

Chapter 10: emotional influence on learning and memory



What is emotion? A cluster of three distinct, interrelated phenomena. What are the three phenomena's of emotion? 1. Physiological response

2. Overt/observable behavior

3. Conscious feelings

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NowPhysiological responseHeart rate, perspiration, respiration, other body

functionsOvert/observable behaviorFacial expression, tone, posture,

laughter, tearsConscious feelingsSubjective experience of happiness,

sadnessManifestation/expression of emotion:*Vary by culture

*Gender: women more likely to express happiness, sadness.

Human emotions innate and universal, but outward expression governed by cultural and social learning.

Learning emotional responses: Focus on fear (easy to induce, detect, and record).

Learning based on emotional response fast, strong, long lasting. Conditioned

emotional responses: learning to predict danger. Why is emotional learning

fast?*CR (freezing) may occur after one CS-US pairing

*Long lasting, hard to extinguish

* Requires numerous extinction trials, does not eliminate CR, only reduce chance CS elicits

*CER high spontaneous recoveryConditioned escapeLearning to get away from danger. Learning to escape or terminate aversive stimulus. (negative reinforcement)

Learning fastConditioned avoidanceLearned responses to avoid or prevent aversive stimuli: often resistant to extinction. Two-factor theoryAvoidance

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learning combination of classical and operant conditioning
How does the two-factor theory work? First stage is classical conditioning (CS evokes conditioned emotional response, fear)

and the second stage is operant conditioning (avoidance response is reinforced). Cognitive expectancies
Weigh possible behaviors based on possible outcomes
Learned Helplessness
Prior exposure to inescapable shock (classical conditioning) taught animals that they were helpless to escape any shock.

Uncontrollable punisher teaches expectation that responses ineffectual, reduce motivation to attempt new avoidance responses
Effects of emotions on memory storage and retrieval: emotion and encoding memories: the more arousing, better encoding of details and retrieval
Mood congruency of memories: Easier to retrieve memories matching current mood/emotional state (compare with transfer appropriate processing)

*Mood/emotion serve as memory cue. Flashbulb memories: Vivid episodic memories with exceptional strength and durability

*remember what, when, and where- smell, sound, etc. Societal flashbulb memories
National disaster longer lasting, vivid, largely accurate, but not perfect photograph of event
False memory
As time progress, fill gaps with detail
Amygdala
Central processing station of emotions
Two emotional pathways for emotional learning in amygdala: From thalamus ("sensory gateway") to amygdala and cortex (fine detail)

*important role in responding to fear-evoking stimuli

*direct and indirect pathway
Direct route (thalamus to amygdala): Faster
less detail

quick reaction

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*amygdala--> ANS and motor areas
Indirect route (thalamus to cortex to amygdala): slower finer stimulus details- terminate fear response. Frontal cortex
Seat of executive functions, responsible for most planning and decision making.

* it is intensely involved in modulation social behavior (expression of emotion and reading other's emotion)
What occurs if there is damage to frontal lobes?

*Fewer and less intense facial expressions

*Impaired ability to recognize negative facial expressions
What are other extreme side results to damage in the frontal lobes? Heightened emotionality, inappropriate social behavior (profanity, public masturbation), rapid mood swings, violent anger, aggression. Phobias
Excessive and irrational fear of object, place or situation

*often justified fear of object or situation; phobia if interferes with daily life.

what are some causes of phobia? vicarious learning, fear evoke response
(cc)Systemic desensitizationsuccessive approximation/presentation of
CSPTSDA psychiatric disorder that can occur following the experience or witnessing of a life-threatening event. Symptoms of PTSD
Strong fear response, helplessness, terror

*Intrusive recollections (flashbacks, nightmares), avoidance or reminders, heightened anxiety

*Increased arousal: insomnia, irritability, difficulty concentration, hyper-vigilance, exaggerated startle response.