Emotion

- A response to some stimulus that involves:
- 1. Physiological component
    - Physiological arousal
    - Ie. HR, BP, BR
- 2. Behavioural component
    - Expressive behaviours
    - Facial expression and body mannerisms
- 3. Cognitive component
    - A) Thoughts or interpretations
        * Interpretation of the consequences or relevance of the stimulus
    - B) Feelings
        * The subjective experience of emotion

Physiological Arousal

- Autonomic nervous system
    - Sympathetic and the parasympathetic divisions
    - Sympathetic division responds to a challenge or threat by increasing physiological arousal
        * Ie. a threat to your safety or possessions, or as porting competition
        * Flight or fight
- There are physiological similarities and differences among the different emotions
- Similarities
    - All emotions elicit a sympathetic nervous system response
- Slight differences in physiological response
    - Hormone secretions and finger temperature will be slightly different between fear and rage
    - HR will increase more for anger, fear, and sadness than for disgust
    - BP will increase more for fear than rage
    - Anger will result in larger finger temperature increase than fear
    - Fear and disgust produce more sweating than happiness
    - Digestion slows during fear, but not during anger
- Differences in bran circuits
    - More amygdala activation with fear

Theories of Emotion

- A response to some stimulus that involves 3 components
    - 1. Physiological arousal
    - 2. Expressive behaviours
    - 3. Cognitions
- Early theories of emotion concerned with
    - Which occurs first?
        - The physiological arousal, the expressive behaviours or the conscious experience and labeling of the emotion?
    - Or do they occur at the same time?
- Later theories of emotion concerned with
    - What is the relationship between cognition and emotions?

James-Lange Theory of Emotion

- James-Lange Theory
    - The theory that our experience of emotion is our awareness of our physiological responses to emotion-arousing stimuli
- Some stimulus causes physiological arousal and expressive behaviours
    - Different emotions have different patterns or intensities of physiological arousal and expressive behaviours
- Interpretation of physiological arousal and expressive behaviours causes the feeling
    - We feel sorry because we cry, angry because we strike, and afraid because we tremble
- There is no explicit cognitive appraisal component (of the stimulus)

Facial Expressions

- Characteristic patterns of facial muscle contraction
    - Facial Action Coding System (FACS)
    - Defined by a set of Action Units (AUs)
        - Each AU codes the fundamental actions of individual muscles or muscle groups typically seen in facial expressions
        - Ie. AU4 describes the contraction of 2 muscles that lower the eyebrows
        - AU6 raises the cheeks
        - AU12 pulls the corners of the lips out (fake smiles last longer and start and stop more abruptly)
        - AU25 pulls the lips apart

- Distress or worry
  - Lifting of the inner eyebrow
- Surprise
  - Raised eyebrows
  - Eyes open widely
- Disgust
  - Wrinkling of the nose
- Consistent across cultures
- Seen in infants
- Seen in the congenitally blind

Effects of Facial Expressions

- Facial feedback effect
  - The tendency of facia muscle states to trigger corresponding feelings such as fear, anger, or happiness
  - Contracting the muscles involved with particular emotions increases the feeling of those emotions
- Behavior feedback effect
  - The tendency of behaviour to influence our own and other's though, feelings, and actions

Cannon-Bard Theory

- Criticism of James-Lange Theory
  - 1. Mechanism is too slow
  - 2. Physiological responses not distinct enough
- Cannon-Bard Theory
  - The theory that an emotion-arousing stimulus simultaneously triggers (1) physiological responses and (2) the subjective experience of emotion
- The detection of a stimulus causes the physiological response (and expressive behaviours) and the conscious experience (the feeling) at the same time
- The neural signal from the stimulus goes simultaneously to the SNS (physiological arousal) and to the cortex (conscious experience)
- Also, no explicit emphasis on the cognitive appraisal

Schachter and Singer's Two-Factor Theory

- Two-Factor Theory
  - The Schachter-Singer theory that to experience emotion one must (1) be physically aroused and (2) cognitively label the arousal
- Physiological arousal comes first
  - But physiological responses are not distinct enough to correctly identify and experience the appropriate feeling
- Requires a cognitive appraisal of the situation
  - 1. Physiological arousal
  - 2. Labelling arousal
- Spillover effect
  - Heightened levels of arousal impact how one perceives other events
- Study: reported feelings after injection of adrenaline
- Study: bridge phone number
- Thus, conscious cognitive labels can influence the felt component of an emotion

Two Processing Systems

SYSTEM 1: THE INTUITIVE SYSTEM

- The “low road”
- A) Automatic and unintentional
- B) Fast and effortless
- C) the process by which the evaluation was made is not accessible to consciousness, only the result of the process enters your conscious awareness

SYSTEM 2: THE REASONING SYSTEM

- The “high road”
- A) Intentional and controllable
- B) Slow and effortful
- C) The process os consciously accessible and viewable

Criticism of Two-Factor Theory

- Sometimes the feeling comes before conscious cognitive labeling
  - Thus, conscious labeling is not always necessary
- Cognition must precede the physiological arousal
  - The purpose of the physiological arousal is to support one’s response to the challenge
  - Thus, if there is physiological arousal, one must have already interpreted the stimulus as presenting some sort of challenge

Conscious and Unconscious Processing

- Two tracks for emotion producing stimuli
  - 1. Directly to the amygdala
    - The “low road”
    - Allows for fast reactions to obvious challenges or threats
    - Doesn’t require conscious processing
  - 2. Cortex, then amygdala
    - The “high road”
    - Allows for deeper cognitive analysis for more complex situations, but takes longer
- More neural projections from the amygdala to the cortex than vice versa
  - The “low road” can more easily hijack the “high road”
  - But one still can use reason to moderate one’s emotion

Lie Detection

- A machine that measures emotion-linked changes in breathing, cardiovascular activity (HR & BP) and perspiration
- First ask baseline questions
    - Questions with known answers
- Then ask the critical questions
- Criticisms
    - Anxiety, irritation, guilt result in similar physiological arousal
        * The victim can fail the test
    - Can be beaten
- Guilty knowledge test
    - Ask them questions about the crime that would not be known to an innocent person
    - Ie. sequential multiple choice
        * Which of the following items were stolen?
        * Some of the options were not stolen, while others were
    - Measure the physiological reaction to the individual options
        * Should be stronger to the items that have been stole

Detecting Emotion in Non-Verbal Cues

- This includes facial expressions as well as body gestures/postures and tone of voice
- 10-second clip of end of a speed date
    - Can often detect if one person is attracted to the other
- 10-second clip of teachers talking to school children (or just the audio clip)
    - Can often determine whether teacher likes the child
- 2-second film clips of faces or bodies
    - Can often detect whether the emotion is anger or sadness
- Introverts tend to be a little better than extroverts
    - Extroverts are easier to read than introverts
- Females better than males
    - Better emotional literacy
    - Express greater empathy
- Information that is missing in electronic communication
- Particularly sensitive to anger
    - Ie. subliminally flashed words, faces in a crowd, etc.
    - Sensitivity can be heightened with experience (ie. abused kids more sensitive to anger)
- Relatively insensitive to lying (only 54% accurate)

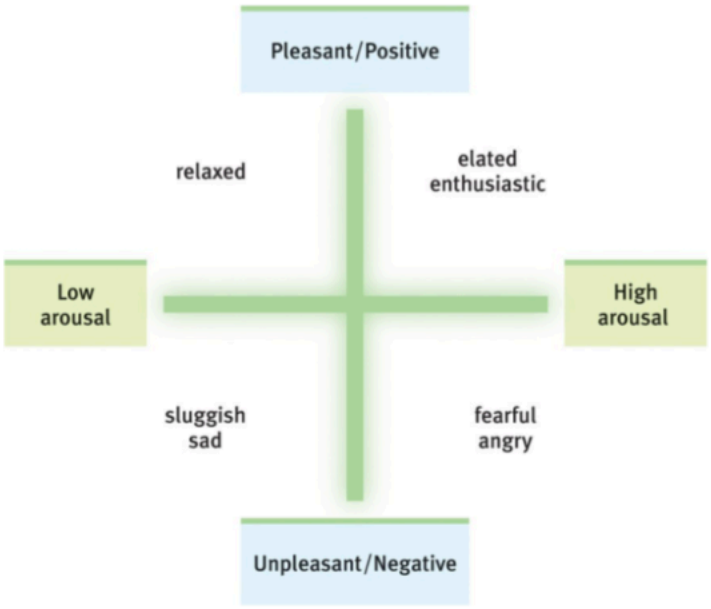
The Experience of Emotion: Basic Emotions

- There are different accounts of primary emotions
- Ie. Carol Izard
  - 10 basic emotions
  - Joy, sadness fear, anger, disgust, surprise, interest-excitement, contempt, shame, guilt
    - 7 can be seen in infants
    - 3 that develop with further maturation
  - Other emotions are a combination of the basic emotions
    - Ie. love is a combination of joy and interest-excitement
- Others include more primary emotions
  - Ie. pride, love

The Experience of Emotion: Valence and Arousal

- Emotional experience placed along two dimensions
- 1. Valence
    - Positive or negative
    - Pleasant or unpleasant
    - Emotional ranges
        - Ie. apprehension, fear, terror
        - Ie. content, happy, elated

- 2. Arousal
    - High or low
    - Emotional ranges
        - Ie. annoyance, anger, rage
        - Ie. interest, absorption, excitement



Anger

- Response to some perceived misdeed
    - To oneself or someone one cares about
    - Particularly if perceived as willful, unjustified, or avoidable
- Adaptive function
- Catharsis
    - Emotional release
- Catharsis hypothesis
    - Releasing aggressive energy (through action or fantasy) relieves aggressive urges

- Ie. screaming, hitting pillows, kicking garbage cans

Catharsis Research

- Ie. Bushman (2002)
  - Make people angry by insulting their essay
  - Some hit punching bag, others not
    - If hit bag, show more aggression
  - Rumination vs. distraction
    - Story about student treated unfairly by professor
    - Those who ruminate show more anger
- Sometimes acting aggressively temporarily leads to calming
  - A) when the provoker is the target
  - B) the retaliation seems justifiable
  - C) the target is not intimidating

Happiness

- A state of well-being and contentment
- A response to some perceived fortune
- Positive psychology
  - The scientific study of human flourishing, with the goals of discovering and prompting strengths and virtues that help individuals and communities thrive
  - Studying the factors related to happiness
  - Ie. brain correlates of happiness, genes, personality characteristics, effects on health, how to teach happiness, behaviours

Determinants of Happiness

- Genes
  - Twin studies
- Wealth?
  - 82% of American college students think “being very well off financially” is very important
  - People with lots of money are happier than those who struggle to afford life’s basic needs
  - People in rich countries experience greater well-being than those in poor countries
  - However, while incomes continue to increase, happiness has not
  - Once people have their basic needs met, happiness ratings tend to level out

Evidence-Based Suggestions for a Happier Life

- Realize that enduring happiness may not come from financial success
- Take control of your time
- Act happy
- Seek work and leisure that engage your skills
- Buy shared experiences rather than things
- Join the “movement” movement
- Give your body the sleep it wants
- Give priority to close relationships
- Focus beyond yourself
- Count your blessings and record your gratitude
- Nurture your spiritual self