

Simposio:

Brixen, 20 Gennaio 2016

TRATTAMENTI DELLA DISLESSIA BASATI SULLE
EVIDENZE: ADDESTRARE LE RAPPRESENTAZIONI, I
PROCESSI COGNITIVI O DIRETTAMENTE IL CERVELLO?



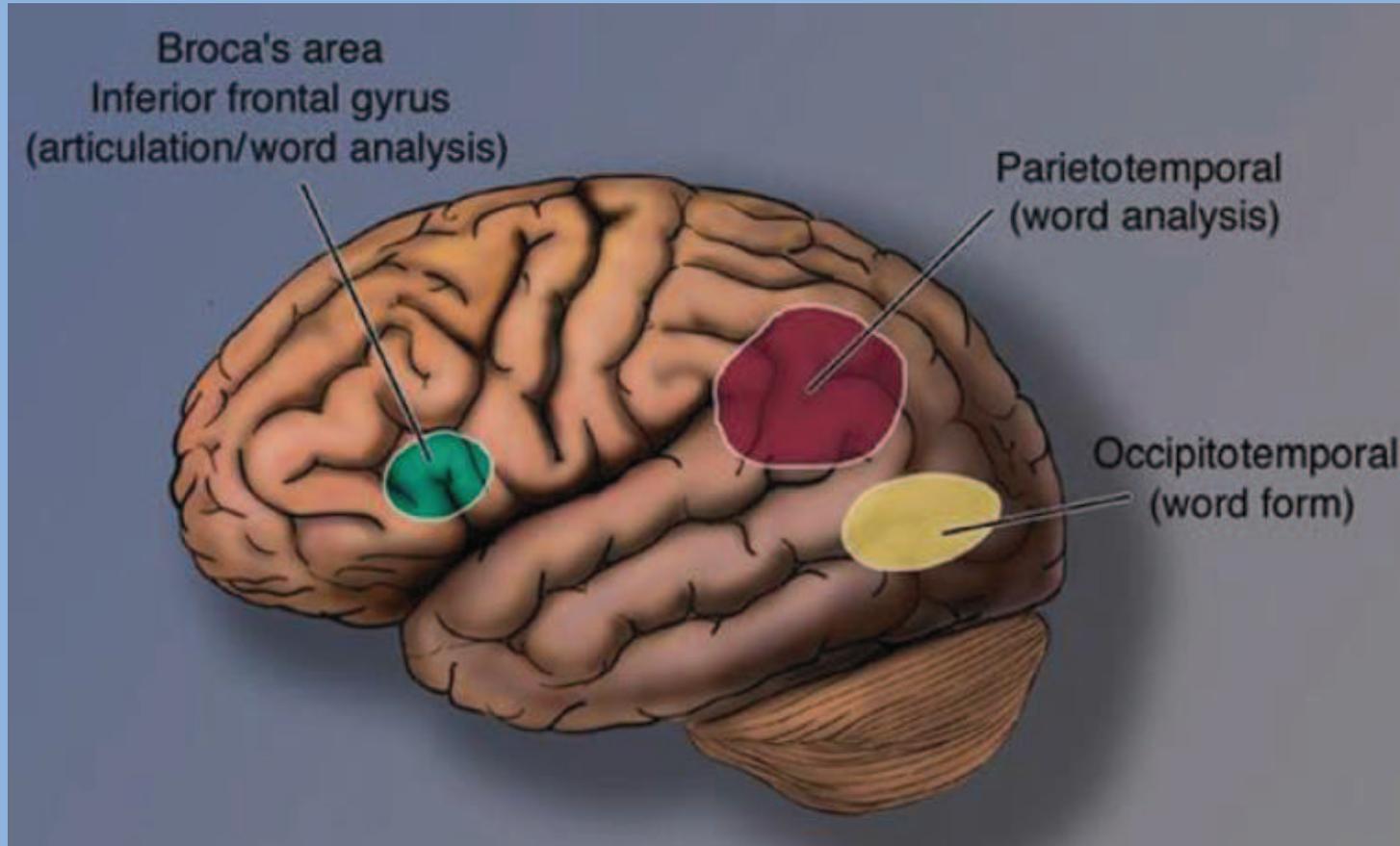
Andrea Facoetti



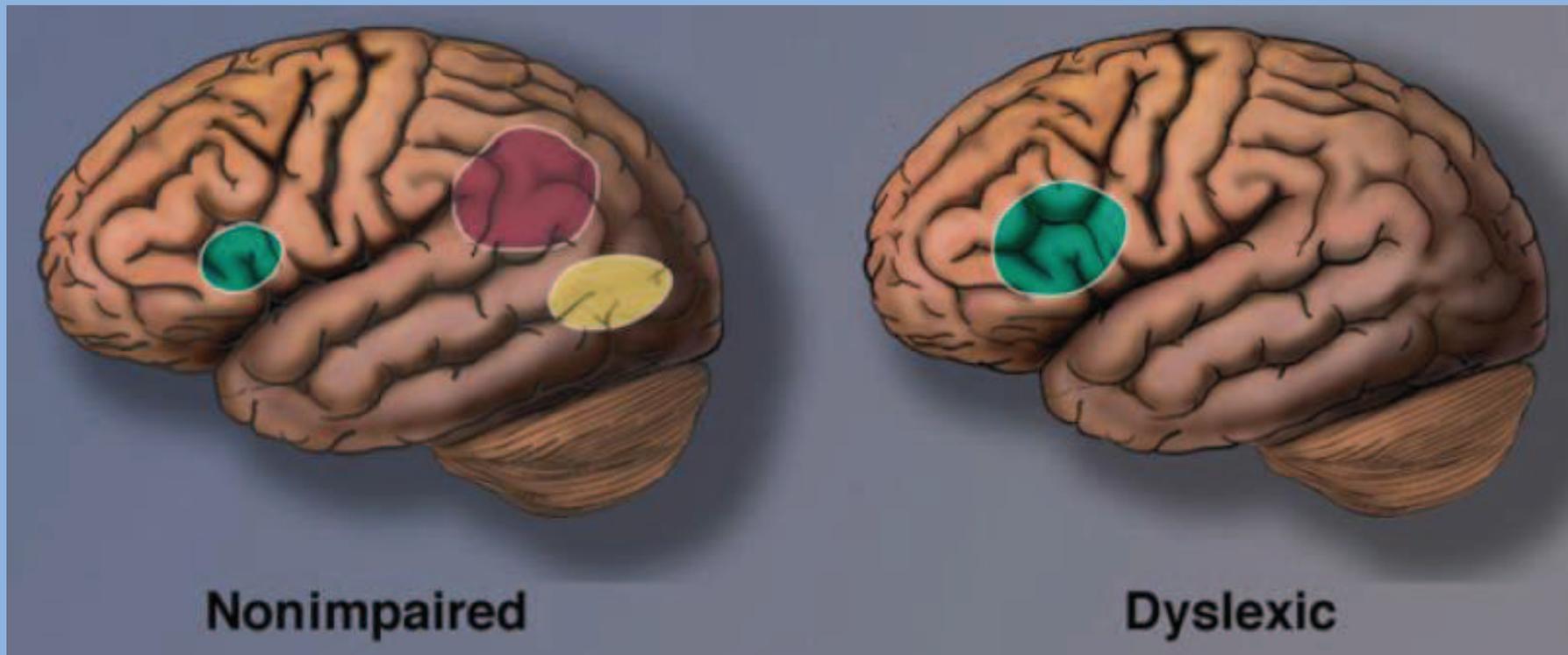
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Neurobiologia della lettura



Disordini fonologici e ortografici: Causa o effetto della dislessia?



REPORT

Neuroanatomical precursors of dyslexia identified from pre-reading through to age 11

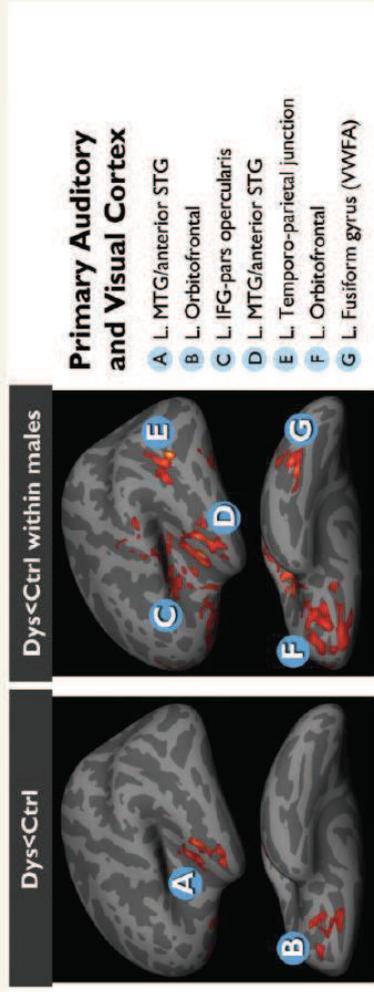
 Kristi A. Clark,¹ Turid Helland,^{2,3} Karsten Specht,^{2,4} Katherine L. Narr,^{5,6} Franklin R. Manis,⁷ Arthur W. Toga¹ and Kenneth Hugdahl^{2,8,9}


Figure 2 Neuroanatomical signature of dyslexia. Regions of thinner cortex in the left hemisphere observed in children diagnosed with dyslexia (Dys) compared to those who were not (Ctrl). These data are cross-sectional from MRI 3, when the children were in the sixth grade. The *left* panel shows the whole group differences, whereas the *right* panel shows the differences when only the males were considered. IFG = inferior frontal gyrus; MTG = middle temporal gyrus; STG = superior temporal gyrus; VWFA = visual word form area.

Developmental dyslexia is a common reading disorder that negatively impacts an individual's ability to achieve literacy. Although the brain network involved in reading and its dysfunction in dyslexia has been well studied, it is unknown whether dyslexia is caused by structural abnormalities in the reading network itself or in the lower-level networks that provide input to the reading network. In this study, we acquired structural magnetic resonance imaging scans longitudinally from 27 Norwegian children from before formal literacy training began until after dyslexia was diagnosed. Thus, we were able to determine that the primary neuroanatomical abnormalities that precede dyslexia are not in the reading network itself, but rather in lower-level areas responsible for auditory and visual processing and core executive functions. Abnormalities in the reading network itself were only observed at age 11, after children had learned how to read. The findings suggest that abnormalities in the reading network are the consequence of having different reading experiences, rather than dyslexia *per se*, whereas the neuroanatomical precursors are predominantly in primary sensory cortices.

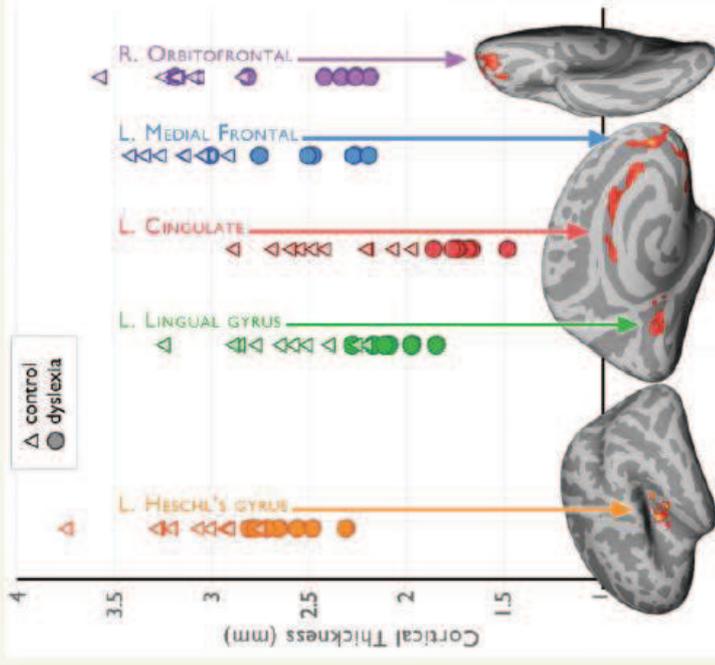
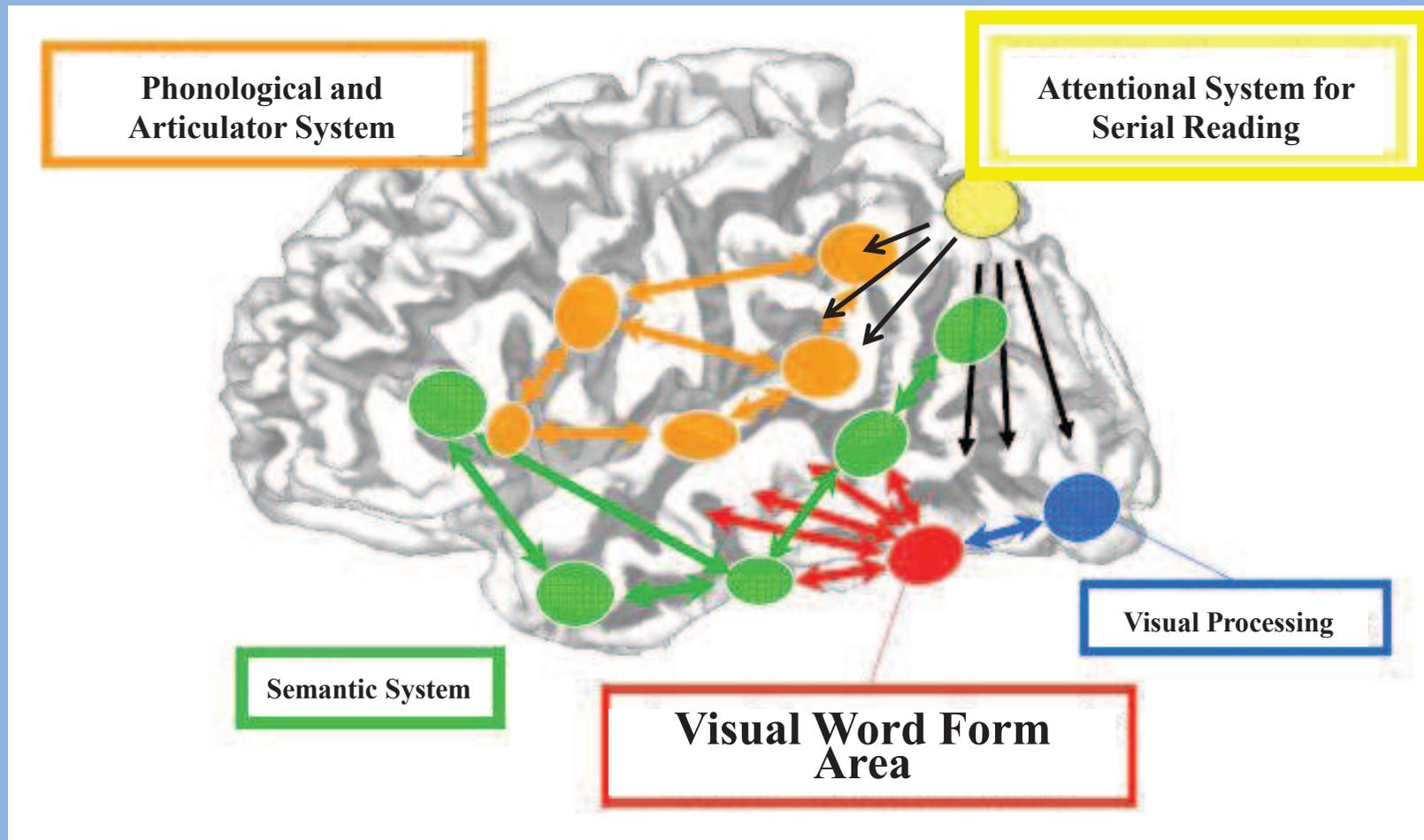


Figure 1 Early signs of dyslexia. Pre-reading differences in cortical thickness between children who later went on to develop dyslexia (Dys) and those who did not (Ctrl). Images: regions in which $Dys < Ctrl$ before the onset of reading. Raw cortical thickness values are plotted for each of the regions.

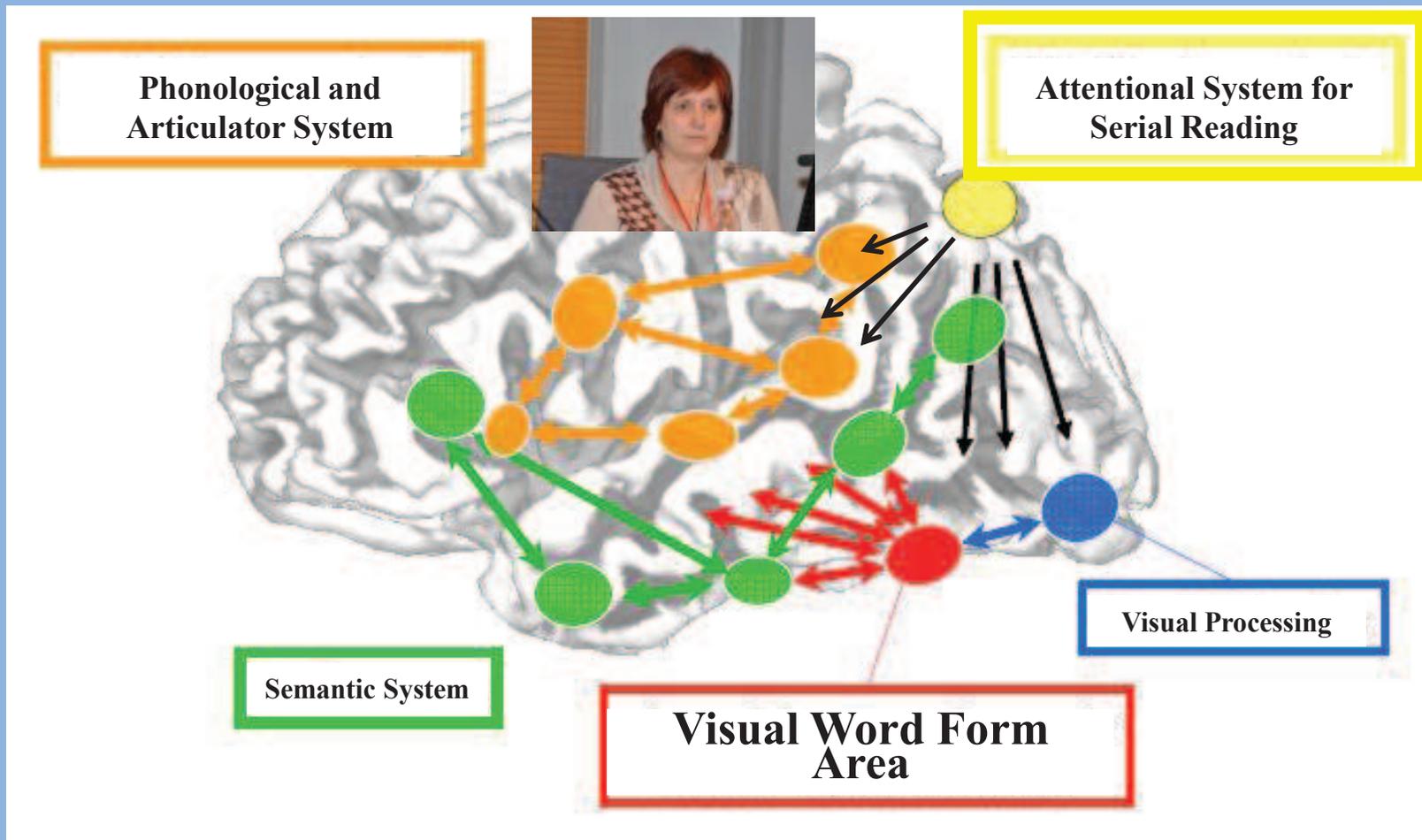
Innovativa anotomia funzionale della lettura

Il modello modificato di Stanislas Dehaene



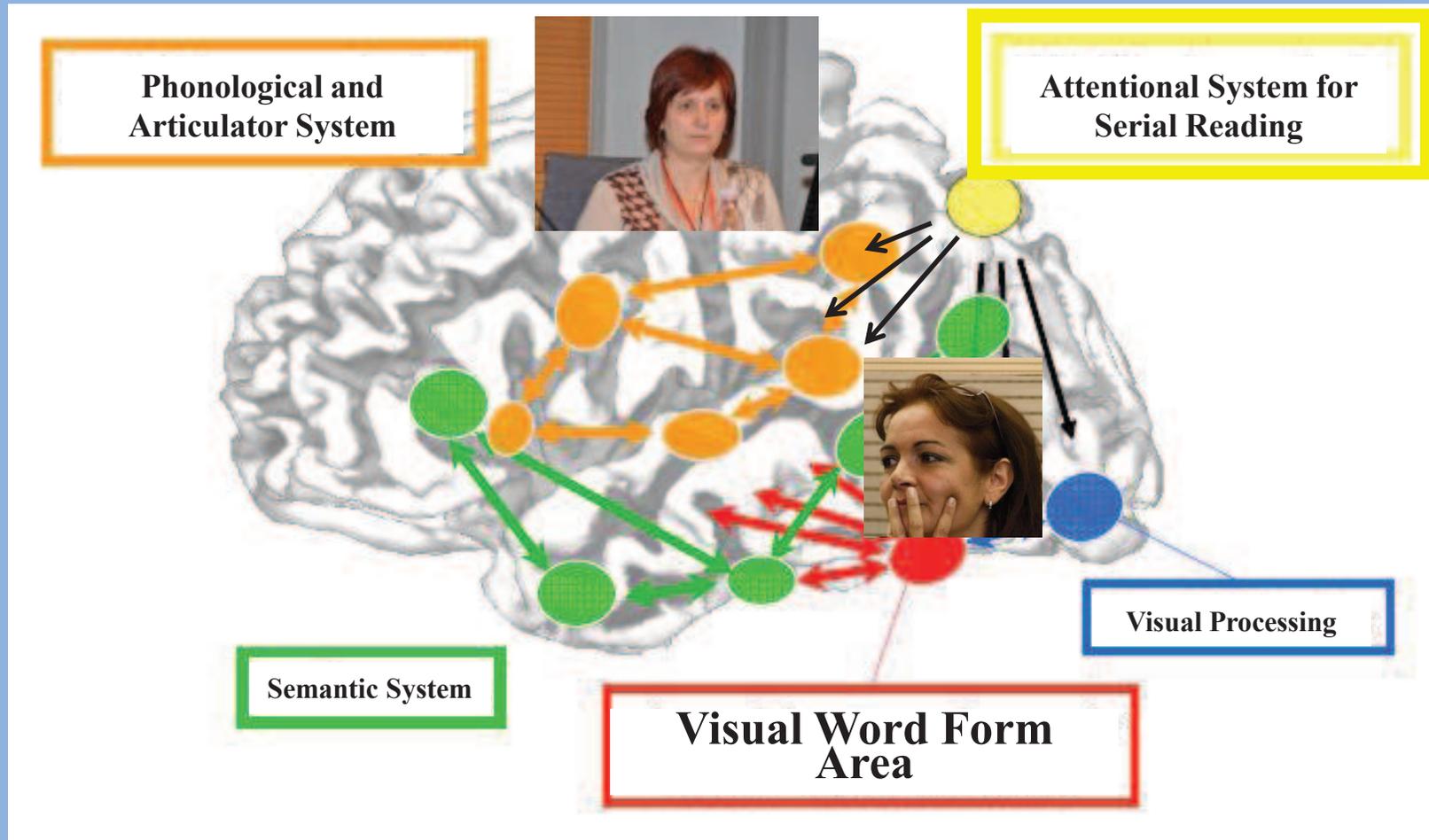
Consapevolezza Fonologica: tra i suoni del linguaggio e le funzioni esecutive

Il modello modificato di Stanislas Dehaene



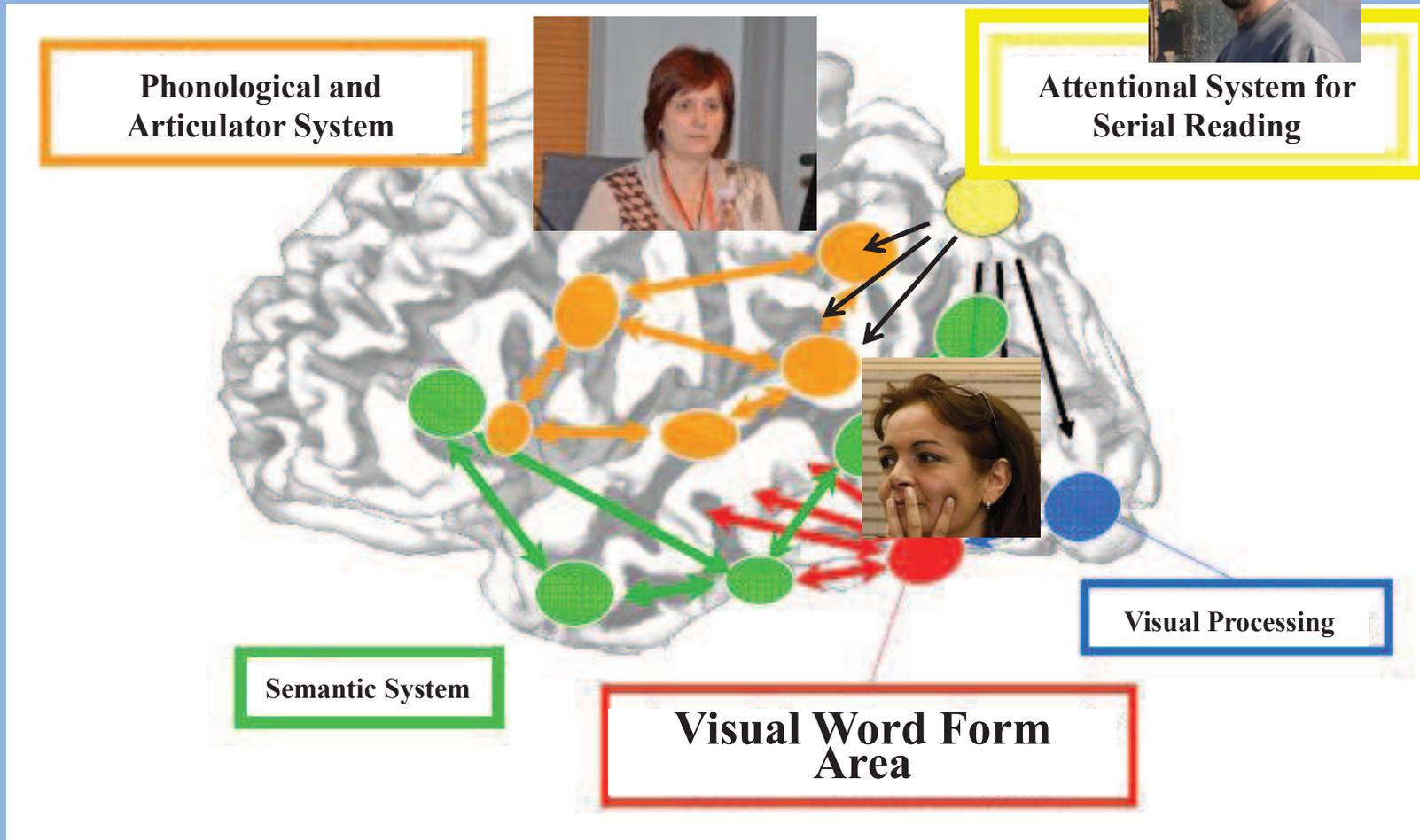
Denominazione Rapida: Processo cross-modale

Il modello modificato di Stanislas Dehaene



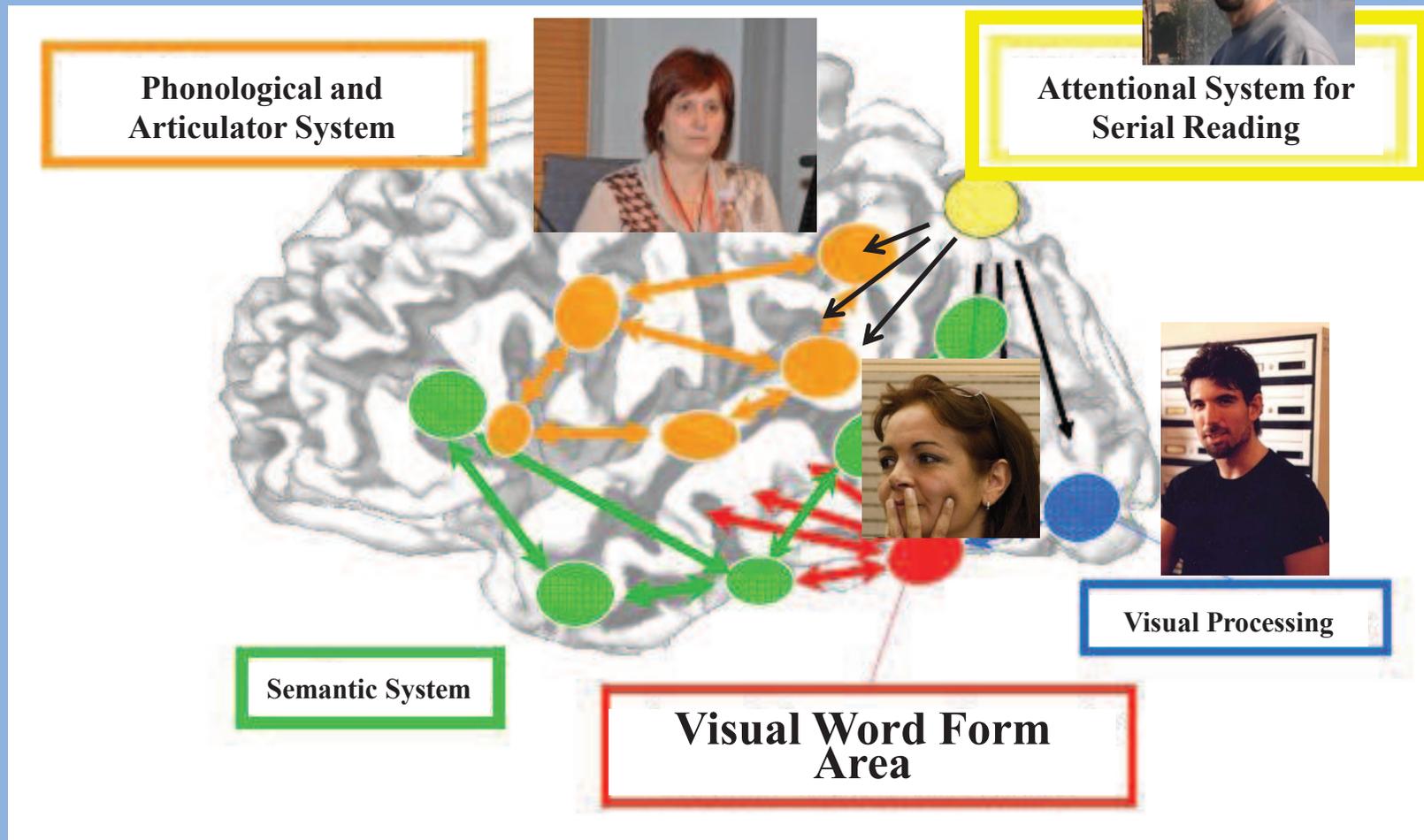
Attenzione Visiva: filtrare il grafema corretto ma non solo...

Il modello modificato di Stanislas Dehaene



Percezione Visiva: il sistema Magnocellulare-Dorsale

Il modello modificato di Stanislas Dehaene



(b)

"Dorsal" reading pathway; AWFA

"Dorsal-where" and "Action" stream

Pre-frontal cortex; motor system

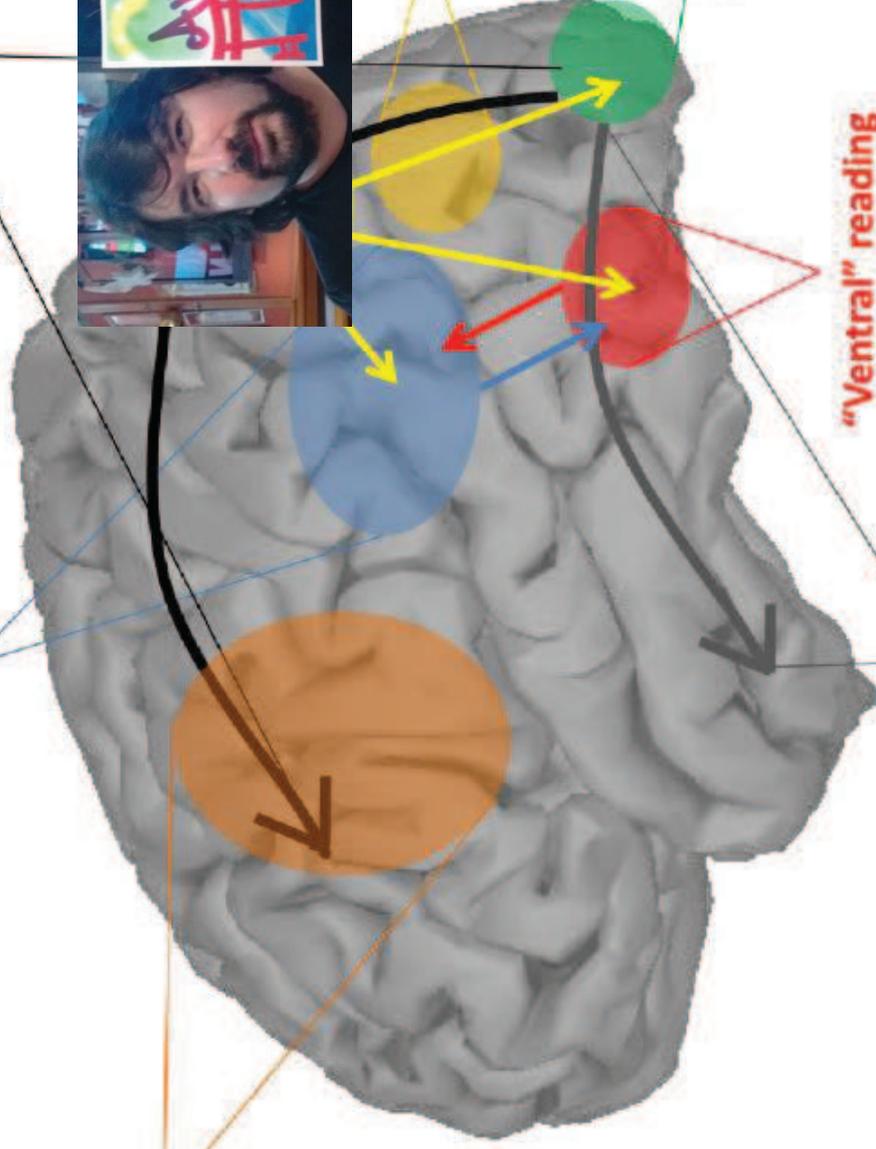


V5-MT: Motion perception

V1; Early visual processing

"Ventral" reading pathway; VWFA

"Ventral-what" and "Perception" stream



Stimolare elettricamente il circuito fonologico!?

Il modello modificato di Stanislas Dehaene

