

Linking strawberries and politicians: The electrophysiology of the bimodal bilingual brain

ABSTRACT:

Background

Bimodal bilinguals are those bilinguals fluent in two languages from two modalities, one signed and one spoken. Investigating language processing of those bilinguals is unique to understand how the brain is organized to represent and process two languages.

Aims

The goal of the project “The Electrophysiology of the Bimodal Bilingual Brain” was to investigate the brain dynamics of bilingual language co-activation across modalities. Two major questions were addressed. How the learned properties of the signed language might alter the word organization of the spoken language? and, How the linguistic properties of the spoken modality influence learning of a signed language?

Method

Behavioral and electrophysiological measures were obtained in different language experiments to evaluate cross-language interactions in bimodal bilinguals. Behavioral performance (accuracy and reaction times) was obtained while participants performed comprehension (lexical decision task) or production tasks (picture naming task). Brain activity was also registered, allowing us to explore the brain chronometry of language processes involved in bimodal bilingualism.

Results

We obtained evidence that the two languages of bimodal bilinguals interact during language production. Despite the two modalities do not share phonology, phonological cross-language effects were obtained, suggesting a lexical origin of cross-language activation. Additionally, our results revealed that to observe cross-linguistic interactions, a certain level of proficiency in the two languages is required.

Conclusions

The successful development of the project has allowed us to better understand the phenomenon of bilingual cross-language interactions across modalities.

Keywords

Bimodal bilingualism, Sign language, Electrophysiology, Brain chronometry

Published Work:

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