

THE MAGNO DEFICIT HYPOTHESIS OF DYSLEXIA: A CRITICAL REVIEW

I-PING CHEN

*Department of Psychology
National Chung-Cheng University*

There has been a growing interest in searching for the malfunctioning brain sites associated with dyslexia. Based on the evidence from both VEP and postmortem anatomical studies, Livingstone and her colleagues proposed that dyslexic readers might have deficits in their magno system (Livingstone, Rosen, Drislane, & Galaburda, 1991). As many studies in recent years were framed around this hypothesis, a critical review of relevant backgrounds and the interpretations of data is in order. Themes covered in this article include: (1) Thinking about the pathology of dyslexia that leads to the magno deficit hypothesis. Researches on the visual aspects of poor readers are stressed. (2) Positive and negative evidence for this hypothesis. Recent brain imaging reports on weak activations of the Wernicke area, angular gyrus, and striate cortex of dyslexics are also discussed. (3) Possible theoretical framework that might reconcile most of the conflicting observations. (4) Conjectures on the language-specific aspects of Chinese dyslexia. It is argued that: (a) magno deficits are only associated with dysphonetic, but not with dyseidetic, dyslexia; (b) poor phonological awareness is the critical determinant of dysphonetic dyslexia. Given these two assumptions, one could account for most discrepancies found in the literature. It is also predicted from this view that writing and reading difficulties in Chinese dyslexics are of different origins. While the former might be due to inadequate phonological awareness, the cause for the latter remains undetermined.

Keywords: Dyslexia, Irlen lens, Transient system, Sustained system, Magno system, Phonological awareness, fMRI