

Chapter 17: Emotion, Health and Stress

- **Be knowledgeable of the case of Phineas Gage, what damage did he experience and what emotional consequences followed?**
 - 25 year old worker construction worker, brain damage in explosion
 - no apparent damage; memory loss, etc
 - however, behavioural changes occurred: medial prefrontal lobe damage (planning/emotion)
 - lived 12 years following the event
 - Now fitful, irreverent, and grossly profane, showing little deference for his fellows. He was also impatient and obstinate, yet capricious and unable to settle on any of the plans he devised for future action. His friends said he was “No longer Gage.”

- **Know Darwin's main ideas regarding the evolution of emotions.**
 - *The Expression of Emotions in Man and Animals*, Charles Darwin 1972
 - belief that emotions evolve much like physical traits, compared species
 - 3 main ideas:
 - evolution acts on behaviours that indicate what animal will do next
 - if signals are beneficial to survival the function will be enhanced
 - opposite behaviours (submissive/aggressive) are signalled by opposite postures, principle of antithesis
 - showed this behaviour in dogs, lean forward v. Cower snout up

- **What are the differences between the James-Lange and Cannon-Bard theories of neural emotional processing?**
 - JL – Physiological reactions cause emotional reactions.
 - JL = perception + phys reaction = feeling (one chain)
 - CB – physiological reactions and experience of feelings in response to emotion inducing stimuli are independent of each other
 - CB = Perception = Feeling, Perception = physiological (2 separate)

- **What is the modern biopsychological view of emotional neural processing?**
 - Perception, physiology and feeling/emotional experience all concurrently affect each other and play a role together

- **What is sham rage and what did Bard conclude following the observation of cats?**
 - Decorticated cats respond aggressively to the slightest provocation
 - abnormal response in two ways – inappropriately severe and not directed at any particular target (sham rage)
 - cannot be elicited if hypothalamus removed, thus made conclusion
 - The hypothalamus is critical in the expression of aggressive responses and the function of the cortex is to inhibit and direct these responses

- **What neural structures are in the limbic system?**
 - Amygdala, mammillary body, hippocampus, fornix, cortex of cingulate gyrus, septum, olfactory bulb and hypothalamus
 - Papez proposed that emotional expression is controlled by several connected structures and named it limbic system

- **What is Kluver–Bucy Syndrome and what neural damage causes it?**
 - Pattern of behaviour in monkeys whose anterior temporal lobes had been removed
 - consumption of almost anything edible, increased sexual activity directed at often inappropriate objects, investigate familiar objects, lack of fear, and tendency to investigate objects with the mouth
 - most caused by damage to the amygdala
 - human example provided in text

- **What is meant by the universality of facial expressions and what other information can we learn?**
 - Cross culturally we can identify 6 primary emotions (12 cultures)
 - most famous was isolated tribe (surprise, anger, sadness, disgust, fear and happy)
 - Does smiling make you feel more positive? Facial–feedback hypothesis, when you put a certain face on – you react differently, feeling more/less positive/negative
 - True v. False expressions – micro–expressions can break through false emotions momentarily and show true expression, there are subtle differences that people can detect
 - genuine smile has certain muscles, called a Duchenne smile

- **What are the 6 primary emotions and additional emotions which are considered?**
 - Surprise, happy, anger, fear, disgust, sad. (SHAFDS)
 - contempt and embarrassment, and possibly pride

- **What is a Duchenne smile?**
 - Orbicularis and zygomaticus major contract for genuine smile, most people cannot control the orbicularis muscle.

- **What is the stress response in humans?**
 - Stress, reaction to harm or threat and stressors, the stimuli that cause stress
 - Chronic psychological stress is most commonly linked to ill health and in the short term we can adapt, but over the long term it is very detrimental
 - Selye attributes stress to the activation of the anterior pituitary adrenal–cortex system (APACS)– Adrenocorticotrophic hormone (ACTH) –> release glucocorticoids from adrenal cortex –> produce effects of stress
 - Recent research implicates the role of the sympathetic nervous system in stress –> increase amounts of norepinephrine and epinephrine released from adrenal medulla
 - in 2004, discovered that brief stress can produce a reaction that releases cytokines which participate in immunological responses, causing inflammation and fever

- Gastric ulcers are painful lesions in stomach and intestine, present in those highly stressed, stress makes body susceptible to hpylo bacteria, psychosomatic
- Stress and hippocampus: sensitive due to high amount of glucocorticoid receptors, following stress dendrite branches shrink and less neurogenesis, natural stressors produce more effects than artificial ones, effects can disrupt function, effects of stress greater in males (estradiol in women)

- **What are the pathways of auditory fear conditioning?**
 - Sound + shock = rat scared, then sound+no shock = rat scared (conditioning)
 - blocked with lesions to the MGN, medial geniculate nucleus and no effect with lesions to the auditory cortex
 - indicates that MGN must project to another area, perhaps amygdala
 - amygdala lesions block fear conditioning
 - Fear and hippocampus: fear of of place can be conditioned too, lesion before prevents fear development, lesion after blocks retention of fear response, other fear responses in tact (like auditory)

- **Who is Charles Whitman and what does his case tell us?**
 - Had tumor in amygdala, killed wife and mother then went to a school and shot people
 - He wrote a letter explaining his bizarre actions and asked to be studied
 - Amygdala, hippocampus and prefrontal cortex play a role
 - Lesion to amygdala = unable to perceive fearful emotions in others, but can still express emotions just fine