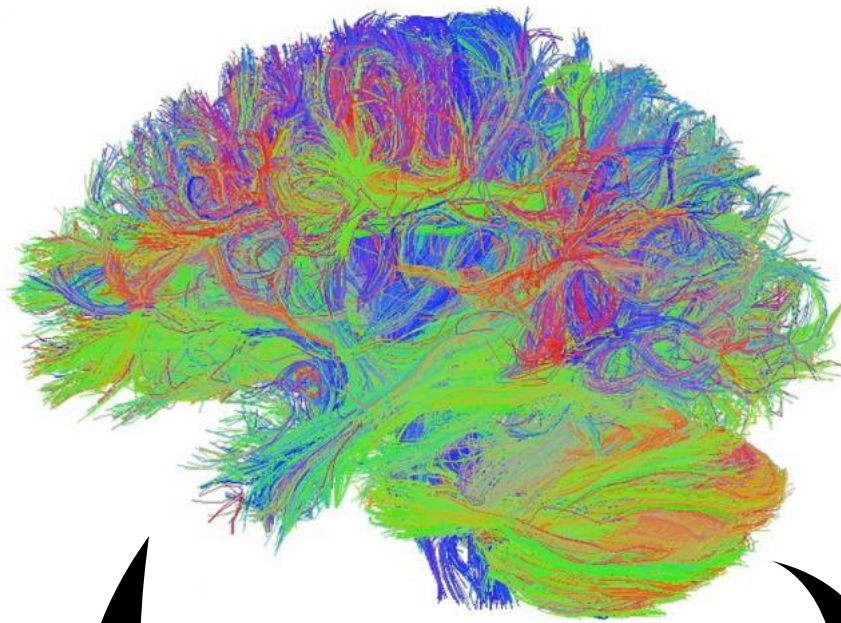


Common Questions

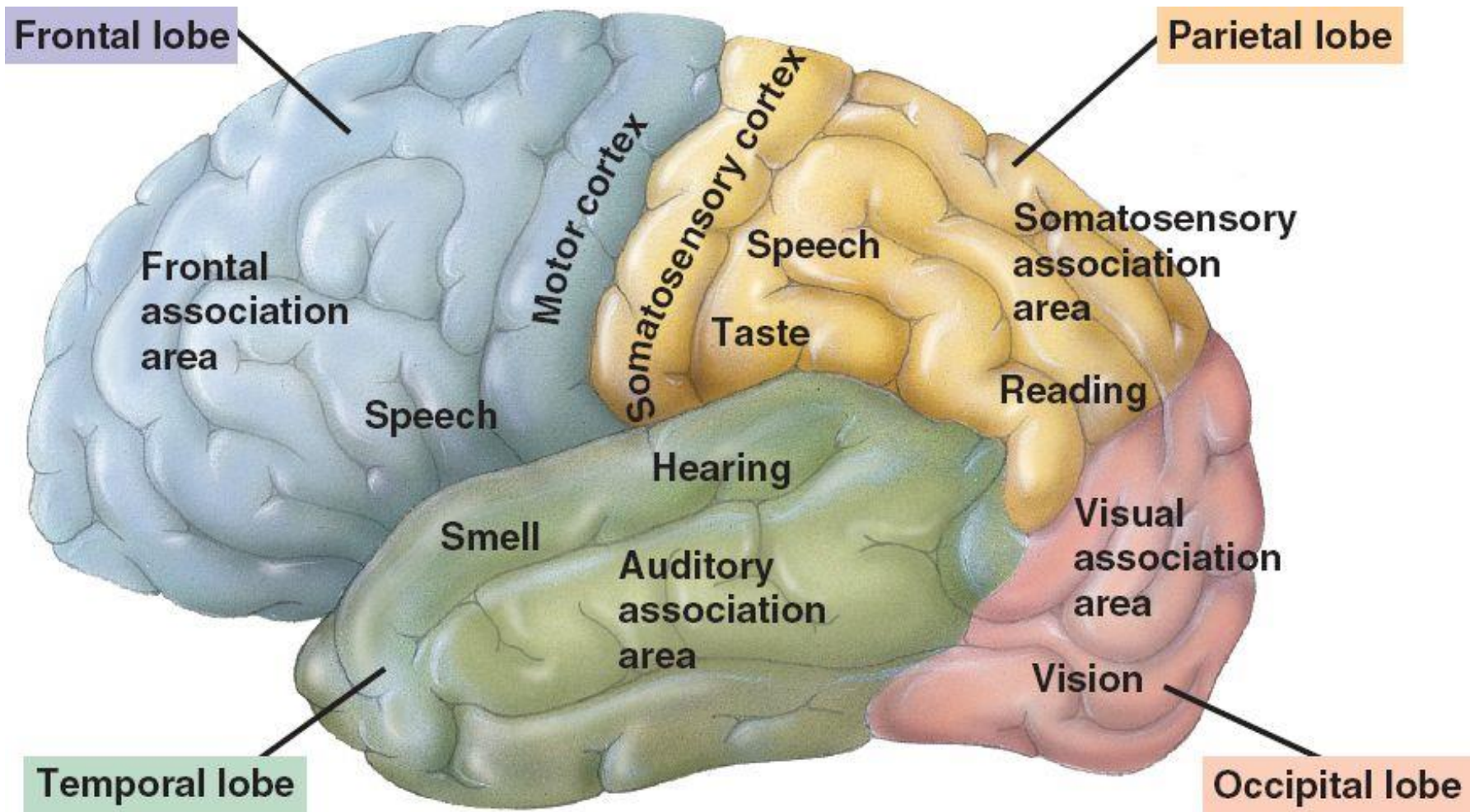
Are there common neurological features which lead to behaviors that are addressed in the educational realm?

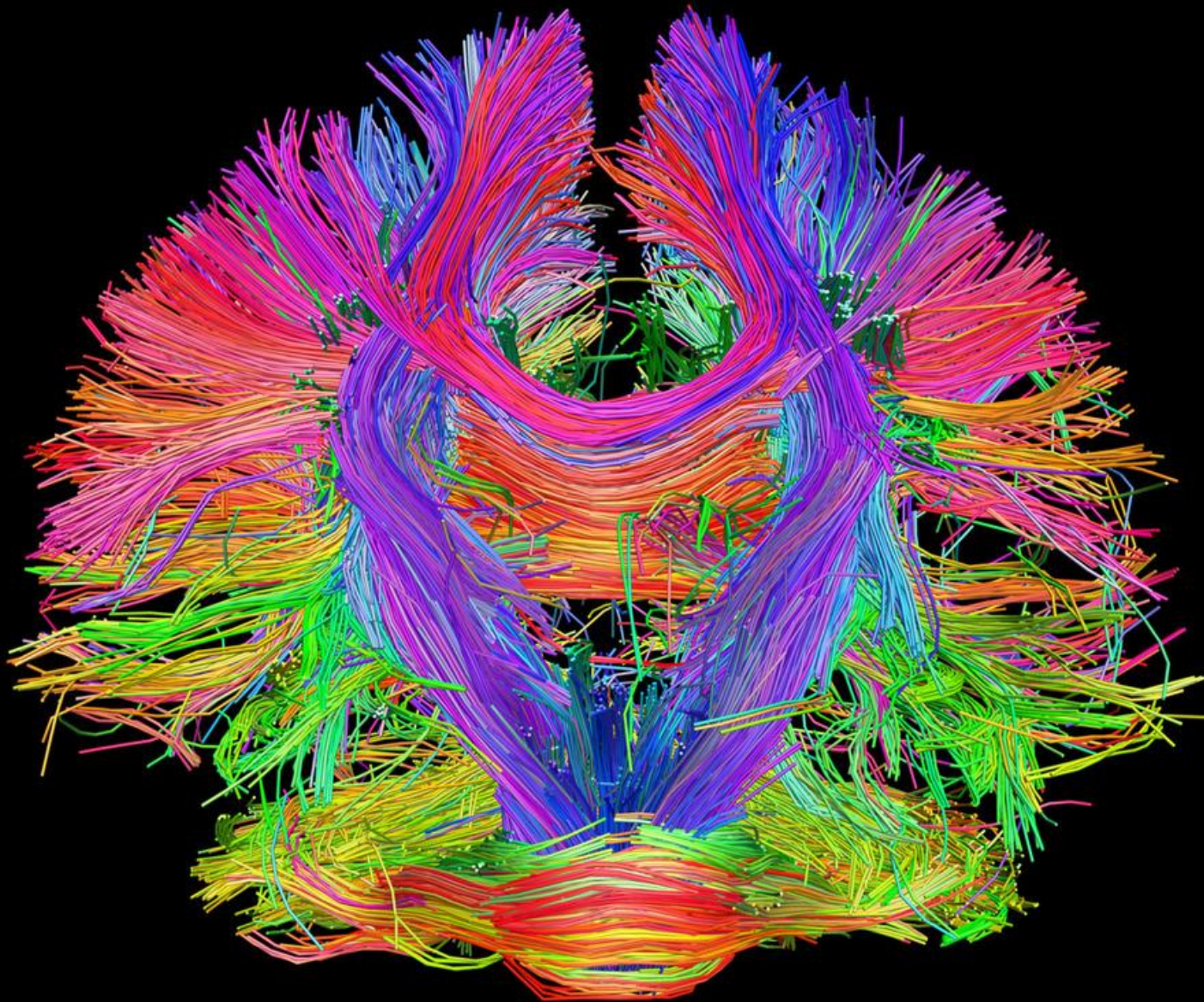
Is the gifted brain different from a neurotypical brain?



Environment









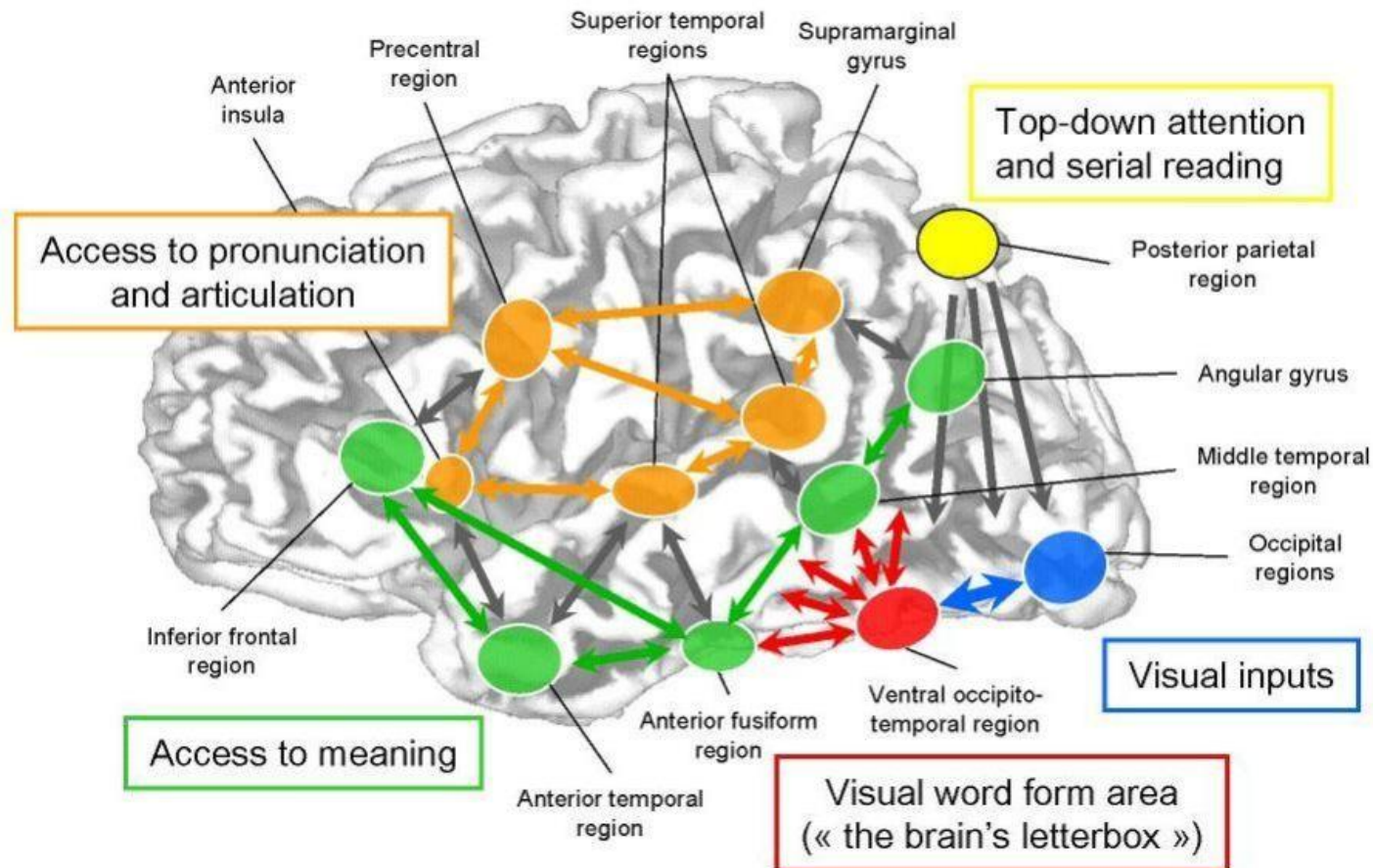
The diagram shows a top-down view of a human brain with orange outlines of the gyri and sulci. Two blue dotted lines represent neural pathways. The left pathway, labeled 'Strong Pathway', is a direct, straight line connecting four blue circular nodes (two in the top hemisphere and two in the bottom hemisphere). The right pathway, labeled 'Weak Pathway', is a convoluted, zig-zag line connecting the same four blue circular nodes. Two dark blue callout boxes with white text point to their respective pathways.

**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

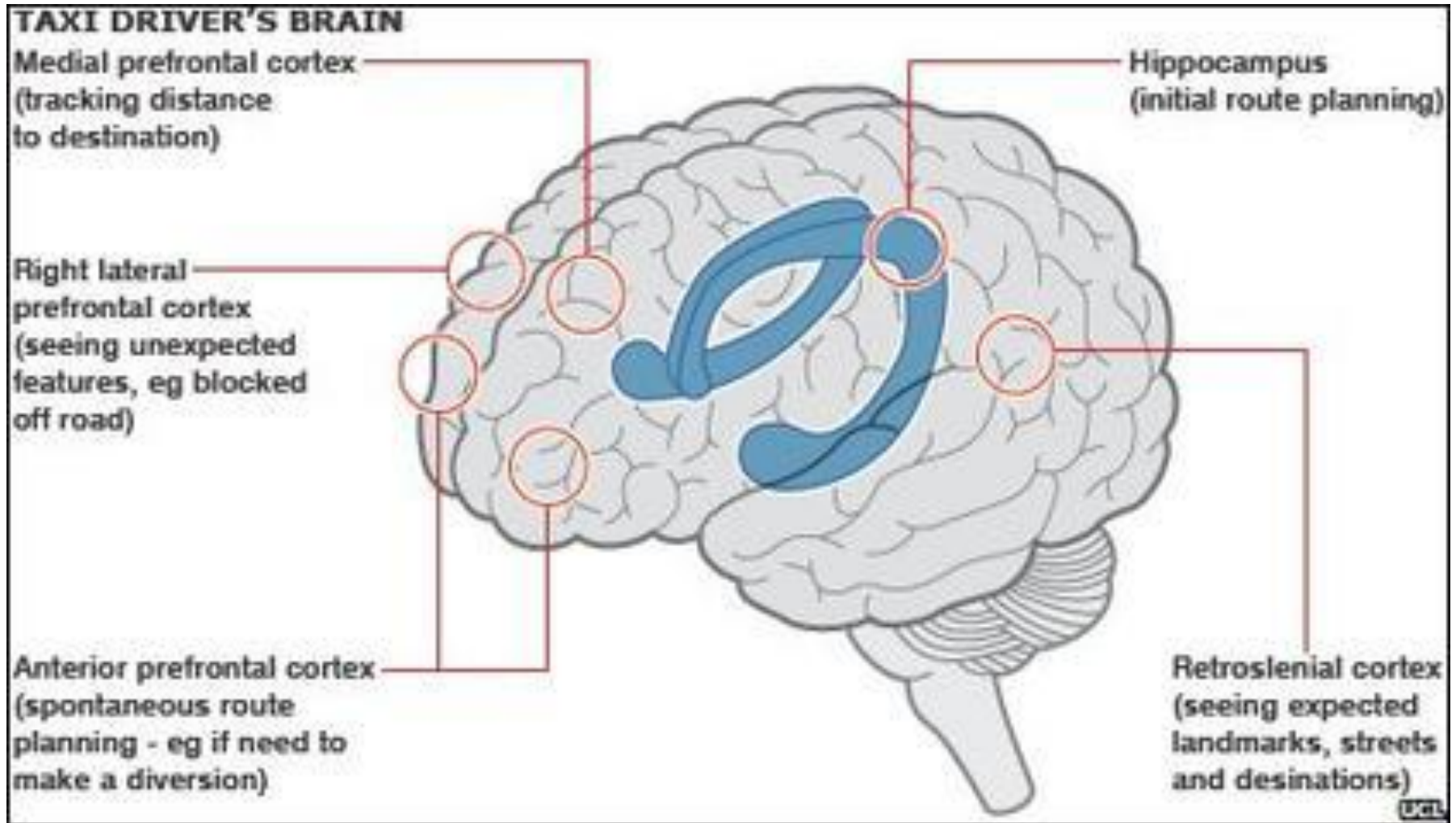
Integration

Plasticity Due to Experience

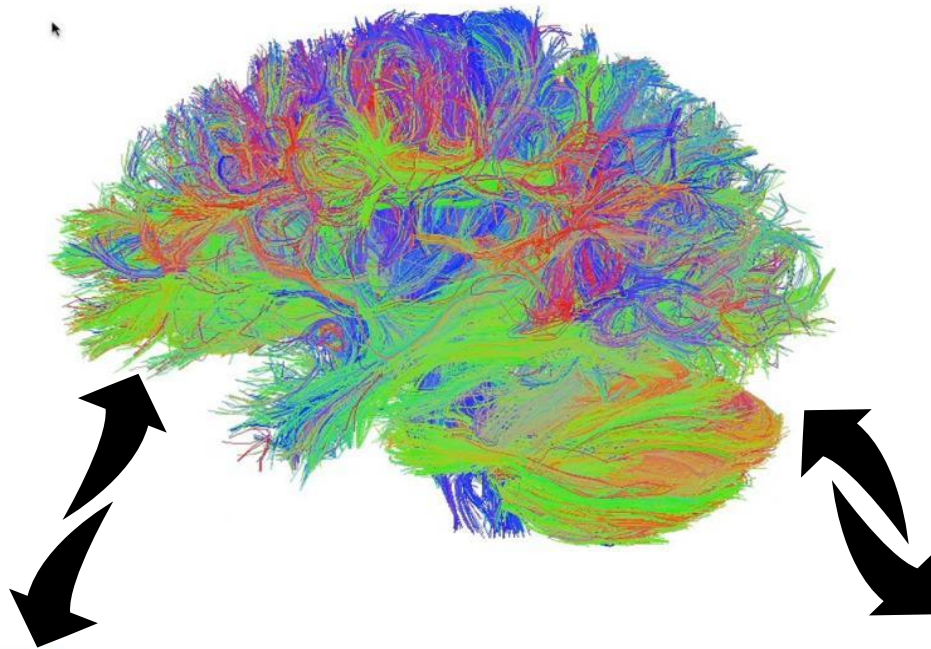
- Musicians have greater cortical area dedicated to their particular skills
- Changes in organization occur after only 15-30 minutes of practice.
- Speed of adaptability



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

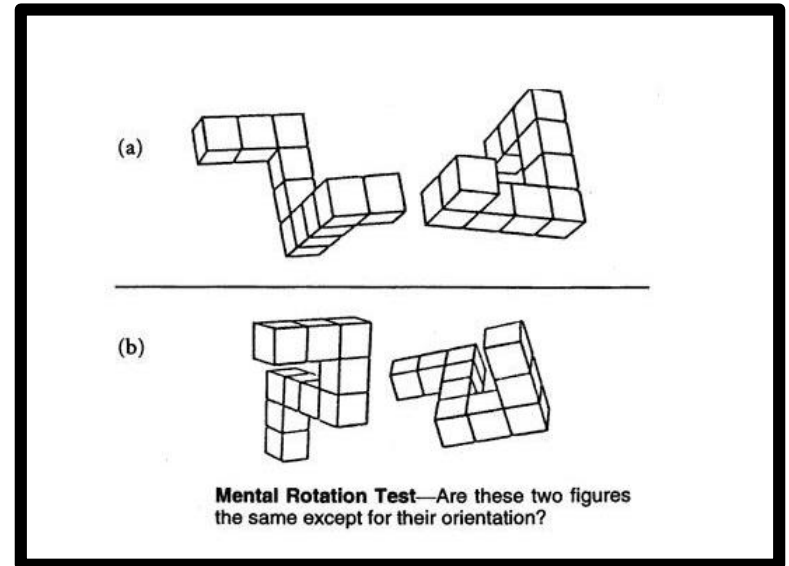
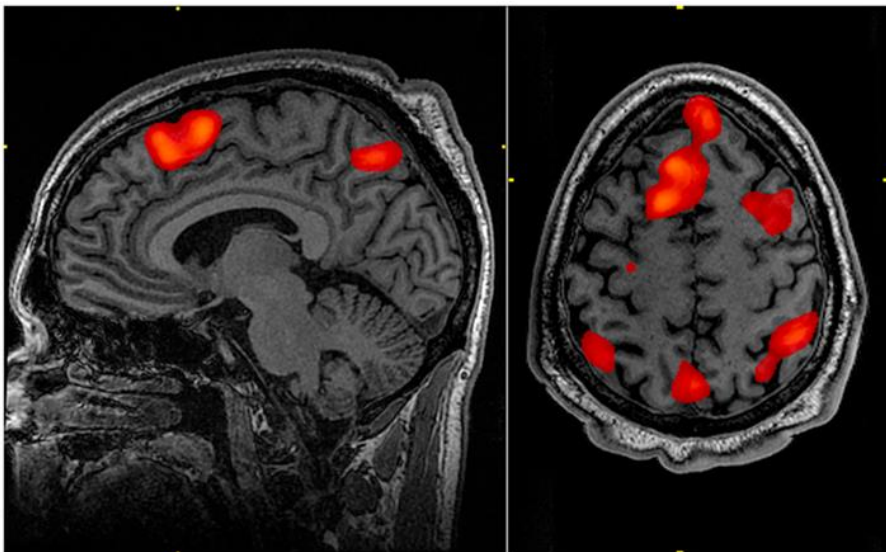
College Students

- 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?

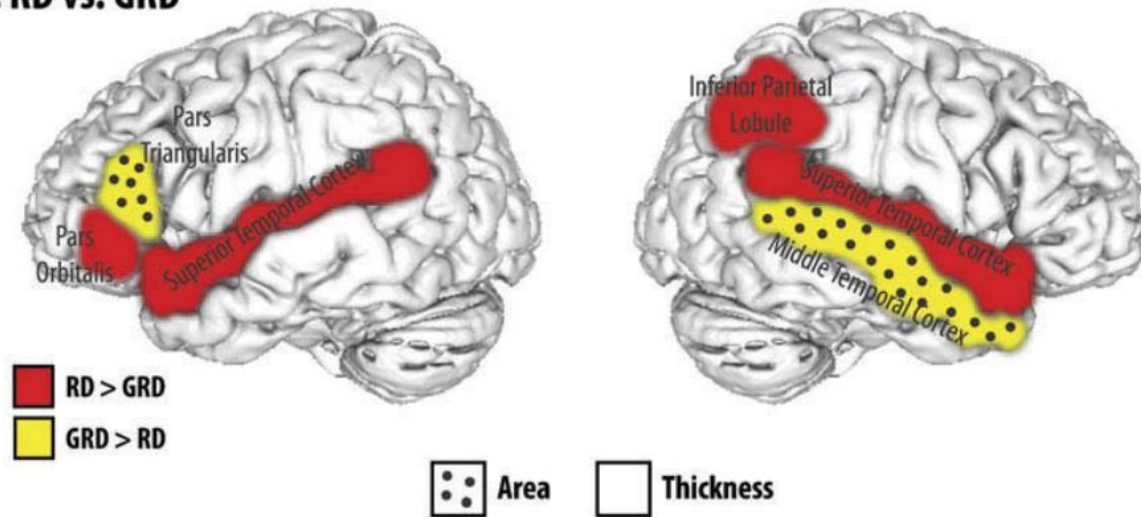
Food/Blood

Bear/Chair

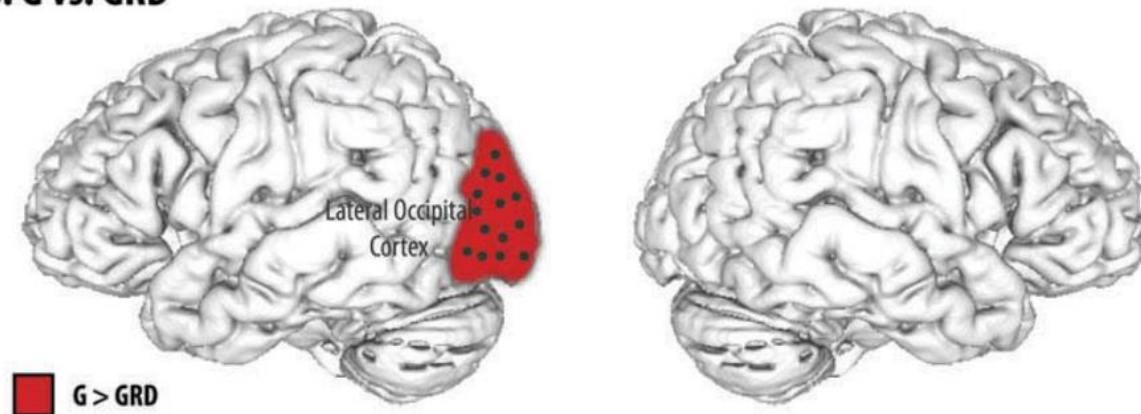
Pea/Play

Town/Gown

A. RD vs. GRD

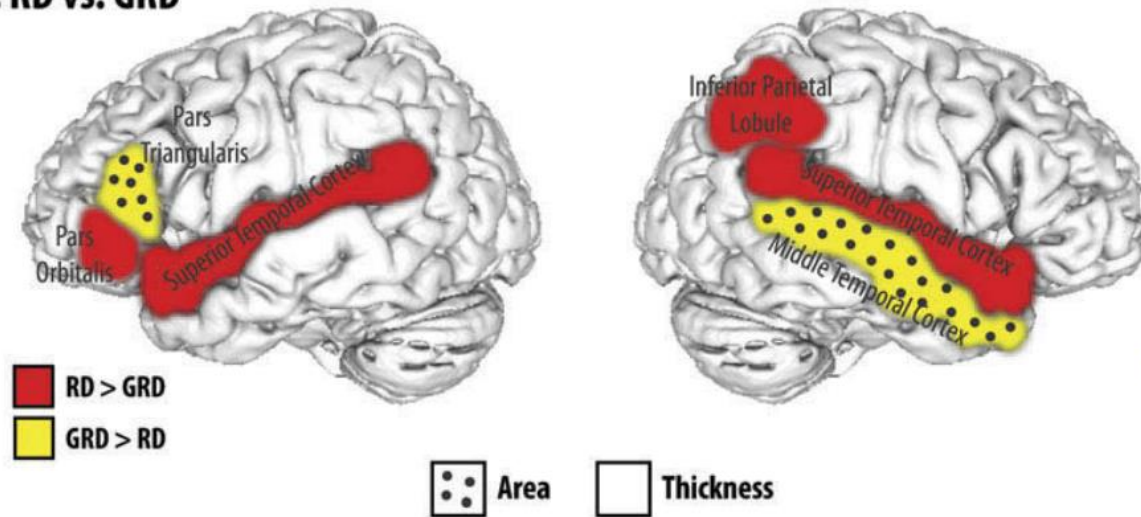


B. G vs. GRD

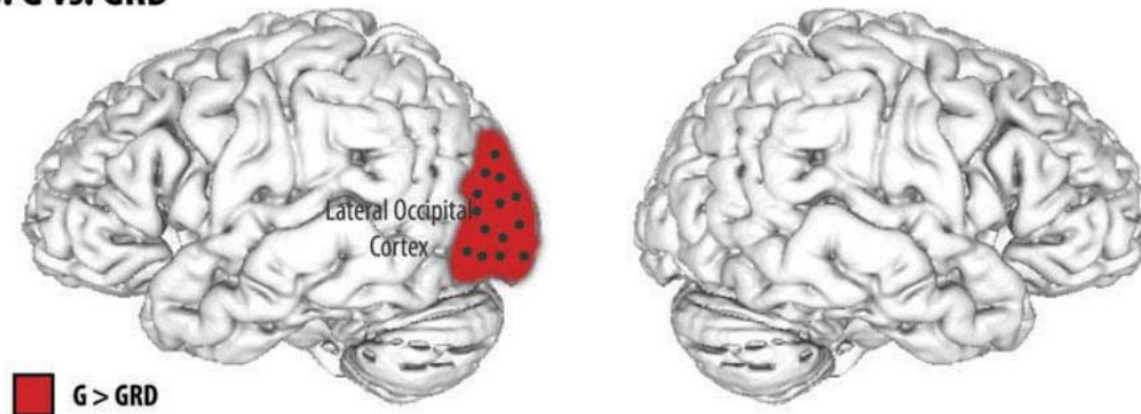


Structure-Brain Correlation Approach

A. RD vs. GRD

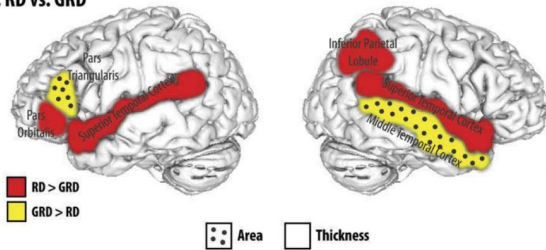


B. G vs. GRD

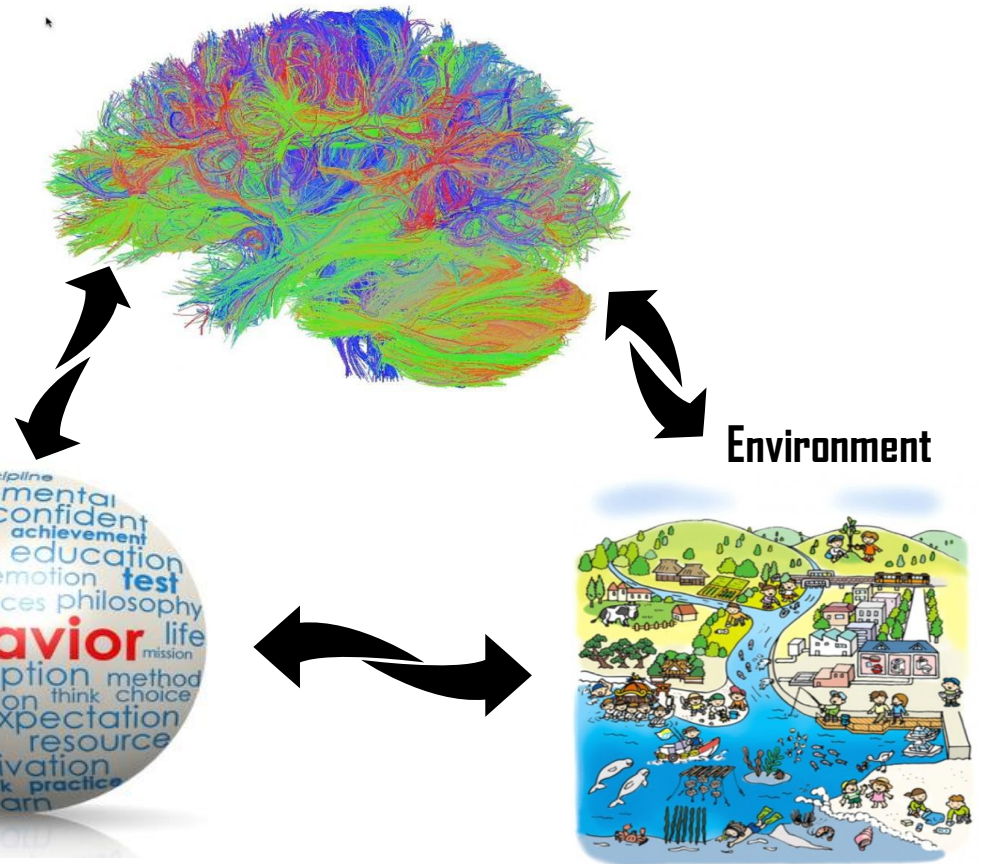
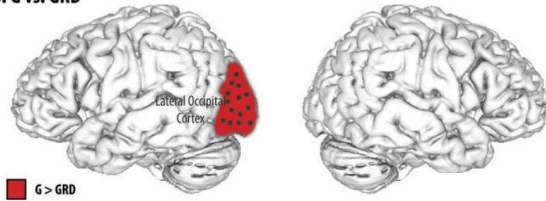


Structure-**SPURIOUS?** Correlation Approach

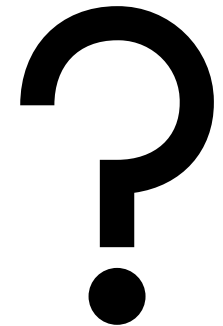
A. RD vs. GRD



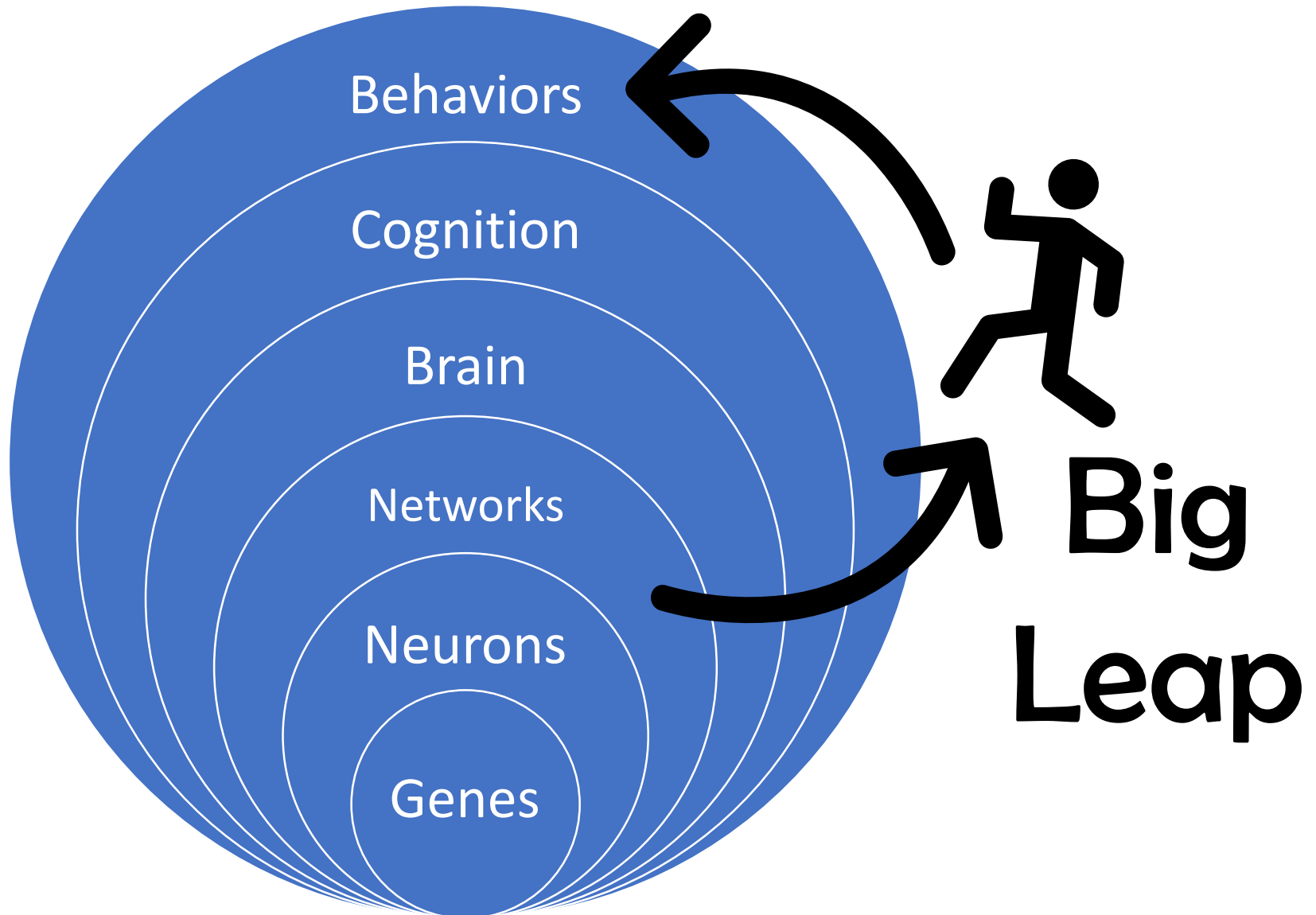
B. G vs. GRD



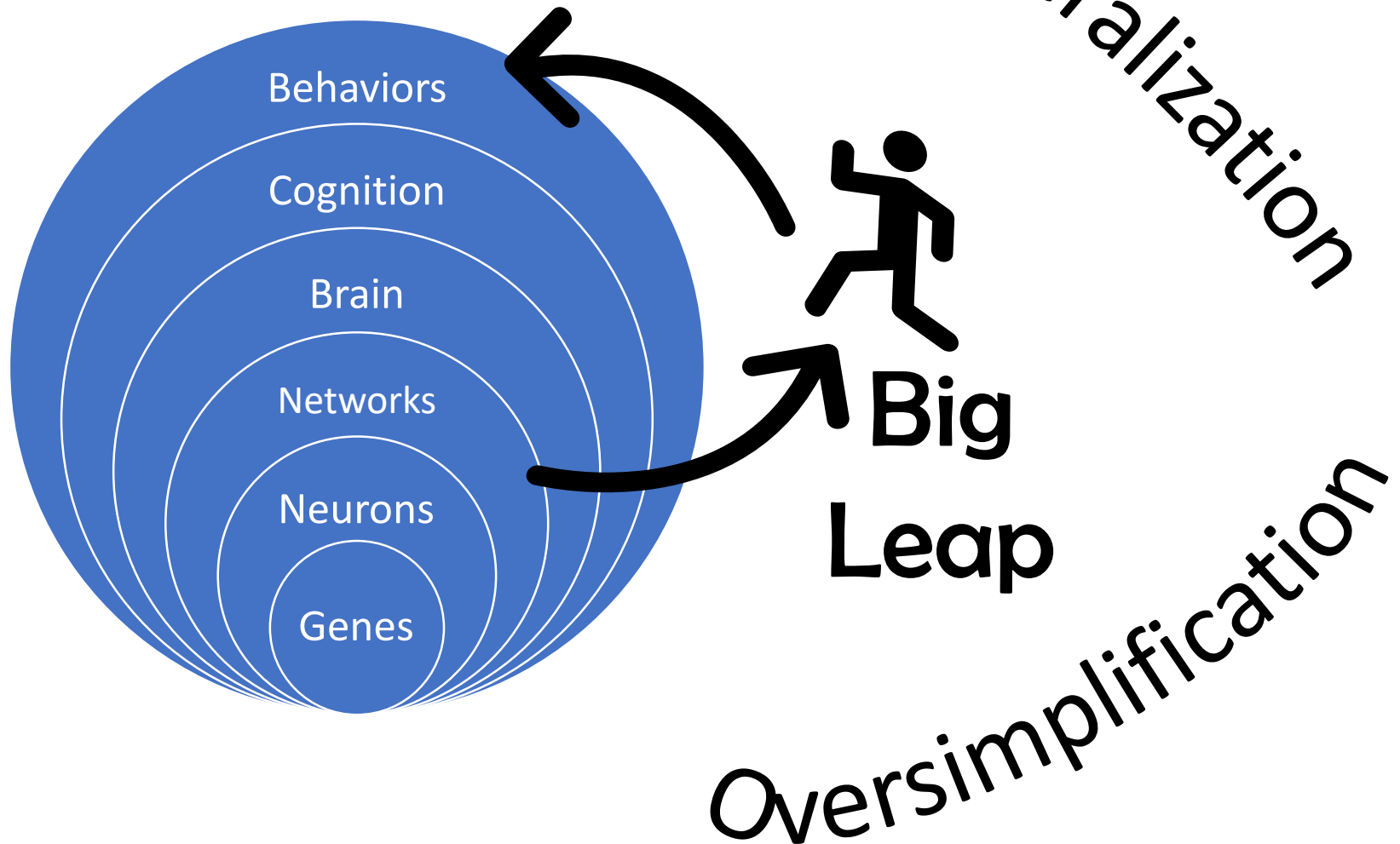
Intelligence/Cognitive Abilities Tests
Mental Rotation
Rhyming Ability



Levels of Analysis



Levels of Analysis



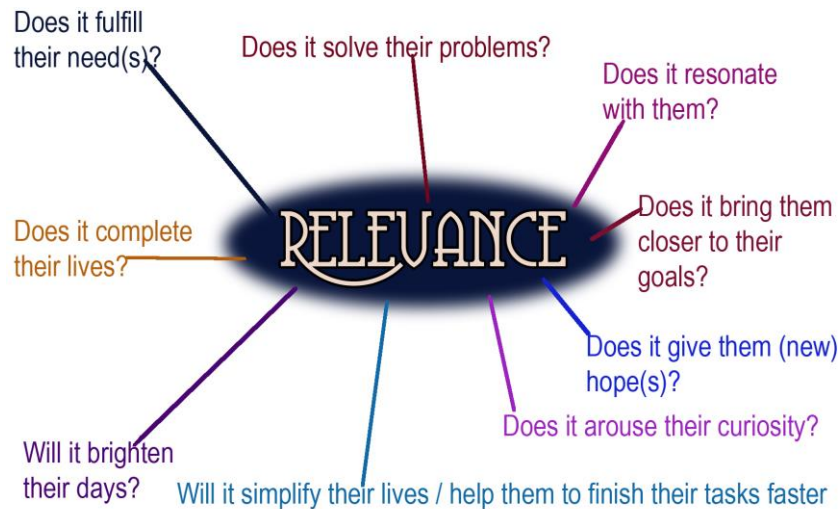
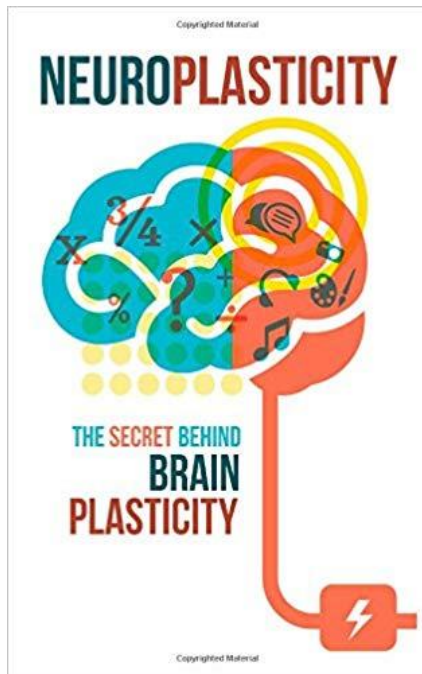
Common Questions

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

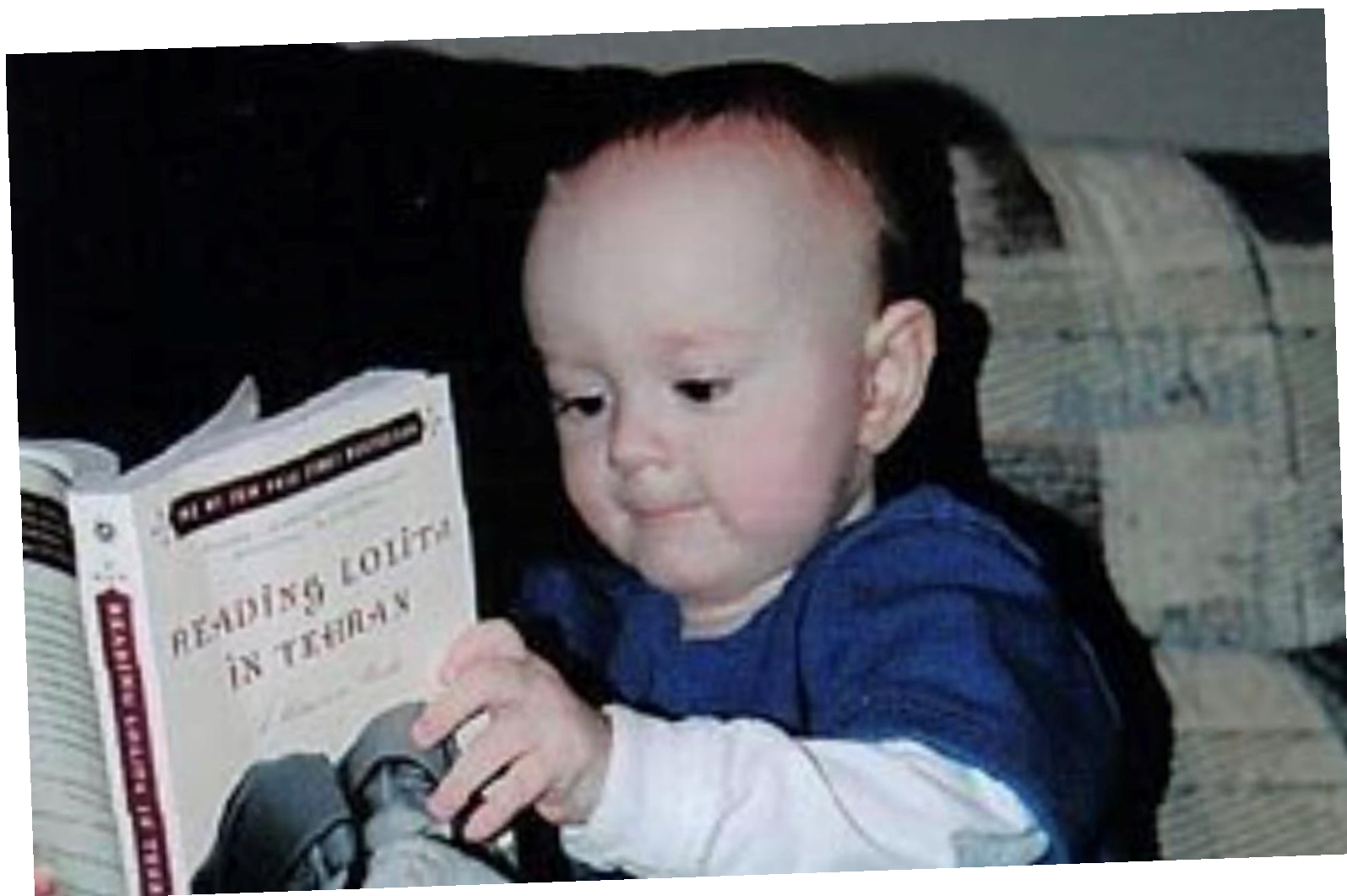
Is this an educational practice that has its origin in neuroscience rather than an existing educational practice that is explained/rationalized by neuroscience?



GROUPE
novelty



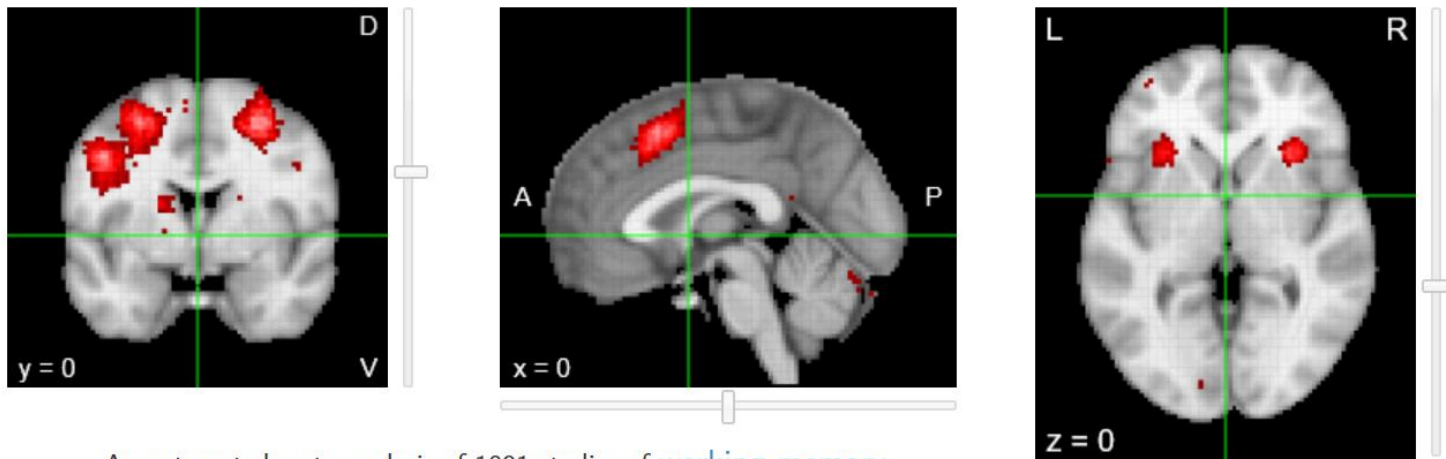
Earn Rewards Points



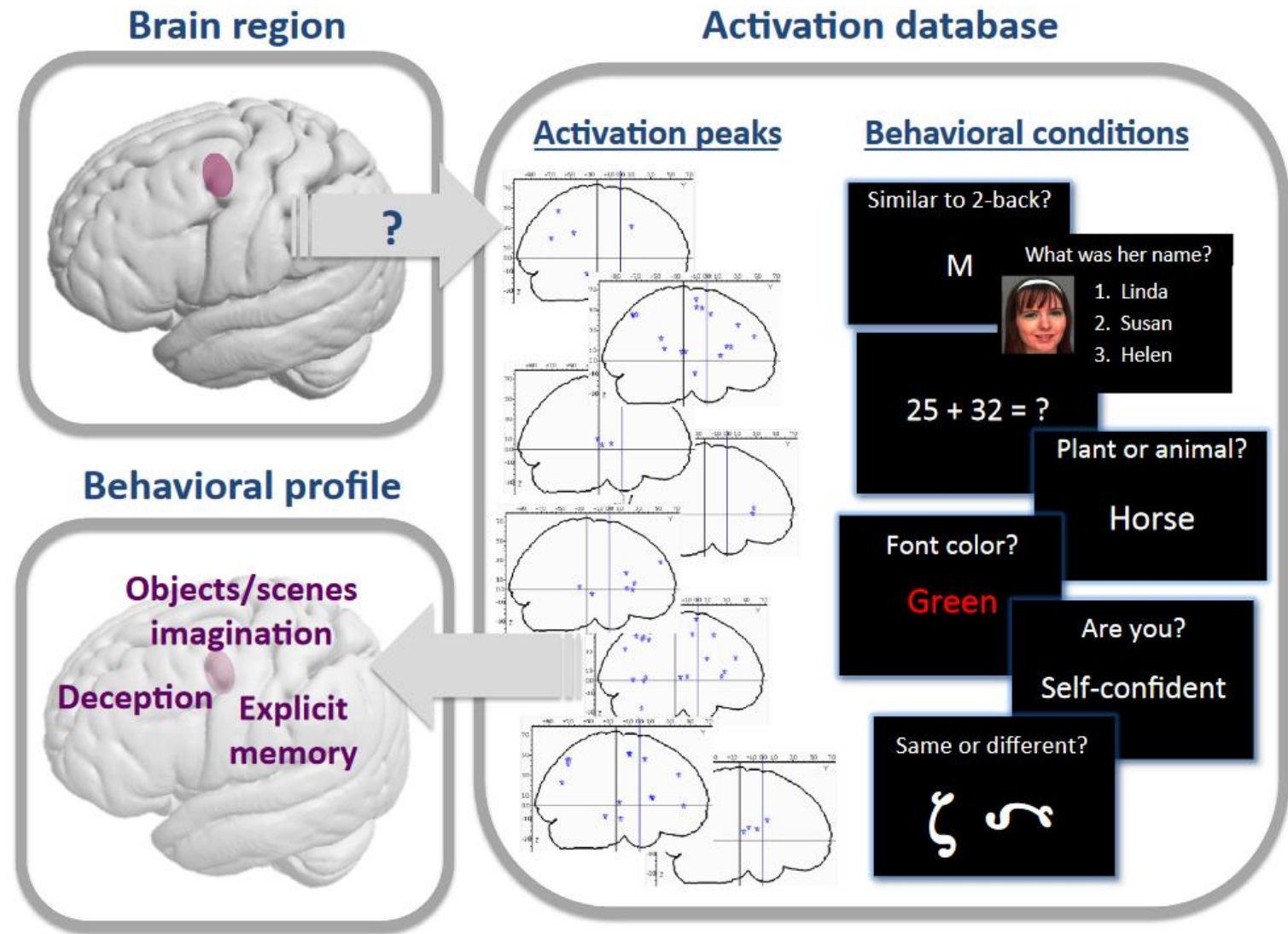
neurosynth.org

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:

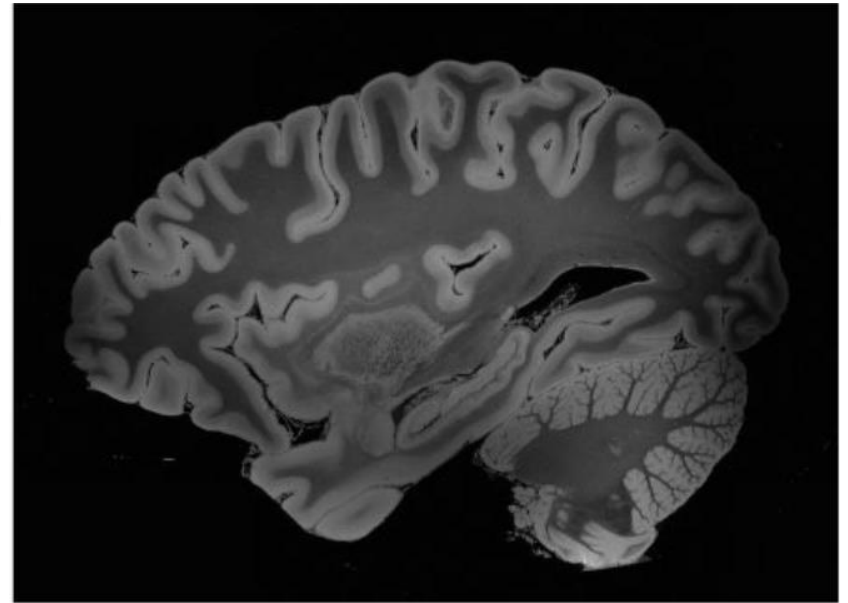


An automated meta-analysis of 1091 studies of [working memory](#)





Erin Morris Miller, PhD
Bridgewater College
emmiller@bridgewater.edu
Twitter: @DoctorErinCat



100 Micron MRI

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