

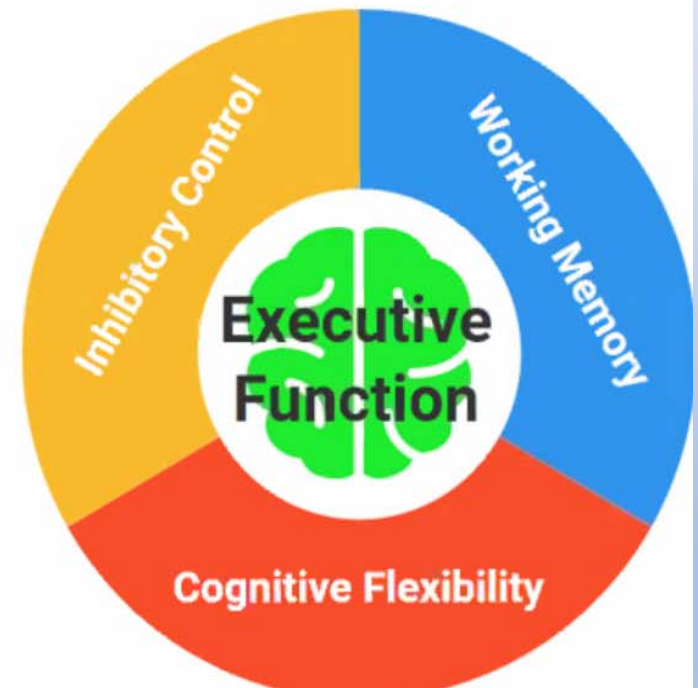
Executive  
Function  
Development

Learning Differences

# EXECUTIVE FUNCTION

- Executive skills refer to the brain-based, cognitive processes that help us to regulate our behavior, make decisions and set and achieve goals. These skills include task initiation and follow through, planning/organization, working memory, performance monitoring, inhibition of impulses, and self-regulation.

~*Dawson & Guare*



## **Executive functions are responsible for many skills, including:**

- Paying attention
- Organizing, planning, and prioritizing
- Starting tasks and staying focused on them to completion
- Understanding different points of view
- Regulating emotions
- Self-monitoring (keeping track of what you're doing)



# Executive Functions (EF): Development & Demands

EF capacity develops through childhood, into adolescence, and beyond; it is not fully present in early childhood

Environmental demands for EF increase with age, from preschool through adulthood


Some EF impairments often are not noticeable by age 12 years!

(T E Brown, Yale Medical School, 2013)



## Signs of executive functioning issues

Trouble with executive function can affect people in different ways. People struggling with executive skills may:

- Have trouble starting and/or completing tasks
  - Have difficulty prioritizing tasks
  - Forget what they just heard or read
  - Have trouble following directions or a sequence of steps
  - Panic when rules or routines change
  - Have trouble switching focus from one task to another
  - Get overly emotional and fixate on things or ideas
  - Have trouble organizing their thoughts
  - Have trouble keeping track of their belongings
  - Have trouble managing their time
- 

## When are Executive Functions (EF) Impairments Noticeable?

- Some are obvious very early and are noticeable in preschool years
- Some are not noticeable until middle elementary or junior high school
- Some are not apparent until the child leaves home to go to college or later

(T E Brown, Yale Medical School, 2013)

# Measures for Assessment of Executive Functions (EF)

- EF modulate and control other functions
- Single function = pooled outcome of multiple sub-functions
- Rating scale & clinical reports of how the person manages everyday tasks are far more sensitive & valid diagnostic indicators than the neuropsych laboratory “tests of EF”

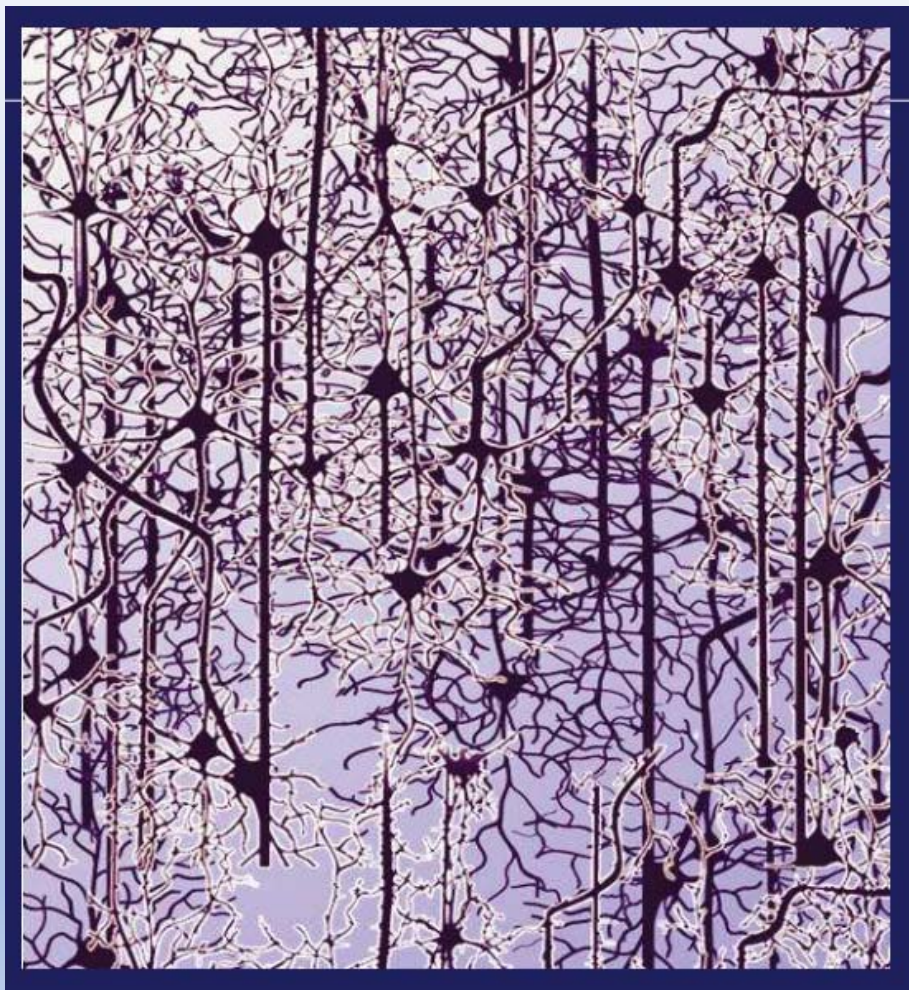
(T.Brown, 2005, 2006, 2013; R.Barkley, 2011)

# In the Human Brain

- 100 billion neurons
- each one linked to > 1000 others
- in complex sub-systems
- that have to “talk to each other”
- using low voltage electrical impulses
- that have to jump across gaps
- so fast that 12 can cross in 1/1000th of a second (a millisecond)

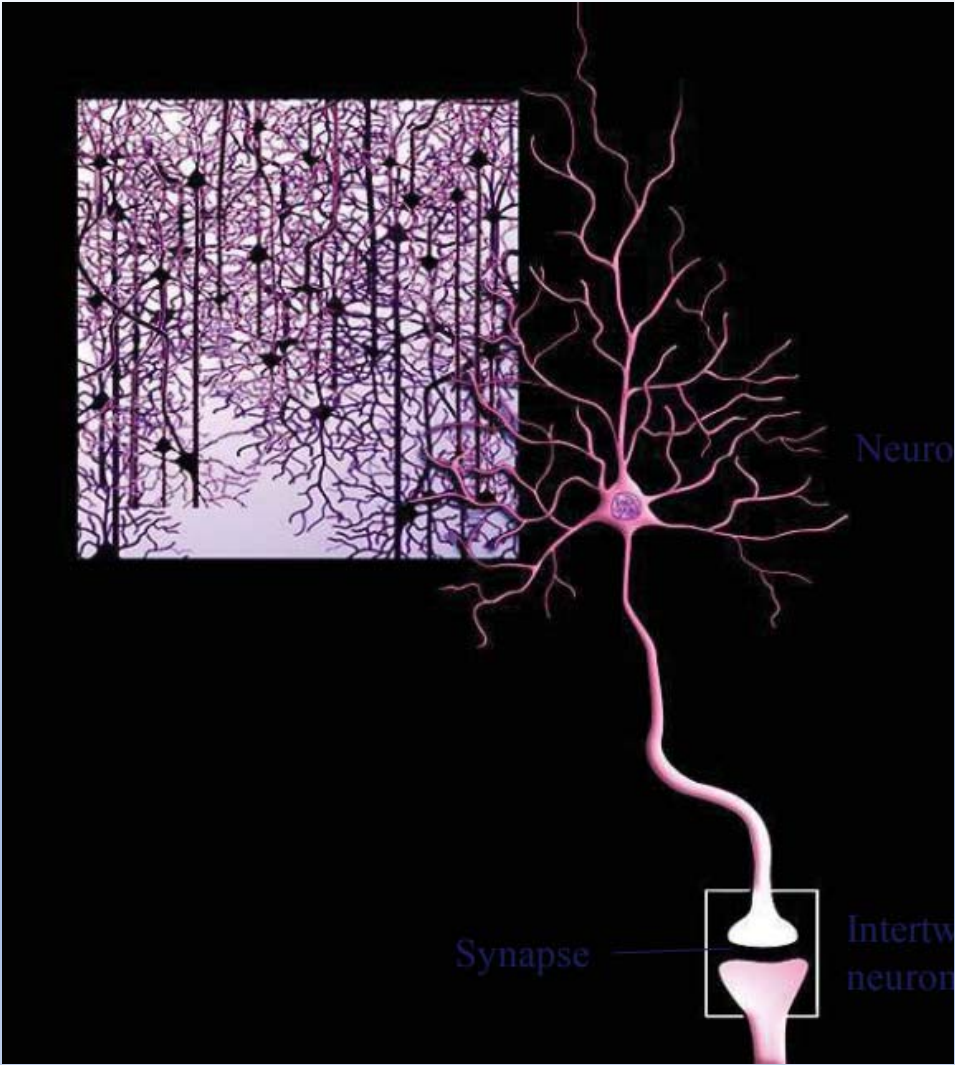
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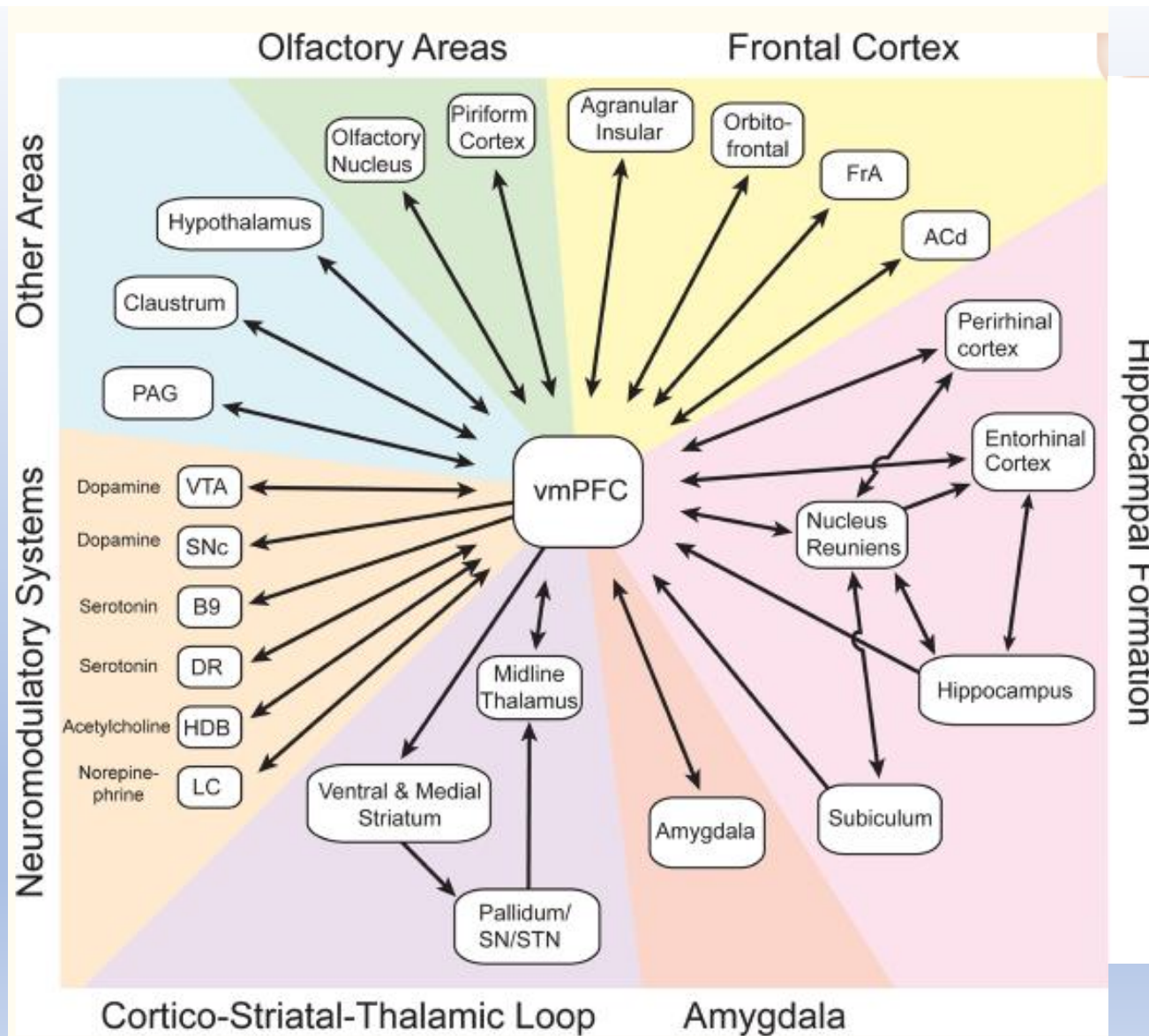




# Chemicals Jump the Gaps

- Inside brain >50 different chemicals are continuously made
- every neuron system uses 1 of them
- stored in little vesicles near the tip of the neuron
- when electrical impulse comes, minidots of that chemical are released,
- cross the gap, fire the next neuron, then reload in fractions of a second





# Executive Skills in Reading Comprehension

“Reading comprehension is more complex than single word reading, with demands that go beyond phonological decoding and word identification to include higher order cognitive processing of meaning conveyed through sentences and paragraphs.

Executive skills... become more necessary as length & complexity of text increases.”

(Sesma, Mahone, et al, 2009)

# Executive Functions in Reading Comprehension

“Most of the time when I’m reading assignments in my textbooks, I’m just ‘licking’ the words rather than chewing them. That’s why I have to keep going back to read it all over again.”

Many students report that often such impairments are not present in self-selected reading material rather than assigned texts.

(Brown, Reichel, Quinlan, 2011)

# Executive Skills in Reading Comprehension

“Executive Functions are often impaired in ADD, especially processing speed and working memory that play an important role in reading, particularly in reading fluency and comprehension.”

ADD = Attention-Deficit Disorder

(Brown, Reichel, Quinlan, 2011)

# Disorder of Written Expression

- Significant impairment in writing grammatically correct sentences & organized paragraphs; often, but not always, poor spelling;
- Chronic difficulty in what to write, organizing ideas, and elaboration.
- Oral expression may be adequate or strong while weak in written expression.

(Brown, Reichel, Quinlan, 2011)

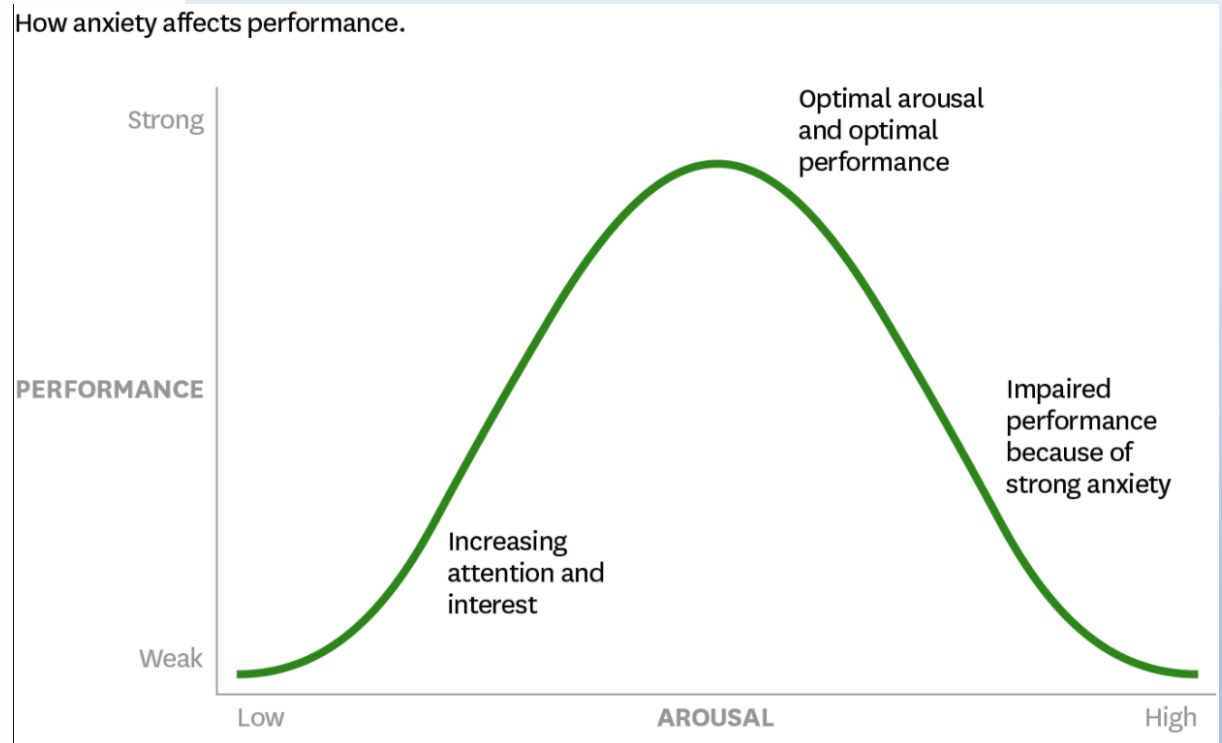


# ANXIETY

- Feeling of intense worry or fear that interferes with the ability to function
- May look like ADHD
- May be preoccupied with failure or perfectionism
- Avoidance
- “That's not to say all anxiety should be battled. Sometimes it should be embraced—even celebrated. In just the right amounts, the hormones that drive anxiety can be powerful stimulants, arousing the senses to function at their sharpest.”
- “The key isn't not to feel anxious; it's to learn ways to manage that experience. ‘Anxiety itself is neither helpful nor hurtful,’ says ASDI's Winston. “It's your response to your anxiety that is helpful or hurtful.” Quotes from:

# Strategies & Resources

- Chunk assignments into manageable pieces
- Task initiation
- Set time limits on homework
- Preview new material so they know what to expect
- Use mindfulness exercises
- Provide a checklist for daily routines



The Yerkes-Dodson Law

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**Thank you!**

Doug Askegard, tutor