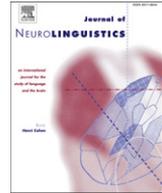




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Effects of language proficiency and language of the environment on aphasia therapy in a multilingual

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ABSTRACT

We examined the relative proficiency of four languages (Spanish, German, French, English) of a multilingual speaker with aphasia, JM. JM's self-rated proficiency was consistent with his naming accuracy for nouns and verbs (The Object and Action Naming Battery, Druks & Masterson, 2000) and with his performance on selected subtests of the Bilingual Aphasia Test (Paradis & Libben, 1987). Within and between-language changes were measured following two periods of language treatment, one in a highly proficient language (Spanish) and one in a less-proficient language (English). The various outcome measures differed in their sensitivity to treatment-associated changes. Cross-language treatment effects were linked to the language of the environment at the time of testing and to relative language proficiency.

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1. Introduction

Early studies of language treatment in polyglot aphasia suggest that treatment in one of the languages of multilingual speakers with aphasia benefits the non-treated languages as well (e.g., Fredman, 1975; Voinescu, Vish, Sivian, & Maretsis, 1977). For example, self-reports from multilingual speakers with aphasia have revealed that treatment in the second language (L2) positively affected the non-treated first language (L1), regardless of the specific structural and genetic relations between the treated and untreated languages (Fredman, 1975). Fredman's results were based on reports from 40

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bilingual patients who had immigrated to Israel as adults and received speech and language treatment in their late-learned L2, Hebrew. It is of interest to note that for these participants, the language of treatment was the language of the environment at the time of treatment. In another early study, Voinescu et al. (1977) demonstrated that, for their highly proficient polyglot speaker with aphasia, treatment in Romanian – a language he learned in childhood but not his mother tongue – resulted in improvement of production in the treated language as well as in the other languages, as measured by verbal responses to interview questions. In both studies, the treatment targeted a variety of skills using a number of treatment techniques. These early results are intriguing but provide insufficient information about the specific language skills that might have benefited from the treatment.

In the past decade, researchers have re-addressed the question of cross-language generalization following aphasia treatment, employing objective measures of language abilities prior to and following intervention (e.g., Edmonds & Kiran, 2006; Goral, Levy, & Kastl, 2010; Miertsch, Meisel, & Isel, 2009; for review see Ansaldo, Marcotte, Scherer, & Raboyeau, 2008; Faroqi-Shah, Frymark, Mullen, & Wang, 2010). A systematic review of 14 studies of aphasia treatment in bilingual and multilingual individuals (Faroqi-Shah et al., 2010) revealed that most studies demonstrated cross-language treatment generalization, especially when the language of treatment was the participants' L1. In reviewing pertinent recent studies we identified two specific patterns of results.

The first pattern is demonstrated by the findings of cross-language treatment generalization between two highly proficient languages as well as from a less-proficient language to a more-proficient language (but not from a more-proficient to a less-proficient one). For example, Gil and Goral (2004) found improvement in their participant's non-treated L1 Russian following treatment in Hebrew, the participant's L2. Treatment addressed all language modalities and skills; performance was measured by The Israeli Loewenstein Aphasia Test (ILAT). Treatment in Hebrew was provided during the first three months following the onset of his aphasia and thus the authors acknowledge that processes of spontaneous recovery may have contributed to the pattern of cross-language improvement observed. However, two additional studies, one with participants in their chronic phase, have reported a similar pattern. Edmonds and Kiran (2006) reported positive treatment effects for two participants (P2 and P3), from their weaker Spanish to their stronger English, but not in the other direction (from their stronger English to their weaker Spanish). Both participants reported that they had acquired their two languages from birth but used English more frequently than Spanish as adults. The authors suggested that when the proficiency levels of the two languages of a bilingual differ, cross-language generalization may be found in one direction, that is, from the weaker language to the stronger language. A third participant in the study (P1) had a balanced proficiency in her two languages, was treated in Spanish only, and showed improvement in the treated Spanish as well as cross-language generalization to her untreated English. The same pattern of transfer between two highly proficient languages was reported in another study. Khamis, Olenik, and Gil (1996) reported overall transfer of therapeutic benefits from their participant's treated language, L2 (Hebrew) to his non-treated language, L1 (Arabic); treatment in L1 was not reported in their study.

By contrast, a second pattern of results reported in the literature demonstrates a lack of generalization from the treated language to the (non-treated) first-acquired language. In three separate studies with multilingual individuals, cross-language generalization was found from the treated language to a non-treated language but not to the participants' non-treated L1. In Filiputti, Tavano, Vorano, de Luca, and Fabbro (2002), an individual with fluent aphasia was treated in Italian, his L2, and tested in his four languages pre- and post-treatment. The results demonstrated improvement in the treated language, Italian (L2), as well as in L3 (Friulian) and L4 (English), but not in his L1 (Slovenian). The authors noted that their participant had not used his first language for 35 years prior to the stroke. A similar finding was reported in Miertsch et al. (2009), who also found no treatment generalization to their participant's stronger L1, German, in contrast to cross-language generalization from the treated L3, French, to his non-treated L2, English. Here, however, L1 was being used by the participant prior to and at the time of the study. Similarly, Goral et al. (2010) found cross-language generalization between English and French – in this case, from the treated L2 (English) to the untreated L3 (French) – but again not to the participant's L1 (Hebrew). In both the Miertsch et al. and the Goral et al. studies, the first language of the participants was better

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