

# Organization

## Executive Functions (EF)

March 31, 2023

Jim Russell Ph.D.

# Learning Objectives



Identifying  
shortcomings



Managing  
expectations



Taking on new  
strategies

# Disclaimer

This is for educational purposes only and not meant to be diagnostic or therapeutic in nature.



# Key Learning Resources

Barkley, R. A. (2012). *Executive functions: What they are, how they work, and why they evolved*. Guilford Press.

Barrett, L. F. (2020). *Seven and a half lessons about the brain*. Houghton Mifflin.

Braaten, E., & Willoughby, B. (2014). *Bright kids who can't keep up: Help your child overcome slow processing speed and succeed in a fast-paced world*. Guilford Publications.

Brown, P. C., Roediger III, H. L., & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Harvard University Press.

# Key Learning Resources (Cont.)


Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*. Broadway Business.

Schwartz, T., & McCarthy, C. (2007). Manage your energy, not your time. *Harvard business review*, 85(10), 63.

Shaywitz, S. E., & Shaywitz, J. (2020). *Overcoming dyslexia: Completely revised and updated*. Hachette UK.

Silver, L. B. (2010). *The misunderstood child: Understanding and coping with your child's learning disabilities*. Harmony.

Various articles from *ADDitude Magazine*, *ADHD Report*, *Understood.org*, and Harvard's Center on the Developing Child.



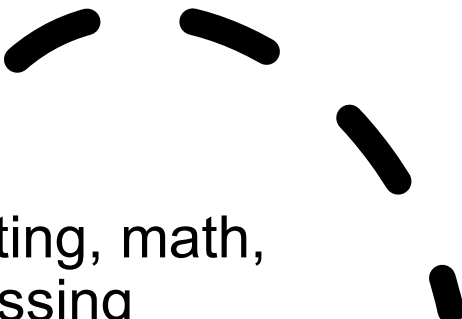
# As Washington University students you have proven exceptional in at least two ways

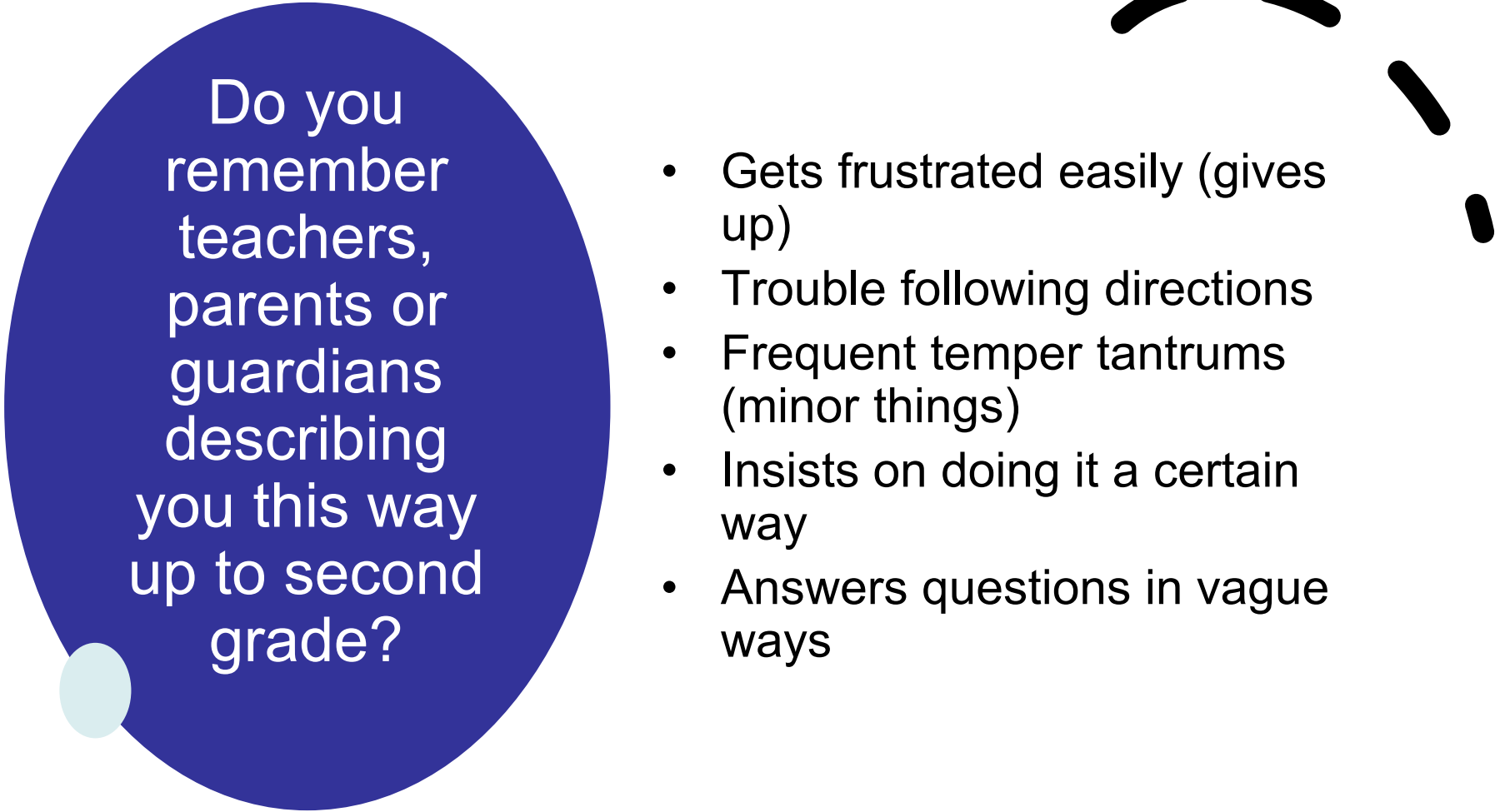
Exceptional in  
academics/athletics  
through admissions.

Self-selected to be  
here today to learn  
about executive  
function/organization.



Do you  
ever feel  
you  
have  
any of  
these?

- 
- LD in reading, writing, math, memory, or processing speed
  - ADHD  
Inattentive/Hyperactive/  
Impulsive presentations
  - Anxiety
  - Depression
  - PTSD
  - ect.



Do you remember teachers, parents or guardians describing you this way up to second grade?

- Gets frustrated easily (gives up)
- Trouble following directions
- Frequent temper tantrums (minor things)
- Insists on doing it a certain way
- Answers questions in vague ways



# Do you remember teachers, parents or guardians describing you this way in middle school?

- Starts tasks, distracted, no completion
- Often mixes up assignments, wrong books
- Messy desk and backpack
- Wants friends to come over- no planning
- Focuses on the least important point




Do you remember teachers, parents or guardians describing you this way in your teenage years?

- Loses track of time (Time Blind)
- Engages in risky behavior
- Trouble working in groups
- Forgets to do paperwork (Applications)
- Overly optimistic or unrealistic

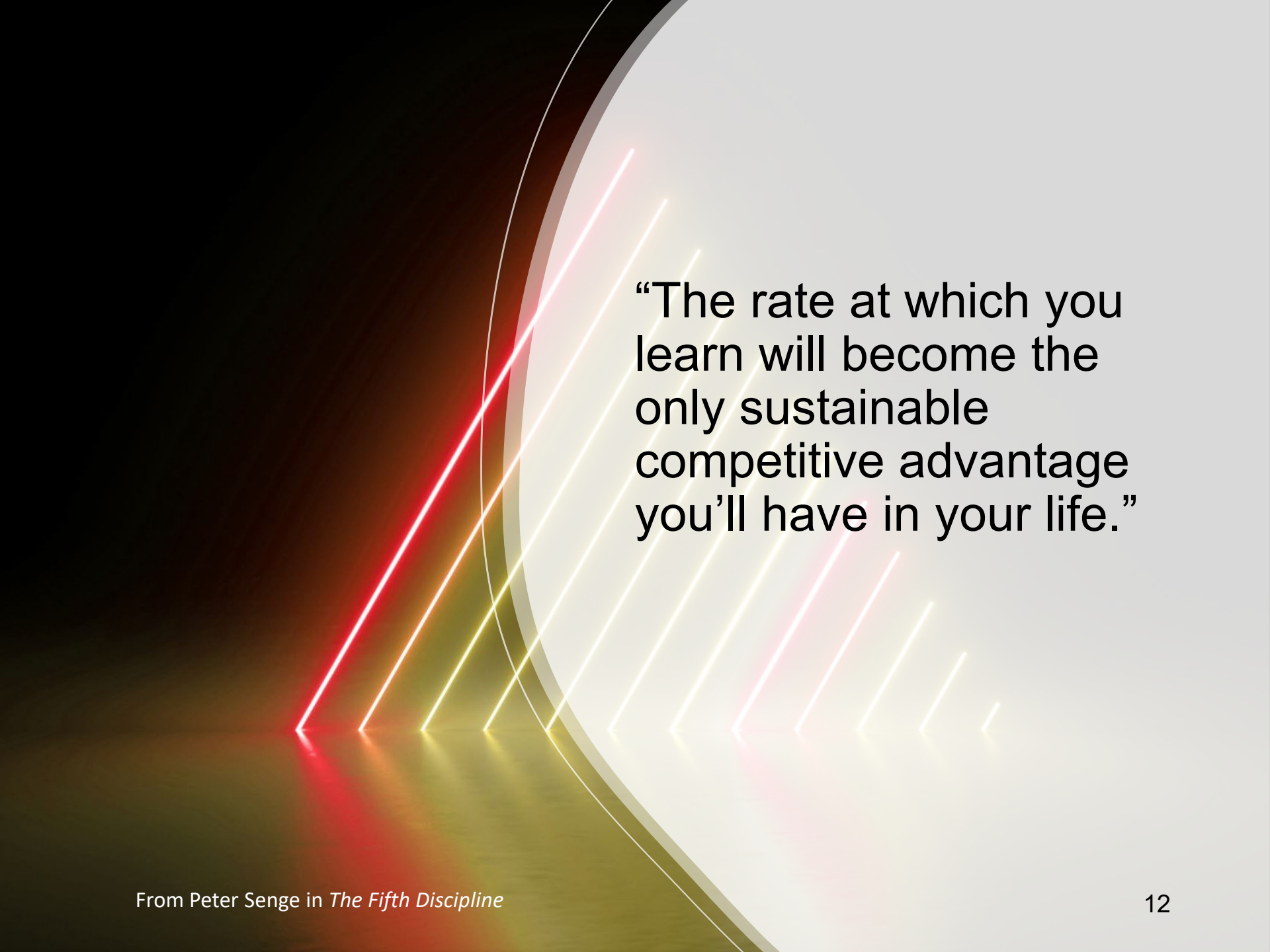




## Slow processing speed and EF deficits



**“Slow processing speed** isn’t a problem with executive function. But it can create problems with executive function. Not being able to quickly size up situations and consider the options means that you can’t solve problems as fast as you need to.”

The background features a large, dark circular arc on the left side. From the bottom left, several parallel lines of light extend towards the right, transitioning in color from red to yellow to white. The lines are slightly blurred, creating a sense of motion or depth. The overall aesthetic is modern and futuristic.

“The rate at which you learn will become the only sustainable competitive advantage you’ll have in your life.”

# Dr. Jim's concept of EF

---

Time management

Organization (As opposed  
to Dis Org.)

Task completion (For  
uninteresting boring tasks)

Self-regulation



# Debunking Old Study Advice and Embracing New Neuroscience-Based Strategies

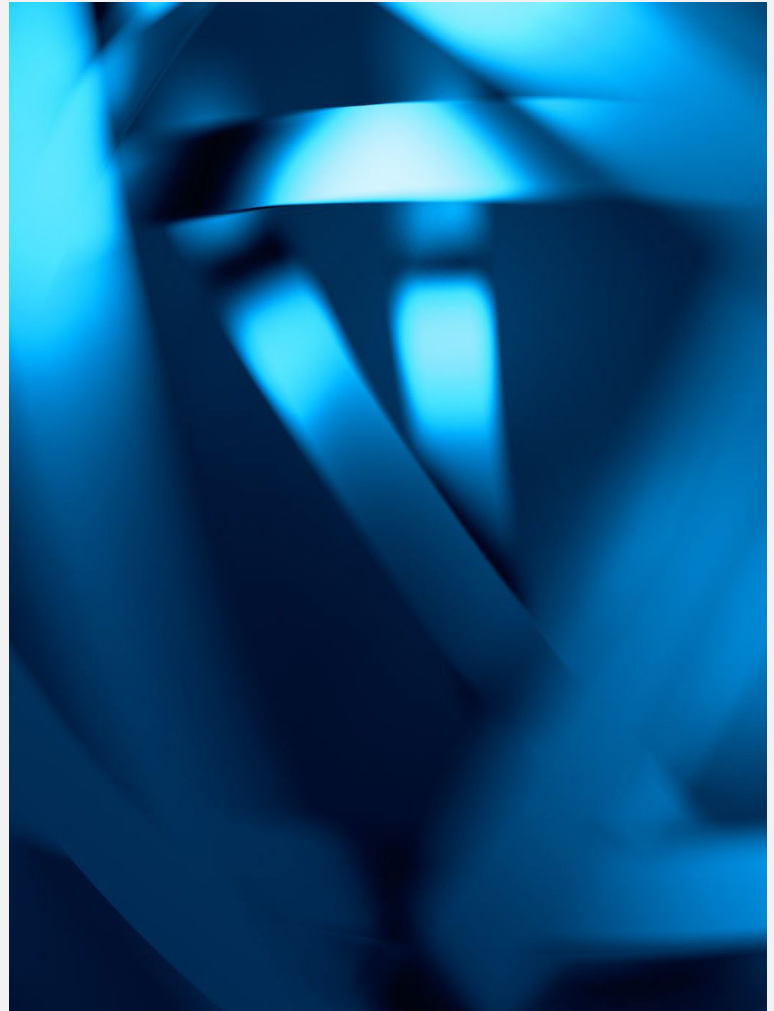
## Old Advice:

- Re-reading material to improve understanding.
- Cramming sessions for better retention.
- Focusing on one topic at a time (massed practice).
- Relying on highlighting or underlining key points.
- Studying in the same environment consistently.

## Debunking Old Study Advice and Embracing New Neuroscience-Based Strategies (Cont.)

### New Neuroscience-Informed Strategies:

- Spaced repetition for long-term retention.
- Interleaving different topics to enhance learning.
- Retrieval practice (e.g., self-quizzing) to strengthen memory.
- Elaboration and explaining concepts in your own words.
- Utilizing varied learning environments for better recall.





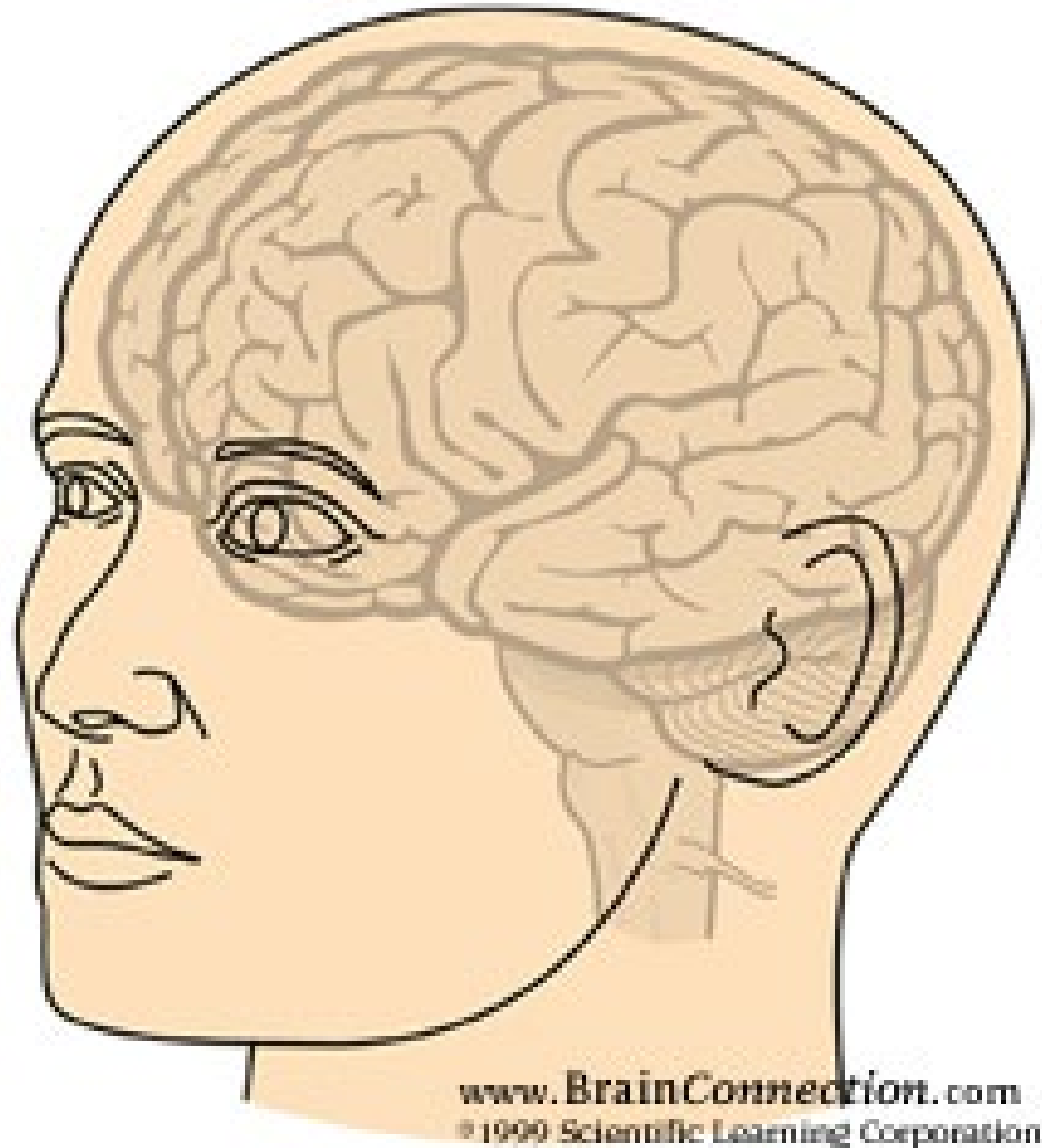
# Sally Shawitz

In *Overcoming Dyslexia*, she writes, “Persistent difficulties in learning a foreign language provide an important clue that a student may be dyslexic.”

To put it simply, many college students who do not have an early diagnosis of dyslexia often end up getting tested after struggling in Spanish 101 or a similar course.



It's all about  
Neurobiology



[www.BrainConnection.com](http://www.BrainConnection.com)  
© 1999 Scientific Learning Corporation

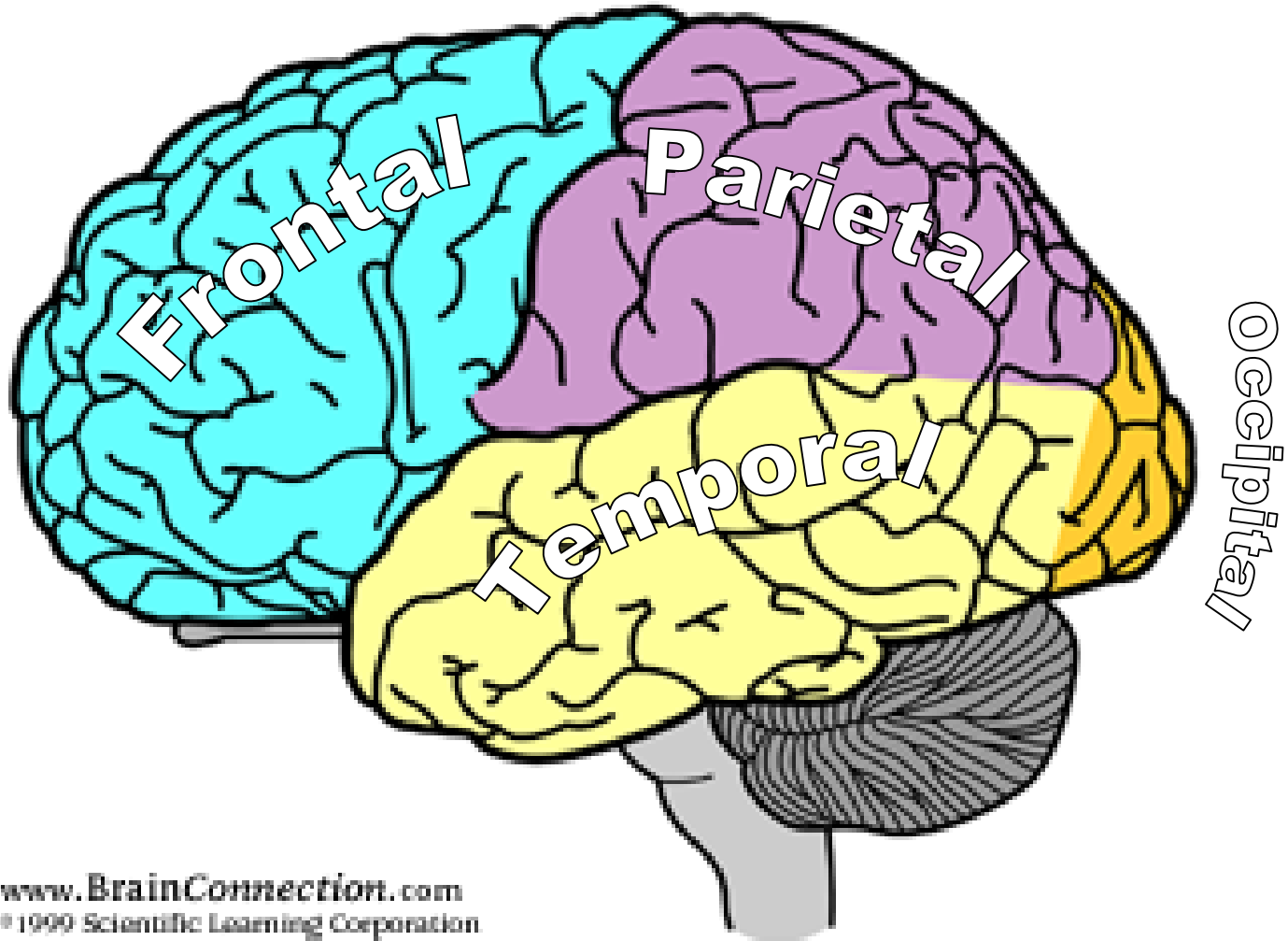


# Neurobiology

Lobes:

- » Frontal
- » Temporal
- » Parietal
- » Occipital

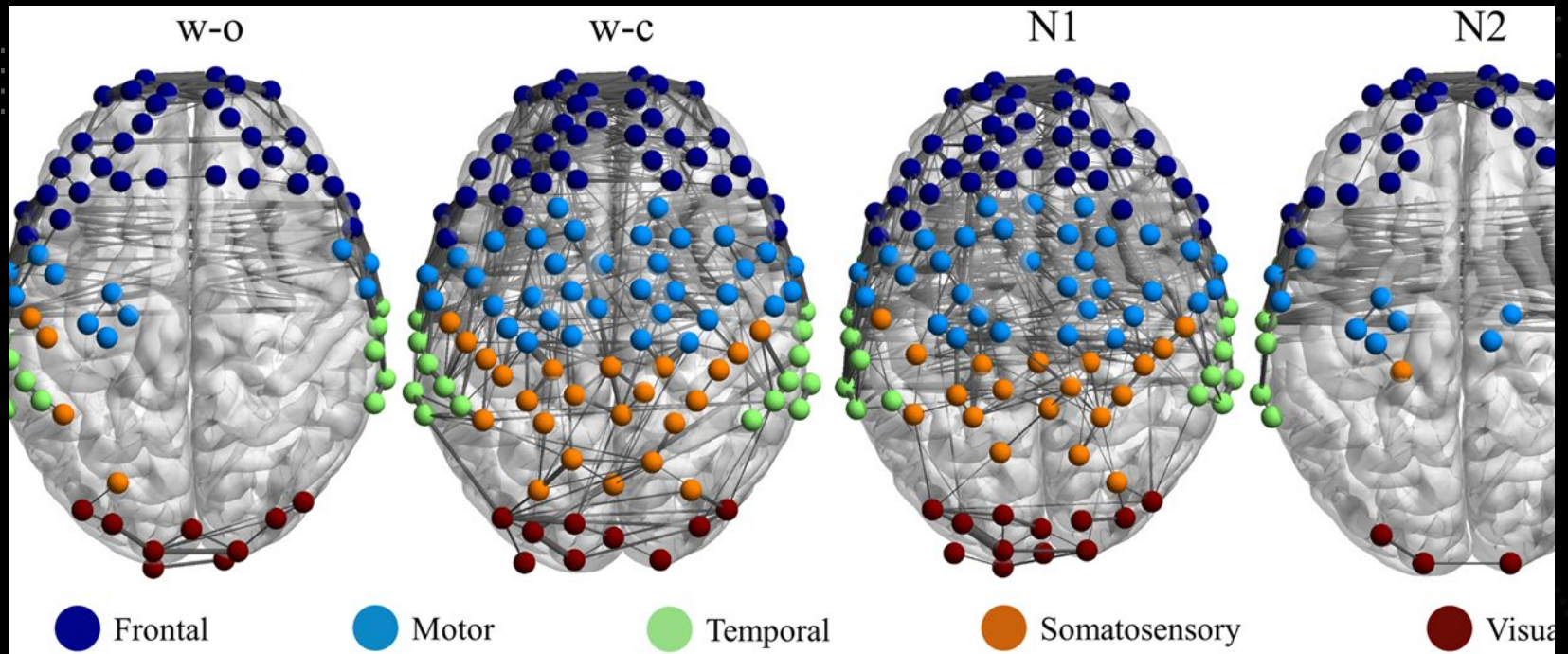
# Lateral Brain



[www.BrainConnection.com](http://www.BrainConnection.com)  
© 1999 Scientific Learning Corporation

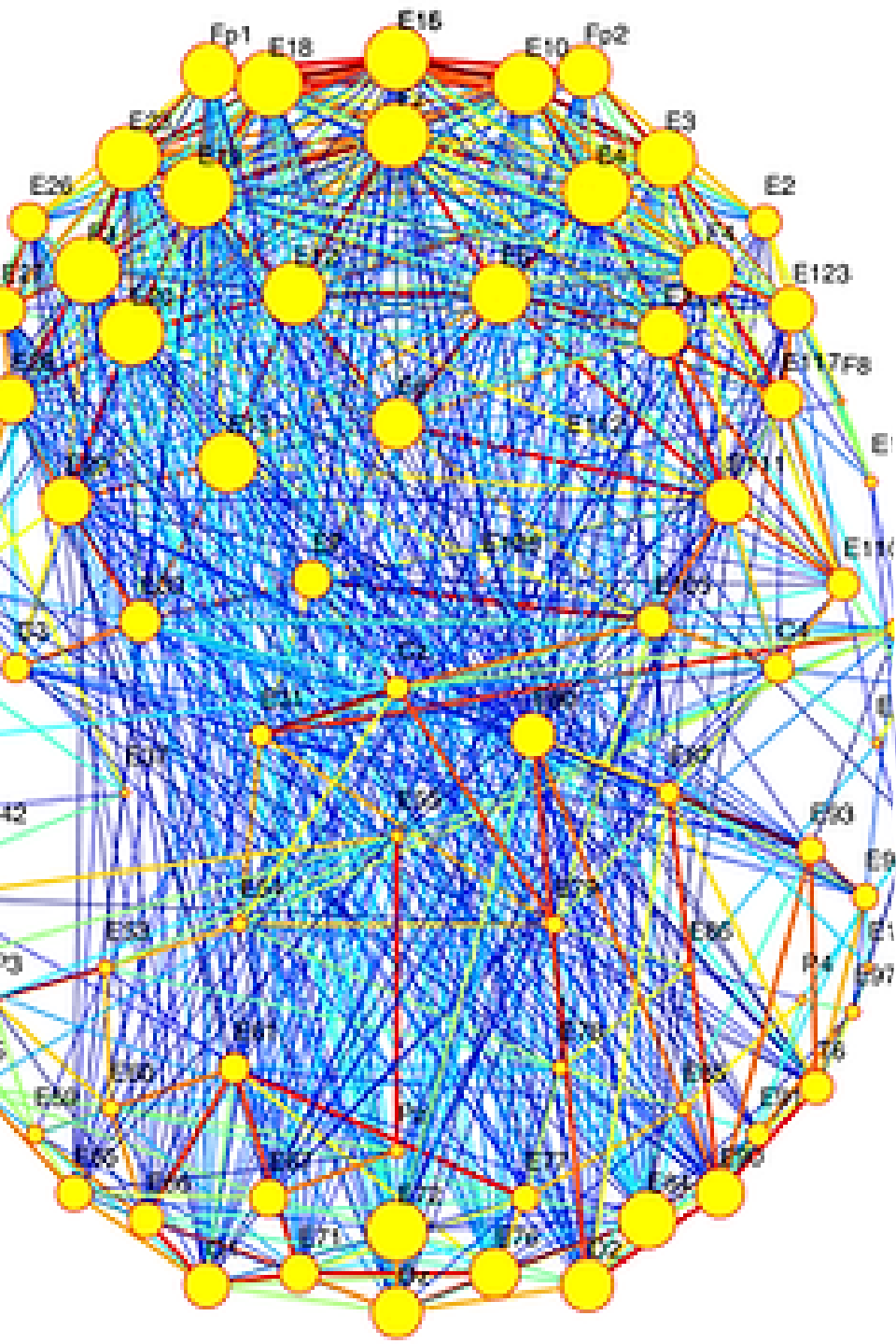


# Neuronal network



## Exploring brain functional connectivity in rest and sleep states: a fNIRS study

From a 2018 article in Nature by Nguyen, T., Babawale, O., Kim, T. et al.



# From Johann H. Martínez's Tutorial for Complex Brain networks

---

# Informal Assessment Activity



**READING SPEED  
ASSESSMENT**



**WRITING SPEED  
ASSESSMENT**

# Washington University's Services for Students







# Learning objectives for next week's talk on procrastination



Understand procrastination causes and impacts



How the four circuits of executive function relate to procrastination



Explore strategies to overcome procrastination

+

0



# References

Barkley, R. (n.d.). What is Executive Function? 7 Deficits Tied to ADHD. *ADDitude*.

Barkley, R. A. (2012). *Executive functions: What they are, how they work, and why they evolved*. Guilford Press.

Barrett, L. F. (2020). *Seven and a half lessons about the brain*. Houghton Mifflin.

Belsky, G. (n.d.). What is Executive Function? *Understood.org*.

Braaten, E., & Willoughby, B. (2014). *Bright kids who can't keep up: Help your child overcome slow processing speed and succeed in a fast-paced world*. Guilford Publications.

Brown, P. C., Roediger III, H. L., & McDaniel, M. A. (2014). *Make it stick: The science of successful learning*. Harvard University Press.

# References (Cont.)

Center on the Developing Child. (n.d.). Executive Function & Self-Regulation. Harvard University.

Martínez, J. H. (2015, April 6). Tutorial for Complex Brain Networks. Neurocomplexity.

Morin, A. (n.d.). Trouble With Self-Regulation: What You Need to Know. Understood. Reviewed by Braaten, E., PhD.

Morin, A. (n.d.). Trouble With Self-Regulation: What You Need to Know. Understood. Reviewed by Braaten, E., PhD.

Nguyen, T., Babawale, O., Kim, T., Jo, H. J., Liu, H., & Kim, J. G. (2018). Exploring brain functional connectivity in rest and sleep states: a fNIRS study. *Scientific reports*, 8(1), 16144.

Orwig, R. (2021, July 22). Why Reviewing Your Notes is a Terrible Med School Study Strategy (And What You Should Do Instead). StatMed Learning.

# References (Cont.)

Orban, S. A., Rapport, M. D., Friedman, L. M., & Kofler, M. J. (2014). Executive function/cognitive training for children with ADHD: Do results warrant the hype and cost?. *The ADHD Report*, 22(8), 8-14.

Rodden, J. (n.d.) What Is Executive Dysfunction? Sign and Symptoms of EFD. ADDitude.

Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*. Broadway Business.

Schwartz, T., & McCarthy, C. (2007). Manage your energy, not your time. *Harvard business review*, 85(10), 63.

Shaywitz, S. E., & Shaywitz, J. (2020). *Overcoming dyslexia: Completely revised and updated*. Hachette UK.

Silver, L. B. (2010). *The misunderstood child: Understanding and coping with your child's learning disabilities*. Harmony.