

- A) The amygdala is responsible for many emotions and emotional responses, as well as the memory of emotions
  - a. Responsible for fear – the reason we're scared of things outside of our control
  - b. Controls how we react to situations that we feel are threatening or dangerous
  - c. When the amygdala was removed in rats, they feared nothing – and had no memory of fear
  - d. Stimulation causes aggression or fear
- B) Center for emotional behavior and motivation – and many other parts of the brain input information causing these emotions or memories to form. Fear and anxiety center
  - a. Receives input from all senses as source of information
    - i. hypothalamus, septal area, orbital cortex, and parabrachial nucleus all send input. Olfactory bulb sends olfactory sensory information
    - ii. part of the limbic system
  - b. Emotion in one area (amygdala) and perception in another area create an intense, emotionally charge memory
  - c. Prefrontal cortex inputs into amygdala
  - d. Amygdala is where emotions and memory combine – both positive and negative (trauma, humiliation), may last extremely long
    - i. Linked to both fear and pleasure responses/learning
  - e. When mice experienced prolonged stress, their amygdala changed structurally.
  - f. Regulates memory consolidation
  - g. Left amygdala is associated with social anxiety, OCD disorders, PTSD, and general anxiety
- C) The amygdala is in the brain's limbic system - the limbic system controls emotional memory, decision-making, emotional reactions
  - a. Very small, in bottom part of brain
  - b. Plays part in episodic memory
    - i. Remembering sensory and personal emotion of situations
- D) Damage eliminates behavioral responses to stress
  - a. When the amygdala is damaged, stimuli that may have been interpreted as threatening becomes harmless.
  - b. Fear is still experienced with a damaged amygdala, but the responses are different. Fear is wrongly interpreted in the brain.
  - c. Contributes to non-conscious aspects to fear
  - d. When amygdala is working correctly, it encourages the brain to avoid stimuli it identifies and remembers as dangerous
  - e. Damage changes memory that is associated with emotion
  - f. Lesions to temporal lobe created large changes, such as
    - i. Overreaction, loss of fear, hypersexuality, hyperorality (where inappropriate objects are placed in the mouth), neglect of infants
  - g. Children with anxiety disorders have been found to have a slightly smaller amygdala
  - h. There's a connection between PTSD sufferers and how their brain processes emotional reactions – when they are shown faces with fearful expressions, their amygdala shows more activity than someone without PTSD.

E) Flashbulb memories

- a. highly detailed, vivid single shot memory – captures circumstances under which an important piece of emotionally distressing news was heard
- b. type of autobiographical memory
- c. formed in the amygdala
- d. often stored for a lifetime
- e. what makes the memory so significant is the emotional arousal at the moment the memory was created