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Dementia of Alzheimer type can alter both languages in late bilinguals

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Introduction

Behavioral, clinical and neuroimaging evidence indicate that the first (L1) and the second language (L2) of bilingual individuals are supported by partly overlapping anatomo-functional pathways. While in the specific cases of patients suffering from cortical neurodegenerative diseases neuropsychological models predict that, in late bilinguals, L2 could be more impaired than L1, clinical data so far failed to demonstrate such dissociation.

Method

To address this question, we compared language performance in different tasks of oral comprehension (semantic and syntactic) and production (naming, repetition, and fluency) in L1 and L2 in a group of 13 late proficient bilinguals with dementia of Alzheimer type (DAT) with 12 healthy late bilinguals matched in several demographic and linguistic factors including education level, age of L2 acquisition and immersion.

Results

Two-way mixed repeated-measure ANOVAs with factors Language and Group reveal main effects of Group ($p < 0.05$) in all language tasks except for the counting and the sentence repetition tasks, indicating that DAT impact all aspects of language. Our analyses did not reveal any Group X Language interaction, suggesting that DAT impacted similarly on both languages.

Conclusion

Our results suggest that, like in stroke patients, neurodegenerative disease affects in a parallel manner oral language in L1 and L2, particularly at the level of semantic, lexical and syntactic level of processing. These results do not support divergent models of bilingual brain representations, but rather argue for a substantially shared L1 and L2 network in late bilinguals.

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