Emotion

- Emotion Expressions
  - Emotions have social values: Communicate
    - Emotional Expressions vs. Emotional Experience
      - Do animal express emotions? Do they experience emotions?
      - Yes, by means of postural changes, facial expressions and nonverbal sounds.
  - Internal State: e.g. Depression, sad (health)
  - Immediate past experiences: e.g. Fear
  - Immediate future intents: e.g. Anger
  - Context information: e.g. Comedians, emoticons

- How much can one trust an emotional expression?
  - Innate (involuntary) vs. Learned (voluntary)

-Darwin’s Theory
  - The expression of emotion in man and animals (1872):
    - Innate and unlearned;
    - Same basic features for e.g. aggression (teeth, snarl) → Human (facial)
      emotional expressions have evolved from that of animals.

  - Innate Component:
    - In different cultures (islands), different languages, but same emotional expressions, also same understanding of nonverbal emotion sounds.
    - Blind children produce the same expressions as normal children.
    - Other means of expressing emotions: voice/tone, body posture, etc.

- Facial Expressions
  - Psychological Basis
    - True and “fake” facial expressions: individual facial muscles
    - Acting: Stanislavski “system” and “method acting”. Decompose the script and internalize the character’s emotion → Actors attempt to imagine themselves in a situation that would lead to the desired emotion, once the emotion is evoked, the facial expressions follow naturally.

  - Basic Emotional Expressions
    - 6 basic facial emotional expressions, each produced by specific muscle combinations. Automatic and involuntary.
    - FACS (Facial Action Coding System): A way of the measuring elementary muscle contractions that make up emotional expressions.
- The production of the correct FACS for an expression can sometimes elicit the emotion in the subject (feedback theory). Botox may “blunt” the experience/feeling of certain emotions.

- **Neural Bases: Facial Paresis**
  - **Volitional Facial Paresis (Right Hemisphere Damage):**
    - Caused by damage to the face region of the primary motor cortex or to the fibers connecting this region with the motor nucleus of the facial nerve, which controls the muscles responsible for movement of the facial muscles.
    - Patients cannot voluntarily move the facial muscles but will express a genuine emotion with those muscles.
  - **Emotional Facial Paresis (Left Hemisphere Damage):**
    - Caused by damage to the insular region of the prefrontal cortex, to the white matter of the frontal lobe, or to part of the thalamus.
    - This system joins the system responsible for voluntary movements of the facial muscles in the medulla or caudal pons, people with this disorder can move their face muscles voluntarily but do not express emotions on the affected side of the face.

- **Asymmetry**
  -(Usually) the left side of the face is more expressive than the right side→ right hemispheric dominance for (facial) expressions and recognition, especially negative emotions.

- **Lateralization of Emotions**
  - Hemispheric specialization of facial expression recognition:
    - Left Hemisphere: words, speech, meaning.
    - Right Hemisphere: facial expressions, tone of voice.
  - Recognition of emotion is impaired in patients with right somatosensory cortex damage (not visual cortex, or amygdala or prefrontal cortex)
  - Recognition of emotion may involve “internal simulation” of emotions
  - **Mirror System (located in premotor cortex, in frontal lobe):**
    - Mirror neuron plays an important role in the control of movement.
    - Mirror neurons are activated when an animal performs a particular behavior or when it sees another animal performing that behavior.
    - Provides feedback that helps us to understand how other people feel.

- **Amygdala Damage in Human**
  - **Amygdala:** Specialized brain area for fear and danger, plays an important role in both emotional responses and recognition.
  - Amygdala not involved in the expression of facial emotions, but is involved in recognition→Most amygdala-damaged patients can express emotions but can’t recognize them.

- **Insular Cortex: Disgust**
  - Insular cortex contains the primary gustatory cortex, activated by sight and experience of disgust.
  - Disgust: a protection signal (personal and species).
- Some emotions activate specific brain areas.