

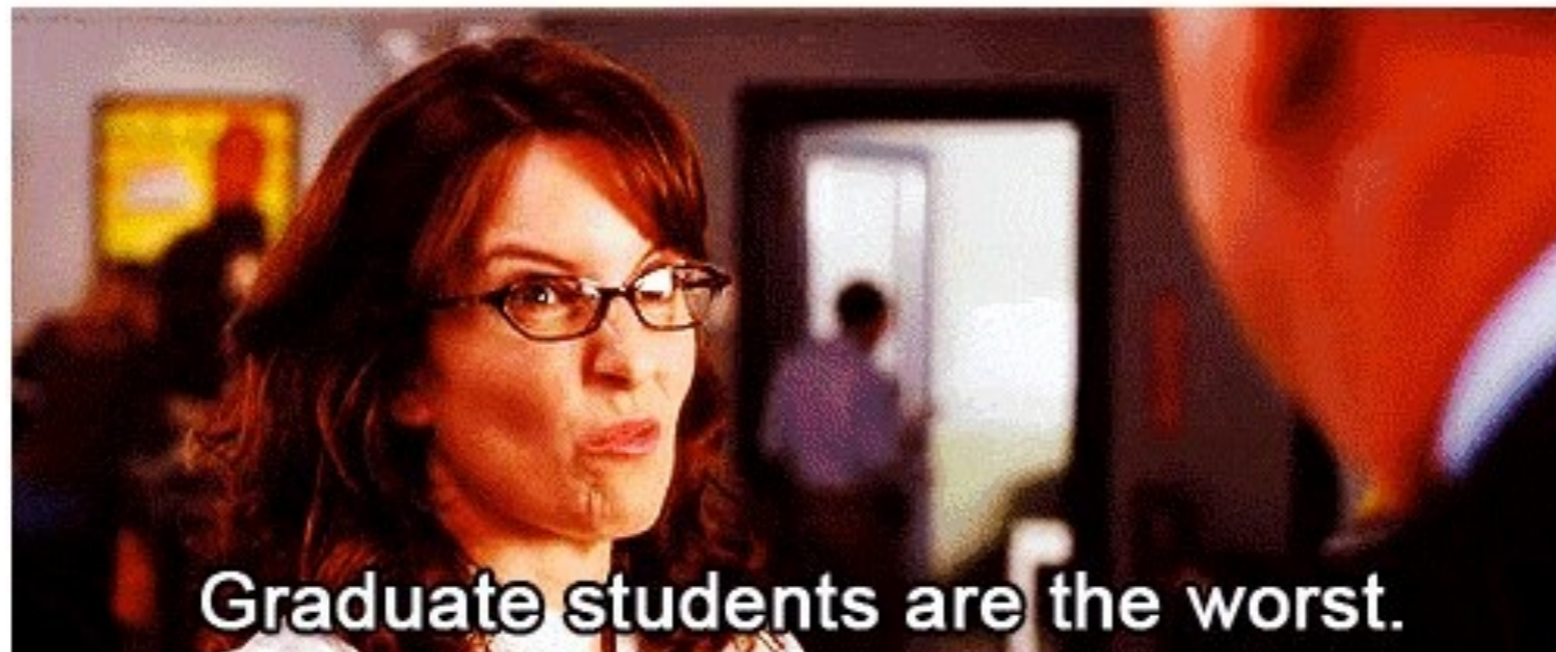
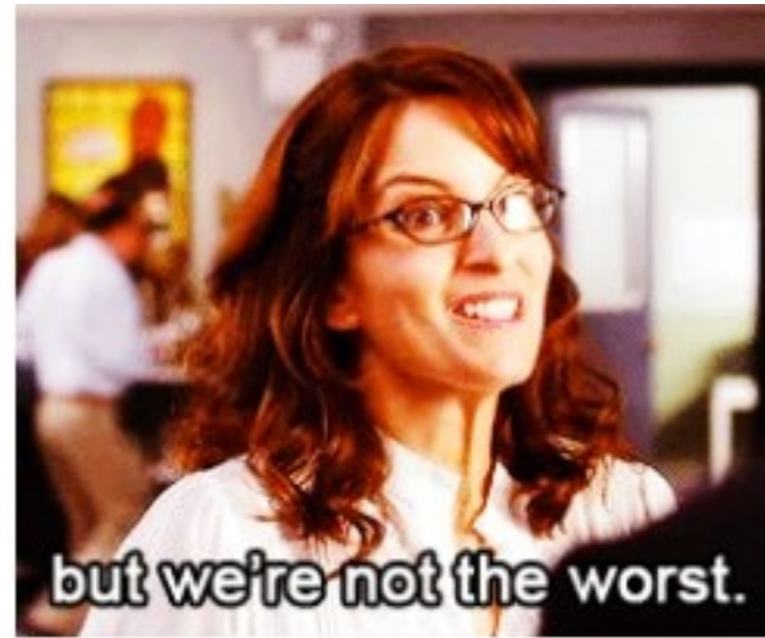
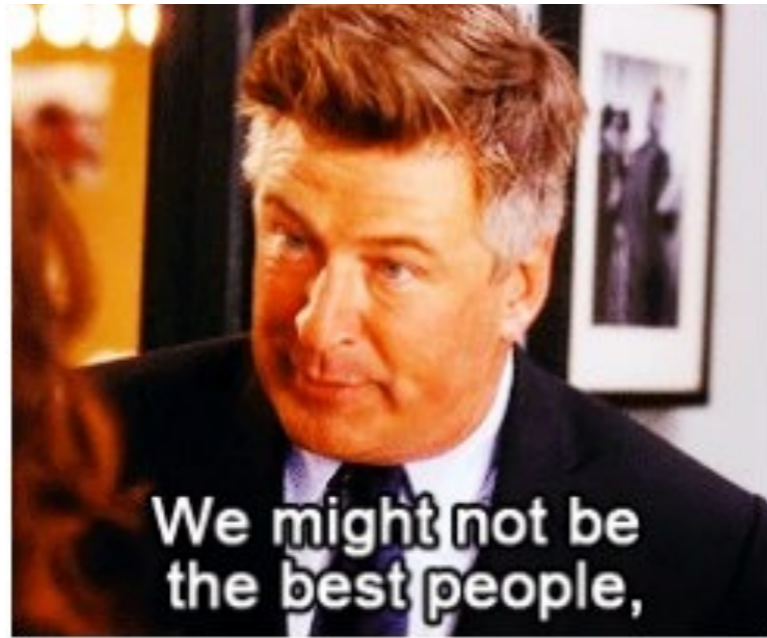
Neuroscience & Psychopathology

A very condensed introduction

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Abnormal Psychology
17 September 2019

Overview

- **Introduction** (i.e. who is this girl talking at us?)
- **The Brain**, very broadly
- Key circuitry
 - (1) **Corticolimbic** - threat
 - (2) **Corticostriatal** - reward
 - (3) **Corticohippocampal** - regulation
- More jargon, most likely
- Final remarks



Hello!

Who am I and why am I talking at you?

Before we get started...

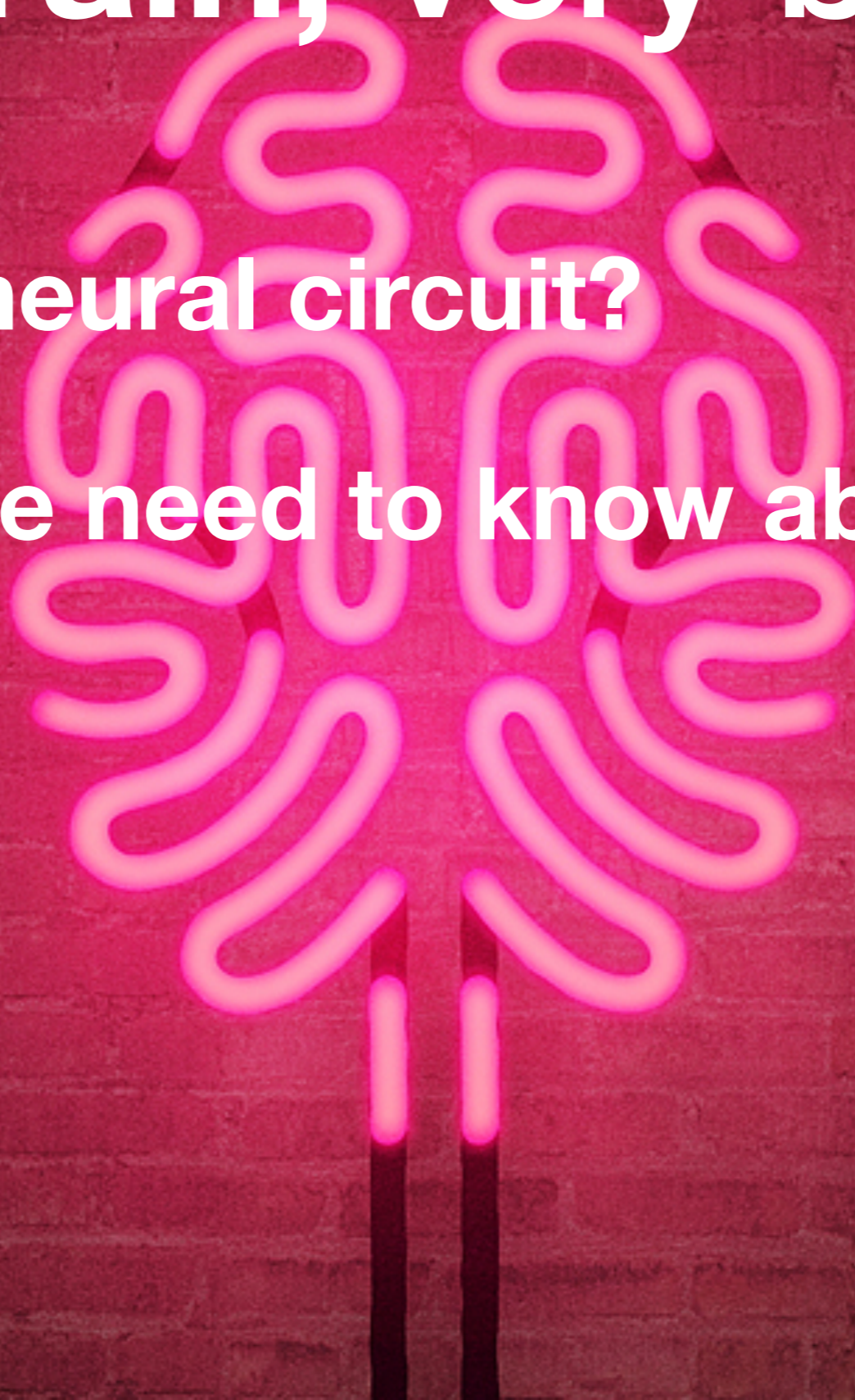
- **function vs. structure**
- **node vs. hub**
- **bottom up vs. top down**
- **hyperactive vs. hypoactive**
- **trait vs. state**

The Brain, very broadly

What is a neural circuit?

What do we need to know about them?

- Anatomy
- Order
- Disorder



The Brain, continued

What circuits do we care about? [today]

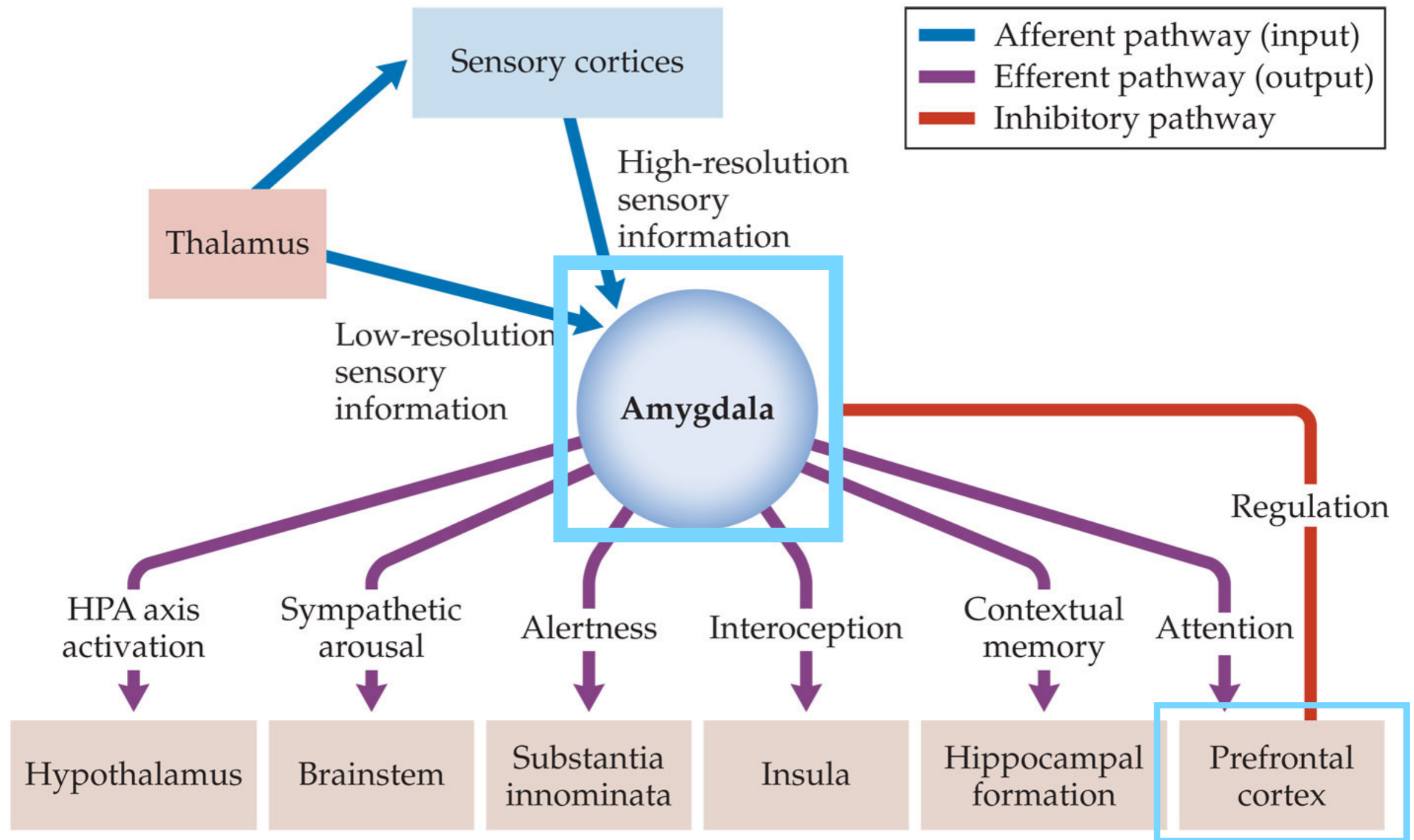
- Corticolimbic
- Corticostriatal
- Corticohippocampal

Circuit 1: Corticolimbic

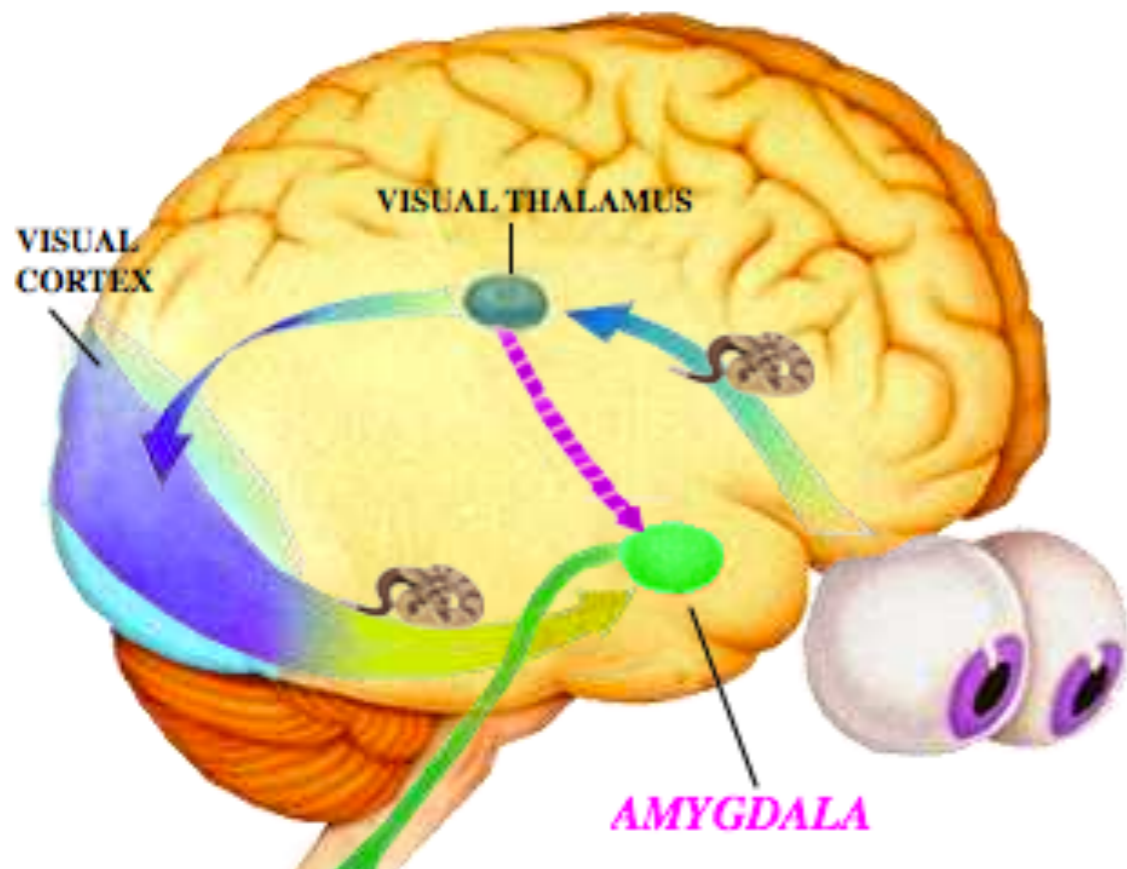


- **Hub:** amygdala
- **Primary functions:** recognition & reaction (threat)
- **Disorders manifest as:** maladaptive reactions to environmental challenges (threat)

Corticolimbic Anatomy



LOOKING INSIDE THE DISORDERED BRAIN, Figure 2.1



Corticolimbic Order

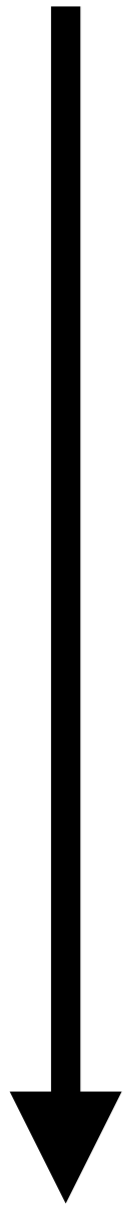
Corticolimbic Disorder



Amygdala **hyperactivity:**

- Mood disorders - MDD
- Anxiety disorders - panic, social phobia, specific phobia, GAD, PTSD
- Disorders of social behavior - antisocial personality disorder, intermittent explosive disorder, autism spectrum disorders

Corticolimbic Disorder

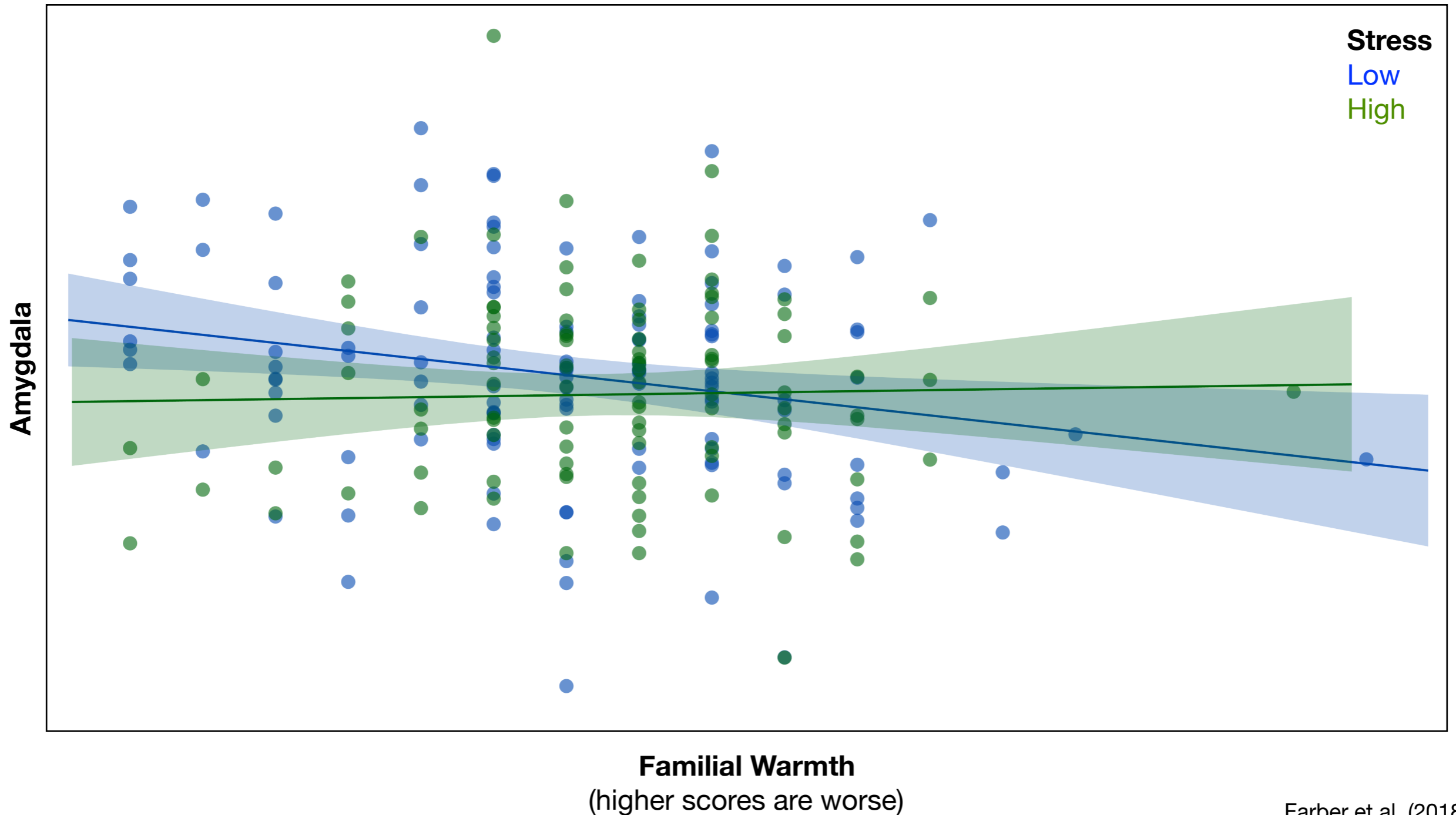


Amygdala **hypoactivity**:

- Major depressive disorder
- Antisocial personality disorder

Corticolimbic Research Spotlight

Familial Warmth, Stress, and Amygdala Response



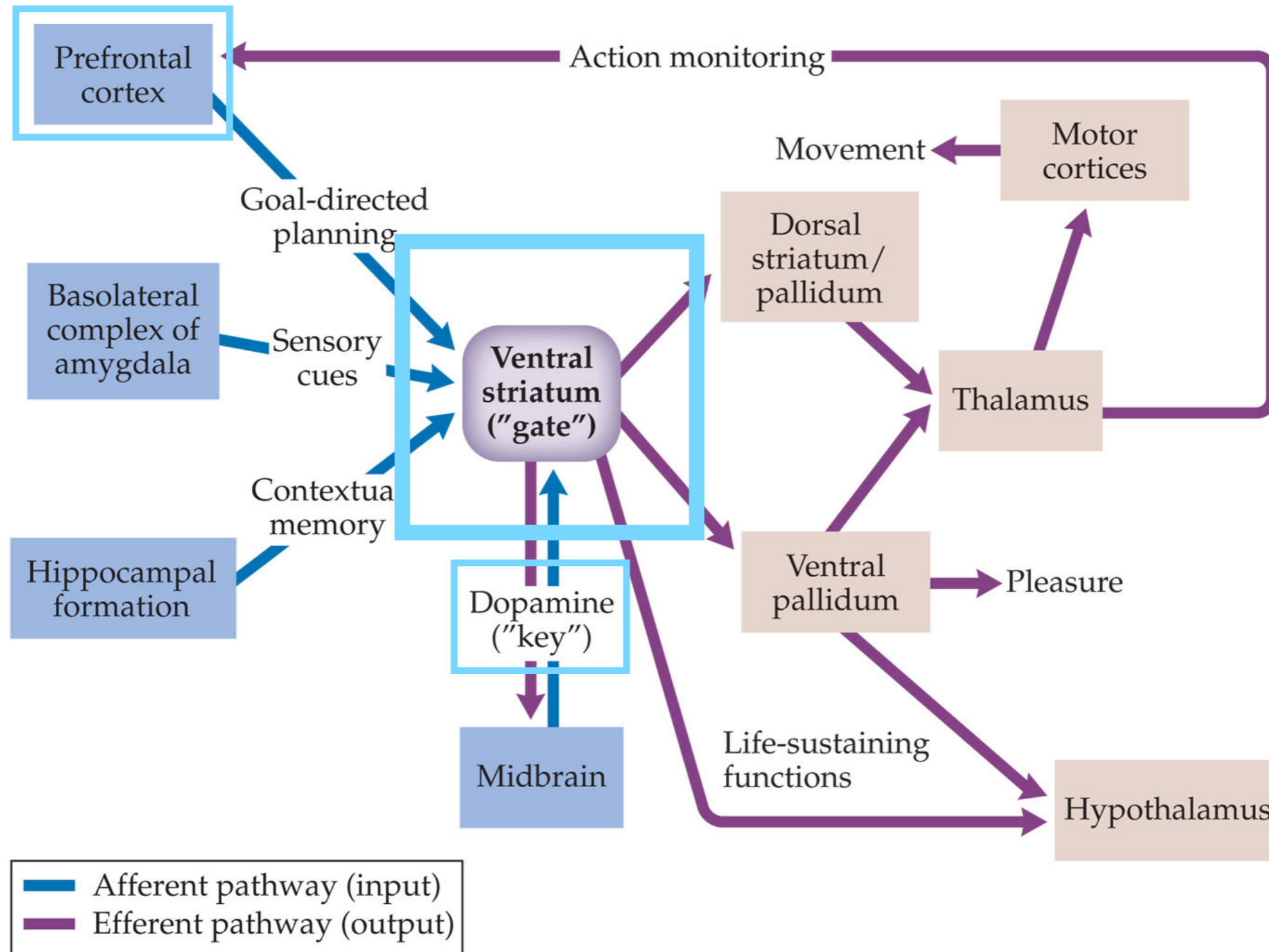
**Corticolimbic
questions?**

Circuit 2: Corticostriatal

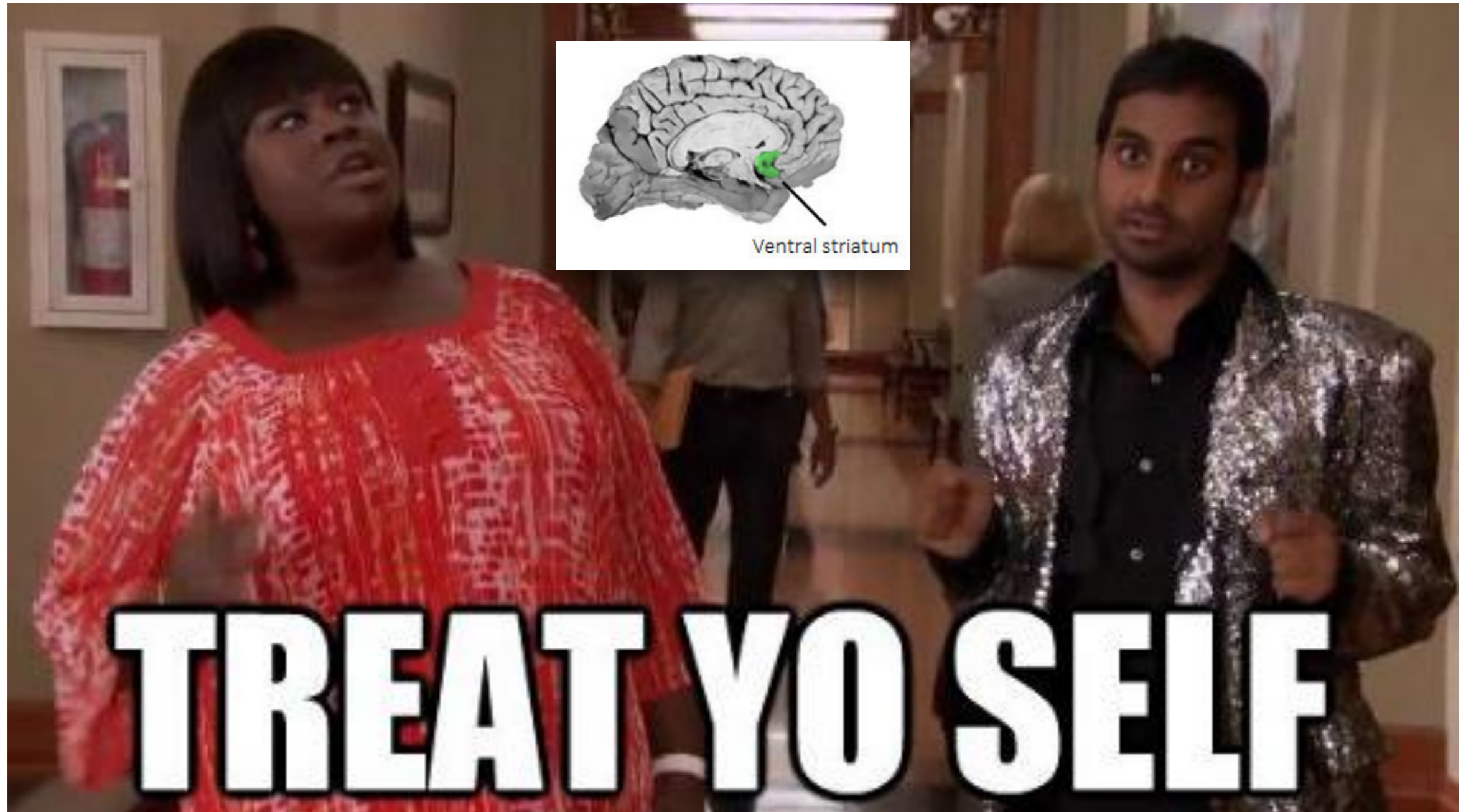


- **Hub:** ventral striatum (VS)
- **Primary functions:** reward (motivation + action)
- **Disorders manifest as:** maladaptive reward seeking, lack of behavioral control, inability to experience pleasure

Corticostriatal Anatomy



Corticostriatal Order

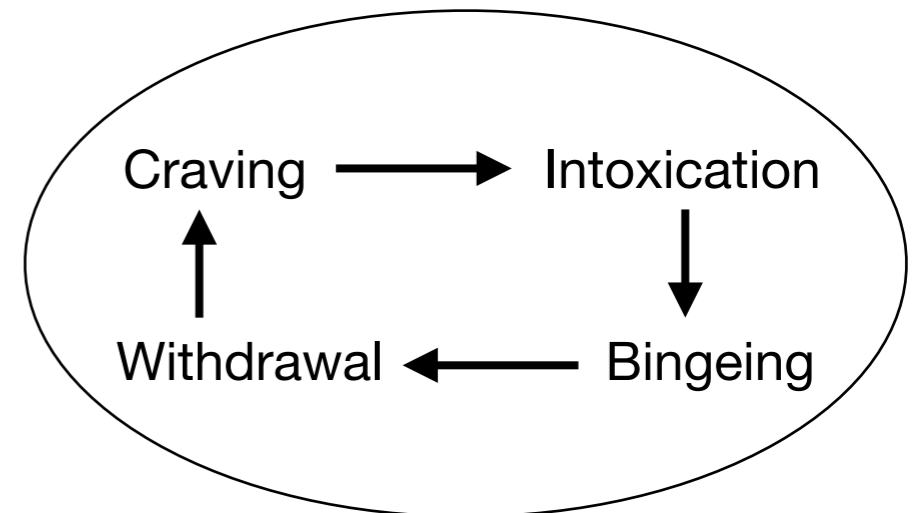


Corticostriatal Disorder



Ventral striatum **hyperactivity:**

- Antisocial personality disorder
- Eating disorders & obesity
- Substance use disorder



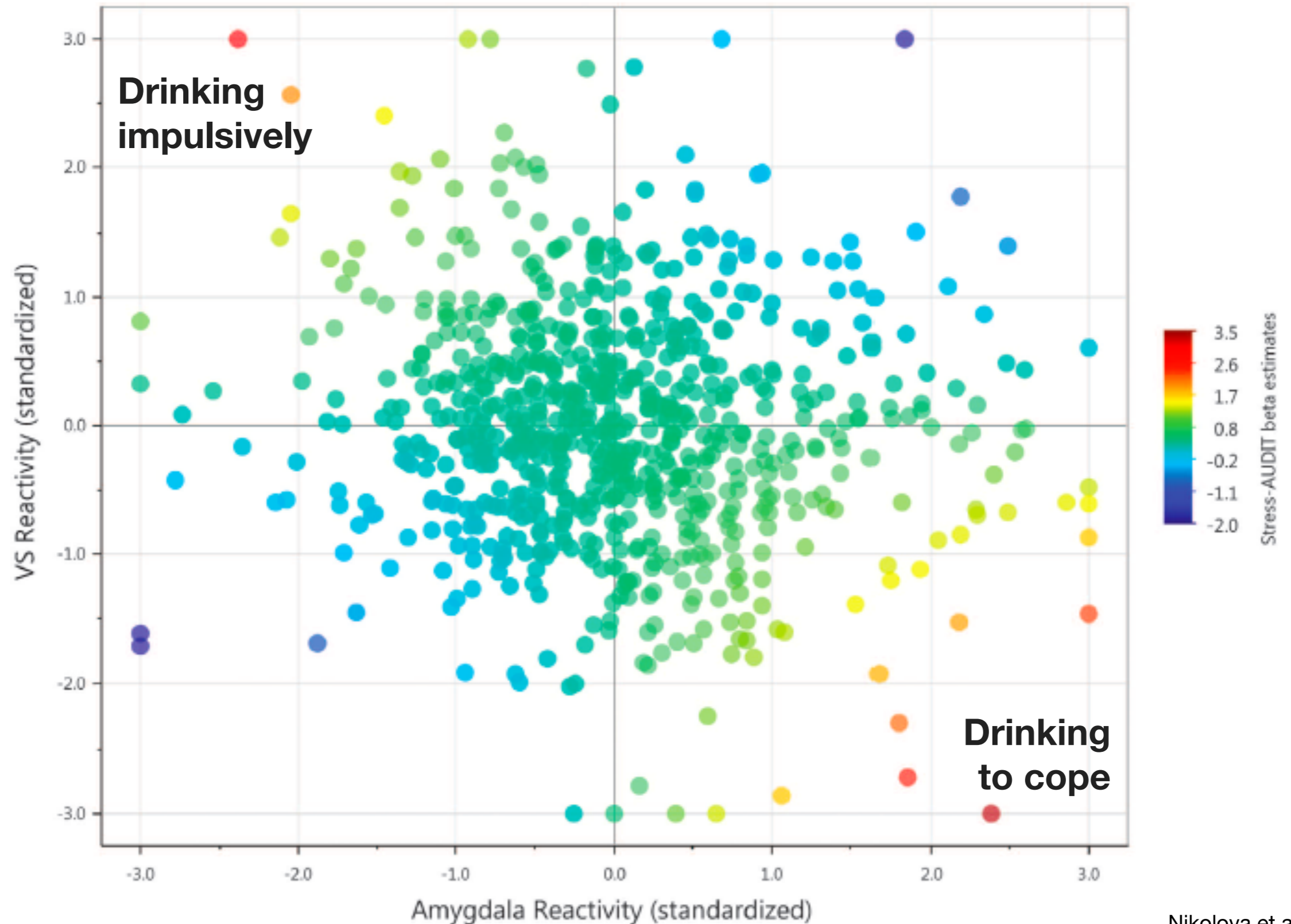
Corticostriatal Disorder



Ventral striatum **hypoactivity**:

- Major depressive disorder
- PTSD
- ADHD

Corticolimbic meets Corticostriatal



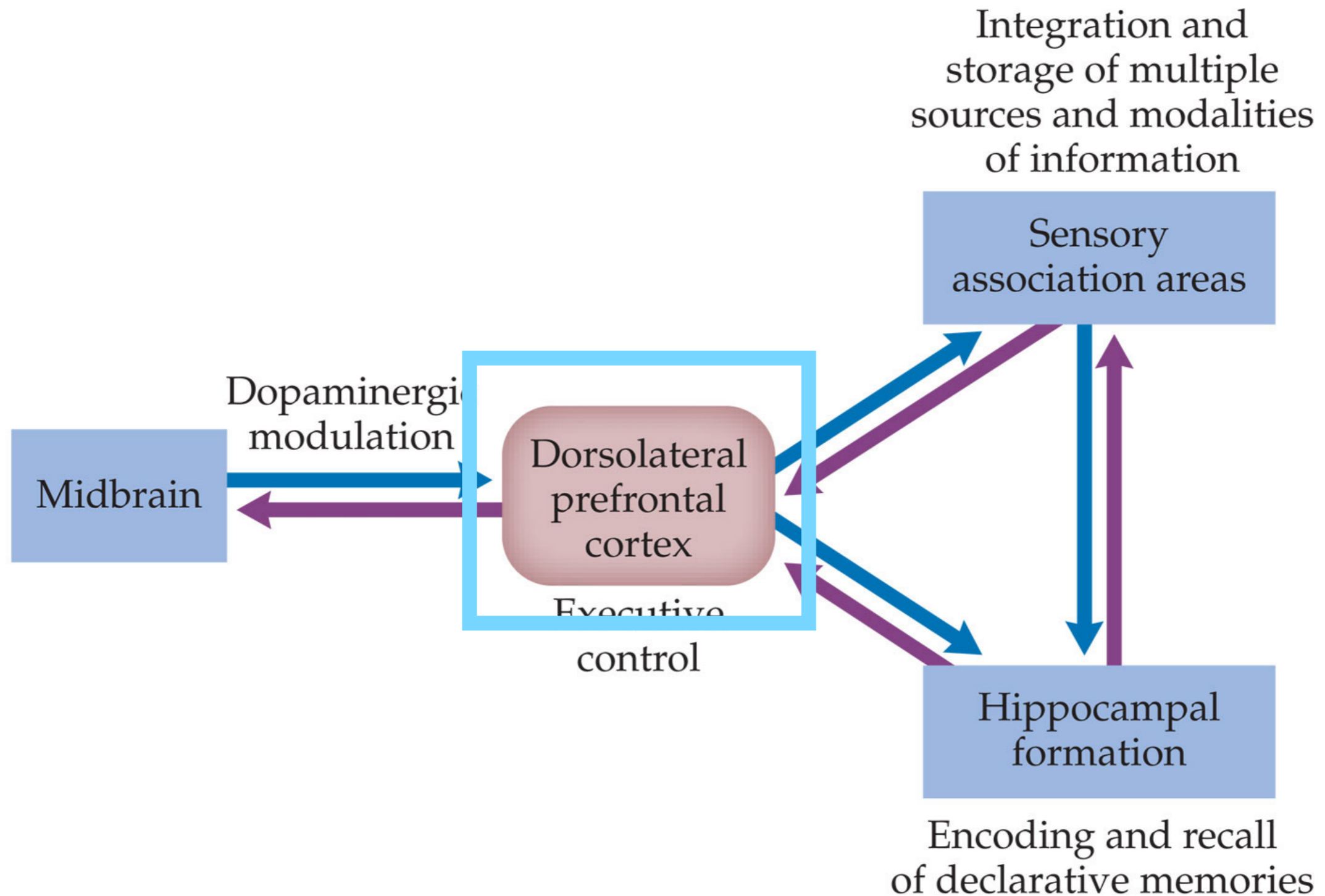
**Corticostriatal
questions?**

Circuit 3: Corticohippocampal

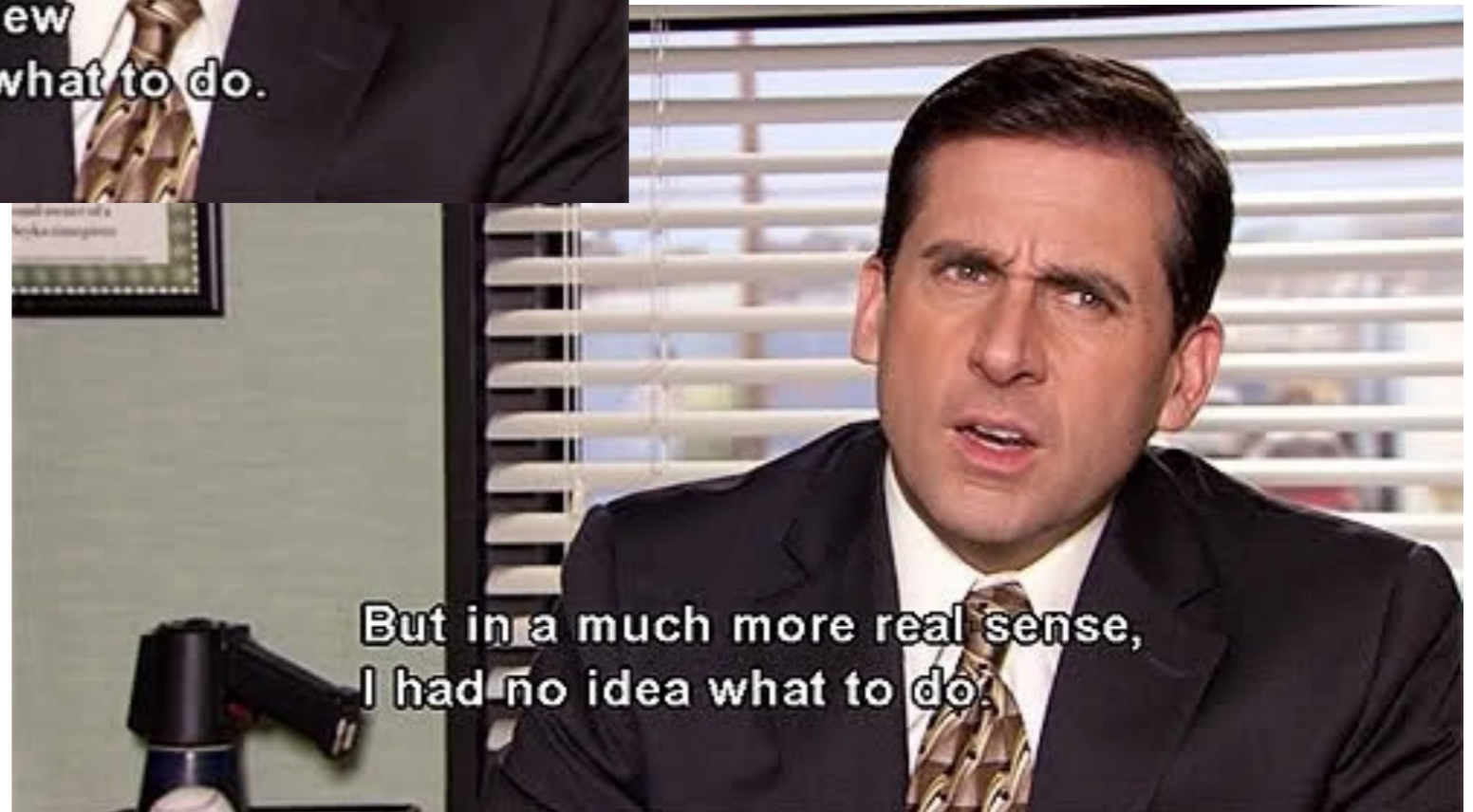
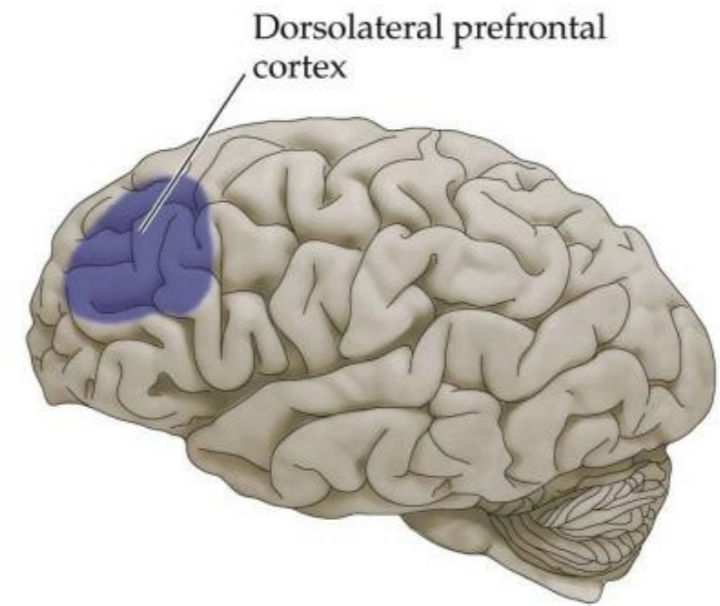
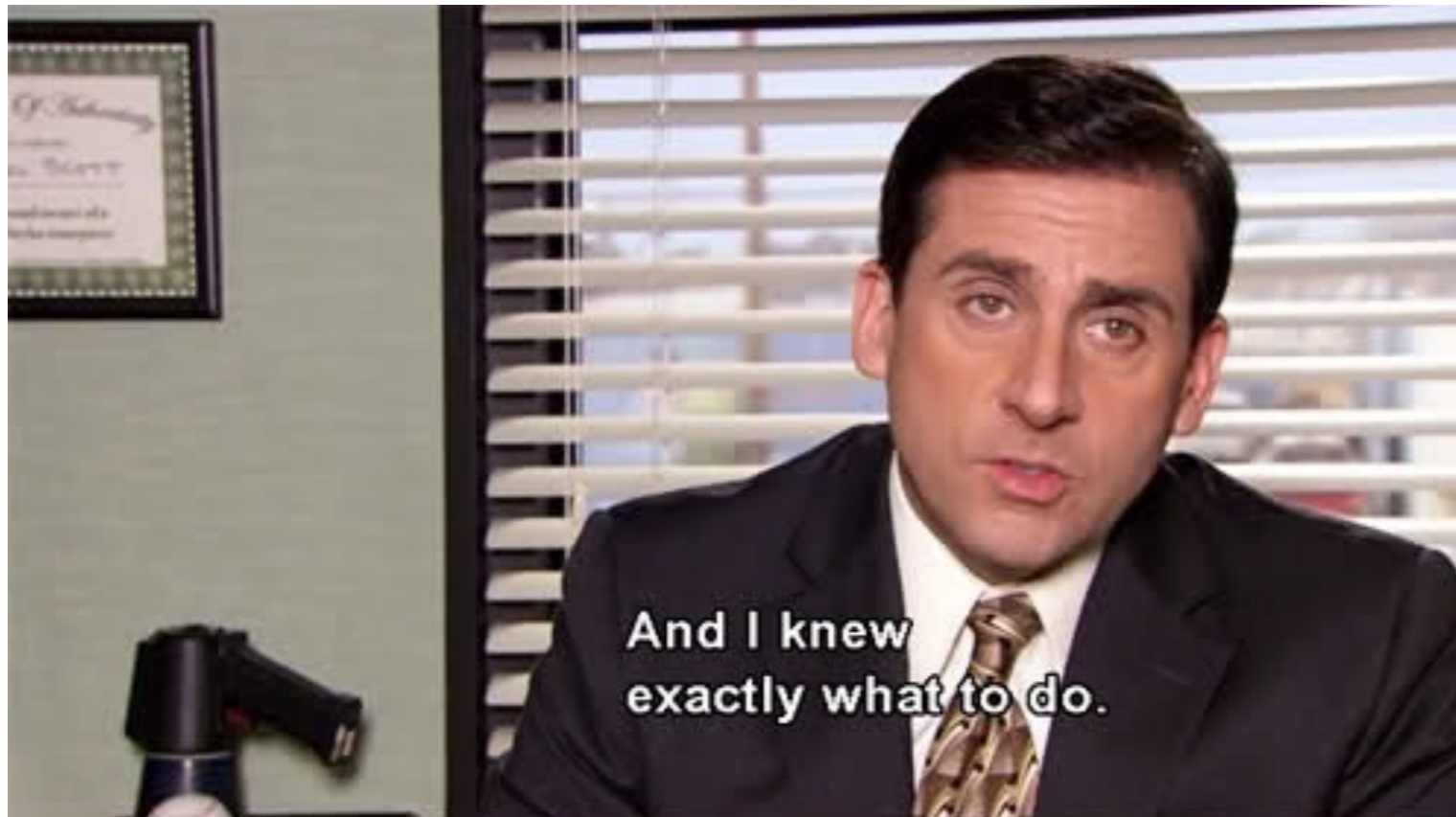


- **Hub:** dorsolateral prefrontal cortex (dlPFC)
- **Primary functions:** memory & executive control (regulation)
- **Disorders manifest as:** memory loss, disordered thinking, lack of control

Corticohippocampal Anatomy



Corticohippocampal Order



Corticohippocampal Disorder

(1) Disorders of **memory**

(2) Disorders of **executive control**

(3) **Thought disorders**

Corticohippocampal Disorder

(1) Disorders of **memory**

Amnesic syndromes

(2) Disorders of **executive control**

Cognitive impairment

(3) **Thought disorders**

Alzheimer's / dementia

Corticohippocampal Disorder

(1) Disorders of memory

(2) Disorders of
executive control

Mood/anxiety disorders

(3) Thought disorders

Substance use disorders

ADHD

Corticohippocampal Disorder

- (1) Disorders of **memory**
- (2) Disorders of **executive control**

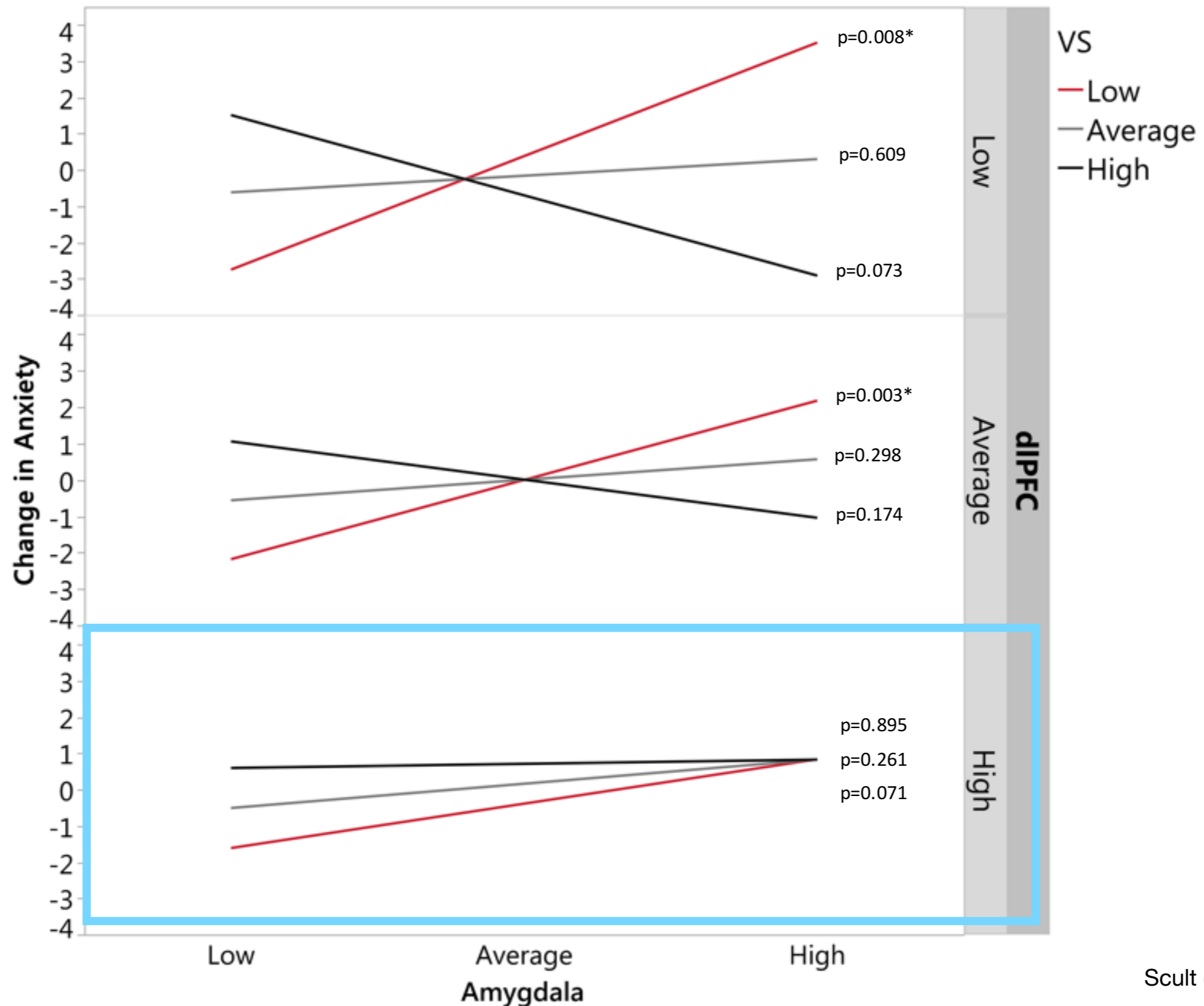
(3) **Thought disorders**

*Obsessive-
compulsive disorder*

Schizophrenia

Bipolar disorders

Corticolimbic & Corticostriatal meet Corticohippocampal



**Corticohippocampal
questions?**

Conclusions, etc.

- Abnormal psychology in the brain is **very** complex & dense & nuanced & etc.
- This lecture is a **veryveryvery** (rule of threes!) condensed introduction to these complex systems
- If you want to learn more, take *“Looking Inside the Disordered Brain”* with Ahmad Hariri

Thank you!

Advisors:

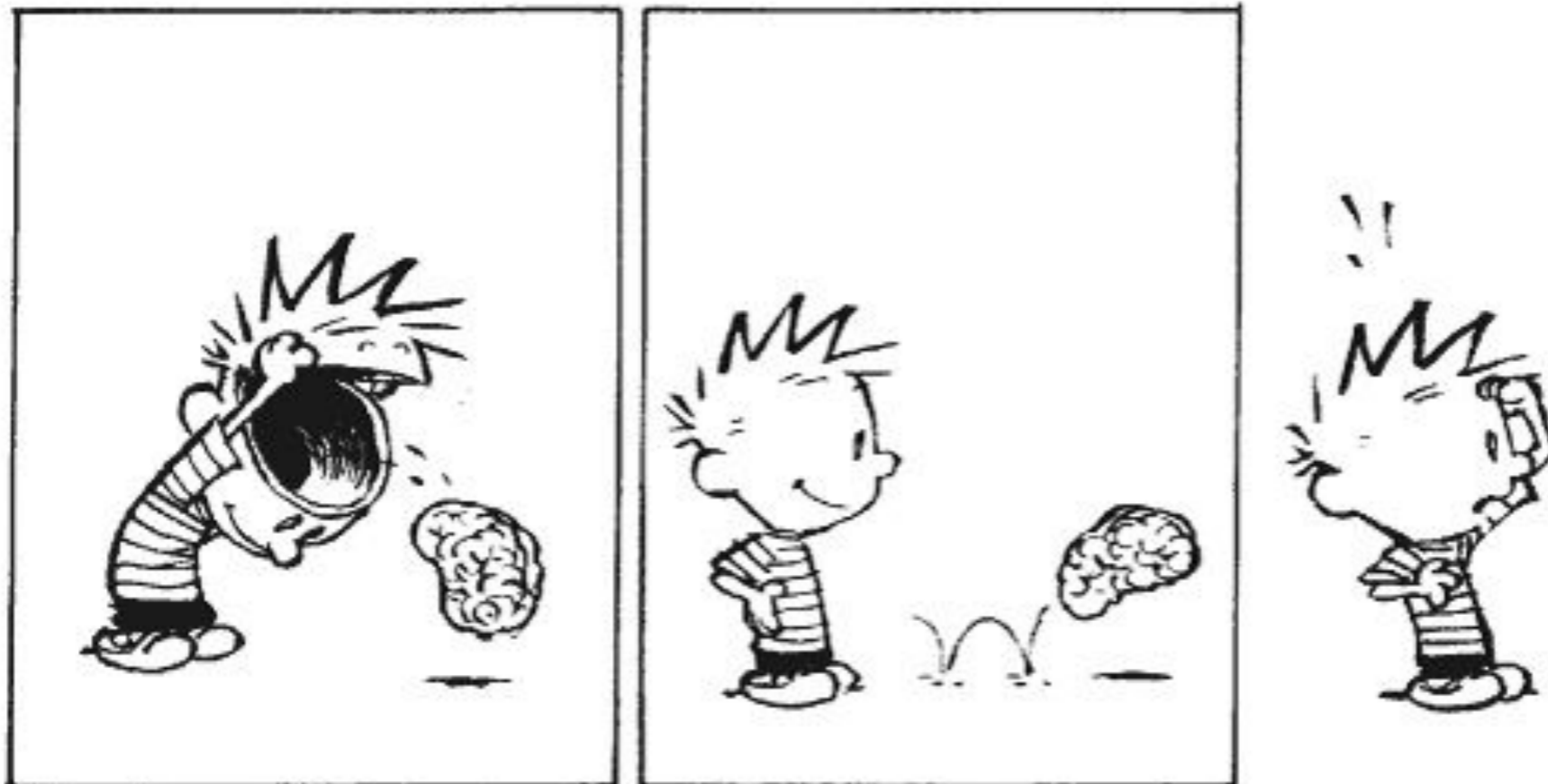
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Your lovely TAs



Questions?



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