Impaired Word Retrieval in Aphasia: A Trilingual Cantonese-English-Mandarin Case Study

Lam K. a, Weekes B. a,*, Kong A. b, Abutalebi J. c

a Division of Speech and Hearing Sciences, University of Hong Kong, Pokfulam, Hong Kong SAR
b Department of Communication Sciences and Disorders, University of Central Florida, Florida, USA
c Psychology Department, Vita Salute San Raffaele University, Milano, Italy

Background

Numerous studies have reported multilingual speakers with aphasia in linguistically similar Indo-European languages. This study is the first to document the performance of a trilingual Cantonese-English-Mandarin speaker with aphasia on cognitive and naming tasks. The primary hypothesis was that naming performance would vary according to linguistic similarity leading to the prediction that naming performance in Cantonese and Mandarin would be more similar than performance in English (Paradis, 1993).

Subject

S1, a right-handed female trilingual Cantonese-English-Mandarin speaker, suffered a traumatic brain injury at 75 years. The injury, caused by a fall, resulted in lesions in the left frontal lobe and left temporo-parietal areas. S1’s dominant language is Cantonese which was acquired from birth. She learnt English and Mandarin formally at school in her early teens and early twenties, respectively. S1’s husband was recruited as a control as he matched with S1 for age, handedness, educational level and trilingual language knowledge.

S1’s performance on the Bilingual-Aphasia-Test (BAT) revealed fluent aphasia of moderate grade in all three languages. S1 also scored significantly lower than the control on tests assessing executive functions, including the modified Stroop color-word task and the Wisconsin Card Sorting Test.

Methods

Lexical retrieval in confrontation naming and discourse production was examined for each language on separate days. For oral and written confrontation naming, the participants were required to name 85 pictures. The 85 stimuli were grouped into 18 categories that constituted 18 conversation topics and each participant was required to converse for at most 15 minutes on each topic. Twenty-nine items that were present in both participants’ responses in confrontation naming and conversational discourse across the three languages were selected to compare their word retrieval performance in different naming contexts.

Language switching and mixing in confrontation naming and discourse production were investigated by quantitatively analyzing the number of code-switched words in speech samples taken from the responses in confrontation naming and three of the conversational topics.
Results

Contrary to the expectations, naming performance in constrained and unconstrained contexts was not statistically different. However, dissociations were observed when SI retrieved words in different modalities between the linguistically similar (Cantonese-Mandarin) and dissimilar (Cantonese-English or Mandarin-English) languages. More specifically, written confrontation naming was significantly better than oral confrontation naming in both Cantonese and Mandarin. However, the reverse pattern was observed in English. Interestingly, English oral naming was significantly better than Cantonese and Mandarin while Cantonese was in turn significantly better than Mandarin in oral naming. Figure 1 summarizes the performance in oral and written confrontation naming and discourse production of the participants across three languages.

Code switching patterns also varied in the two elicitation contexts. Code switching was significantly less prominent in Cantonese oral confrontation naming (10%) compared to Cantonese discourse production (32%). Statistical differences were not found in English and Mandarin.

Conclusions

Our results suggest that language dominance has a greater impact than linguistic similarity in the pattern of aphasia observed in multilingual Cantonese-Mandarin-English speakers.

References