Facilitation and Competition Following Treatment in Multilingual Aphasia

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Problem

Single-system theories of multilingual language representation would predict that treating language impairment resulting from focal brain damage in one language of multilinguals can generalize and lead to positive effects also in the untreated languages. Currently published results have been mixed, showing selected, modest cross-language facilitation. Whether cross-language facilitation is obtained depends, in part, on relative language proficiency and order of language acquisition. For example, positive change was found in untreated languages for participants who were equally proficient in their treated and untreated languages (Edmonds & Kiran, 2006), but not for the first-acquired language (L1) when another, non-L1 was treated (Goral, Levy, & Kastl, 2010; Miertsch, Meisel, & Isel, 2009). Moreover, the opposite pattern, i.e., negative cross-language effects – with worse performance in the untreated languages following treatment – has also been reported (Abutalebi et al., 2009). We report here data from three multilingual individuals with aphasia who show both patterns – cross-language facilitation and inhibition – from their treated to untreated languages.

Participants

Three individuals with chronic nonfluent aphasia participated in sequential treatment blocks in one or more of their languages and were tested in the treated and untreated languages. Participant 1, a Hebrew-English-French speaking man with mild nonfluent aphasia was treated in English; Participant 2, a Catalan-Spanish-French-German-English speaking man with moderate nonfluent aphasia was treated in Spanish and in English; and Participant 3, a Farsi-German-English speaking woman with mild nonfluent aphasia was treated in English, Farsi, and German.

Outcome Measures

Each participant was tested before and after each treatment block. Measurements differed across participants according to the level of impairment and the focus of the therapy. For the purpose of this study, we report on picture naming and picture-scene description for Participant 2 and Participant 3, and narrative production for Participant 1 and Participant 3. Analyses included non-parametric measures to assess change in naming accuracy, sentence grammaticality, and productivity (e.g., number of words, number of utterances).

Results & Conclusion

All participants demonstrated selective within-language improvement following treatment. Cross-language effects varied across measures and were determined by relative levels of proficiency and similarity between the...
treated and untreated languages. For example, cross-language facilitation was observed for Participant 3 in her German following treatment in the less-proficient and lexically different Farsi. Conversely, equal or lower scores following treatment characterized the naming tests in the untreated languages when the treated and untreated languages shared lexical items and/or relative proficiency, as in Participant 3’s German following treatment in English and in Participant 2’s German and French following treatment in English. No cross-language competition was observed in the narrative production of these participants. We suggest that cross-language effects can work to both facilitate and inhibit performance in the untreated languages in multilingual aphasia, depending on relative proficiency and language similarity, and on the measured skills.

References


