LANGUAGE IN INDIA

Strength for Today and Bright Hope for Tomorrow

Volume 12 : 8 August 2012

ISSN 1930-2940

Dissociation between Sound Spelling and Sight Spelling in the Writing of Bilingual Wernickes Aphasia – A Case Report

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Abstract

The present study reveals the writing errors in a bilingual Wernickes aphasic with Malayalam as mother tongue and English as second language. The phoneme grapheme conversion route was nonfunctional in both L1 and L2 as indicated by poor scores for writing to dictation as well as on the subtest of sight spelling (the examiner will dictate the word first and then shows the word in which few letters will be missing. Subject has to write the word by filling the missing letters) for nonwords. The good scores obtained on sight spelling for irregular as well as regular words shows that the patient had access to stored whole word orthographic representation in the lexicon, L1 showing better scores than L2 .It is suggested that the intact route, i.e., lexical route may be used for training these patients for retrieving words.

Key words: bilingual aphasia, phonological agraphia, Wernickes aphasia

Introduction

Aphasia, which is an acquired language disorder caused by brain damage is often associated with alexia and agraphia. Phonological agraphia is thought to be caused by a selective impairment in associating input phonological representations with output orthographic representations and, thereby, a forced reliance on lexical memory for accessing orthographic word-form representations. (Martin 1998). Because persons with phonological agraphia rely on lexical information in writing, they usually show errors in writing affixes and nonwords, which presumably are not stored in the mental lexicon, and in writing low-frequency words, for which the access to the lexicon is less efficient. (Martin 1998). There are very few cases reported where comparison is made between sight spelling and sound spelling.

Case Description

A 52-year-old right-handed bilingual with Malayalam as mother tongue and English as second language presented with the complaint of impaired comprehension followed by an infarct of left middle cerebral artery posterior division. His speech was fluent with neologisms, jargons and severe word finding problems. He also had difficulty with repetition. No abnormality was found in tests of other cognitive functions, such as praxis, left-right orientation, calculation, finger naming, and spatial attention. Other parts of the neurological examination, including examination of the cranial nerves, motor and sensory functions, and reflexes, were unremarkable. Hearing was normal. Malayalam version of Western Aphasia Battery (Phillip J.E 1992) was administered. On WAB he scored 8 in the subtest of fluency, 4 in the subtest of comprehension, 4 in the subtest of repetition and 3 in the subtest of naming which classified the patient as Wernickes aphasia. Detailed analysis of his writing skills was done using Writing test for Malayalam English Bilingual Aphasics (Ranjini & Sebastian .S. 2012) .The results of the test are as follows

For automatic writing the scores were

10/10 for both Malayalam as well as English

For copy writing the scores were

8/10 for English and 10/10 for Malayalam.

For sound spelling (writing to dictation) the scores were as follows

Irregular words- 0/10 for English, 0/10 for Malayalam

Nonwords (pseudo- words) - 0/10 for English, 0/10 for Malayalam

Regular words- 1/10 for English, 2/10 for Malayalam

For sight spelling (the examiner will dictate the word first and then shows the word in which few letters will be missing. Subject has to write the word by filling the missing letters) the scores were as follows

Irregular words- 3/10 for English, 10/10 for Malayalam

Nonwords (pseudo words)- 0/10 for English, 0/10 for Malayalam

Regular words- 5/10 for English, 10/10 for Malayalam

Discussion

The present study has discussed the writing errors in a bilingual Wernickes aphasic patient. The patient had good scores in automatic writing and copy writing, L1 (Malayalam-10/10) being slightly better than L2 (English-8/10) .On the subtest of writing to dictation where the patient had to hear to the word and then write, he had very poor scores- 0/10 for irregular and non-words for both Malayalam and English. His scores were slightly better for regular words- 1/10 for English and 2/10 for Malayalam. This is indicative of impairment of phoneme grapheme conversion route.

On the subtest of sight spelling (the examiner will dictate the word first and then shows the word in which few letters will be missing and subject has to write the word by filling the missing letters) he scored well for irregular words and regular words, L1 being better than L2 but not for the nonwords which suggests that the patient relies only on the visual representation of the words and he had access to stored whole word orthographic representation in the lexicon.

There was no mixing of languages within one word (mixing phenomenon).The similar type of errors shown in two languages and better scores that he got for Malayalam supports the hypothesis that in a bilingual, different languages are represented in the same areas with separate neural circuits (Fabbro 1999). The better scoring in Malayalam language may be attributed to the fact that it is the first language as well as the most familiar language for him. As the frequency of usage of a particular language increases the neural circuitry for that particular language becomes more established.

Conclusion

The present study has focused on the dissociation between sound spelling and sight spelling in the writing of a bilingual Wernickes aphasic patient. The phoneme grapheme conversion route

was nonfunctional in both L1 and L2 as indicated by poor scores for writing to dictation as well as on sight spelling for non-words. The good scores obtained on sight spelling for irregular as well as regular words shows that the patient had access to stored whole word orthographic representation in the lexicon. It is suggested that the intact route may be used for training these patients for retrieving words.

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