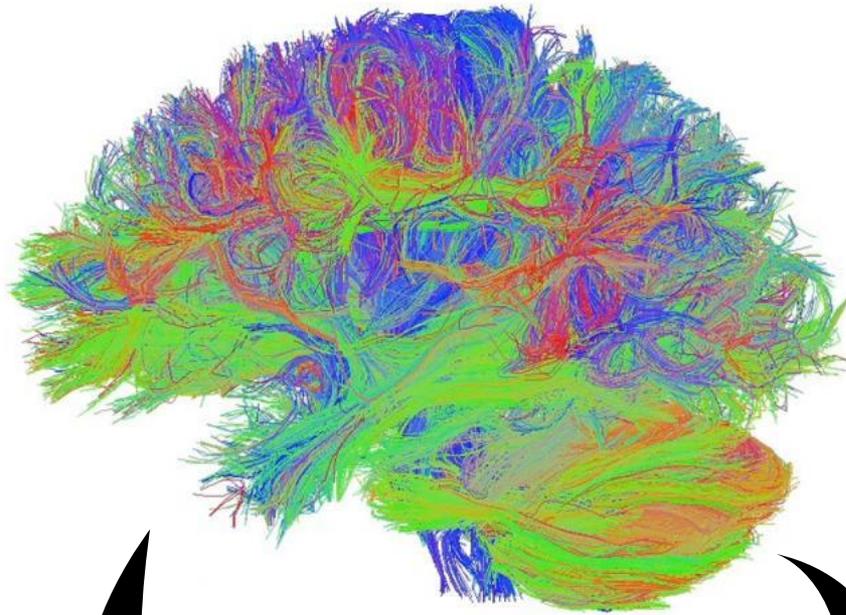


Common Questions

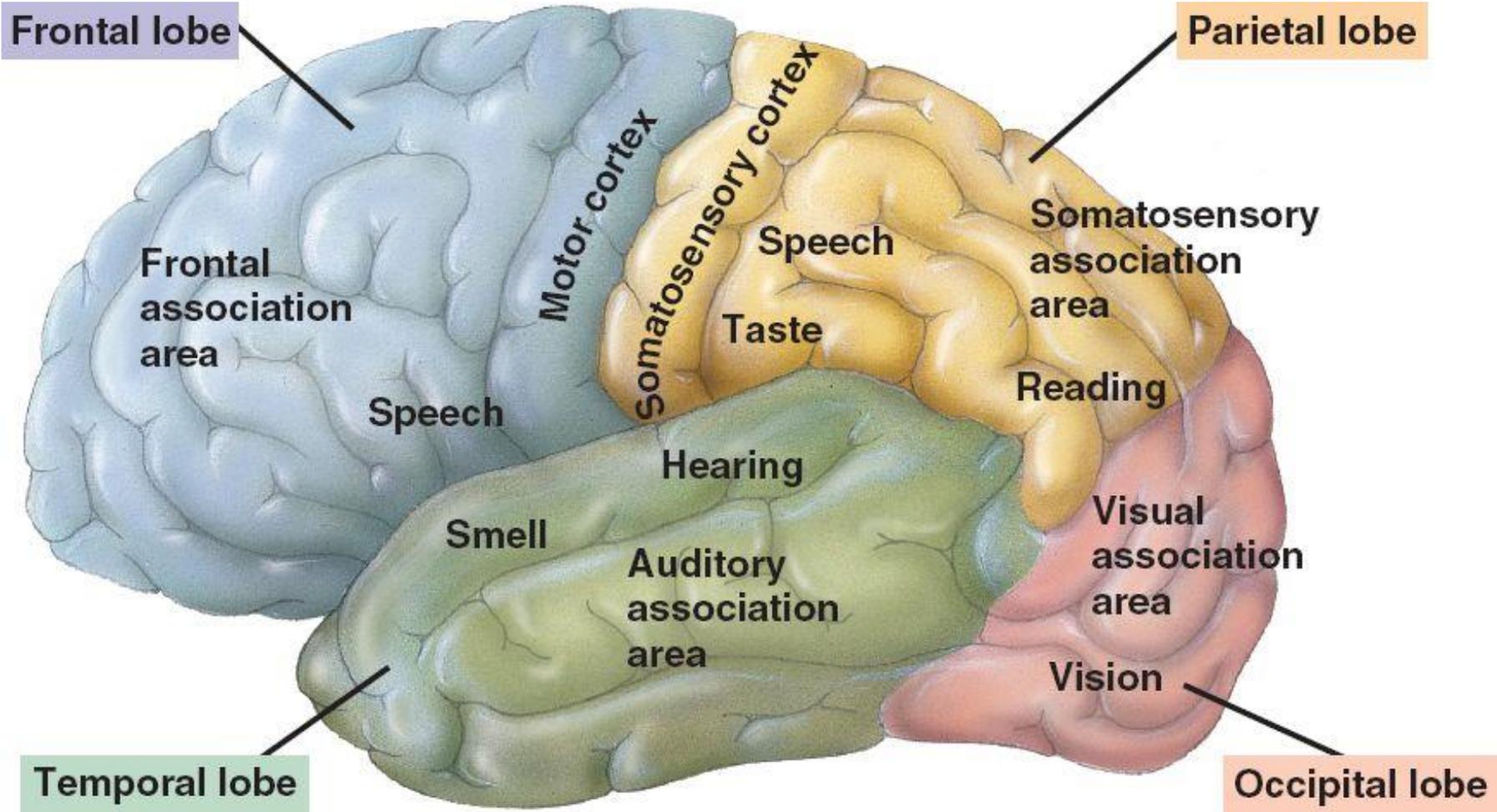
Are there common neurological features which lead to behaviors that are addressed in the educational realm?

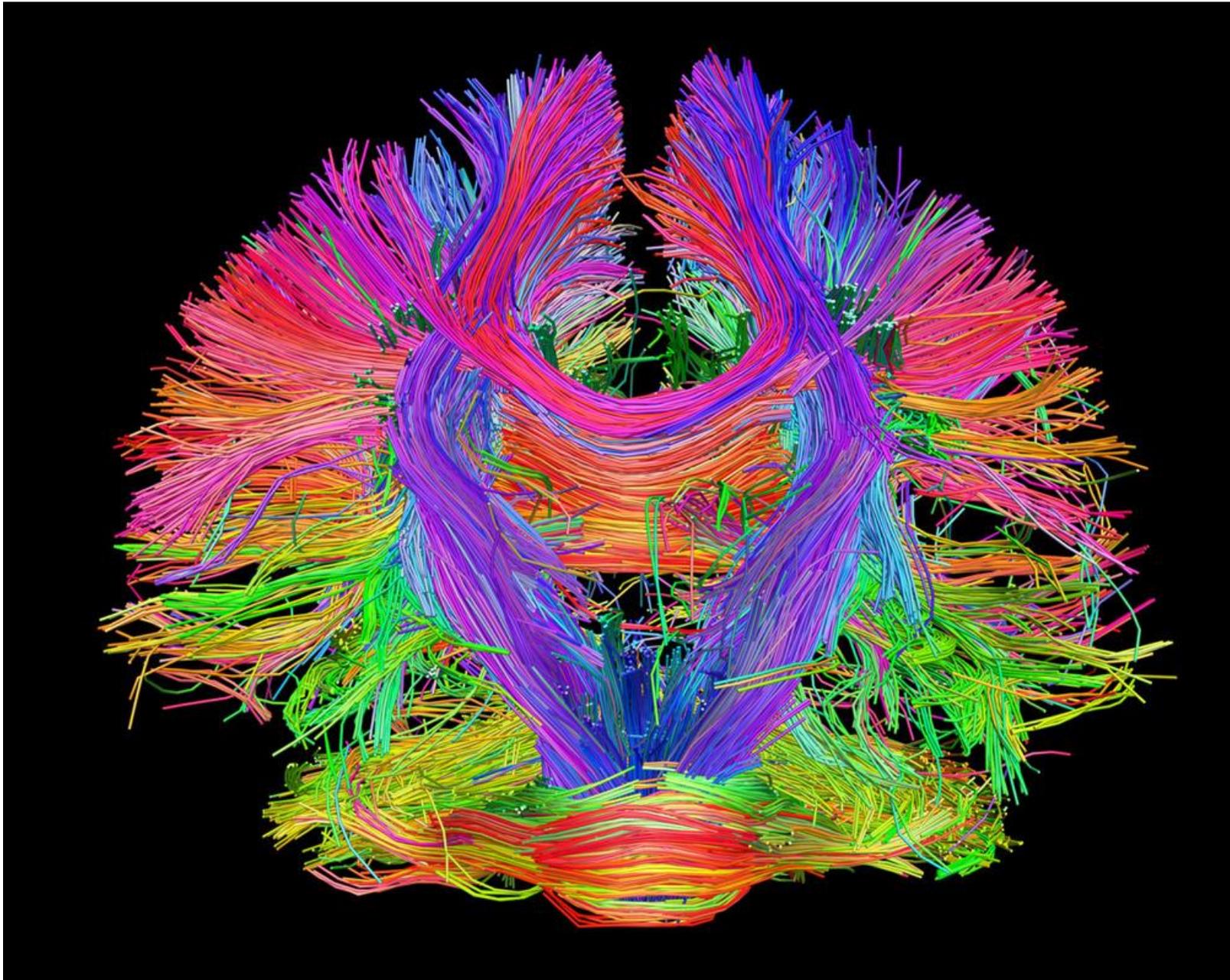
Is the gifted brain different from a neurotypical brain?

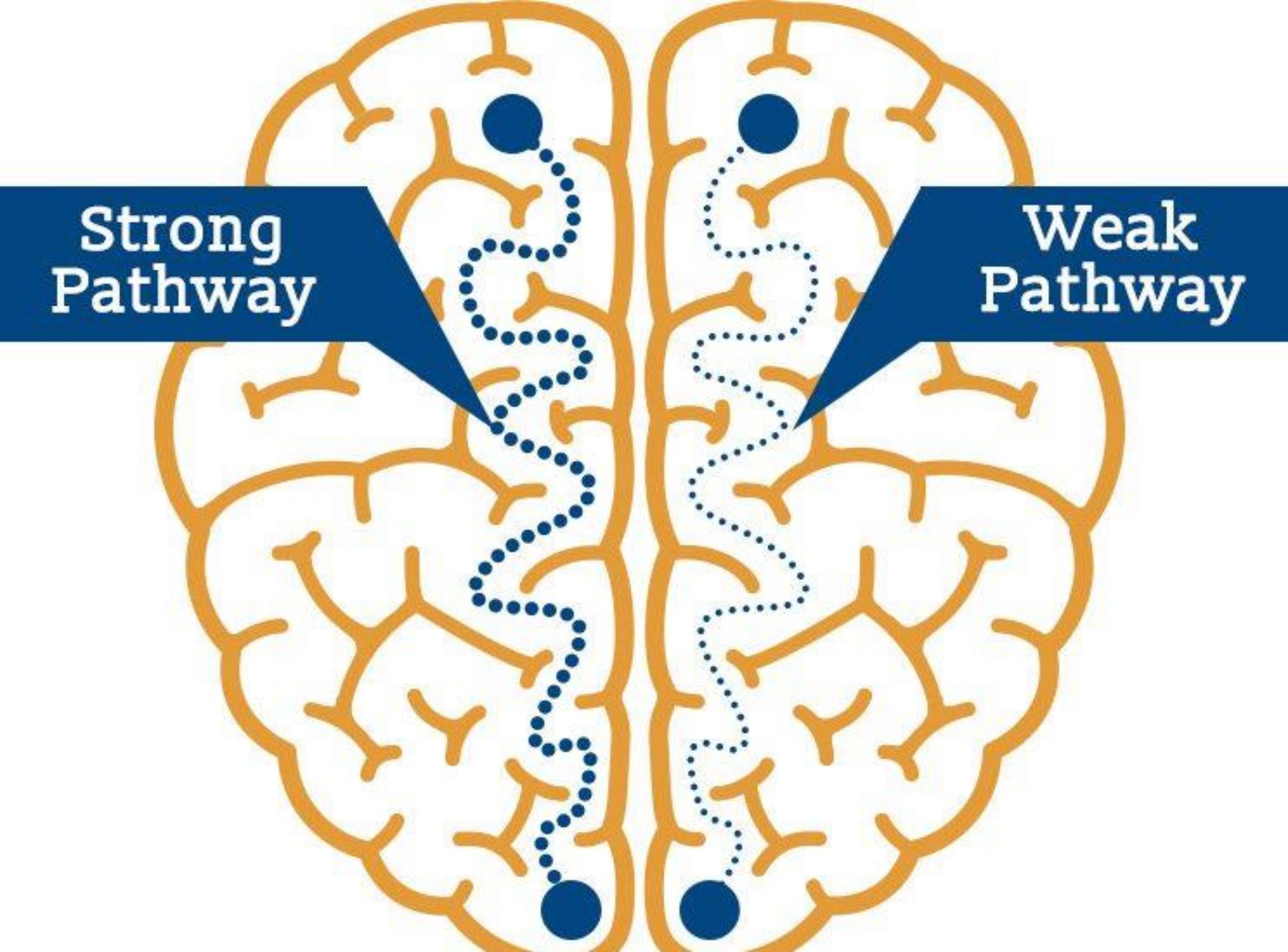


Environment







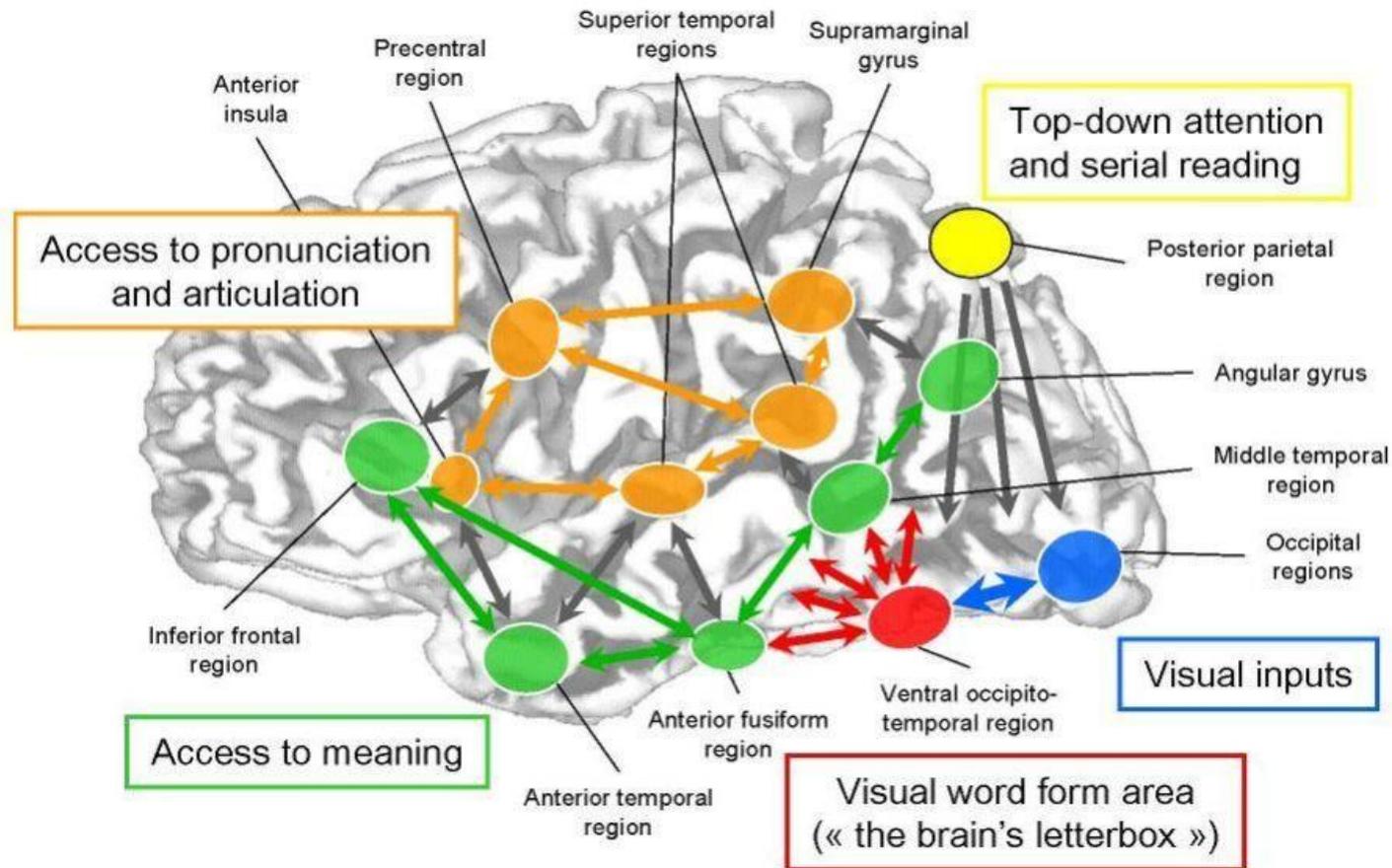
A diagram of a human brain showing two pathways. The brain is outlined in orange with a network of orange lines representing neural connections. Two blue dots are positioned at the top and bottom of each hemisphere. A blue dotted line path connects these dots in a zig-zag pattern. On the left side, a blue callout box points to a path that is thick and solid, labeled 'Strong Pathway'. On the right side, a blue callout box points to a path that is thin and dotted, labeled 'Weak Pathway'.

**Strong
Pathway**

**Weak
Pathway**

Neurons that Fire Together, Wire Together

A modern vision of the cortical networks for reading



Neurons that Fire Together, Wire Together

Topographical

Segregation

Networks

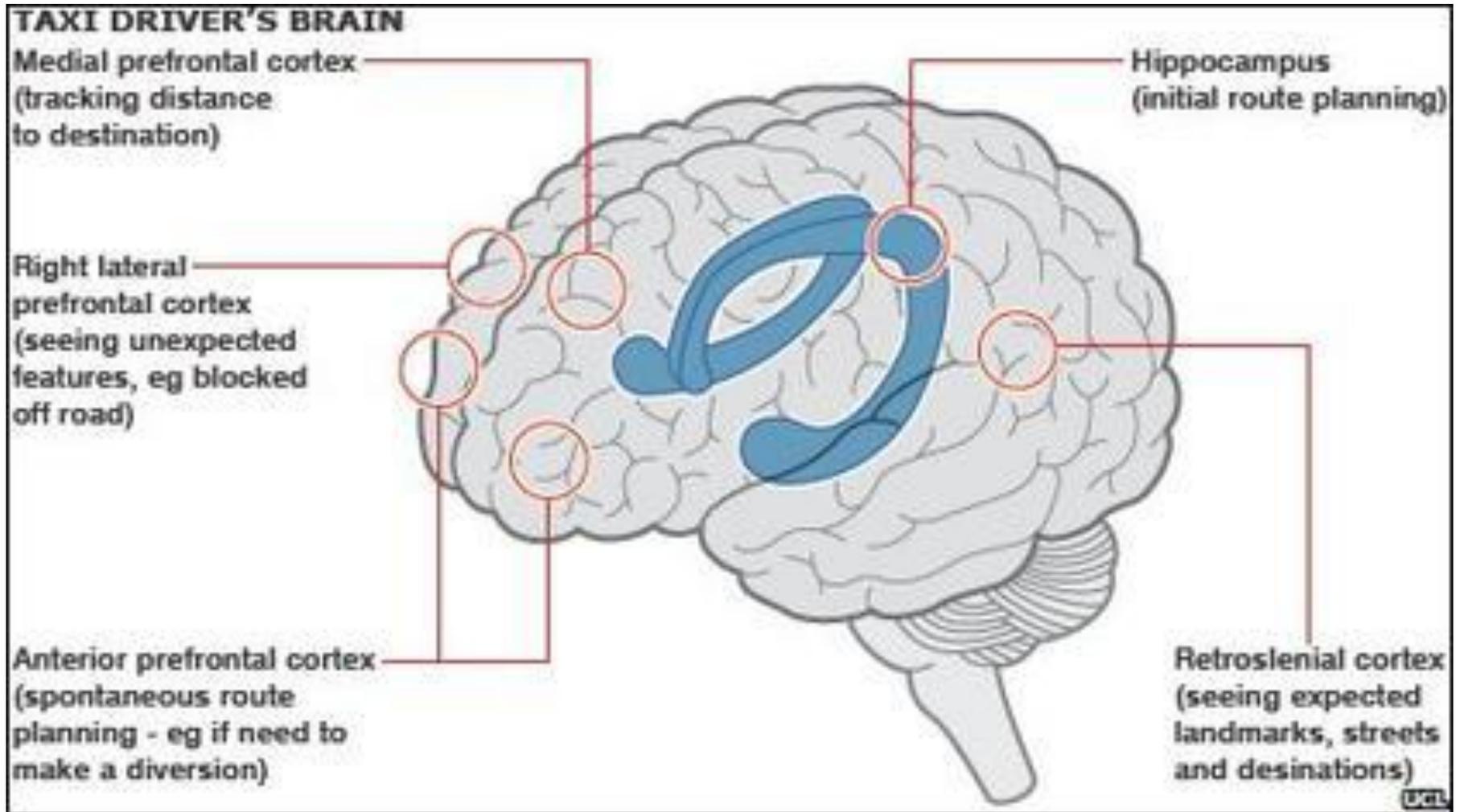
Integration

Plasticity Due to Experience

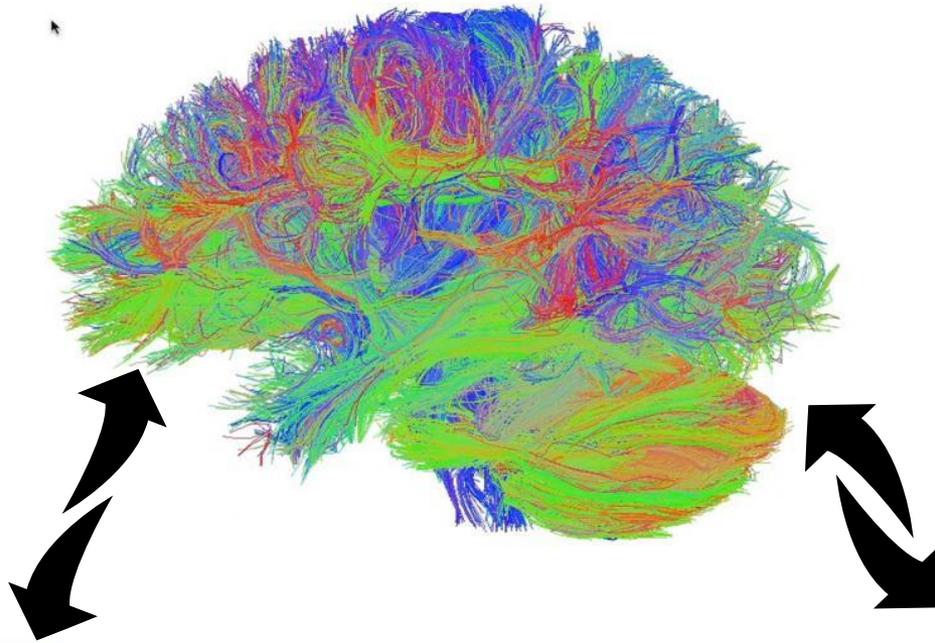
- Musicians have greater cortical area dedicated to their particular skills
- Changes in organization occur after only 15-30 minutes of practice.
- Speed of adaptability



London Taxi Driver Studies



Series of experiments completed by Eleanor Maguire and colleagues



Preliminary Report on Neuroanatomical Differences Among Reading Disabled, Nonverbally Gifted, and Gifted-Reading Disabled College Students

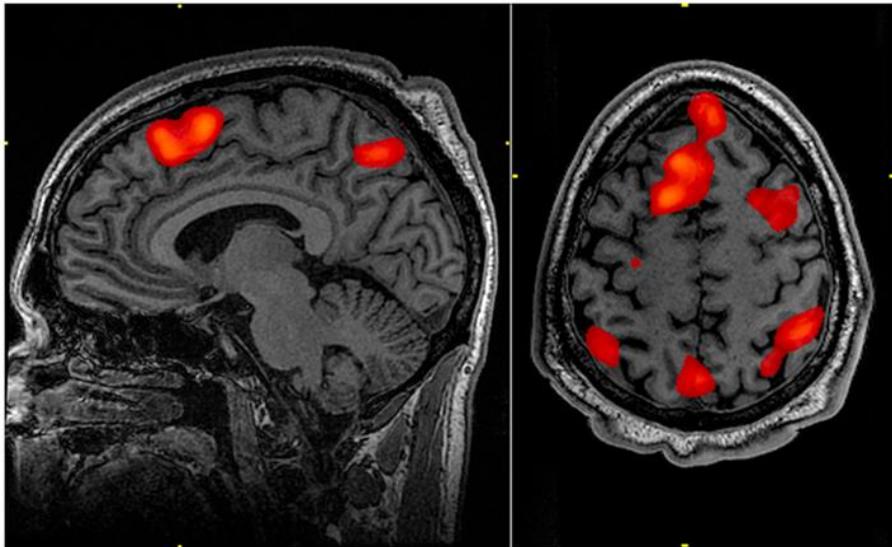
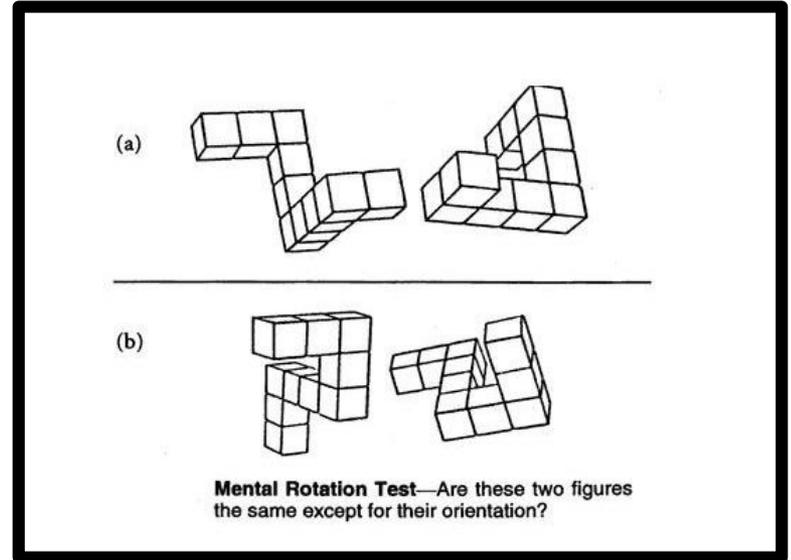
College Students

- 6 with Reading Disorders (3 M, 3 F)
- 5 Non-Verbally Gifted (4 M, 1 F)
- 9 Non-Verbally Gifted and Reading Disorder (5 M, 4 F)

Multiple papers have come
from this sample

Measures

- MRI and fMRI
- Region of Interest
- Subtractive Logic



Word Rhyming Task

Do the words Rhyme, Y/N?

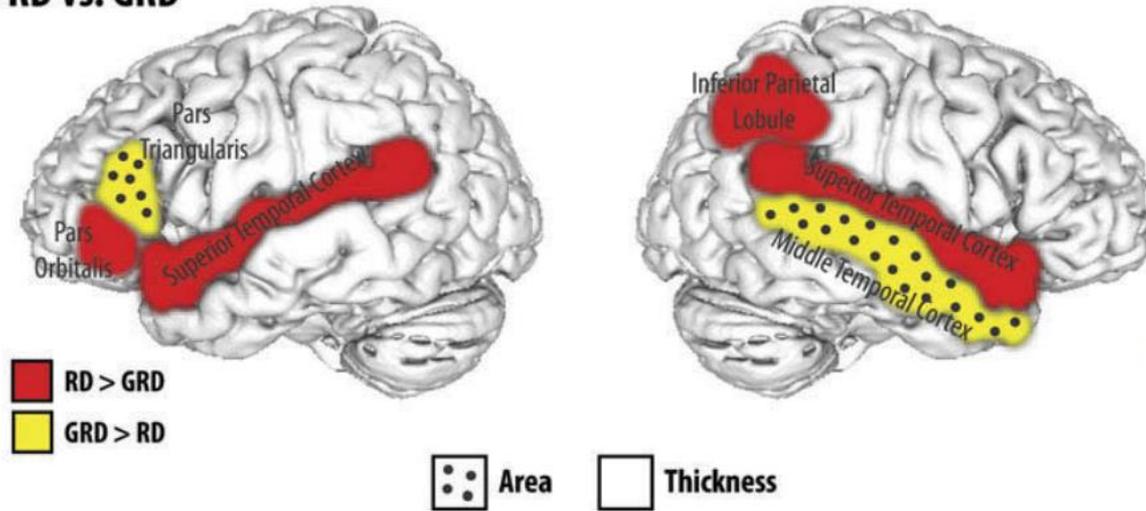
Food/Blood

Bear/Chair

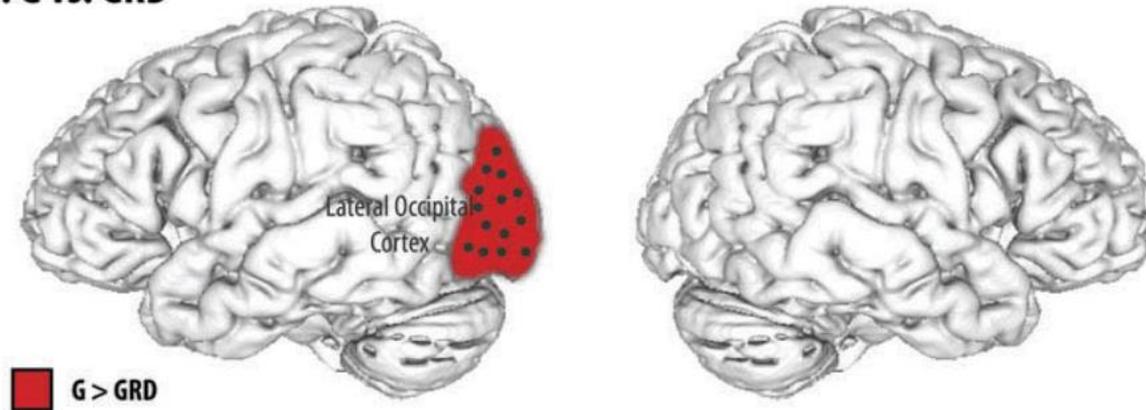
Pea/Play

Town/Gown

A. RD vs. GRD

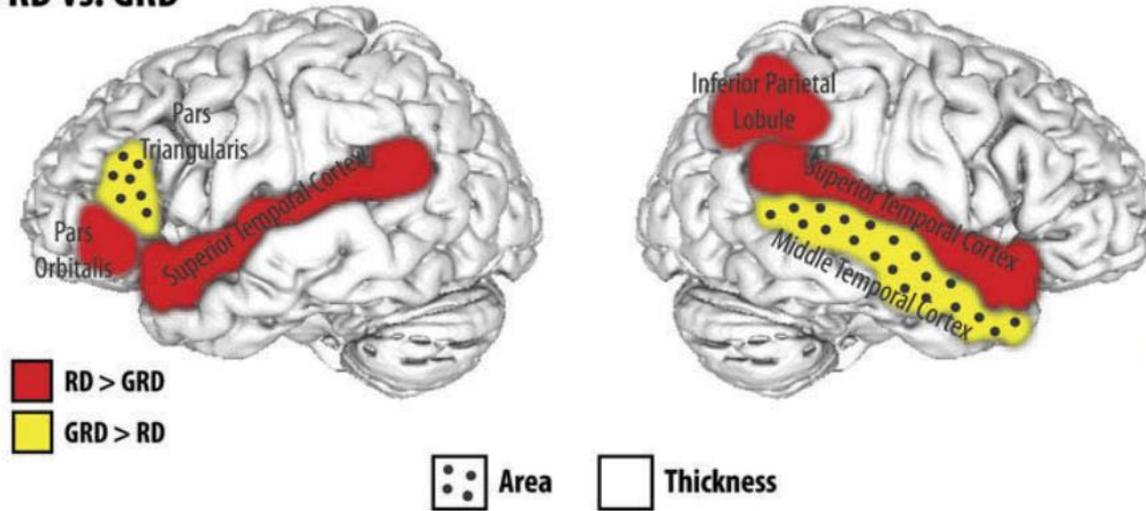


B. G vs. GRD

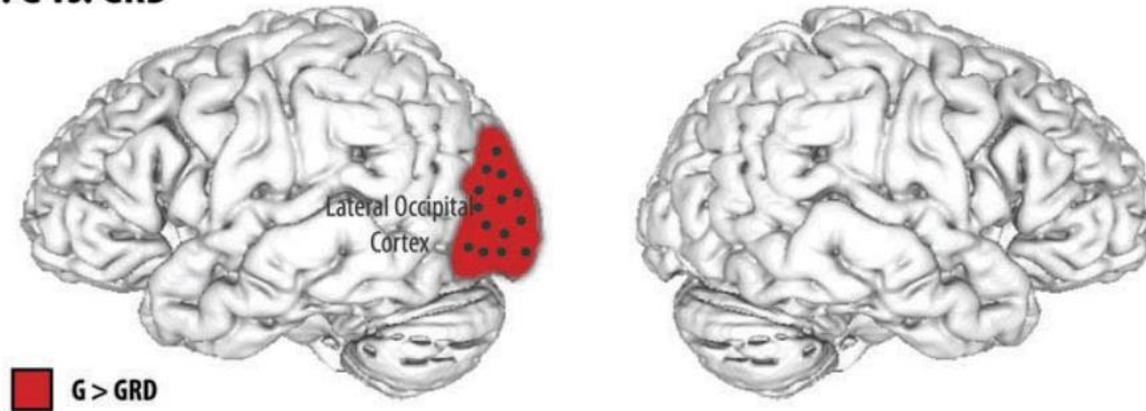


Structure-Brain Correlation Approach

A. RD vs. GRD

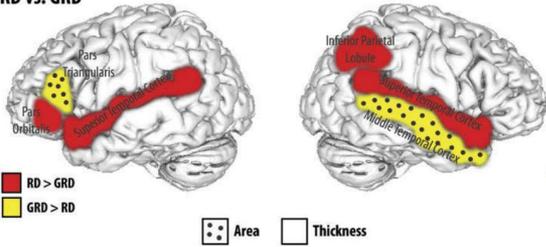


B. G vs. GRD

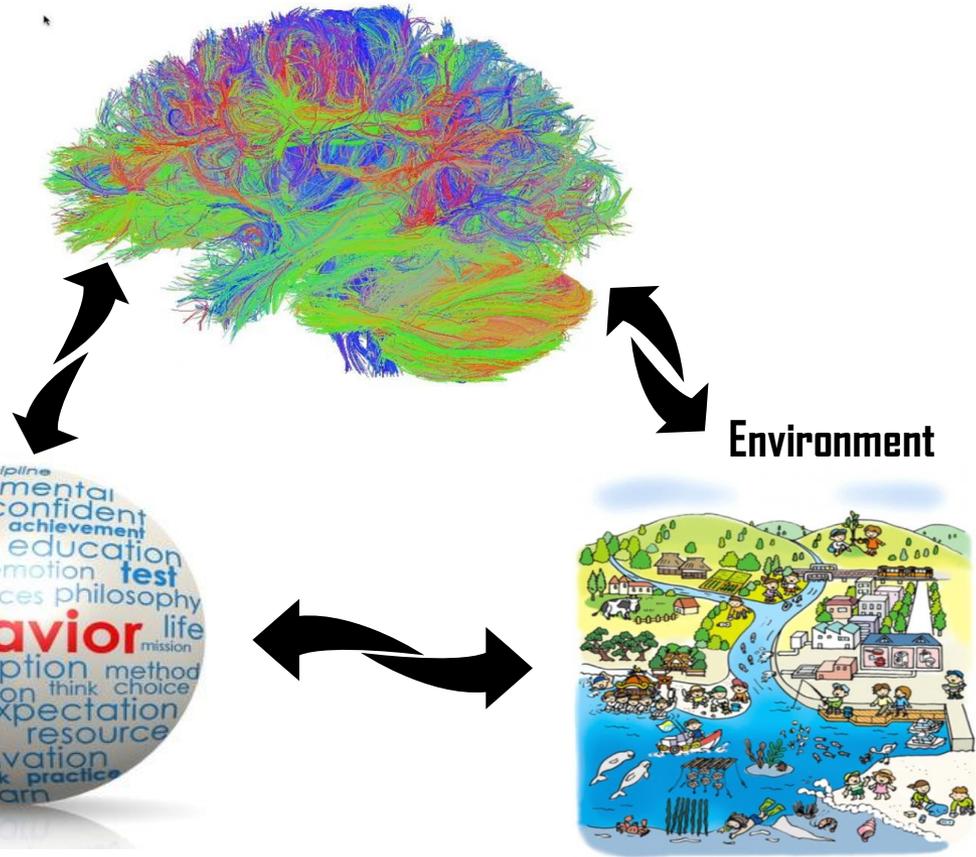
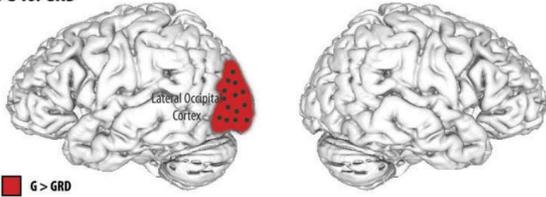


Structure-**SPURIOUS?** Correlation Approach

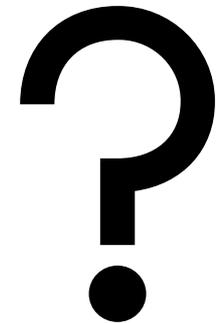
A. RD vs. GRD



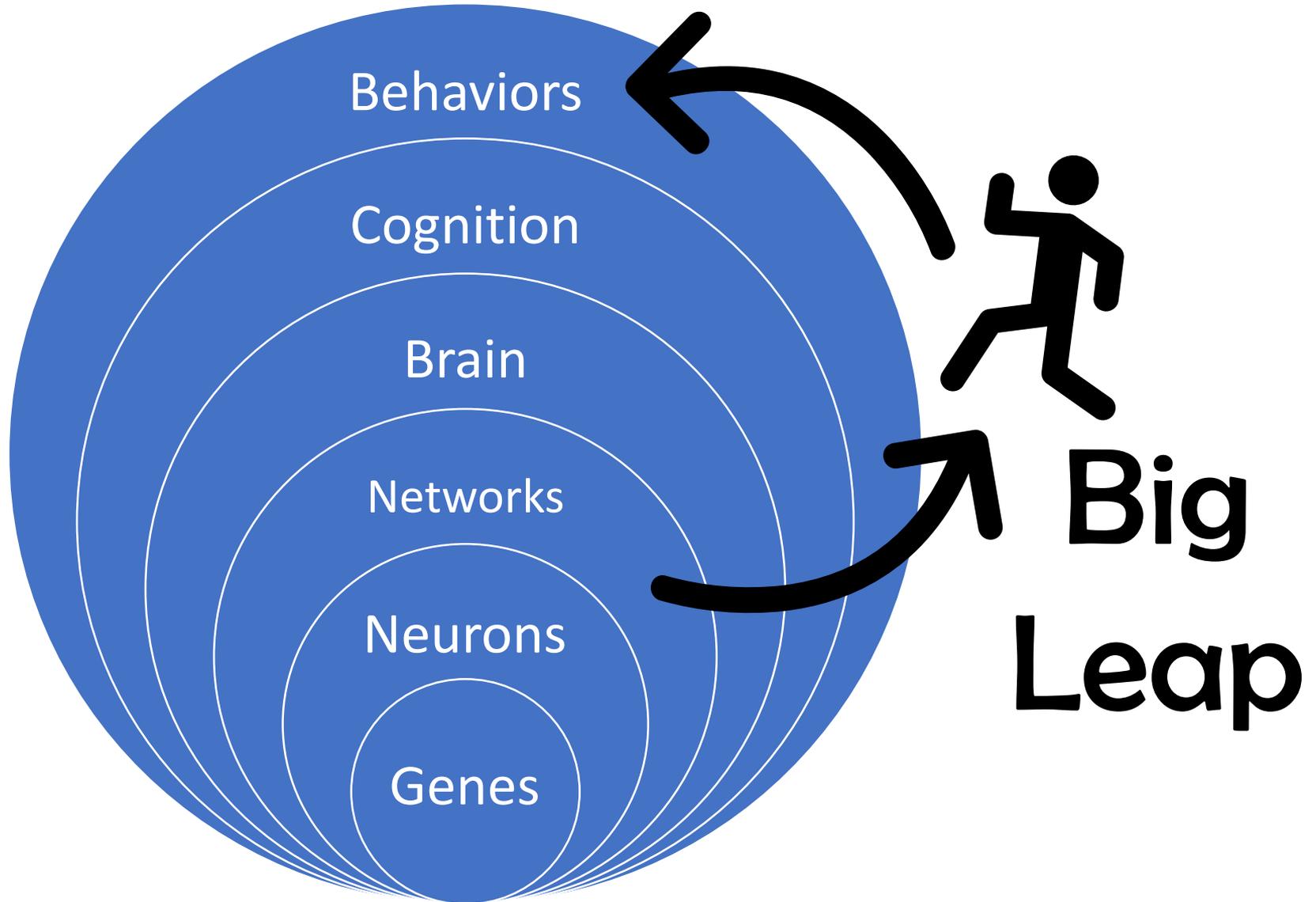
B. G vs. GRD



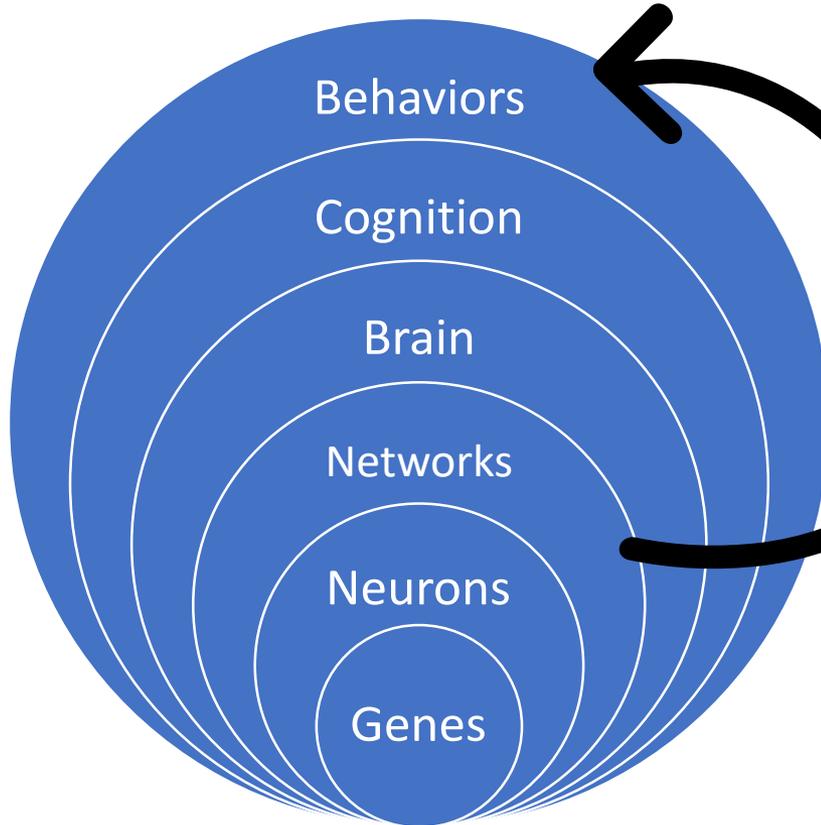
Intelligence/Cognitive Abilities Tests
Mental Rotation
Rhyming Ability



Levels of Analysis



Levels of Analysis



Generalization



**Big
Leap**

Oversimplification

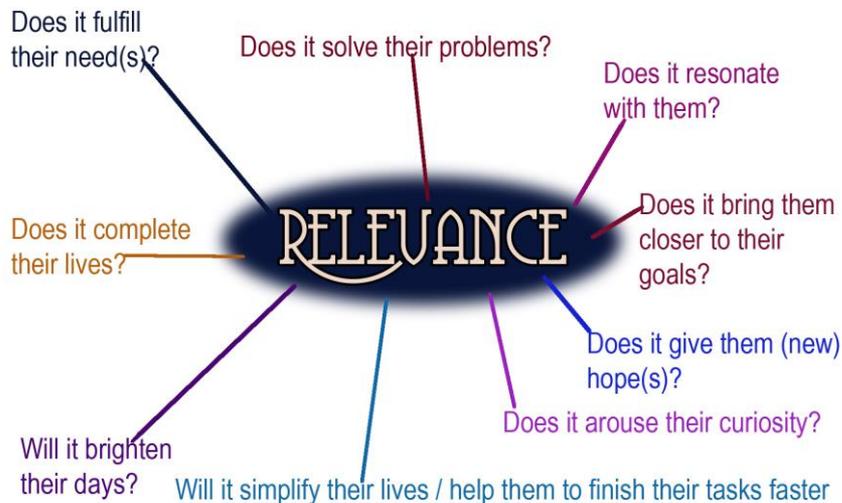
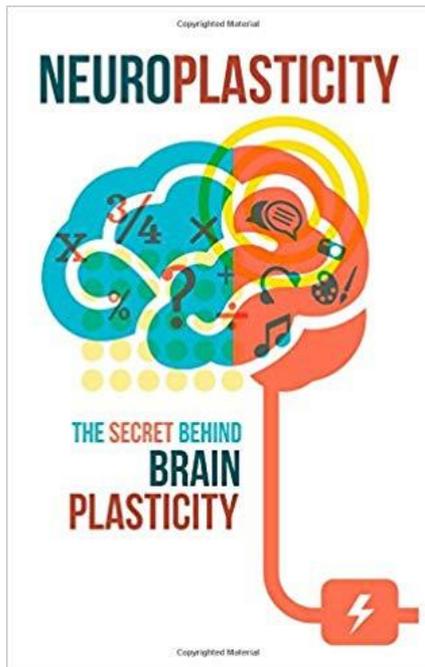
Common Questions

Are there common neurological features which lead to behaviors that are addressed in the educational realm?

Is the gifted brain is different from a neurotypical brain?

Informed Skepticism

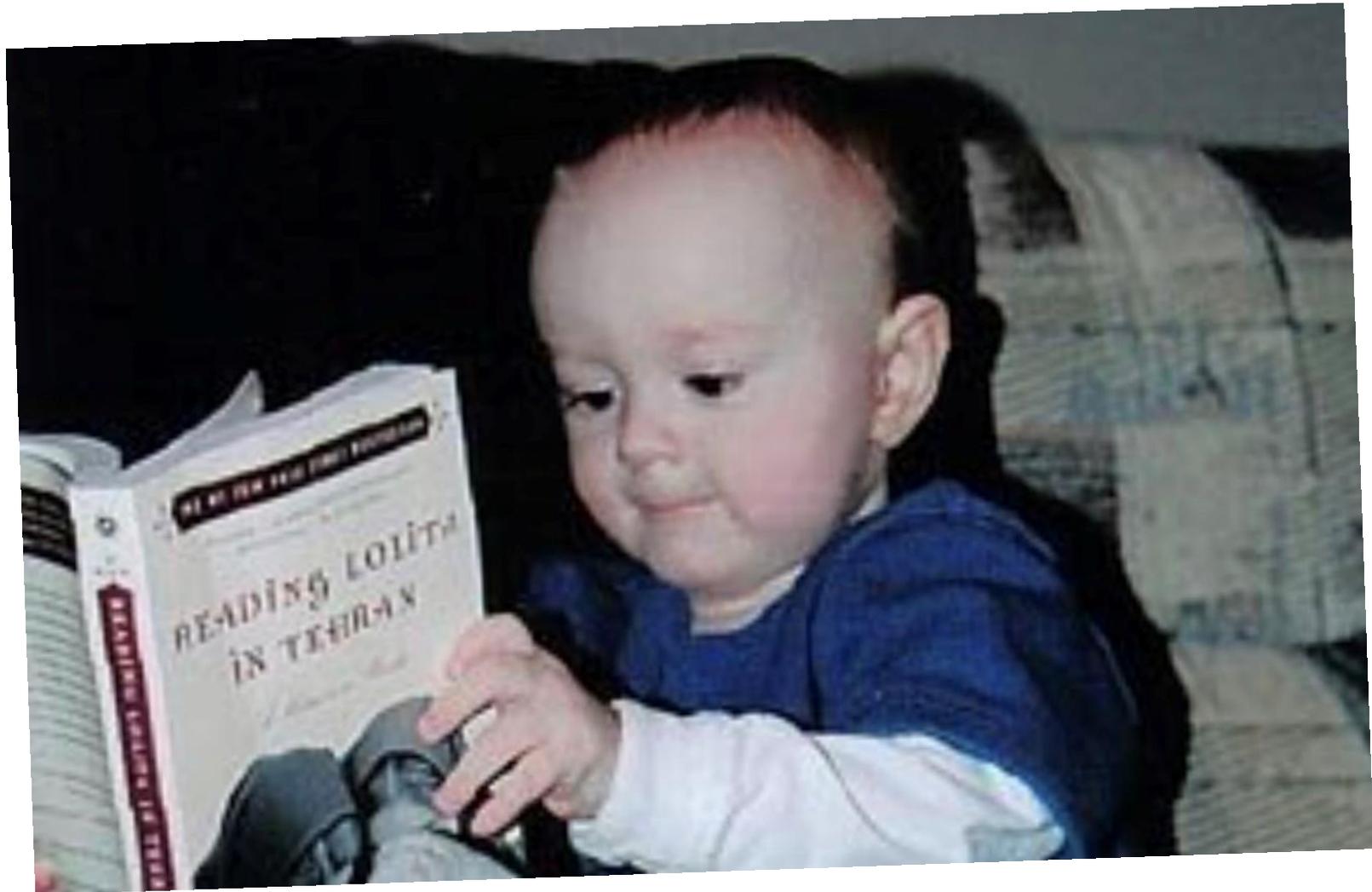
Is this an educational practice that has its origin in neuroscience rather than an existing educational practice that is explained/rationalized by neuroscience?



GROUPE
novelty



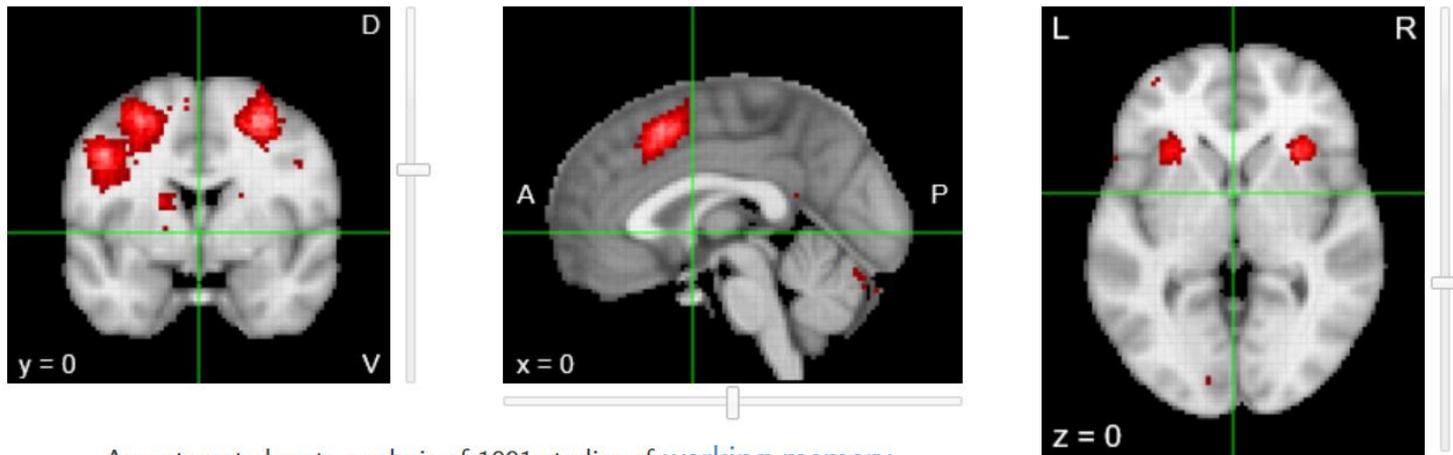
Earn Rewards Points



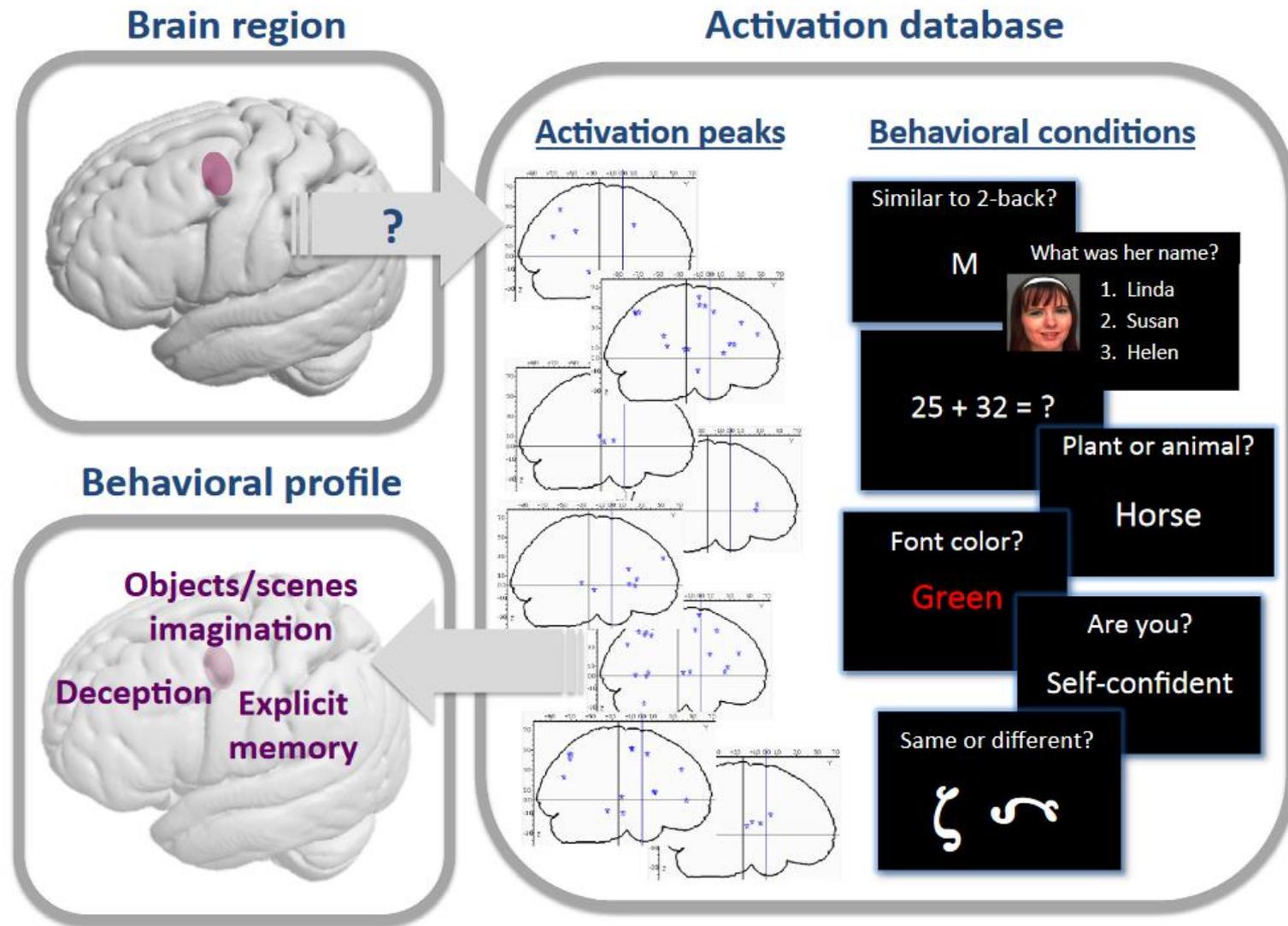
neurosynth.org

Neurosynth is a platform for large-scale, automated synthesis of functional magnetic resonance imaging (fMRI) data.

It takes thousands of published articles reporting the results of fMRI studies, chews on them for a bit, and then spits out images that look like this:



An automated meta-analysis of 1091 studies of [working memory](#)

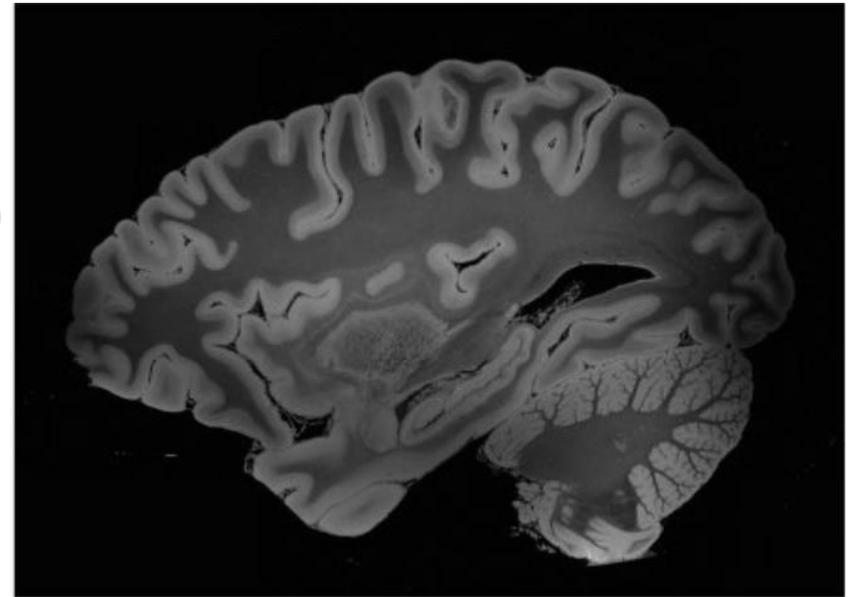




Erin Morris Miller, PhD
Bridgewater College

emmiller@bridgewater.edu

Twitter: @DoctorErinCat



100 Micron MRI

https://histopath.nmr.mgh.harvard.edu/image_view/