



Emotion

10/29/24

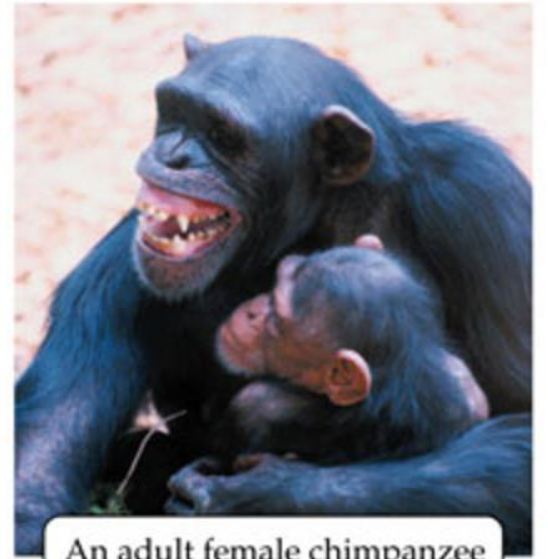
Emotion across human traditions

- **Classical (Greek and Roman) philosophy:** emotions were seen as passive states that disrupted inner harmony, false beliefs; *pathos* as central to rhetoric and moral behavior
- **Medieval scholasticism:** the “*passions of the soul*” were natural appetites or movements happening with the complex of body and soul that could be morally good or evil, depending on their alignment with reason; but generally seen as lower than reason
- **Esoteric/occult traditions:** emotions are energies that influence the astral and etheric bodies; expressions of the life force that can be transmuted; amplifiers of intention
- **Buddhism:** qualities/afflictions/states of being that disturb mental clarity, obstacles to spiritual enlightenment; attachments and aversions that are driven by ignorance of the true self
- **Confucianism:** emotions are essential aspects of human nature that are to be harmonized with ethics; cultivation and refinement of emotions is central to virtue and wisdom
- **Taoism:** emotions are natural flows of energy (qi), aligned with the effortless flow of nature (the Tao); natural expressions not to be resisted or clung to, part of a larger harmony
- **Bhakti yoga:** emotions are expressions of divine love and devotion, especially emotions like love, longing, and devotion; a means to connect with the divine
- **Indigenous traditions:** emotions reflect a connection to the land, ancestors, and spirit world; grief, reverence, gratitude are celebrated and honored communally



What is emotion for?

- To organize and motivate action
- To communicate with and learn from others



An adult female chimpanzee screams at another female, who is pulling at her food. Screaming is used in submission and protest.

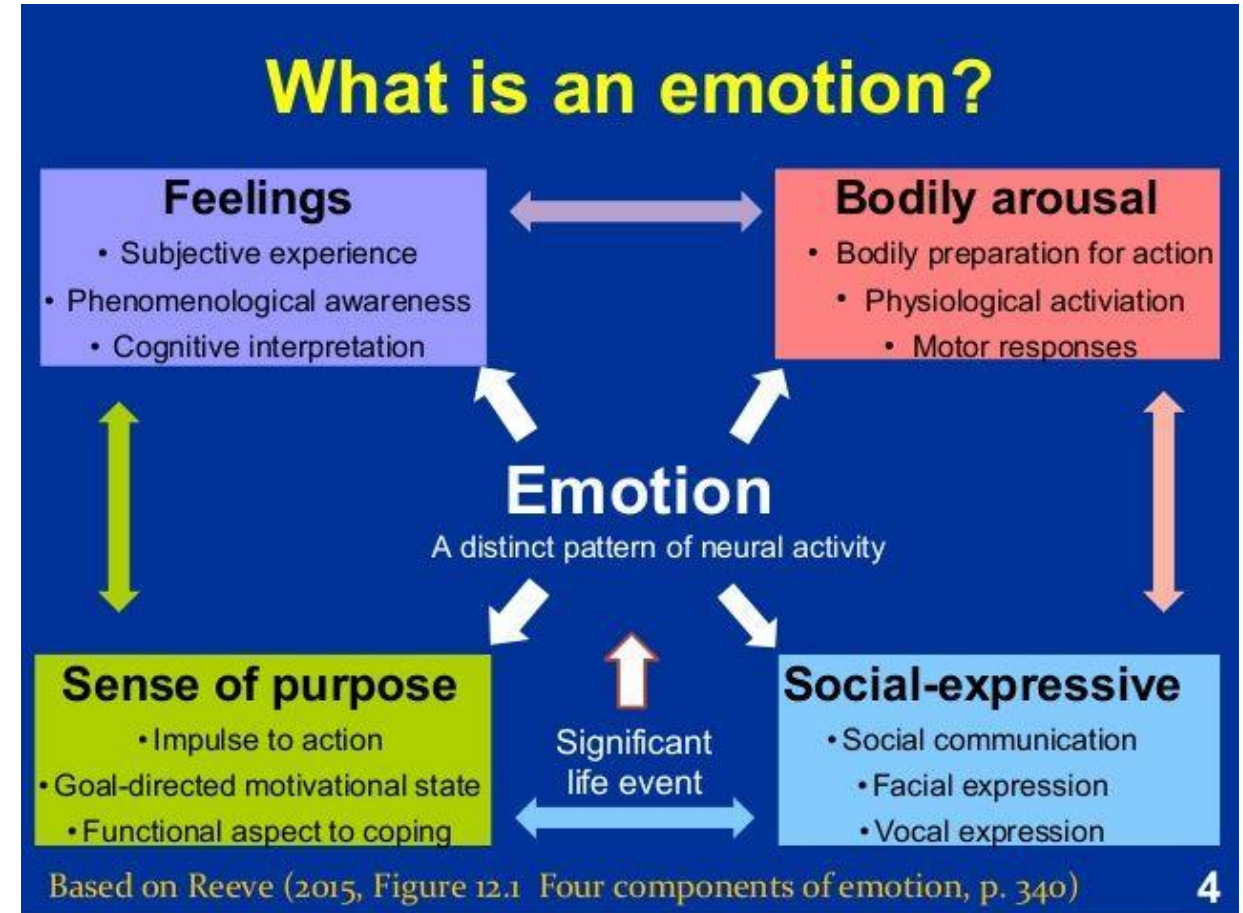
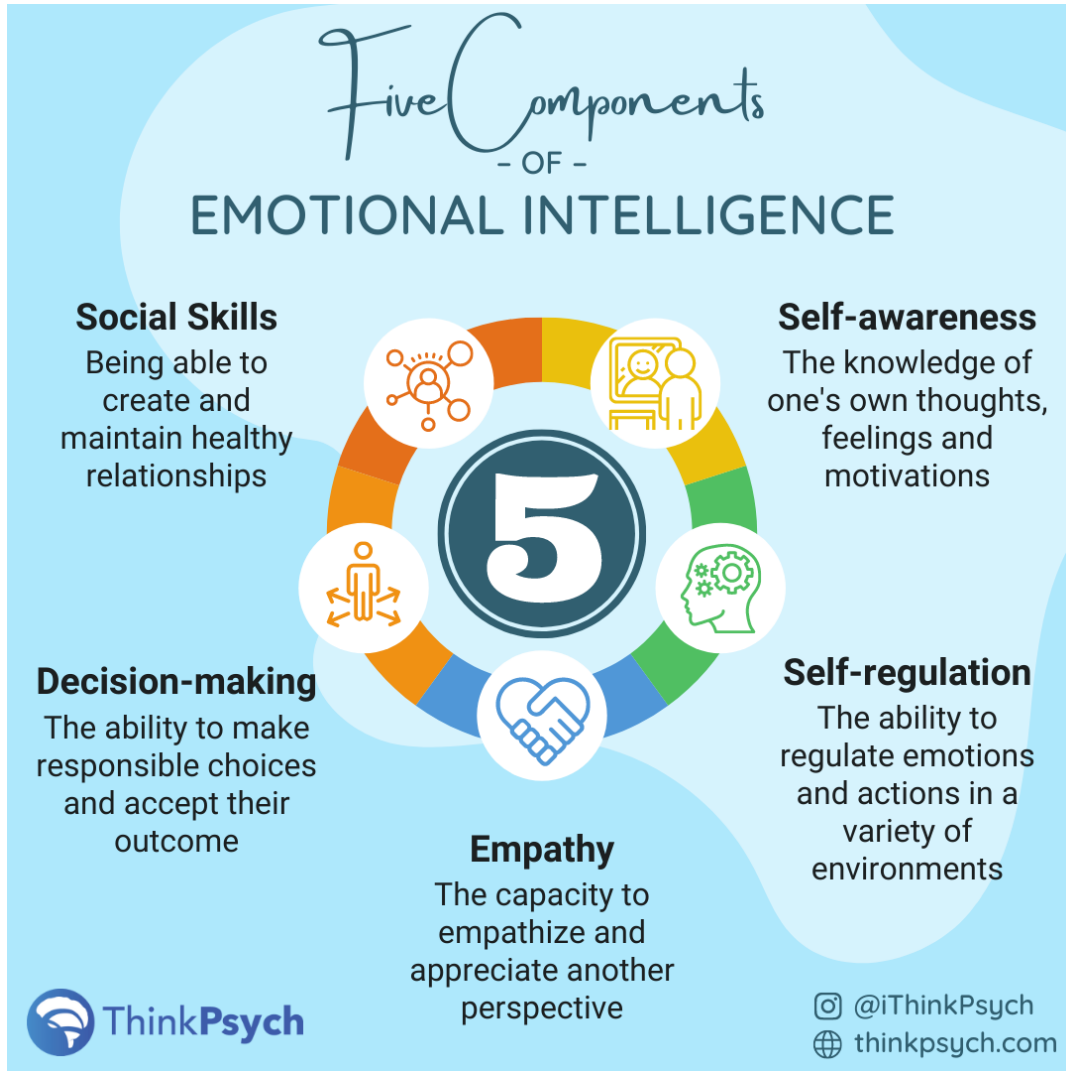


What is emotion?

- Extremely difficult to define
- Other labels: passion, sentiment, affection, affect, disturbance, movement, perturbation, upheaval, or appetite
- Several components to emotion:
 - **Feeling**: subjective experience, embodied
 - **Evaluation**: an appraisal of something (that bear is dangerous)
 - **Physiological**: change in the body (increased heart rate)
 - **Expression**: signaling of emotion state (a furrowed brow)
 - **Behavior**: a response to a stimulus (running from the bear)
 - **Mental**: a change in cognition (focusing of attention)
- How do all of these components intersect and interact? This is still widely debated

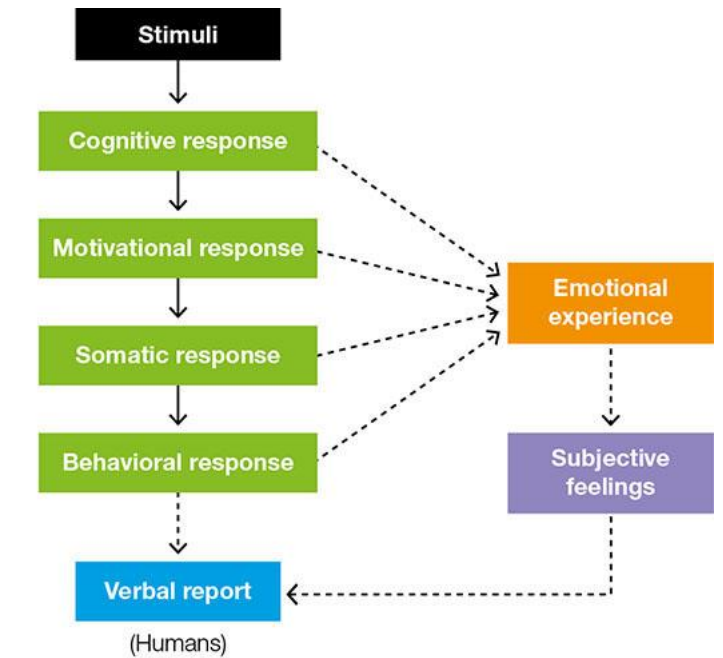
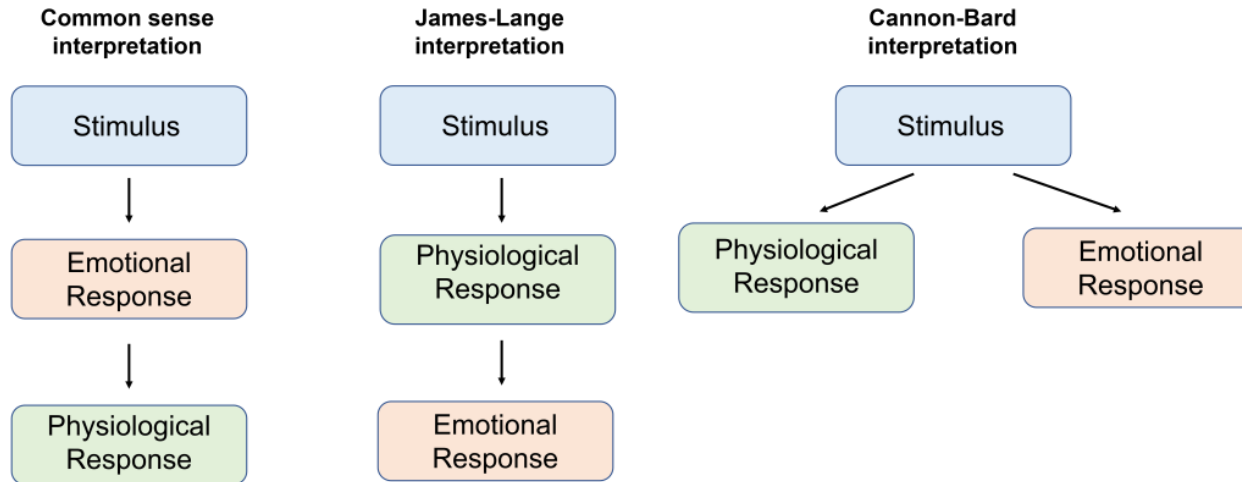


What components make up emotion?

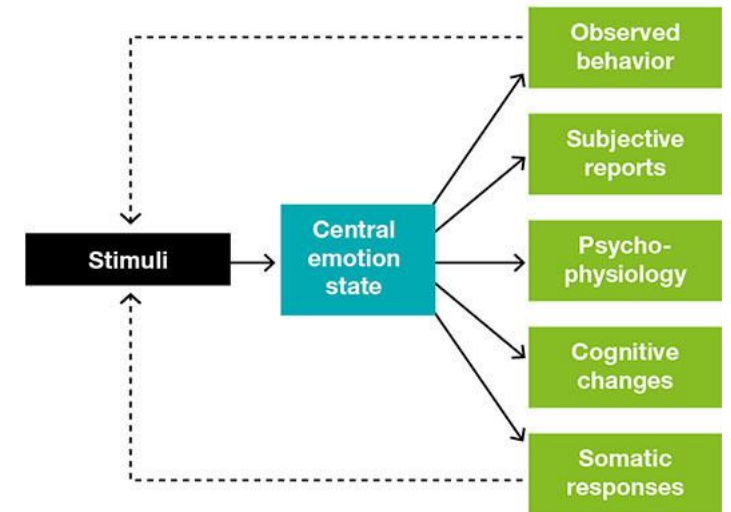


What organizes emotion?

- Does the emotion cause the response? Are there built-in emotional circuits that get activated? Or is the response appraised as an emotion?



a



b

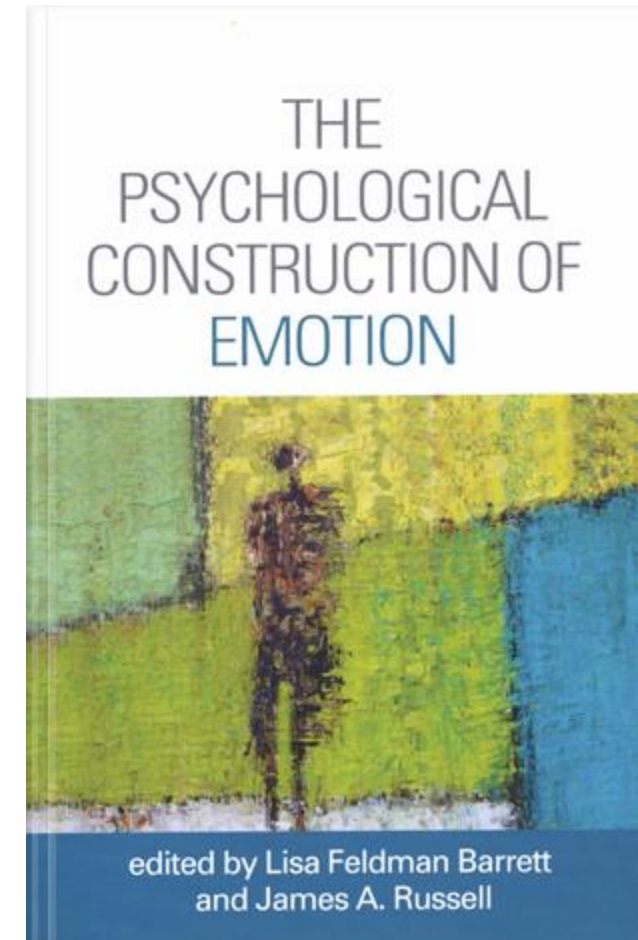
Facial Action Coding System (FACS)

- The action of facial muscles can be used to classify six fundamental emotional states
- These are believed to be universal, independent of upbringing, cultural transmission
- This can also be used to explain why some expressions appear as genuine or not genuine



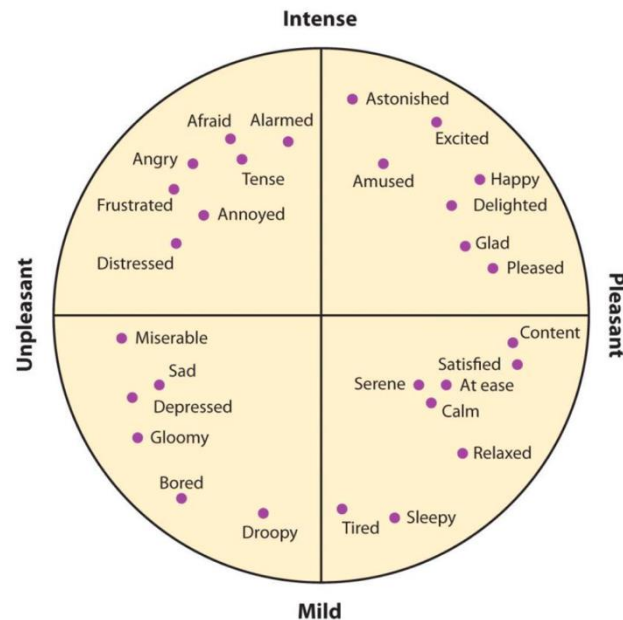
Feldman-Barrett's Constructed Emotions

- Emotions are actively constructed out of prior experiences, situational context, and cultural understanding. There is no hardwired emotional circuitry with fixed meanings
- Emotions emerge out of “core affect,” a basic sense of valence (good/bad) and arousal (high/low energy) that the brain monitors and interprets
- Emotions are the brain’s attempt to make meaning out of bodily signals in a given context, so they are reliant on cultural context and individual experience to provide frameworks of understanding
- Emotion concepts like anger and sadness are therefore learned constructs, rather than universal expressions
- “Your brain invisibly constructs everything you experience, including emotions.”
- <https://www.youtube.com/watch?v=0gks6ceq4eQ>

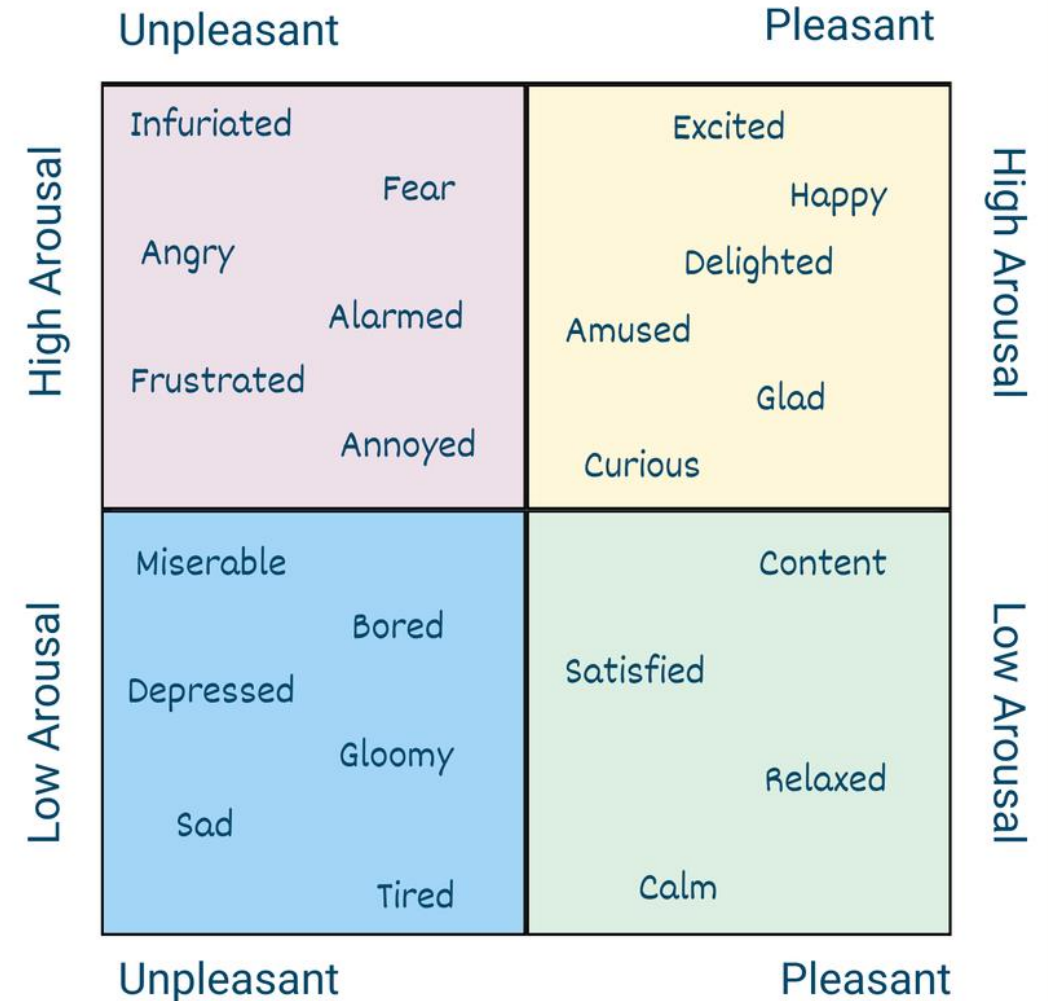


Arousal-Valence

- **Valence:** pleasant or unpleasant, it feels good or bad
- **Arousal:** intensity or activation, high or low energy



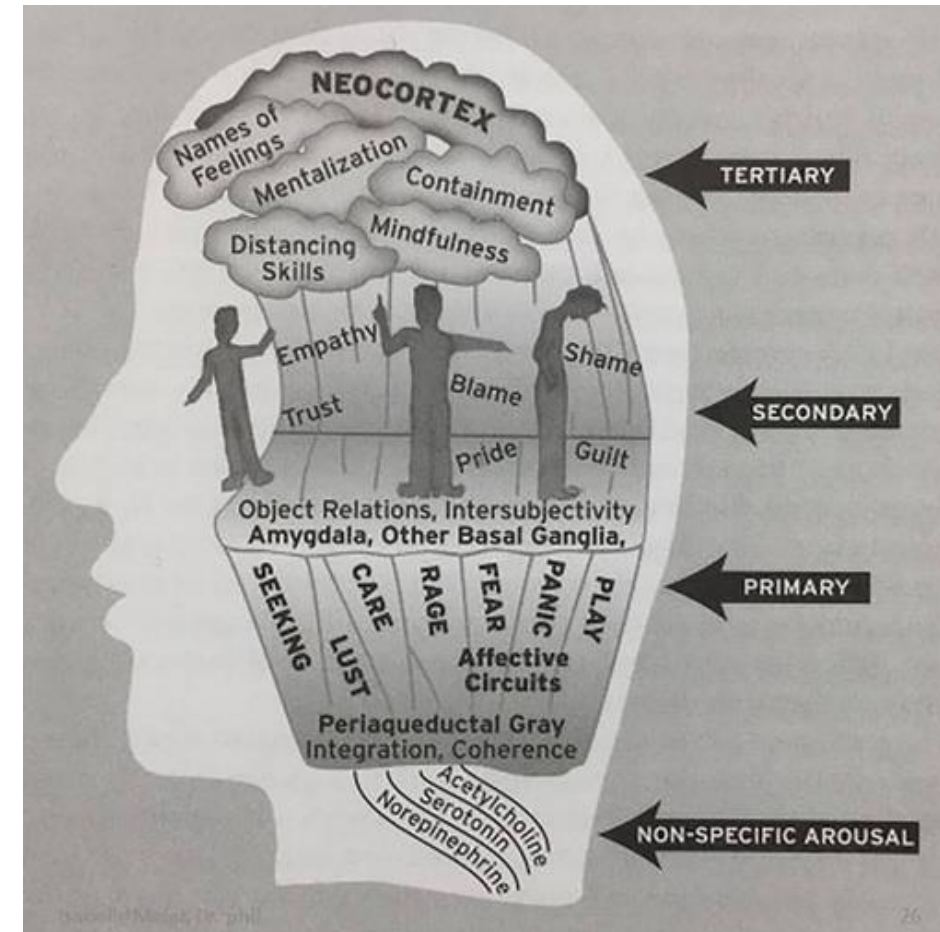
The Arousal-Valence Model of Emotions



Vertical Axis: Arousal,
Horizontal Axis: Valence

Jaak Panksepp's Emotion Systems

- There must be something adaptive about emotions that is the reason evolution has selected for them. They are highly conserved, evolutionary ancient systems
- There are “primary processes” that are fundamental, hardwired systems in the brain that produce core emotions
- Emotions have an underlying circuitry to them, they are systems with embedded feelings, cognition, behaviors
- Three levels: primary (neural circuits), secondary (learned response), and tertiary (complex, conscious emotional experience)
- https://www.youtube.com/watch?v=65e2qScV_K8

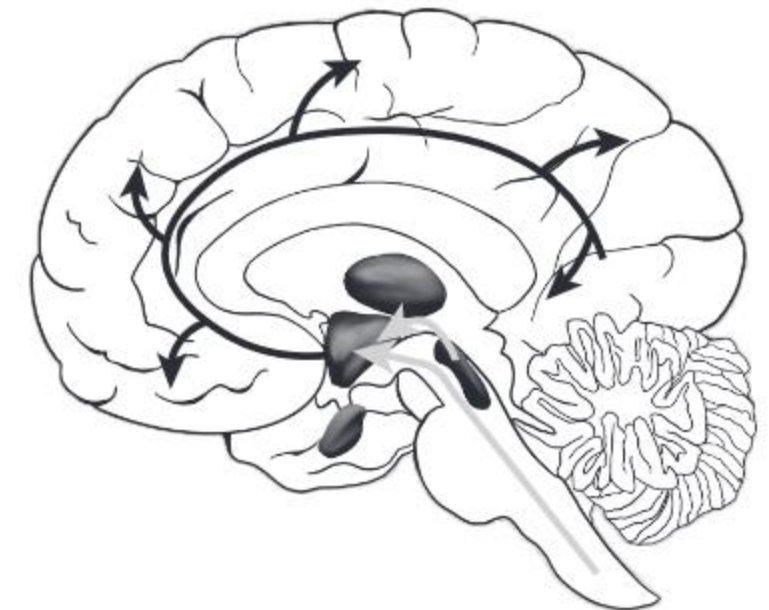
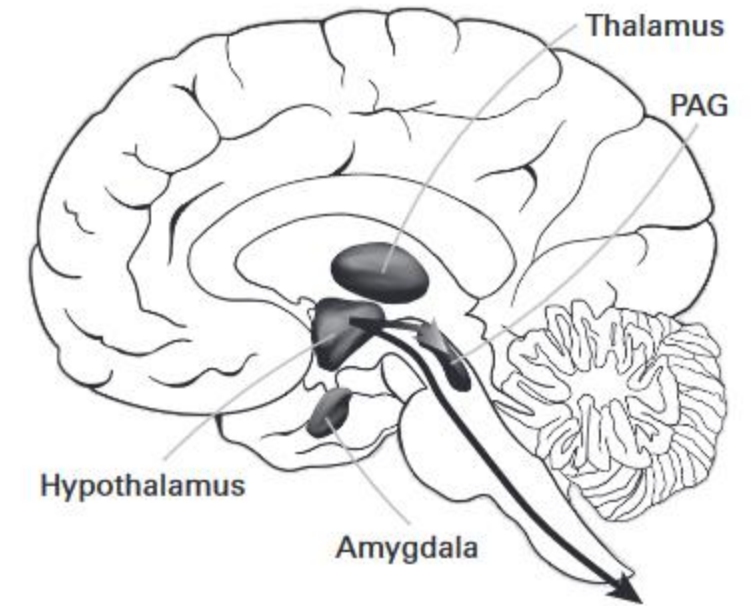


Emotion systems

System	Emergent feelings	Function
SEEKING	Interest, frustration, craving	General-purpose appetitive motivational system, exploration motivation
RAGE	Anger, irritability, contempt, hatred	Invigorates aggression, self-defense, competition
FEAR	Anxiety, worry, psychic trauma	Avoiding harm, heightened vigilance, response to threat
LUST	Erotic feelings, jealousy	Sexual arousal
CARE	Nurturance, love, attraction	Social bonding, parental bonding, pair bonding
PANIC	Separation distress, sadness, guilt/shame, shyness, embarrassment	Seeking care through distress calls, social attachment
PLAY	Joy, glee, mirth, happy playfulness, laughter	Learning new skills through practice, social capacities

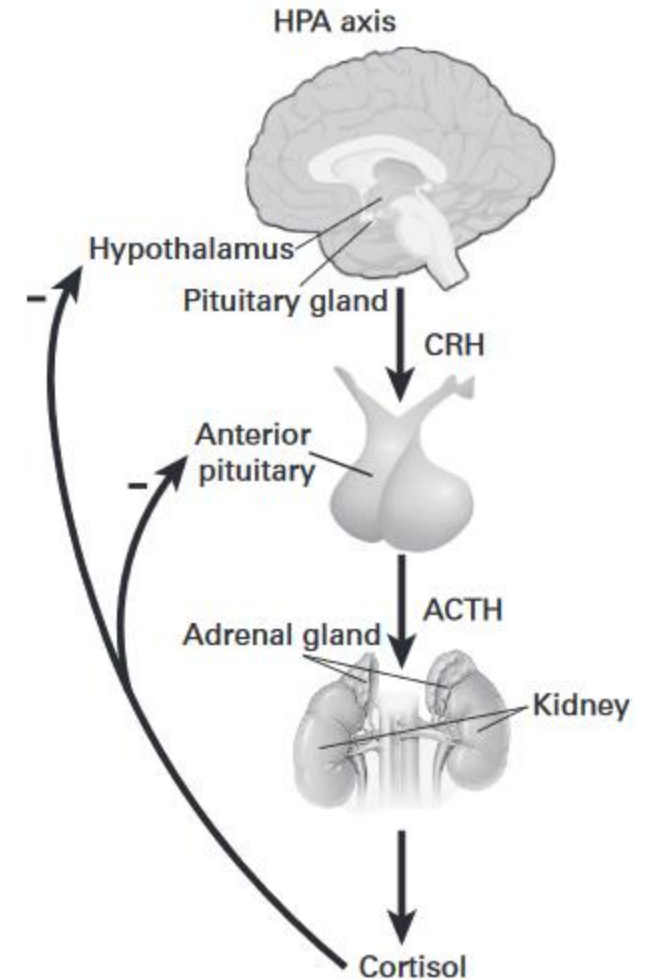
The hypothalamus

- Regulates **homeostasis** and the **pituitary gland** (hormone secretion)
- Circadian rhythms, wakefulness and sleep, stress response, temperature regulation, food intake, thirst, sexual behavior, defensive behavior
- Plays major role in activating various physiological states involved in emotions
- Direct and indirect (through **thalamus** and **basal ganglia**) projections to all of the cortex
 - Can influence many cognitive, sensory, motor processes
- Has modulatory effects on **dopamine** release, reward system



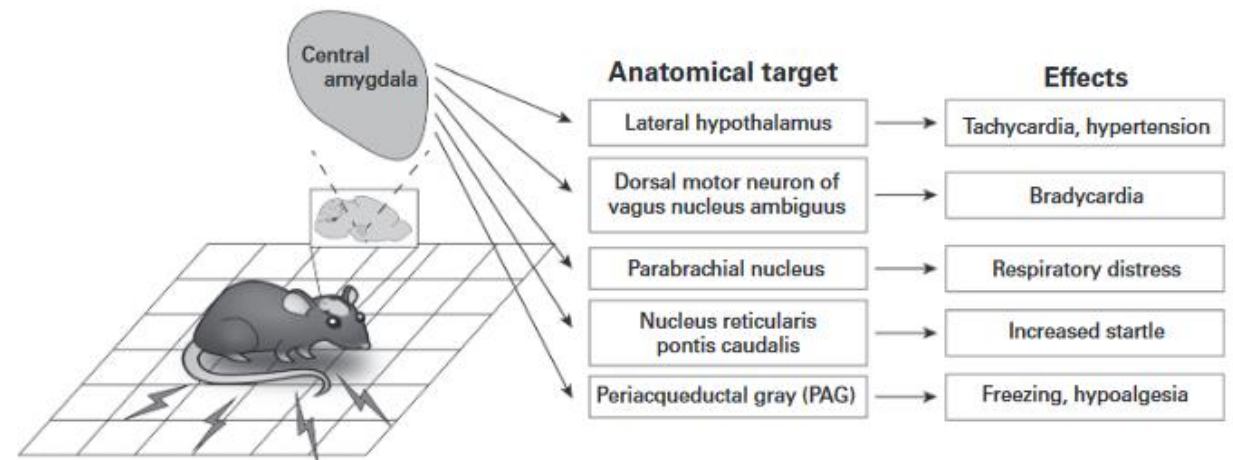
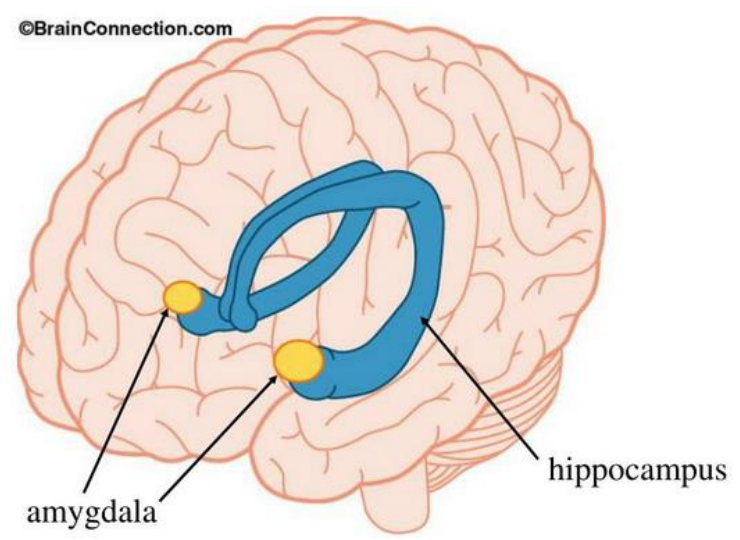
Hypothalamic-Pituitary-Adrenal (HPA) Circuit

- Stress response system – **cortisol** release to mobilize energy, heighten alertness
- **Cortisol** inhibits **CRH** release in a feedback loop to control stress response
 - In chronic stress, this feedback loop is dysregulated
- Works closely with **amygdala** and **prefrontal cortex** to regulate physiological stress in emotional systems



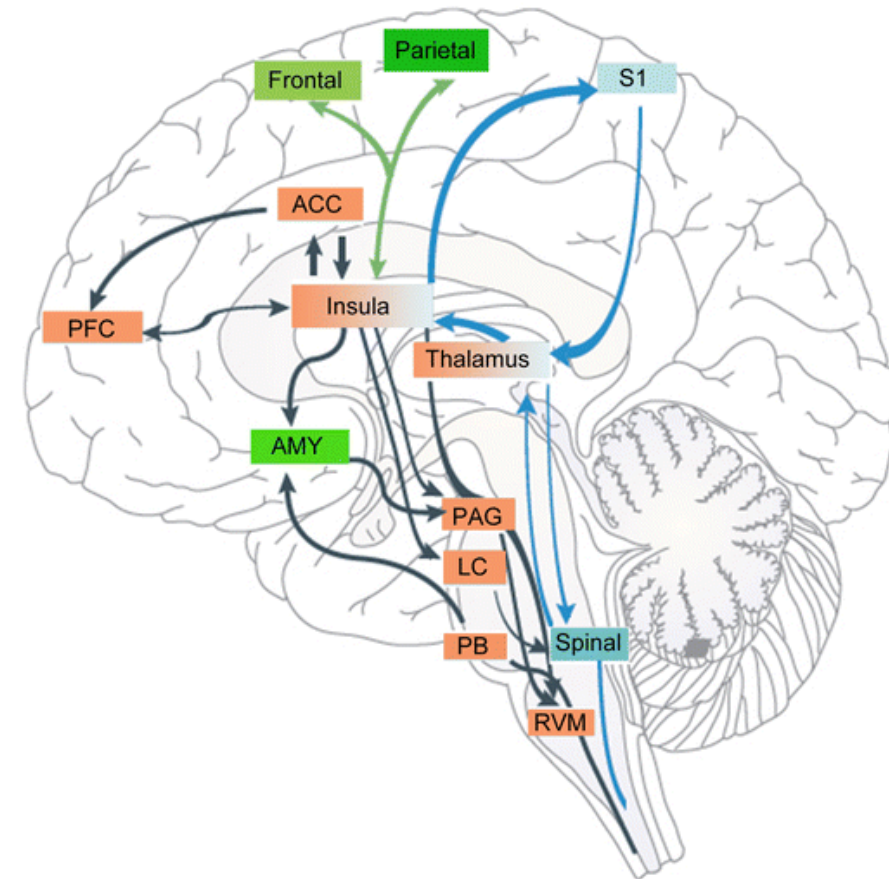
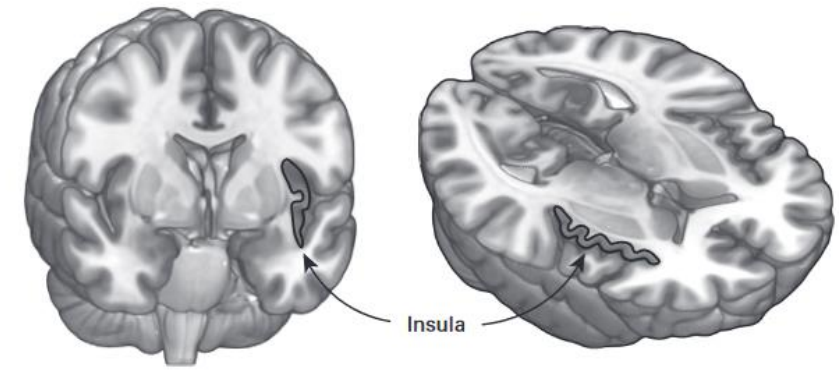
The amygdala

- Receives visual, auditory, somatosensory, and hippocampal inputs, allowing for **integrated emotional processing** and memory consolidation
- Encodes **emotional significance** of events and motivating rapid response to that information
 - Allows for **aversive learning, threat detection**



Insula

- Connections with **sensory cortices**, **amygdala**, **PFC**, **cingulate cortex**, and the **salience network**
 - Integration of emotionally relevant stimuli, attention shifting, body feeling
- Plays a major role in **interoception** – awareness of physiological states needed for awareness of emotions
- Active in processing emotional salience, social emotions, pain processing



Emotional Regulation

- **Prefrontal cortex (PFC)** can downregulate **HPA circuit** and **amygdala**, dampening stress response
 - The **PFC** cannot stop the response from the **amygdala**, but it can downregulate its downstream effects
- **Inhibitory control** over a stress response allows you to willfully maintain emotional stability, engaging more slowly and thoughtfully rather than quickly and reactively
- **Cognitive reappraisal**: reinterpret a potentially stressful situation to reduce stress response
- Inhibitory neurotransmitters like **serotonin** and **GABA** used to regulate emotional stability and decrease stress levels



Emotional Intelligence (EI)

- Refers to the ability to recognize your emotions and how they are impacting your thoughts and behavior, and your ability to recognize the emotions of others
- High EI associated with better self-control, self-confidence, more intrinsic motivation, resilience, more effective communication, more successful relationships
- Its neurological basis is debated, but similar to IQ, likely indicates a well-regulated nervous system and high cognitive control

