



Academy of Aphasia 2011

Grammatical Impairment of Code-Switching but Intact Language Selection in Bilinguals with Aphasia

Amanda Miller Amberber^{a,*}, Lyndsey Nickels^a, Stephen Crain^b, Max Coltheart^b

^a Macquarie Centre for Cognitive Science, Macquarie University

^b Macquarie Centre for Cognitive Science; Centre of Cognition and its Disorders, Macquarie University

Introduction

Proficient bilinguals who switch languages in conversation (code-switching) consistently select the language according to the speaker, topic and context, and show grammatically regular patterns of code-switching. Robust crosslinguistic evidence exists of code-switching between a lexical noun phrase subject and grammatically-inflected verb (e.g. 'La femme eats the apple') but not between a pronoun subject and inflected verb (*'Elle eats the apple') (e.g. Timm 1975). Bilingual (and multilingual) individuals with aphasia present with varied patterns of impairment in each language. Language-selection can be impaired in bilingual aphasia (Aglioti & Fabbro 1993), however, whether grammatical impairment of code-switching occurs remains unclear. This study tested for grammatical impairment of code-switching and whether grammatically-impaired code-switching and impaired language-selection occur concurrently.

Methods

Five high-proficiency bilinguals with aphasia characterised by grammatical impairment (PWA) and five controls participated. Participants acquired both languages in early childhood, habitually code-switched, and spoke Rarotongan-Cook-Islands-Maori-English (PWA n=2), Maltese-English (PWA n=1), French-English (PWA n=2). Experiment 1, an elicited spoken sentence production task, and Experiment 2, a lexical selection task, comprised sentences containing a lexical noun-phrase (e.g. 'the woman, te vaine') or pronoun (e.g. 'she, aia') subject and object phrase, with the verb omitted. The language of the subject and object were manipulated to create 8 language conditions for each sentence. Subject and object-phrases were accompanied by a drawing of the event (e.g. 'the woman eats the apple'). Participants were required to read aloud and complete the sentence but were not instructed in which language to produce the verb. In Experiment 2, participants selected one of four printed lexical alternatives for each trial (a correctly and incorrectly inflected verb in each language). Participants completed a language and cognitive test battery and conversational and narrative speech samples in each language.

Results

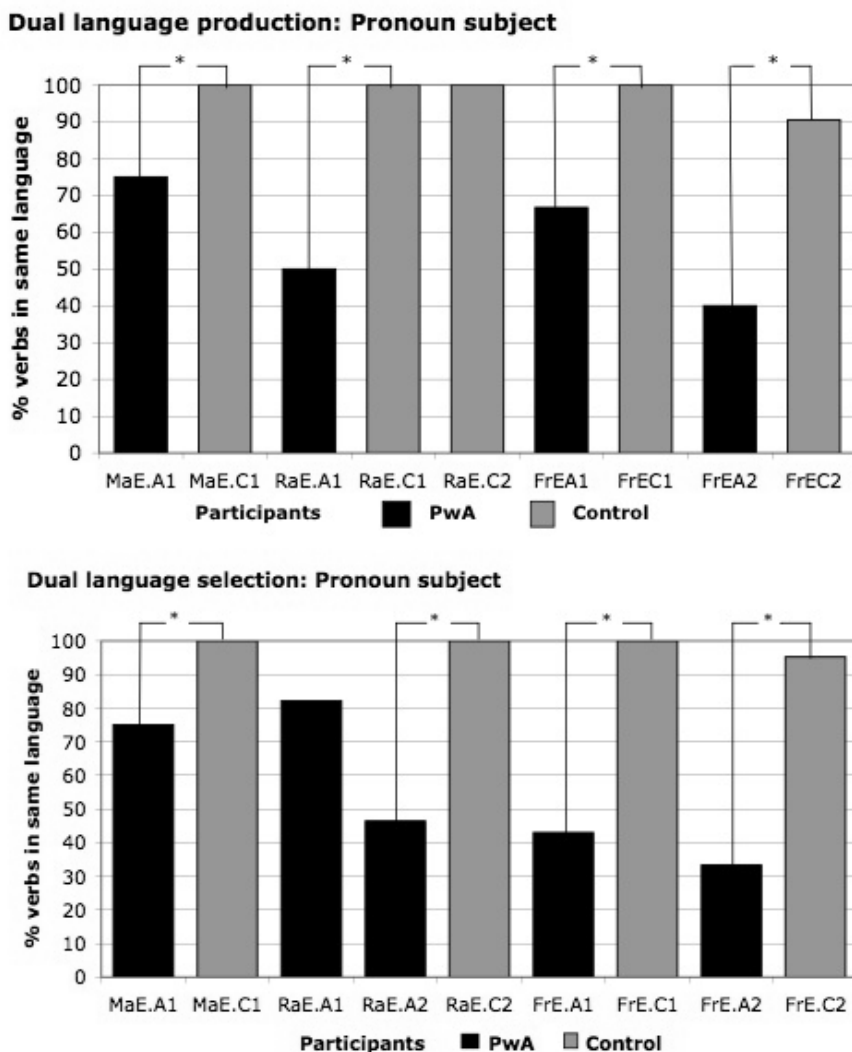
Responses were analysed for whether the verb was produced in the same language as the sentential subject, focussing particularly on sentences with a pronoun subject. The results of Experiments 1 and 2 for dual language sentences with a pronoun subject showed a significant difference between each PWA and matched control (Figure 1) and for the PWA overall in comparison to controls (paired samples t test, Experiment 1, $t(3) = -4.377$, $p = .022$

* Corresponding author.

E-mail address: amanda.milleramberber@mq.edu.au.

two tailed; Experiment 2, $t(4) = -4.785$, $p = .009$ two tailed). Narrative and spontaneous samples in monolingual and bilingual contexts showed intact language selection for all PWA and controls.

Figure 1.



Discussion

The results provide evidence of grammatically-impaired code-switching but intact language selection in previously proficient bilinguals with aphasia. PWA were unable to consistently produce and select inflected verbs in the same language as the pronoun subject in dual language sentences, unlike the controls. The same pattern of results was found for elicited spoken sentence production, and lexical selection, and across three diverse language pairs. Implications for neurolinguistic language-switching models are discussed.

References

Aglioti, S., & Fabbro, F. (1993). Paradoxical selective recovery in a bilingual aphasic following subcortical lesions. *NeuroReport*, 4, 1359-1362.

Timm, L.A. (1975). Spanish-English code-switching: el porqué and how-not-to. *Romance Philology*, 28, 473-482.