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Class 16- Emotions – 10/19

The issues:
- Inate or learned?
- Voluntary or involuntary?
- Adaptive behavior or communication?
- Emotional expression vs. emotion experience.
- Do animals have emotions? Yes.

Measuring Emotions:
- Behavior (emotional display)
- Autonomic system (heart rate, breathing, sweating) polygraph.
- Endocrine system (hormones)

Facilitation Cascade: One level triggers another-(Endocrine→Autonomic→Behavior)

The 4 Theories: Common sense, James-Lange, Canon-Bard, Modern (Ledoux)

Limbic system: A network of structures involved in the experience and expression of emotions.

Amygdala- Modern theory: 2 pathways-fast and slow.
- Fast= gut reaction
- Slow= cognitive

Scientific study of emotions: Fear conditioning
- fear can be innate or learned.
Condition: Association between a neutral cue and a negative stimulus.
- The Amygdala is involved in the acquisition (learning) of fear.

Good animal model: Many studies have shown that the pathways for auditory fear conditioning are similar in rats and humans.

Extinction: Repeated presentation of the tone alone, after learning.
- this is not about forgetting.
- Emotional learning in rats is permanent.

The lateral nucleus of the amygdala:
- Inputs: cortex (primary and association)
- Outputs: striatum (reinforcement learning) prefrontal cortex.
- Involvement: emotional learning, reward perception, auditory fear conditioning, conditioned taste aversion.
The central nucleus of the amygdala:
  Inputs: internal amygdala
  Outputs: hypothalamus, midbrain
  Involvement: long term stress

Amygdala fear evidence:
  Animal: stimulation of hypothalamus
  Human: stimulation of Amygdala
  - Fear may or may not yield aggression.
    - the expression of aggressive behavior is genetically programmed. (Species specific)
    - the cause of aggressive behavior is partly genetic and partly environmental.

  Threat and defensive: towards same species.
  Predation: towards other species.

Aggression: frontal cortex
  Anatomy:
    Inputs: thalamus, temporal cortex, VTA, Amygdala.
    Outputs: hippocampus, hypothalamus, Amygdala.
    Its role: control complex emotions.

Phineas Gage: 1800’s.
  The bar went through his frontal cortex. He recuperated back to normal. Although, he had emotional childish behavior. Suggesting that the frontal cortex is involved with emotions.

Trolley Dilemma: Saving lives by sacrifice example... would you push 1 person off the bridge to save 4?
  - vmPFC is involved in personal moral judgements.
In summary: vmPFC takes high level sensory info, matches them to social standards and plans emotional actions.

True or Flase:
  The Ventromedial hypothalamus is involves in maternal behavior.
    - False.

  A patient with androgen insensitivity syndrome will look female.
    - True.