

Procrastination and Executive Functions (EF)

April 7th, 2023

Jim Russell Ph.D.

Last week's talk



Identifying your shortcomings



Managing expectations



Taking on new strategies



Today's Learning objectives



Understand procrastination causes and impacts



How the four circuits of executive function relate to procrastination



Explore strategies to overcome procrastination

Disclaimer

This is educational purposes only and not meant to be a diagnosis 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.)

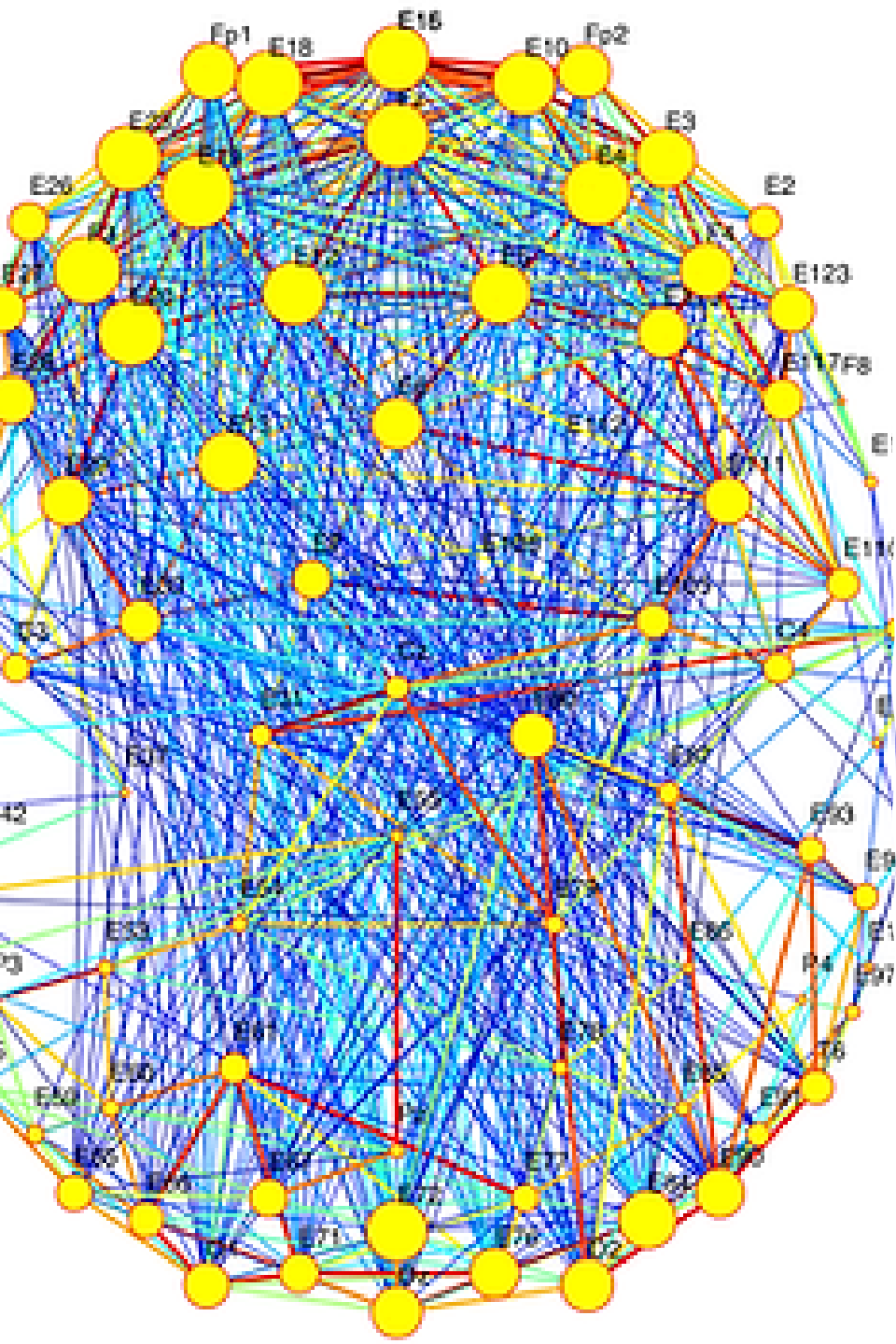
Senge, P. M. (2006). *The fifth discipline: The art and practice of the learning organization*. Broadway Business.

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.



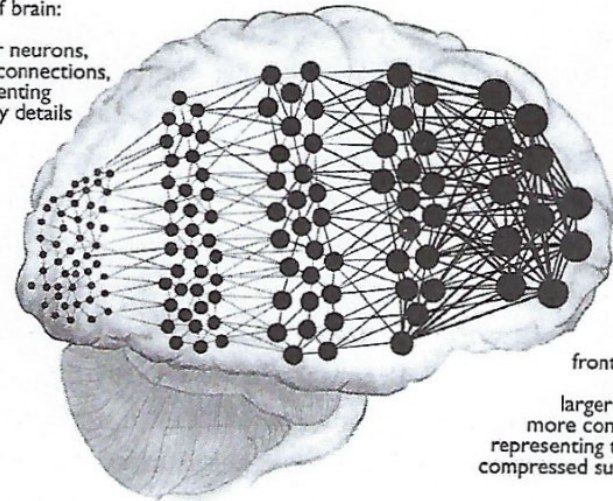
From Johann H. Martínez's Tutorial for Complex Brain networks

From Lisa Feldman Barrett's book

116 *Seven and a Half Lessons About the Brain*

back of brain:

smaller neurons,
fewer connections,
representing
sensory details



front of brain:

larger neurons,
more connections,
representing the most
compressed summaries

Compression in the brain, which enables abstraction (this diagram is conceptual, not anatomically precise)

Flow chart for processing information:

Input

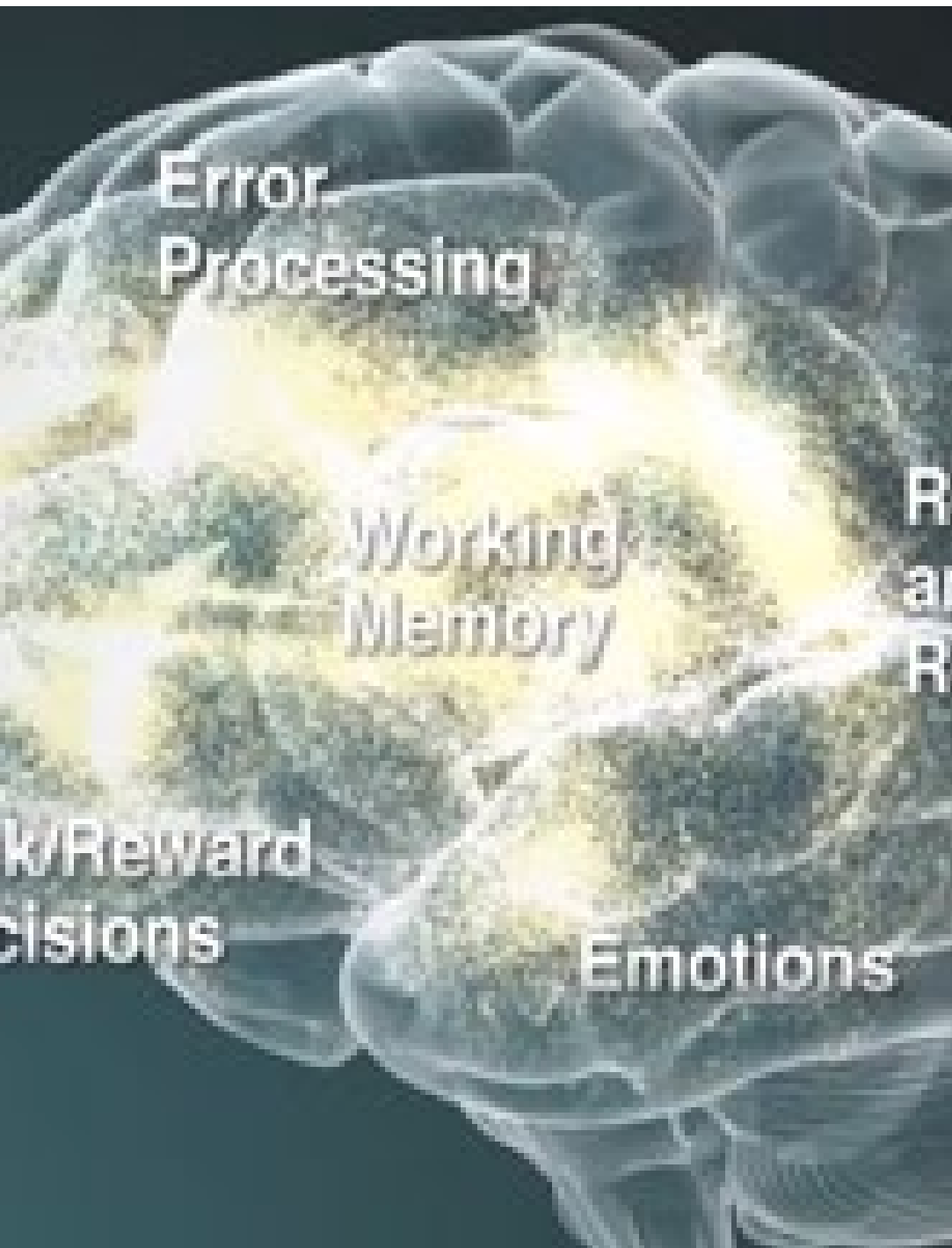
Integration

Memory

Output

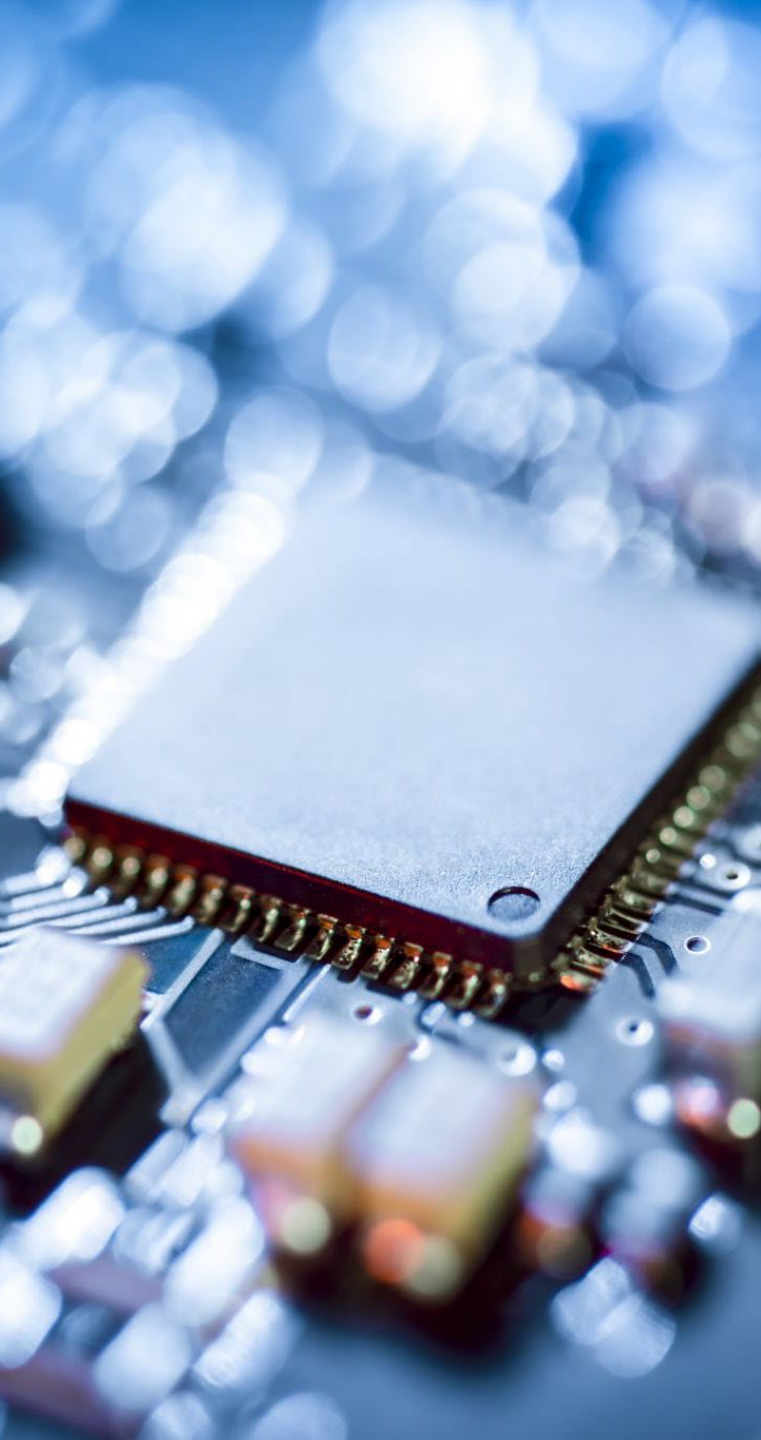


Thinking skills that are *coordinated* with the way the brain works are commonly called Executive Functions (EF).



“Each type of executive function skill draws on elements of the others.”

Based on content from Harvard's Center on the Developing Child



Neurobiology of EF

Four circuits:

What

When

Why

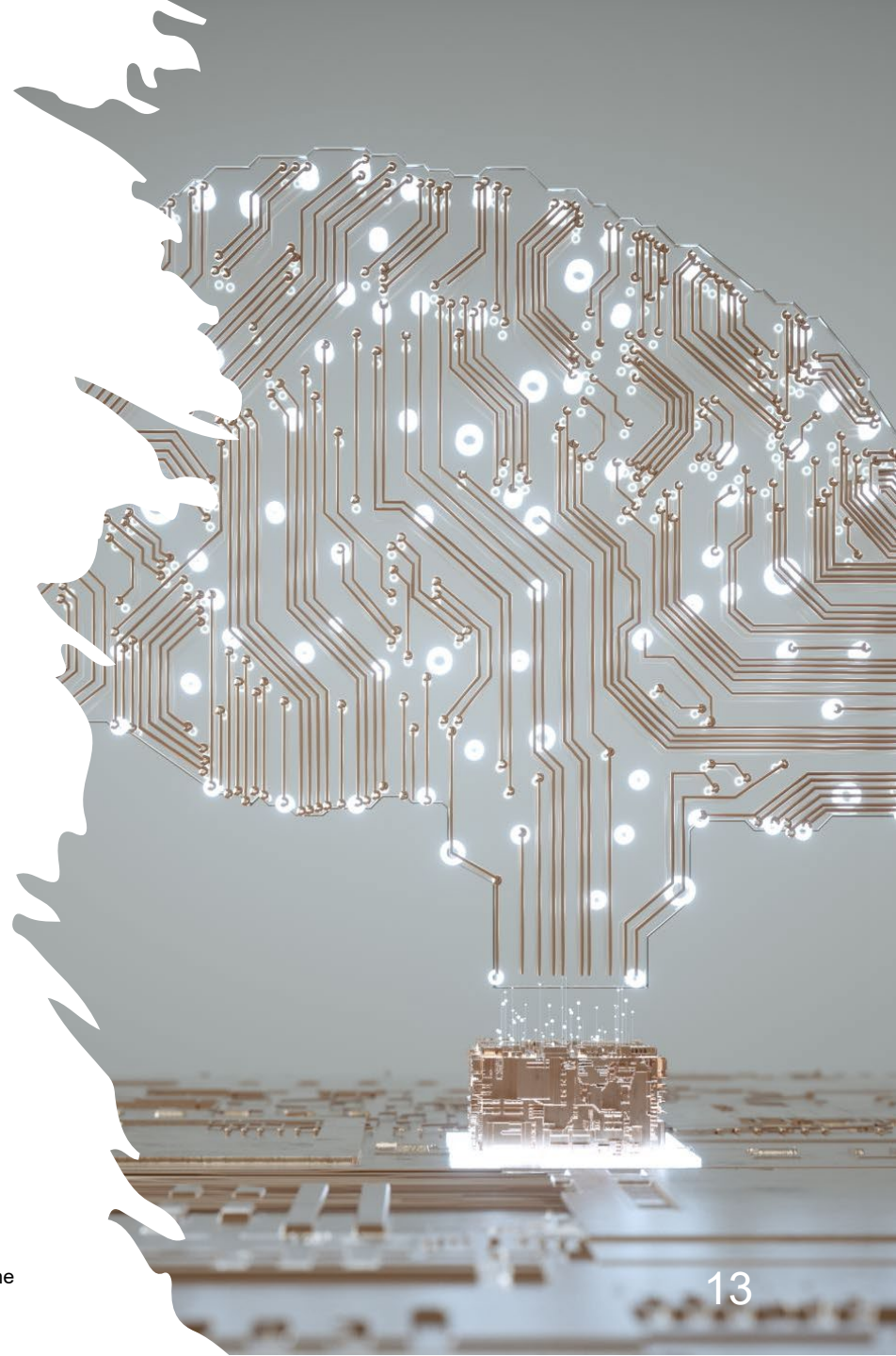
Who

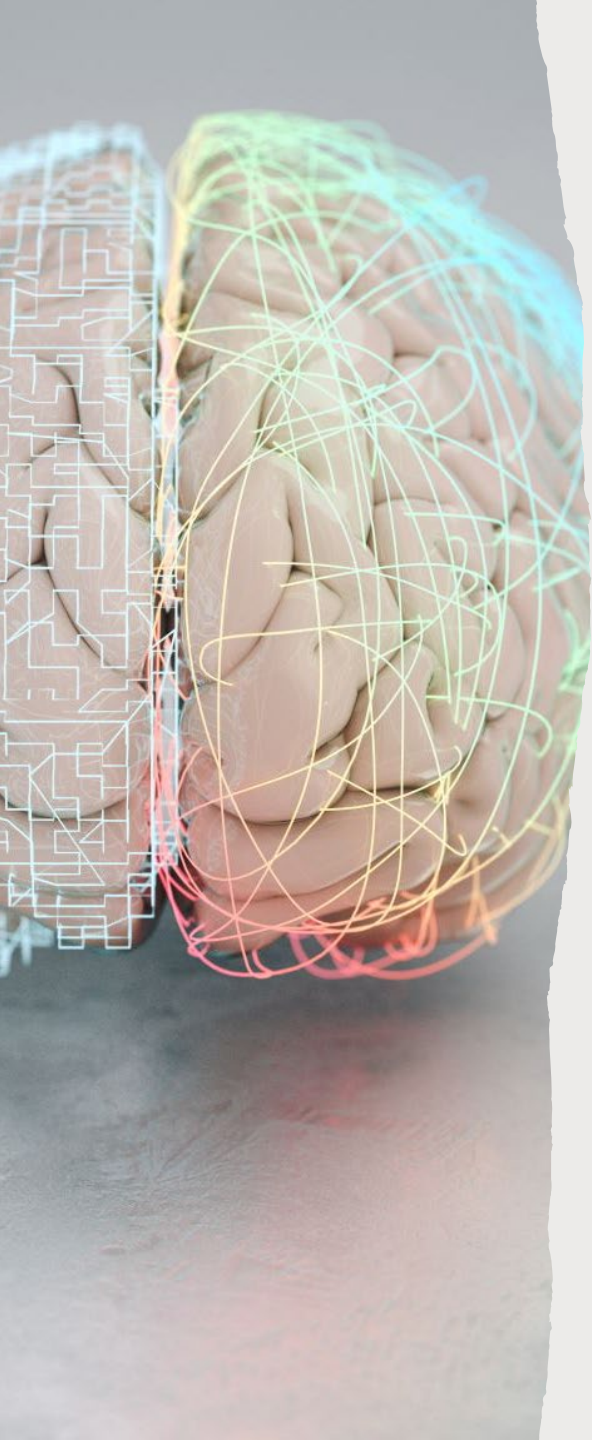
FOUR EF CIRCUITS

The “What” Circuit: Goes from the front to the back of the brain and is linked to working memory.

(From the frontal lobe to the basal ganglia, particularly a structure called the striatum).

The “What” Circuit is linked to working memory, so what we think starts to guide what we do. This is particularly true when it comes to plans, goals, and the future.



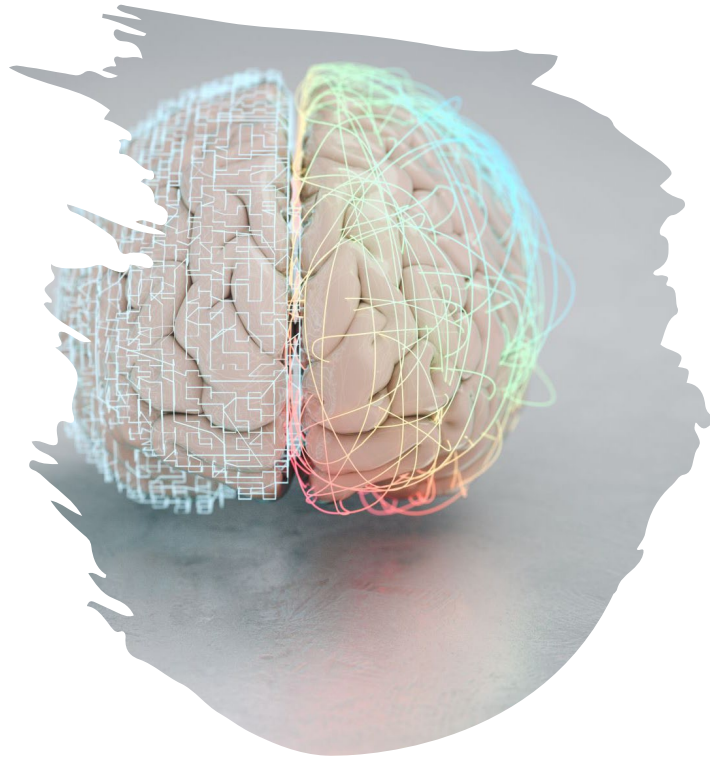


FOUR EF CIRCUITS (CONT.)

The “When” Circuit: This second circuit goes from the same prefrontal area back into a very ancient part of the brain called the cerebellum.

The “When” Circuit is the timing circuit of the brain — it coordinates not just how smooth behavior will be and the sequence of behavior, but also the timeliness of your actions and when you do certain things.

FOUR EF CIRCUITS (CONT.)



The “Why” Circuit: The third circuit also originates from the frontal lobe, going through the central part of the brain (known as the anterior cingulate) to the amygdala — the gateway to the limbic system.

It’s often referred to as the “hot” circuit because it’s linked to our emotions.

FOUR EF
CIRCUITS
(CONT.)

The “Why” Circuit:
“hot” circuit

It’s where what we
think controls how
we feel, and vice
versa.

FOUR EF
CIRCUITS
(CONT.)

The “Why”
Circuit: “hot”
circuit

It’s the final
decision maker
in all our plans.

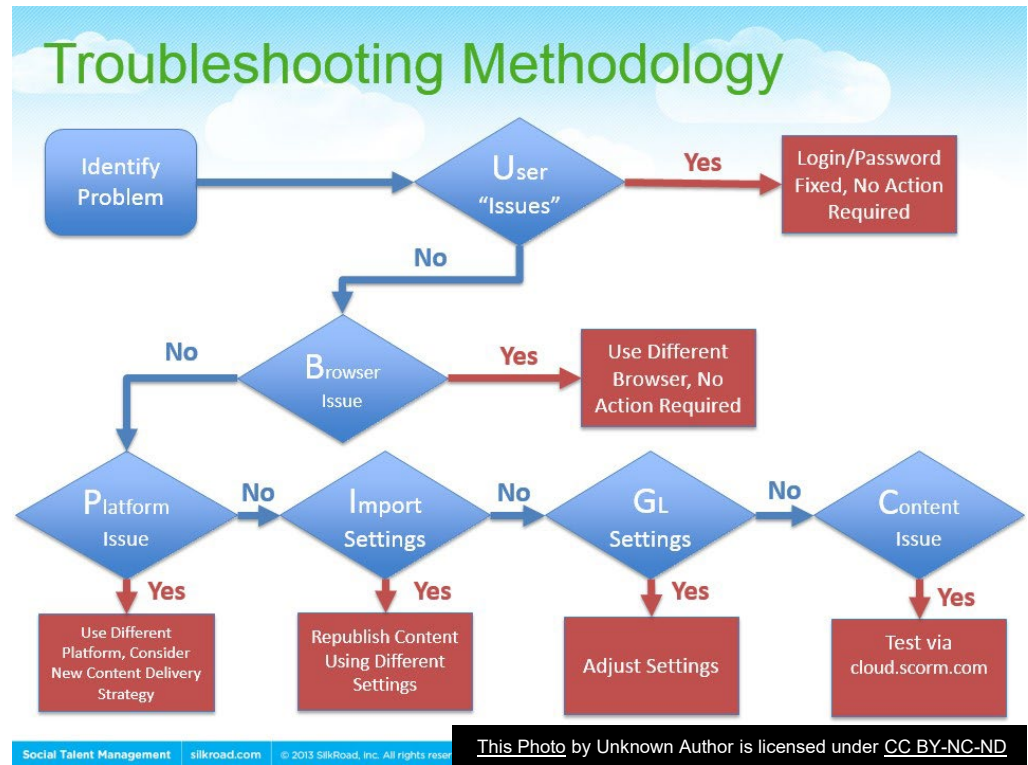
FOUR EF
CIRCUITS
(CONT.)

The “Why” Circuit: “hot” circuit

When thinking about multiple things we could be doing, this is the circuit that eventually chooses among the options based on how we feel about them and their emotional and motivational properties.

The next action

123
321
231
etc



FOUR EF
CIRCUITS
(CONT.)

The “Who” Circuit: This final circuit goes from the frontal lobe to the very back of the hemisphere.

It’s where self-awareness takes place — it’s where we’re aware of what we do, how we feel (both internally and externally), and what’s happening to us.



Causes of Procrastination



Feeling
overwhelmed

Perfectionism

Lack of clarity



Beat procrastination by lowering the bar



Study five Spanish vocabulary words at a time



Format your document for an essay and write the first sentence



Ask you chemistry professor for help with the first question of the homework assignment

Washington University's Services for Students



Learning objectives for next week's talk on Task Initiation and Management



Identify obstacles and develop strategies for task initiation



Recognize and prevent procrastination in task management



Apply evidence-based strategies for effective task management

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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.

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

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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.

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