51st Academy of Aphasia Proceedings

EEG correlates of specific L1 language improvement after Intensive L2 phonological rehabilitation. Case Report

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Introduction

Since L1 and L2 are processed by the same neural structures, Speech therapy of bilingual aphasic patients coming from immigration, only L2 is generally rehabilitated since the benefits of rehabilitation in one language tend to extend to the untreated languages (Fabbro 2001). However, phonological therapy does not generalize, particularly for non cognates (Faroqi-Shah, 2010), and the neural correlates are not completely understood.

Aims: To test for transfer from L2 to L1 naming and ERP changes after an intensive phonological training in L2 in a bilingual aphasic with two language with no common roots (Farsi and French).

Methods

A bilingual patient IR suffering of severe Broca aphasia. Naming D144 (with EEG) was performed in both languages. Then a period of 30 Days of intensive phonological training in L2 was performed. After the training the patients was reevaluated using BAT and D144 in both languages.

Results

There was an improvement of trained items in L2 but no generalization to L1. Untrained items did not improve. ERP analysis showed a positive interaction between language and session for both Global field power and Topographical ANOVA in the time windows after 300 ms from stimulus presentation (Fig 1), suggesting specific correlation with phonological processing.

Discussion

Phonological training in L2 does not transfer to L1 in a bilingual aphasic with distant languages and ERPs changes during time windows associated to phonological processing correlate with improvement or not of naming abilities.

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