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Specialising in Personality Disorder and Complex Trauma

What AI can tell us about interpersonal dysfunction

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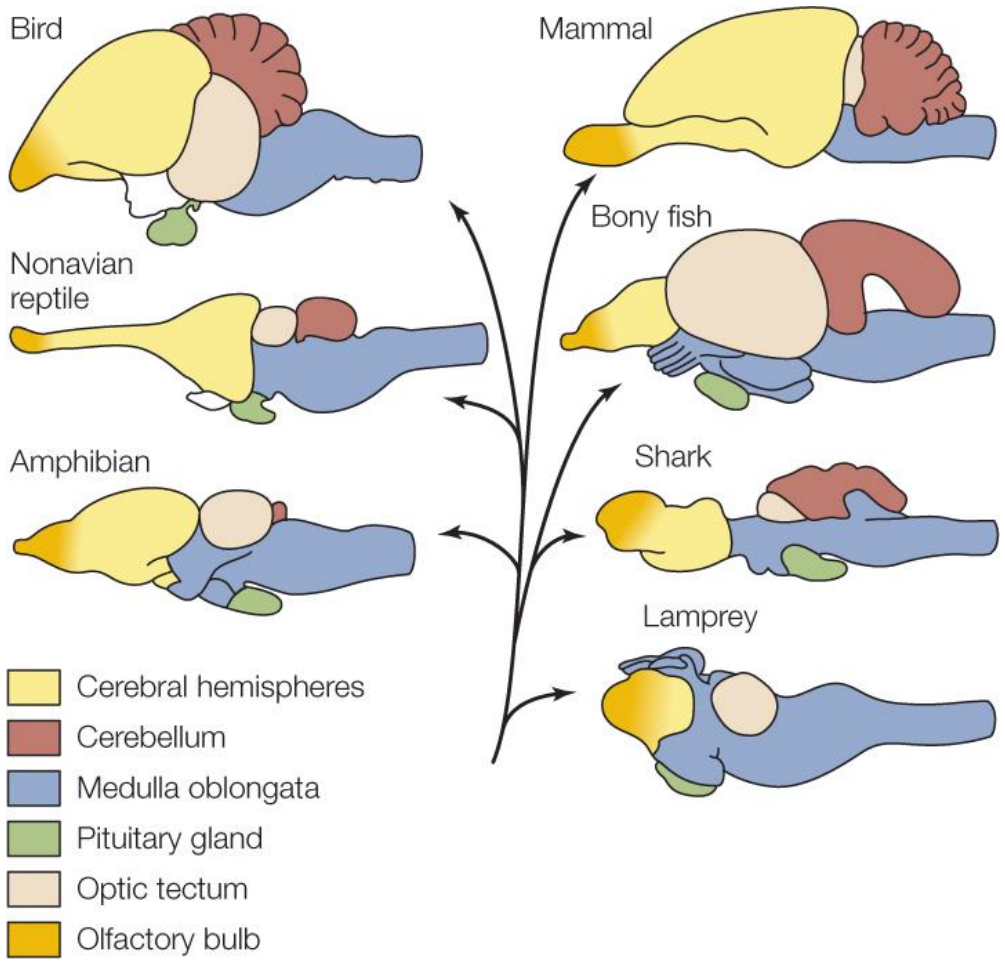
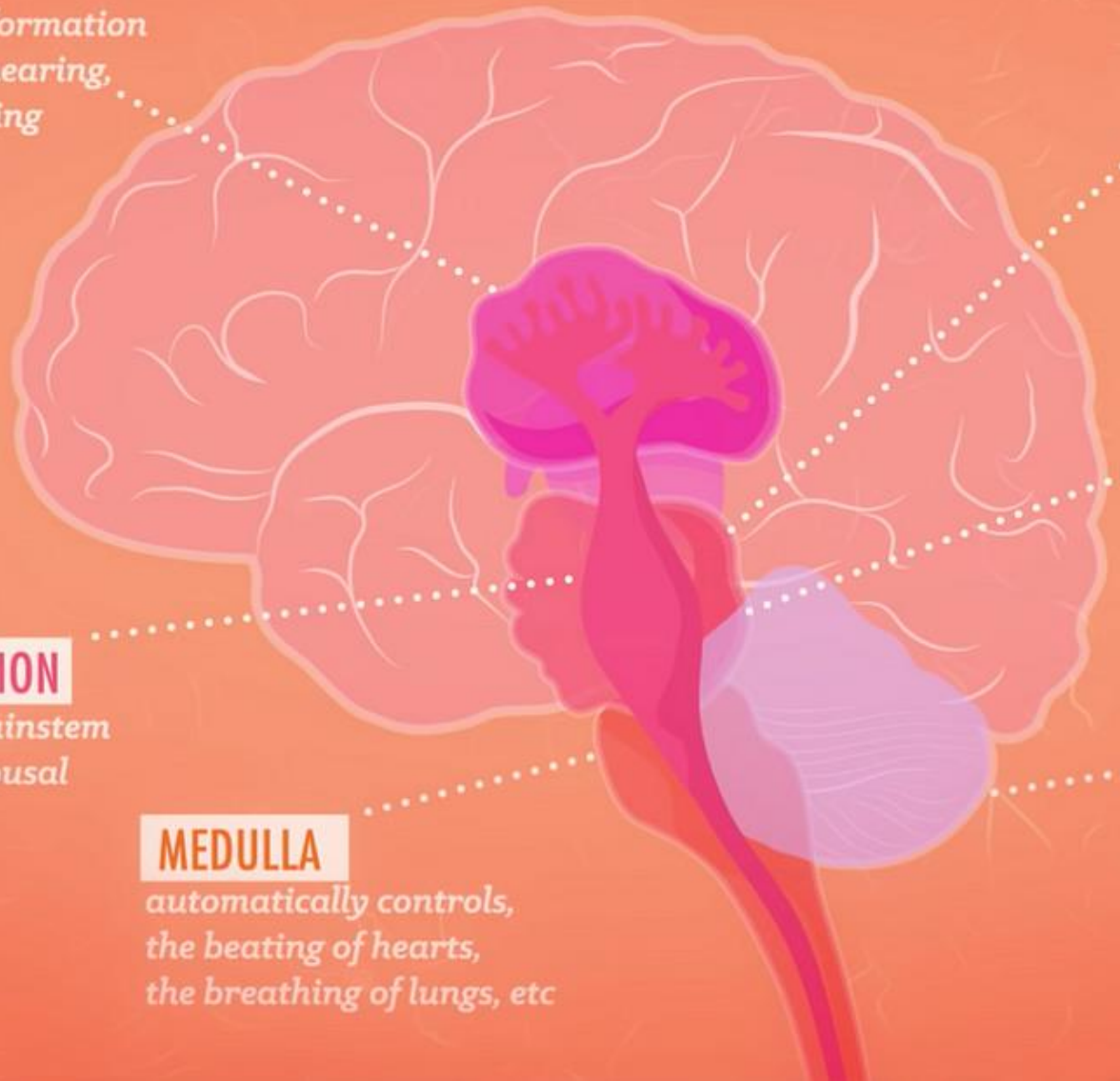

Bird
Mammal
Bony fish
Nonavian reptile
Amphibian
Shark
Lamprey
Cerebral hemispheres
Cerebellum
Medulla oblongata
Pituitary gland
Optic tectum
Olfactory bulb

"OLD BRAIN"



THALAMUS
take in sensory information related to seeing, hearing, touching, and tasting

PONS
helps coordinate several other automatic functions

BRAIN STEM
the most ancient and central core of the brain

RETICULAR FORMATION
network inside the brainstem that's essential for arousal

MEDULLA
automatically controls, the beating of hearts, the breathing of lungs, etc

CEREBELLUM
is responsible for non-verbal learning and memory, the perception of time, and modulating emotions

LIMBIC SYSTEM

HYPOTHALAMUS

regulates body temperature, circadian rhythms, and hunger, helps govern the endocrine system

PITUITARY GLAND

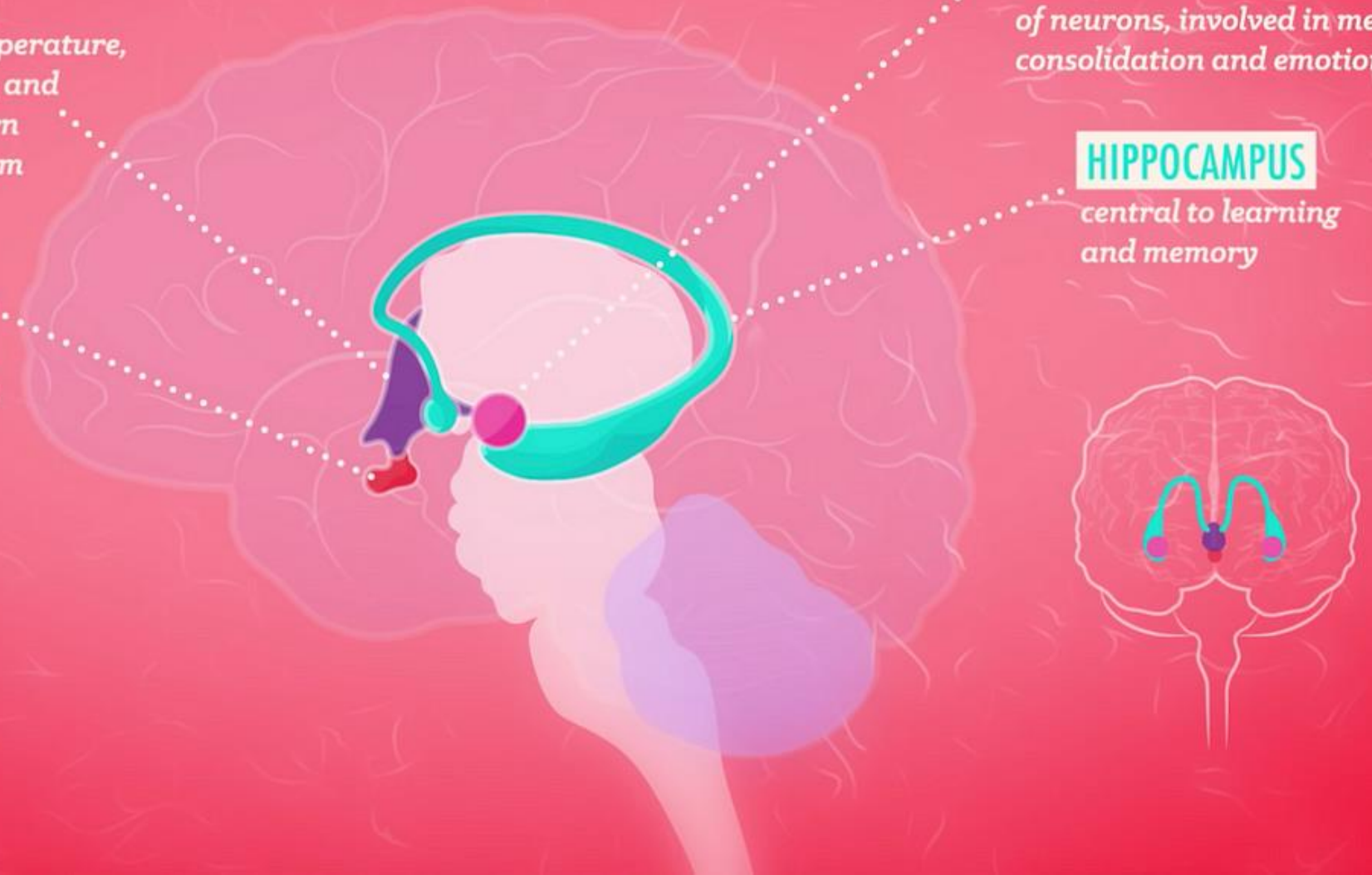
secretes many different hormones, some of which affect other glands

AMYGDALA

two lima-bean-sized clusters of neurons, involved in memory consolidation and emotion

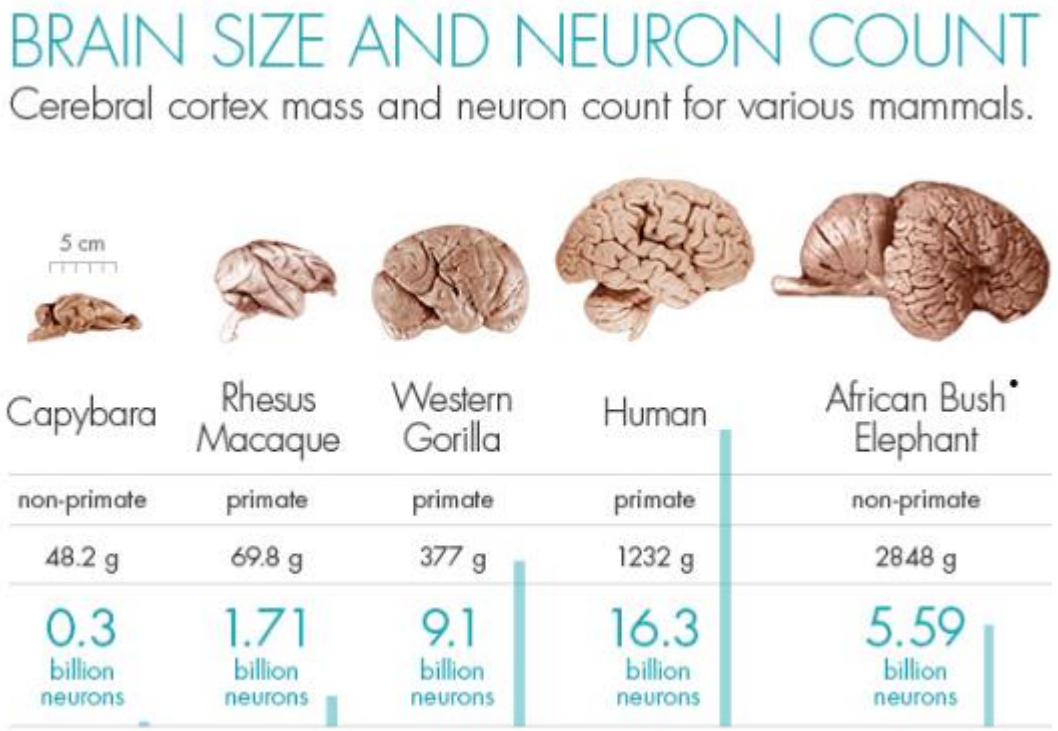
HIPPOCAMPUS

central to learning and memory



CEREBRAL CORTEX

- The brain is an information processing organ
- The neocortex is primarily concerned with predictive modelling



https://gifer.com/en/VJVX

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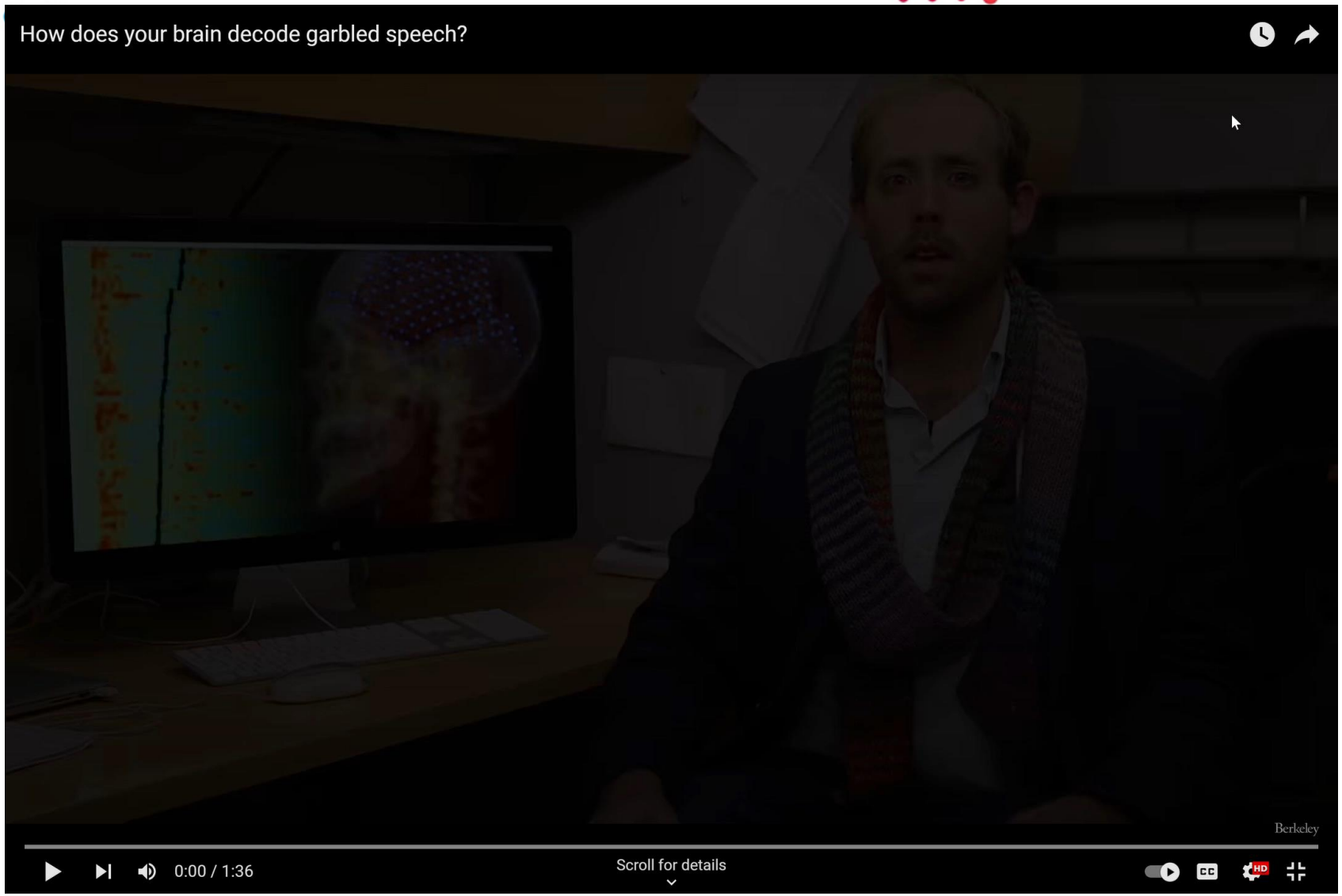

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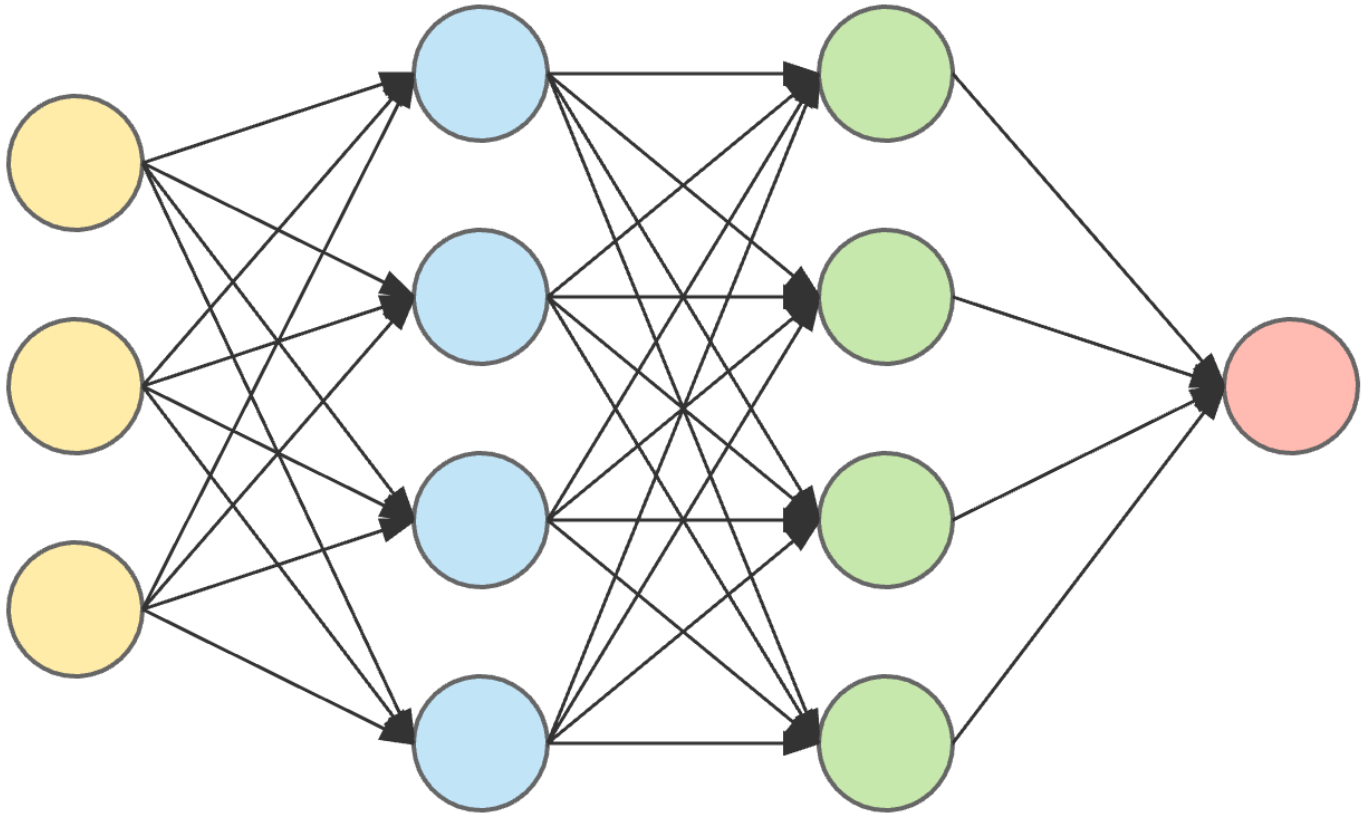
How does AI work?



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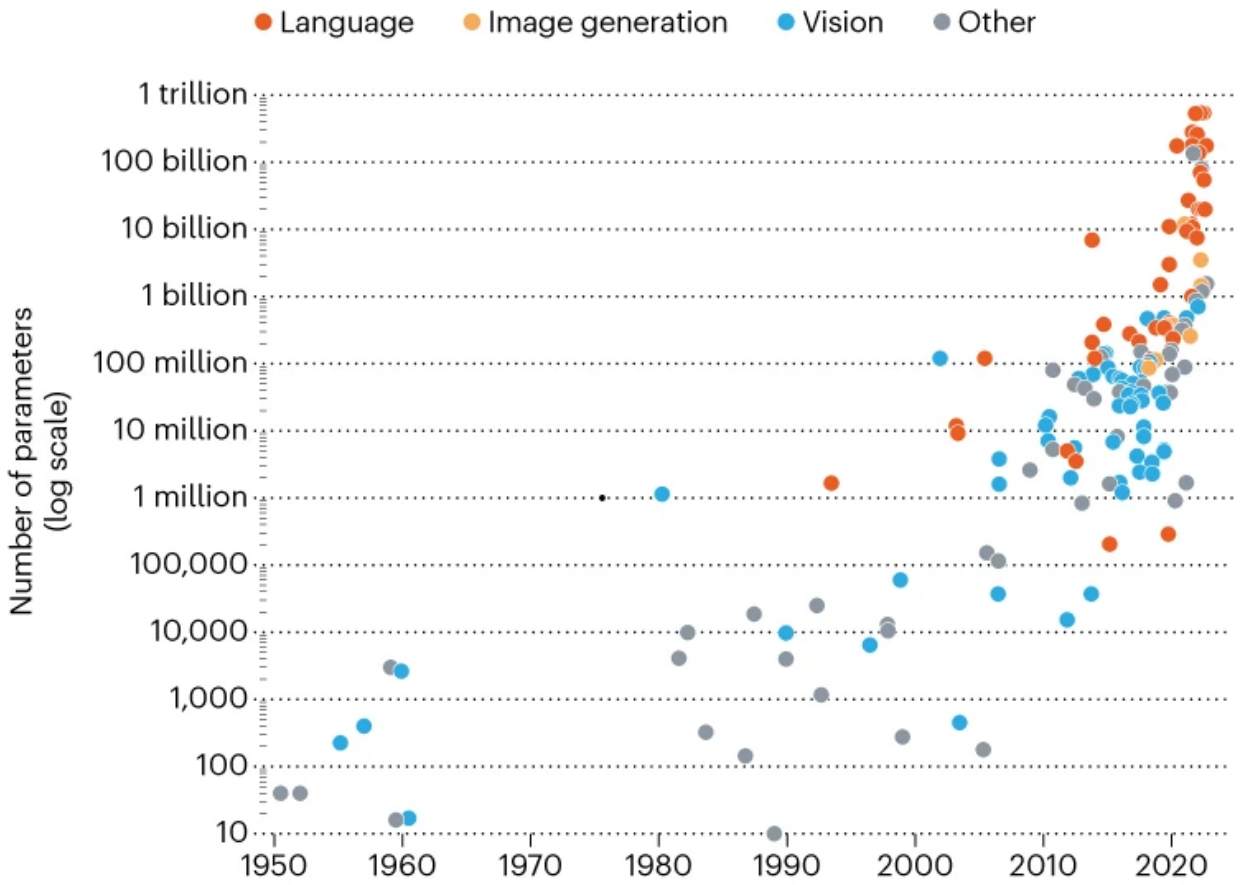
THE DRIVE TO BIGGER AI MODELS

The scale of artificial-intelligence neural networks is growing exponentially, as measured by the models' parameters (roughly, the number of connections between their neurons)*.



*'Sparse' models, which have more than one trillion parameters but use only a fraction of them in each computation, are not shown.

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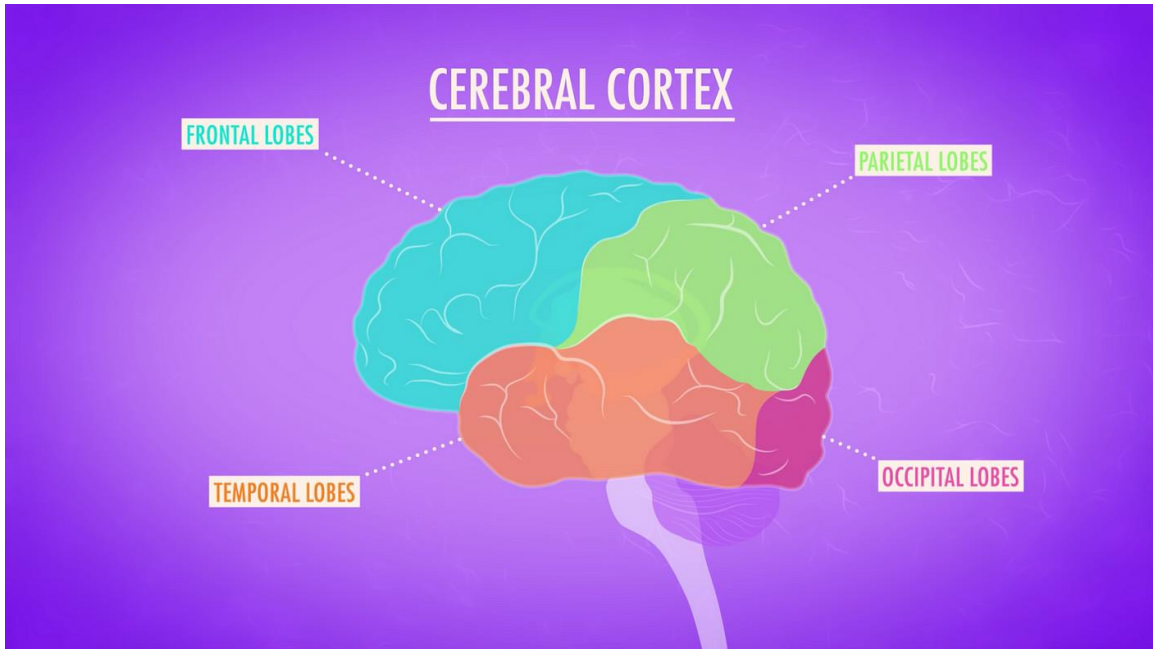
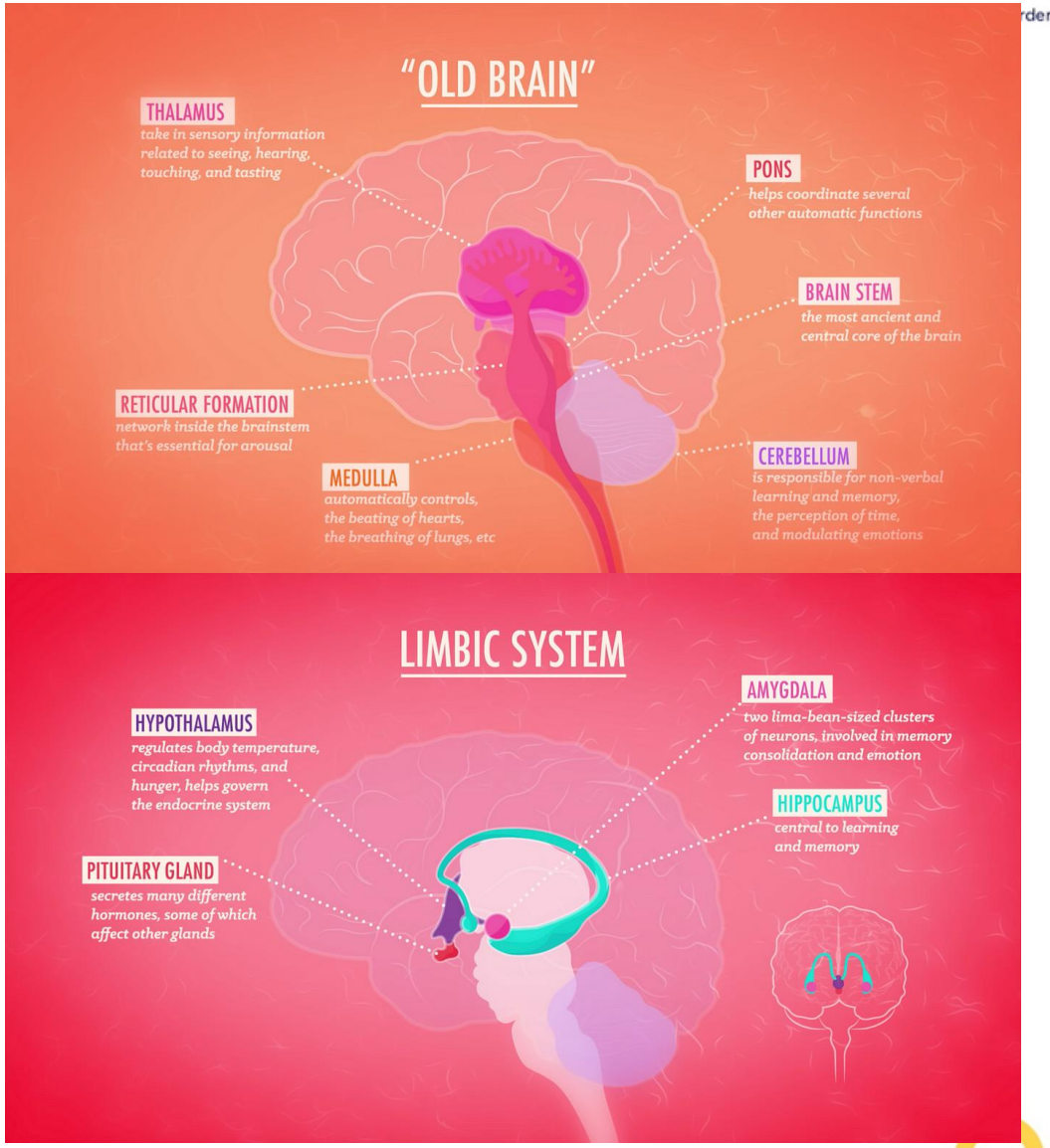

CEREBRAL CORTEX
FRONTAL LOBES
PARIETAL LOBES
TEMPORAL LOBES
OCCIPITAL LOBES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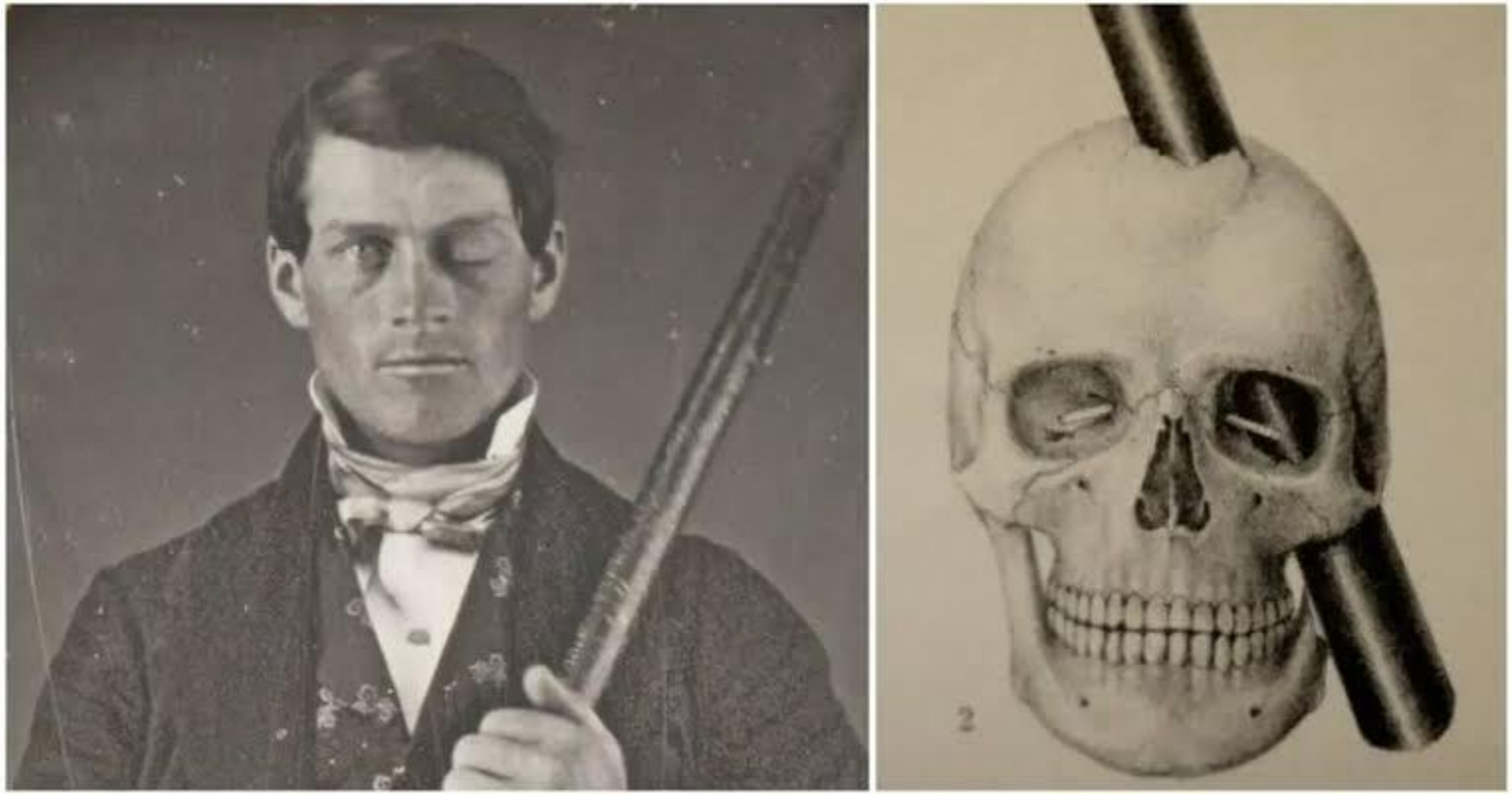
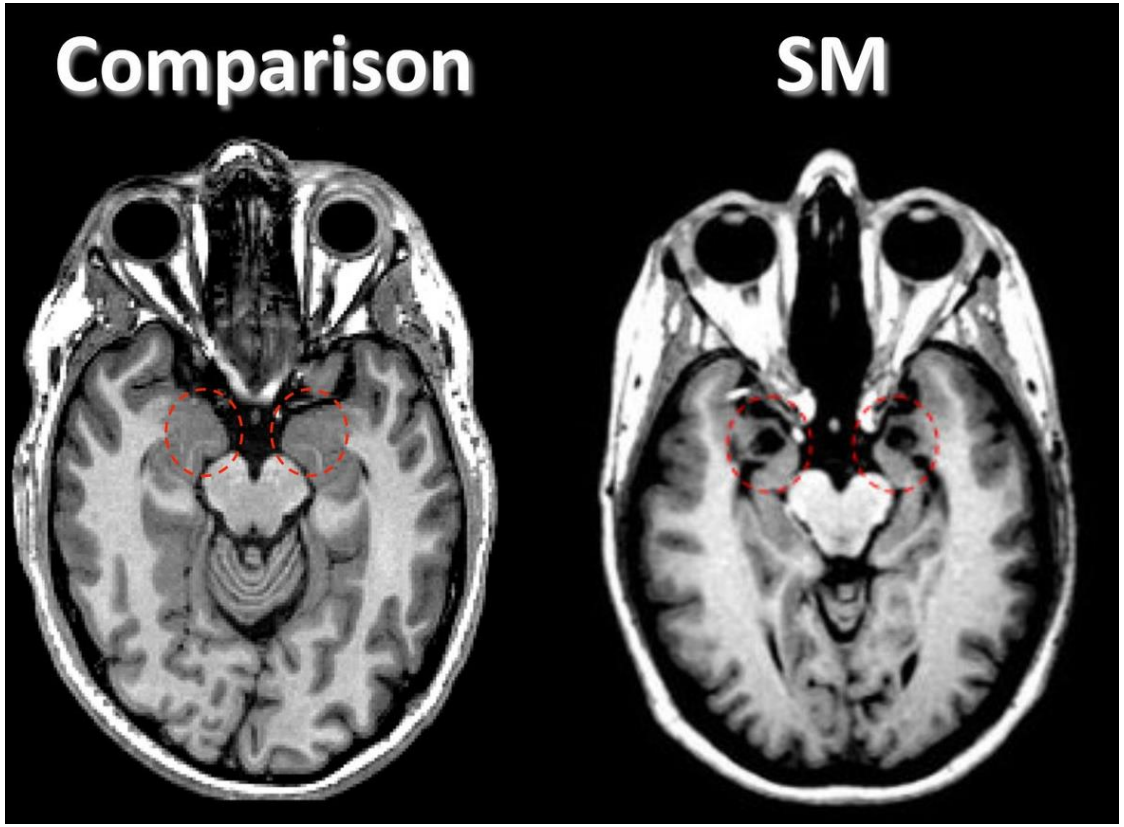
Phineas gage



Urbach-Wiethe disease

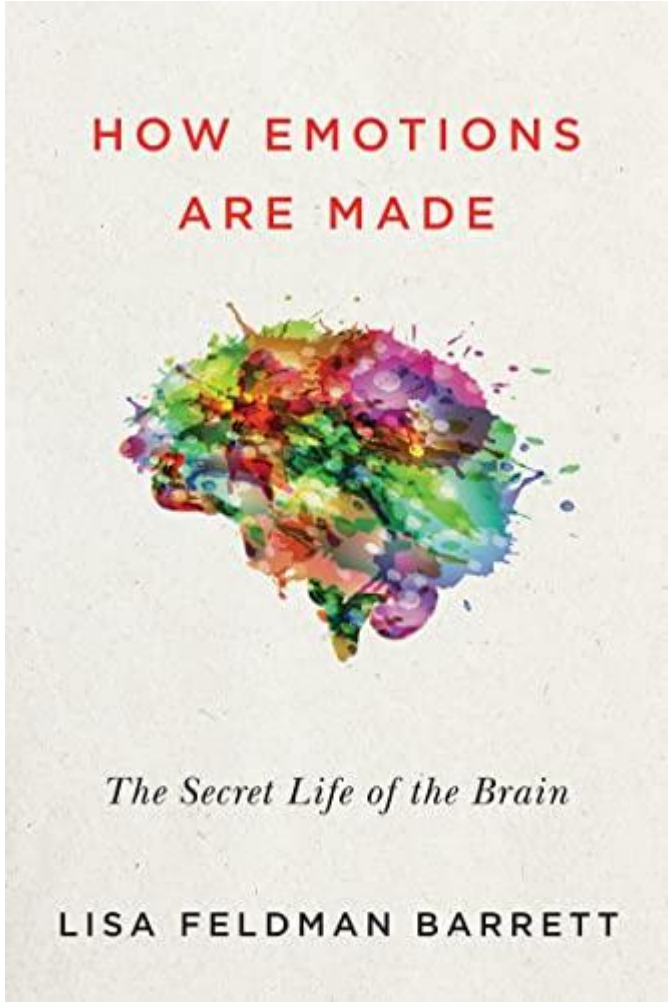
- Rare genetic disorder- 300 cases reported
- Bilateral Amygdala destruction- calcification
- Have difficulty experiencing fear
- Bias towards trusting people

- Persons with Amygdala damage -no PTSD
- Amygdala-Role in evaluating social signals that are emotionally significant



How the human brain produces emotions

- Emotions represent balance between cortex and older brain
- Attachment is a key developmental process in creating this balance
- Genetics and environment interact in 50:50 relationship
- The imbalance in frontal vs amygdala is evident in people who are diagnosed with BPD and C-PTSD



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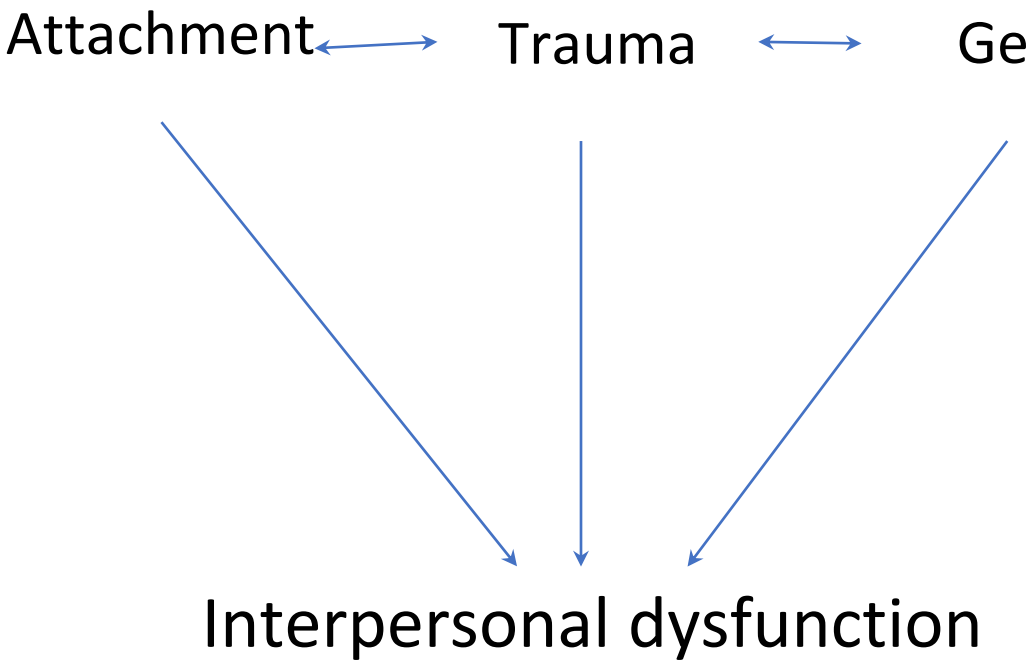
GENES interacting with ENVIRONMENT (aka Epigenetics)



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What does it mean for clinical practice?

- Theoretical understanding suggests specific targets for treatment

    1. Frontal processes through cognitive-behavioural therapies

    2. Limbic system through exposure treatments and biological inputs with medications

- These principles are reflected in the current evidence-base

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