



## Word Recognition and Reading Following Temporo-Frontal and Basal Ganglia Lesion: a Case Report

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# Word Recognition and Reading following Temporo-frontal and Basal Ganglia Lesion: A Case Report

Venu Balasubramanian<sup>1</sup>, Maha Aldera<sup>2</sup>, & Tarunya Mayilvahanan<sup>3</sup>

<sup>1</sup>Seton Hall University, New Jersey, USA

<sup>2</sup>Princes Noura University, Saudi Arabia

Middlesex County Academy for Allied Health and Biomedical Sciences, NJ, USA

**Introduction.** Decades of research on acquired reading disorders and neural basis of reading had led to significant discoveries (Price, 2012). Despite these achievements, “the neural underpinnings of mapping of print onto sound and meaning remain unclear” (Kemmerer, 2015).

The objectives of the current study were to report a new case of acquired dyslexia and, to discuss the implications of the results for the dual route model of reading and the neural underpinnings of reading.

**Method. Subject.** LK, a 45 -year-old male with a history of left hemisphere stroke induced non-fluent aphasia. A CT scan study done 18 months post-onset revealed infarcts involving the left temporal region extending up to a portion of the left frontal lobe and left basal ganglia.

**Procedures.** Clinical evaluation comprised of administering BDAE, BNT, Token Test, Reading Comprehension Battery for Aphasia, and Discourse Comprehension Test. Experimental reading evaluation was completed using selected, pertinent subtests of PALPA.

**Results.** LK’s word recognition performance was generally good except for the non-word and homophone tasks. Impaired performance on regular, irregular and pseudowords point to a diagnosis of deep dyslexia. Error analyses identified semantic errors (for both regular and irregular words), visual errors, mixed semantic-visual and phonological errors.

**Discussion.** The characteristics of reading performance in LK match that of the category of deep dyslexia confirming the applicability of the dual-route model. However, Coltheart’s (1980) explanation of the right hemisphere’s causal role for the occurrence of semantic paralexia could not be directly verified. On the other hand, LK’s extensive lesion of the left hemisphere, especially the temporal and frontal lobe can explain semantic errors. The results of the current study can also be discussed in the context of recent investigations that support the conceptualization of a neural-network supporting reading (Binder et al, 2003, Baldo et al, 2017; Hoffman, Lamban Ralph & Woollams, 2015 ). The emerging new conceptualization offers insights into the neural underpinnings of both successful word readings as well as reading errors (Pillay et al, 2017).

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