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Bilingual Phonological Dysgraphia

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Phonological dysgraphia describes a selective impairment to the spelling of unfamiliar words and nonwords with relatively well preserved spelling of familiar words. Spelling performance depends on word frequency (high frequency > low frequency), concreteness (concrete > abstract) and word class with nouns spelled better than verbs. Phonological dysgraphia has been reported in Dutch, Italian, Japanese, Korean and Spanish manifesting across shallow (Italian) and deep (English) orthographic systems. No study has examined acquired phonological dysgraphia in bilingual speakers.

Methods

AA is a 25 year-old right-handed male student with a left parieto-occipital lesion. He was raised as a simultaneous trilingual speaking Greek, English and Arabic from infancy. However, he was educated in Greek with some years of English language instruction during schooling in Greece. AA completed a 4-year Bachelor degree requiring reading and writing in Greek and English. He was administered (a) the Boston Diagnostic Aphasia Examination (BDAE) in English and Greek to determine aphasia type and severity; (b) the Greek Object and Action Test (GOAT) of spoken and written retrieval of action and object names; and (c) phonological and orthographic processing subtests of the Athina Diagnostic Test of Learning Difficulties. AA presented with anomic aphasia characterized by fluent, well-articulated speech but mild to moderate anomia in Greek (L1) and English (L2). His auditory comprehension across language tasks was within the normal limits in both languages.

Results

AA displays all the features of acquired phonological dysgraphia including impaired spelling of nonwords in Greek and English. For example, he was unable to combine sounds to form real words from spoken dictation or identify missing phonemes from auditorally presented words. When spelling nonwords in Greek AA scored 25% correct for pseudo-nouns and 0% for pseudo-verbs. In contrast to nonword spelling, AA was able to spell high frequency Greek words well. When spelling nonwords in English words he was able to spell only 12% items correctly. AA's spelling of high frequency English words was better preserved although it was not perfect. For nonword spelling in English and Greek, AA was able to spell the word-initial phoneme correctly for 68% of target items. When phonological skills were tested further in Greek AA scored 0% on a task of phoneme blending, 68.7% correct on phoneme discrimination, 40.6% correct on phoneme retrieval and 87.5% on grapheme discrimination.

Conclusions

AA displays all the features of acquired phonological dysgraphia including impaired spelling of nonwords in Greek and English. As in reports of phonological dysgraphia in English, AA was impaired on tasks that require

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phoneme to grapheme knowledge in Greek. For example, he was unable to combine sounds to form real words from spoken dictation or identify missing phonemes from auditorally presented words. These impairments would be expected to produce a deficit in the mechanisms of phoneme to grapheme conversion assumed in Dual Route Models of Spelling (Houghton & Zorzi, 2003) and as a consequence, AA should be unable to spell non-words from dictation. The novelty of the present findings is that poor spelling of nonwords compared to words i.e. phonological dysgraphia can be observed in both Greek (not previously reported) and in English. These patterns of nonword spelling support the hypothesis that bilingual dysgraphia is language independent - at least for nonlexical spelling performance (for detailed discussion see Weekes, 2005; Raman & Weekes, 2005; Weekes & Raman, 2008).

References

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