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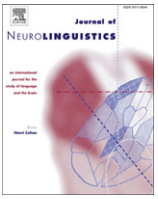

Language impairment in Catalan-Spanish bilinguals with Alzheimer's disease

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ABSTRACT

The language performance of a sample of 12 Catalan-Spanish bilingual patients with early Alzheimer's disease was studied using the Bilingual Aphasia Test (BAT). We compared the performances of the two languages in spontaneous speech and in a wide set of linguistic subtests including translation tasks. Three of the patients had acquired Catalan and Spanish at the same time, while the rest were exposed to their second language (Spanish) between three and five years of age. Catalan was the most frequently used language for all the participants. Their performances in Catalan and Spanish were similar, except for the verbal fluency subtest (Spanish > Catalan). Their translation of words was better from Spanish to Catalan, whereas the translation of sentences was better from Catalan to Spanish. The analysis of spontaneous speech only showed that the patients produced more words and sentences in Catalan. According to the declarative/procedural model of language, these results suggest that the processing of the two languages is more similar than different. Nevertheless, regression to the first language may be more evident as the disease progresses. In our study, the differences observed between one language and the other may be influenced by the sociolinguistic environment of the patients.

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1. Introduction

Language impairment is one of the first symptoms that appears along with progressive memory loss in patients with early Alzheimer's disease (AD) (Caramelli, Mansur, & Nitrini, 1998; Cummings, Benson, Hill, & Read, 1985; López Pousa & Lozano Fernández de Pinedo, 2001; Obler & Albert, 1984). In the initial stages, the lexico-semantic system disintegrates progressively, whereas the more automatic aspects of language, such as the phonological and syntactic systems, remain relatively preserved. As the disease progresses, all levels of linguistic structure (phonology, morphology, syntax, lexicon and semantics) deteriorate until a state of mutism is reached.

According to Hyltenstam and Stroud (1993), the same pattern of deterioration that has been observed in monolinguals is also manifested in each language of a bilingual speaker. Nevertheless, it has yet to be determined whether the deterioration in each language occurs at the same pace or whether one language is lost before the other. Despite the fact that millions of people frequently and commonly use two or more languages (Grosjean, 1982; Tusón, 2009), the number of studies published about language loss in bilinguals with AD is limited.

The primary aim of our study was to study the Catalan and Spanish linguistic skills of 12 bilinguals diagnosed with early AD along with 12 bilingual controls. All of the participants were exposed to their second language (L2) before the age of five. The Bilingual Aphasia Test (BAT) (Paradis & Libben, 1987) was used to assess each language. This test is currently available in 65 languages (part B) and 160 language pairs (part C). The various versions of the BAT are not mere translations from one language to another, but they have been adapted to each language in accordance with the linguistic and cultural characteristics of that language (Paradis, 2004). The different versions of the test are equivalent and facilitate the systematic comparison of bilingual speakers that come from different places throughout the world. In our study, we compared Catalan and Spanish performances in spontaneous speech and in a wide range of linguistic subtests including translation tasks. A brief review of the literature dedicated to language regression in bilinguals with AD is provided below (Section 1.1). The theoretical background of this paper is the declarative/procedural model of language representation and processing (Section 1.2).

1.1. Language regression in bilingual patients with Alzheimer's disease

1.1.1. Spontaneous speech and elicited production

Research on spontaneous speech by bilingual speakers with AD has mainly focused on the improper use of each language. That is, problems in choosing the appropriate language to use in a given context and difficulties in keeping the two languages separate.

Hylstenstam and Stroud (1989) analyzed the language production of two bilingual patients with AD. Both subjects were at advanced stages of dementia and had a high premorbid level of proficiency in the languages they spoke. Subject GM was a German-Swedish bilingual who learned his second language (Swedish) in middle-age. Subject KL was a Swedish-Finnish bilingual who acquired her L2 (Finnish) during childhood. Performance in each language was assessed separately via different language production tasks: a 15–20 min conversation, elicited production and a situation-contextualized interaction. The results showed that GM performed better in his L1 and had greater difficulty keeping the two languages separate when he spoke in his L2 (that is, frequent use of elements of L1 when speaking in L2). For patient KL, however, there was no clear evidence that she performed better in either of her languages. Years later, the same authors studied six bilingual patients with AD with different degrees of cognitive impairment (Hyltenstam & Stroud, 1993). In all cases, Finnish was L1, and Swedish was L2 and was learned during adulthood. The data presented pertain to the language output of the patients speaking in their L2 when talking to someone who only knew Swedish. The results showed that, even in advanced stages of the disease, patients with a good proficiency of L2 retain the ability to choose and uphold the appropriate language during interaction. Meanwhile, patients who had lower levels of L2 competence had more problems in keeping the two languages separate. The authors conclude that individuals with a poor mastery of their L2 may require more processing capacity for the use of this language. Therefore, the resources required to inhibit L1 while speaking in L2 are insufficient. The results corresponding to the linguistic output of those six patients when

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