

What Causes Dyslexia?

Created in partnership with the Rhode Island Department of
Education Literacy Ambassadors 2020





BRAIN-BASED
RESEARCH



GENETICS



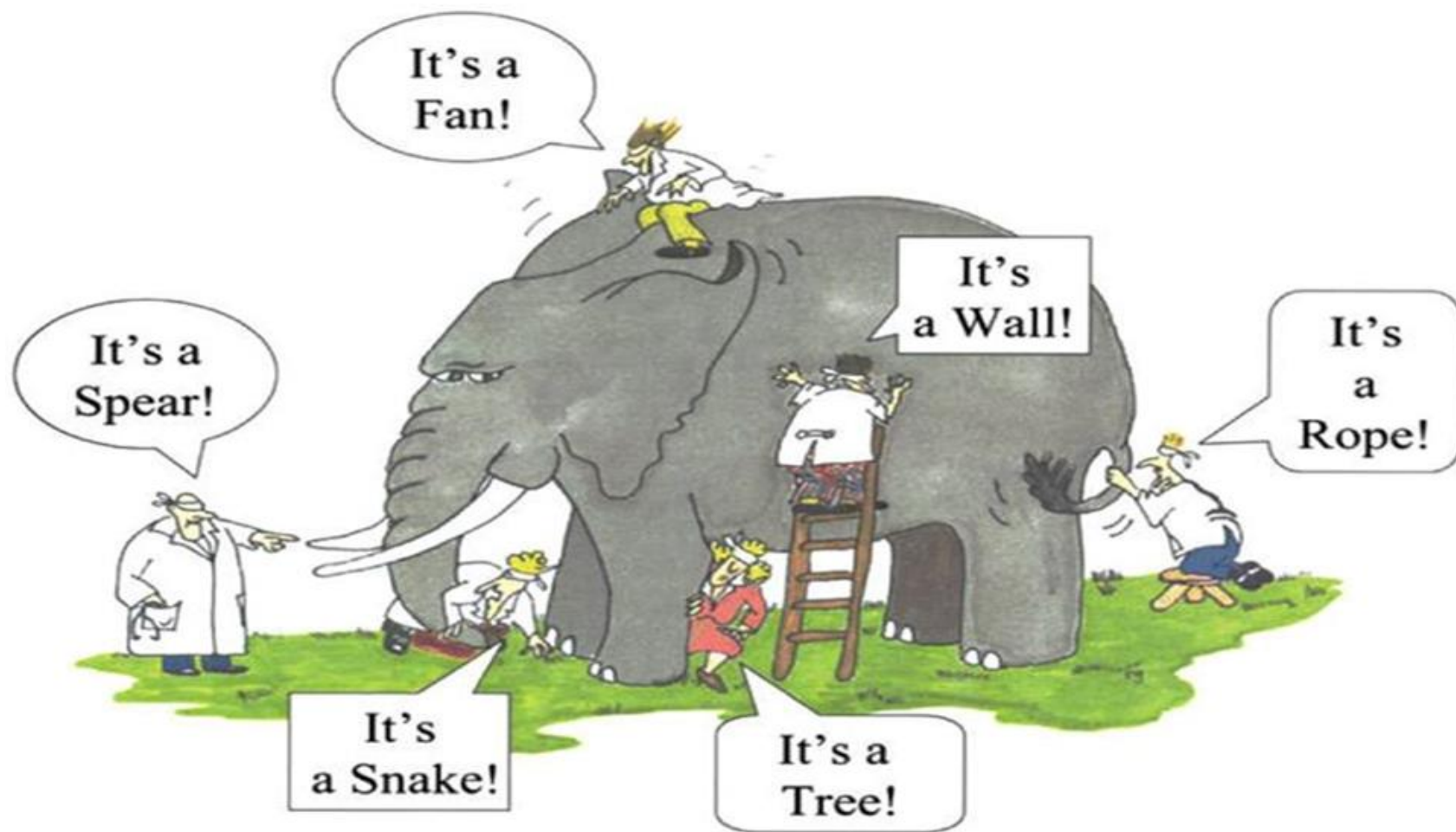
HEREDITY



Early studies (e.g., Galaburda, 1970s-80s)

- Structural issues in language areas of the brain
- Neurons migrating to the wrong place
- Symmetry in left/right hemispheres (when left is usually larger)





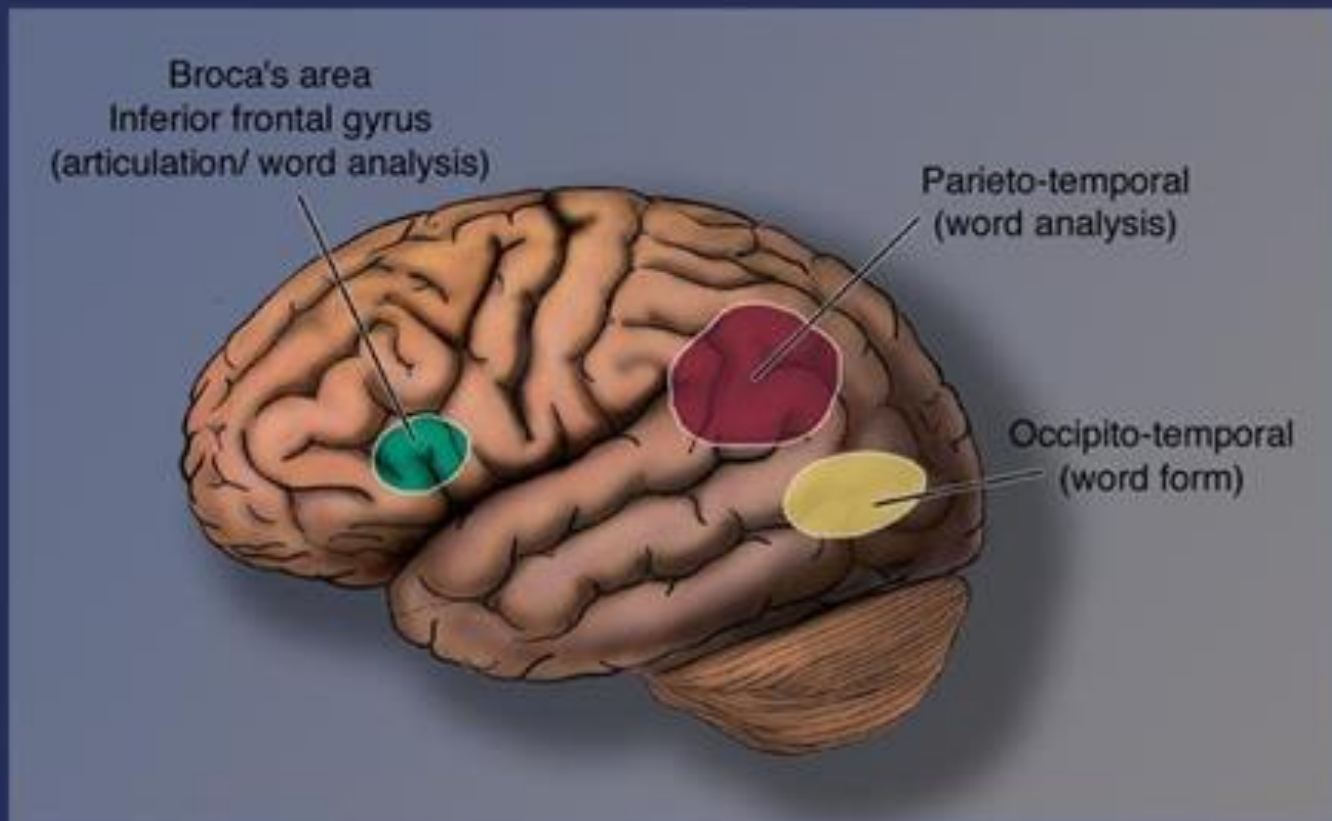
Advanced techniques
led to more advanced
thinking

- fMRI studies (e.g., Shaywitz, 2003)
- Different parts of the brain activate for those with dyslexia



fMRI Views of Reading

Reading Systems in Brain



Broca's area
Inferior frontal gyrus
(articulation/ word analysis)

Parieto-temporal
(word analysis)

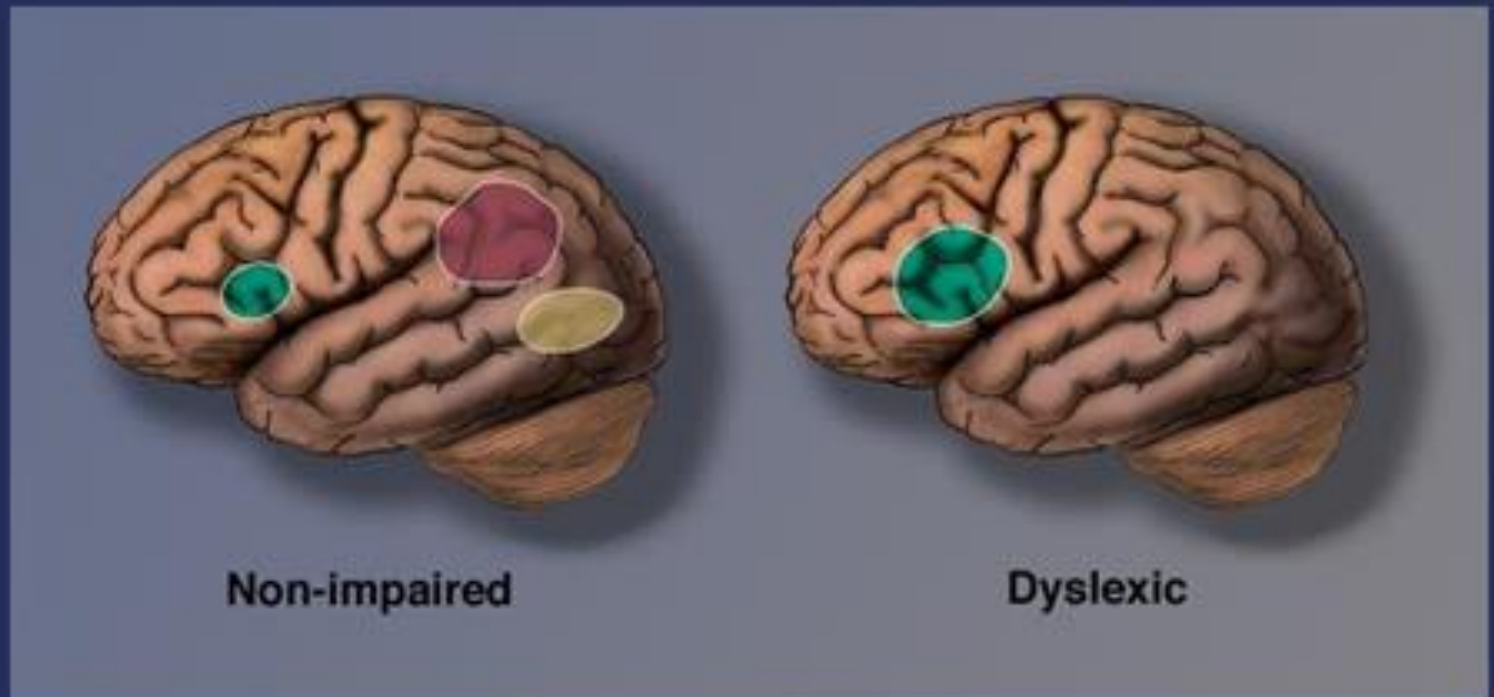
Occipito-temporal
(word form)

© Sally Shaywitz, *Overcoming Dyslexia*, 2003



fMRI
Views of
Reading
with
Dyslexia

Neural Signature for Dyslexia: Disruption of Posterior Reading Systems



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Studies investigating genes associated with dyslexia

- Evidence for two genes is most compelling

Inconclusive, thus far...

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2597981/>



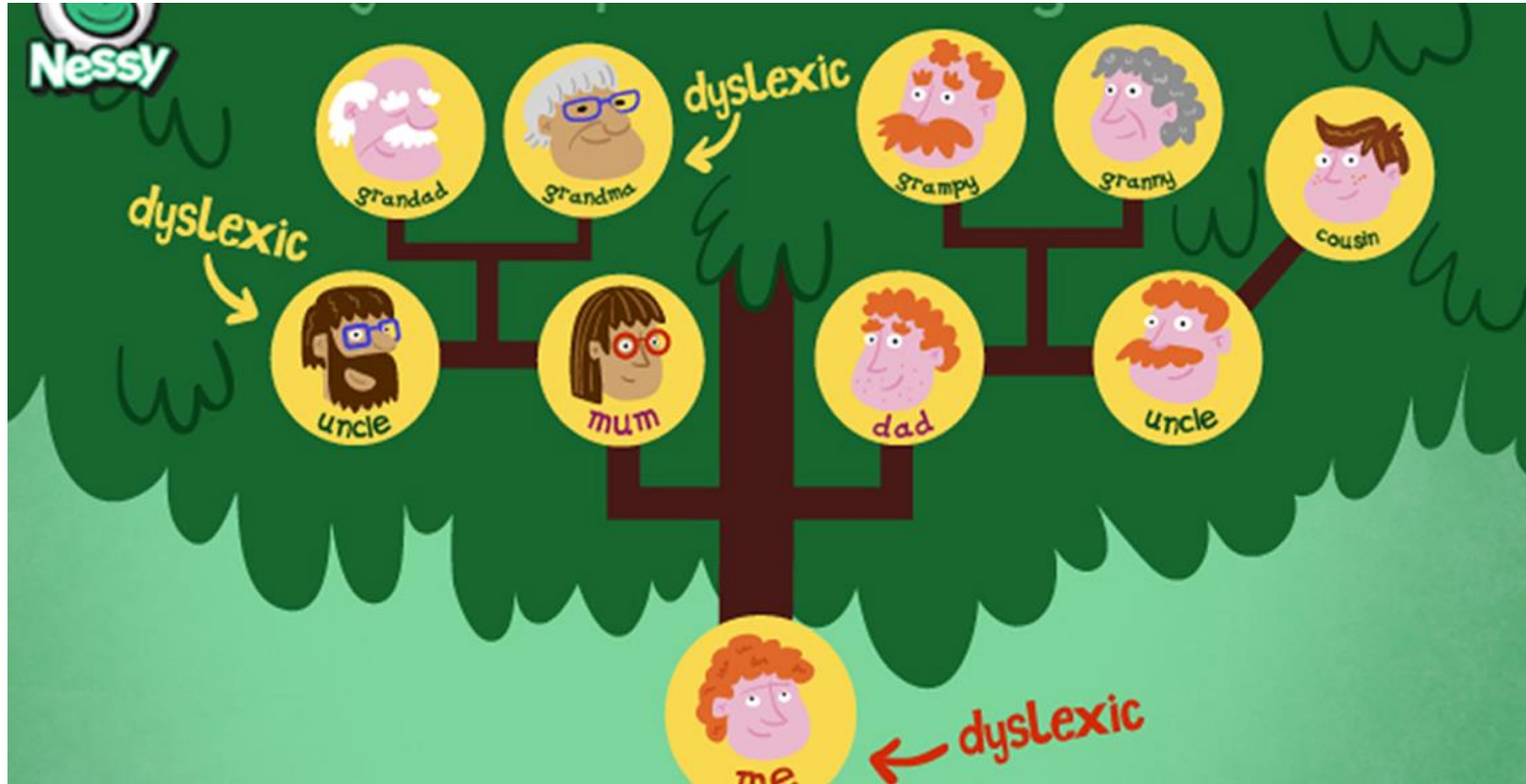
Twin studies

- If one twin had dyslexia, 40-50% chance other did as well

Family members

- If a parent has dyslexia, 40-60% chance child will have it as well





Concluding Reflection

Which strand of research is the most relevant to teachers/schools?

What plans can we put into place to make this information useful to schools?

