an independent system relying on distinct anatomical areas. Second basic question concerns the neural correlates of language switching, that is, the areas that are active when bilinguals switch from one language to the other.

Since clinical studies have shown that bilingual aphasics do not necessarily manifest the same language disorders with the same degree of severity in both languages, neurosurgeons who operate multilinguals use intraoperative language monitoring under awake craniotomy and recommend intraoperative testing of all languages in which the patients are fluent in. We make a critical review of surgical mapping results obtained by us and other different teams using this technique.

We will also highlight methodological issues relevant to intraoperative investigations of languages processing and switching, and discuss what can be learned from these direct intraoperative brain mapping studies in multilingual patients comparing the data obtained from this technique to those obtained from other mapping techniques and particularly functional neuroimaging.