Emotion

- Emotion
  - a response of the whole organism
    - physiological arousal
    - expressive behaviors
    - conscious experience
<table>
<thead>
<tr>
<th>The Basic Emotions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear</td>
</tr>
<tr>
<td>Surprise</td>
</tr>
<tr>
<td>Anger</td>
</tr>
</tbody>
</table>
Does your heart pound because you are afraid... or are you afraid because you feel your heart pounding?
James-Lange

Theory of Emotion

- Experience of emotion is awareness of physiological responses to emotion-arousing stimuli
James-Lange Theory

1. Stimulus: Shadowy figure of a man in a parking lot at night

2. Physiological arousal and behavior changes

3. Subjective experience of emotion

1. I see a man by that parked car.
2. I am trembling and running away.
3. I am afraid!
Cannon-Bard
Theory of Emotion

- Emotion-arousing stimuli simultaneously trigger:
  - physiological responses
  - subjective experience of emotion

Sight of oncoming car (perception of stimulus) → Pounding heart (arousal) → Fear (emotion)
Cannon Bard Theory

1. Stimulus: Shadowy figure of a man in a parking lot at night

2. Simultaneous experience of:
   - Conscious emotion
   - Physiological arousal

1. I see a man by that parked car.
2. I am afraid and trembling!
Schachter’s Two-Factor Theory of Emotion

- To experience emotion one must:
  - be physically aroused
  - cognitively label the arousal

- Sight of oncoming car (perception of stimulus)
- Pounding heart (arousal)
  - Cognitive label: “I’m afraid”
- Fear (emotion)
Two-Factor Theory

1. Stimulus: Shadowy figure of a man in a parking lot at night
2. Physiological arousal
   Plus
3. Cognitive label for arousal
4. Conscious emotion

1. I see a man by that parked car.
2. I am trembling.
3. My trembling is caused by fear.
4. I am afraid!
Cognition and Emotion

Must cognition precede emotion?

- Some emotional reactions may occur without conscious thinking.
Cognition and Emotion

- The brain’s shortcut for emotions

![Diagram showing the brain's structures involved in emotion processing]

- Thalamus
- Visual cortex
- Amygdala

**Short-cut enables instant fear response**

**Slightly slower interpretation:** “This is a snake! Get away.”

**To pounding heart**
Two Routes to Emotion

- Event
- Appraisal
- Lazarus/Schachter
- Emotional response
- Zajonc/Le Doux
Two Dimensions of Emotion

- Positive valence
  - Pleasant relaxation
  - Joy

- Negative valence
  - Sadness
  - Fear
  - Anger

- Low arousal
- High arousal
Emotion and Physiology

- **Autonomic Nervous System**—controls our arousal.

- **Epinephrine**—a hormone that increases heart rate, blood pressure, and blood sugar levels in times of emergency.
Autonomic nervous system controls physiological arousal

<table>
<thead>
<tr>
<th>Sympathetic division (arousing)</th>
<th>Parasympathetic division (calming)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pupils dilate</strong></td>
<td><strong>EYES</strong></td>
</tr>
<tr>
<td>Decreases</td>
<td><strong>SALIVATION</strong></td>
</tr>
<tr>
<td>Perspires</td>
<td><strong>SKIN</strong></td>
</tr>
<tr>
<td>Increases</td>
<td><strong>RESPIRATION</strong></td>
</tr>
<tr>
<td>Accelerates</td>
<td><strong>HEART</strong></td>
</tr>
<tr>
<td>Inhibits</td>
<td><strong>DIGESTION</strong></td>
</tr>
<tr>
<td>Secrete stress hormones</td>
<td><strong>ADRENAL GLANDS</strong></td>
</tr>
</tbody>
</table>
Arousal and Performance

- Performance peaks at lower levels of arousal for difficult tasks, and at higher levels for easy or well-learned tasks.
Emotion-Lie Detectors

- Polygraph
  - machine commonly used in attempts to detect lies
  - measures several of the physiological responses accompanying emotion
    - perspiration
    - cardiovascular
    - breathing changes
Emotion--A Polygraph Examination
Emotion--Lie Detectors

- **Control Question**
  - Up to age 18, did you ever physically harm anyone?

- **Relevant Question**
  - Did [the deceased] threaten to harm you in any way?

- **Relevant > Control --> Lie**
Emotion--Lie Detectors

- Respiration
- Perspiration
- Heart rate

(a)

(b)
Emotion--Lie Detectors

- 50 Innocents
- 50 Thieves
  - 1/3 of innocent declared guilty
  - 1/4 of guilty declared innocent (from Kleinmuntz & Szucko, 1984)
Is 70% accuracy good?

- Assume 5% of 1000 employees actually guilty
  - test all employees
  - 285 will be wrongly accused

What about 95% accuracy?

- Assume 1 in 1000 employees actually guilty
  - test all employees (including 999 innocents)
  - 50 wrongly declared guilty
  - 1 of 51 testing positive are guilty (~2%)
Emotion--Lie Detectors

- **Guilty knowledge test**—typically used to assess a suspect’s responses to details of a crime.
Nonverbal Communication

- **Nonverbal Communication**— people are especially good at quickly detecting facial expressions of anger. In a crowd of faces, a single angry face will “pop out” faster than a single happy one. Introverts tend to do better at reading others’ emotions, although extraverts are easier to read.
Nonverbal Communication

- People more speedily detect an angry face than a happy one
Gender, Emotion, & Nonverbal Behavior

- Females are better at reading people’s emotional cues.
- Women are also far more likely than men to describe themselves as empathic (identifying with others).
- Women also react more visibly to films displaying emotions.
- Women and men also differ in the emotions they express best.
- Women recalled being happy nearly 2/3's of the time, but they were able to spot it less than half the time when observing men.
- Men, however slightly surpassed women in conveying their anger.
Expressed Emotion

- Gender and expressiveness

<table>
<thead>
<tr>
<th>Number of expressions</th>
<th>Sad</th>
<th>Happy</th>
<th>Scary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>0</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Women</td>
<td>2</td>
<td>16</td>
<td>4</td>
</tr>
</tbody>
</table>
Detecting and Computing Emotion

- Psychologists are now linking various emotions with specific facial muscles (Paul Ekman)
- We don’t do well using our intuition to determine if someone is lying (50% of the time we guess right). When people aren’t seeking to deceive us, we do much better.
- Our brains are amazing emotion detectors.
- Computers outperformed human non-experts, with 91% accuracy in recognizing six facial expressions.
- E-mail communication. Problems??? :) :-(
Expressed Emotion

- Culturally universal expressions
Culture and Emotional Expression

- Facial expression such as happiness and fear are common throughout the world. (Universal language)
- Americans are more likely than Asians to openly display their feelings by their facial expressions.
- Children’s facial expressions – even those of blind children who have never seen a face – are also universal.
- To effectively manage emotions, people would be best advised to control their facial expressions.
Open Palm  Greece: an insult dating to ancient times; West Africa: You have five fathers, an insult akin to calling someone a bastard

Thumbs-up  Australia: up yours; Germany: the number one; Japan: the number five; Saudi Arabia: I'm winning; Ghana: an insult; Malaysia: the thumb is used to point rather than the finger

Thumb and forefinger  Most countries: money; France: something is perfect; Mediterranean: a vulgar gesture

OK Sign  France: you're a zero; Japan: please give me coins; Brazil: an obscene gesture; Mediterranean countries: an obscene gesture
Experienced Emotion

- Infants’ naturally occurring emotions
The Effects of Facial Expressions

- When people mimicked expressions of emotion, they experienced those emotions.
Experienced Emotion

The ingredients of emotion

- Cognition (appraisal)
- Emotion
- Expression (overt display)
- Physiology (arousal, etc.)
Emotion and Facial Expressions

- Each basic emotion is associated with a unique facial expression
- Facial expressions are innate and "hard-wired"
- Innate facial expressions the same across many cultures
- Display rules—social and cultural rules that regulate emotional expression, especially facial expressions.
Learning Fear

The **Amygdala** - a neural key to fear learning. Fears are learned!
The Biology of Fear

The amygdala plays a key role in associating various emotions, including fear, with certain situations.
The Biology of Fear

- Rabbits fail to react with fear to a signal of impending shock if they have suffered damage to the amygdala.
Anger (Rage)

- Anger is most often evoked by events that not only are frustrating or insulting but also are interpreted as willful, unjustified, and avoidable.

- Blowing off steam may be temporarily calming, but in the long run it does not reduce anger.

- Expressing anger can actually cause more anger.
Catharsis
Experienced Emotion

- Catharsis
  - emotional release
  - catharsis hypothesis
    - “releasing” aggressive energy (through action or fantasy) relieves aggressive urges

- Feel-good, do-good phenomenon
  - people’s tendency to be helpful when already in a good mood
Experienced Emotion

- Subjective Well-Being
  - self-perceived happiness or satisfaction with life
  - used along with measures of objective well-being
    - physical and economic indicators to evaluate people’s quality of life
Experienced Emotion

- Moods across the day

![Graph showing mean mood levels over time since rising (hours)]
Experienced Emotion

- Changing materialism

Graph showing the percentage of people rating goal as very important or essential over the years from 1966 to 2002. The graph compares two trends: Being very well-off financially and Developing a meaningful life philosophy.
Experienced Emotion

- Does money buy happiness?

<table>
<thead>
<tr>
<th>Average per-person after-tax income in 1995 dollars</th>
<th>Percentage describing themselves as very happy</th>
</tr>
</thead>
<tbody>
<tr>
<td>$20,000</td>
<td>00%</td>
</tr>
<tr>
<td>$19,000</td>
<td>90%</td>
</tr>
<tr>
<td>$18,000</td>
<td>80%</td>
</tr>
<tr>
<td>$17,000</td>
<td>70%</td>
</tr>
<tr>
<td>$16,000</td>
<td>60%</td>
</tr>
<tr>
<td>$15,000</td>
<td>50%</td>
</tr>
<tr>
<td>$14,000</td>
<td>40%</td>
</tr>
<tr>
<td>$13,000</td>
<td>30%</td>
</tr>
<tr>
<td>$12,000</td>
<td>20%</td>
</tr>
<tr>
<td>$11,000</td>
<td>10%</td>
</tr>
<tr>
<td>$10,000</td>
<td>0%</td>
</tr>
</tbody>
</table>


Personal income

Percentage very happy
Experienced Emotion

- Values and life satisfaction

<table>
<thead>
<tr>
<th>Life satisfaction</th>
<th>Importance scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>0.6</td>
</tr>
<tr>
<td>2.00</td>
<td>0.4</td>
</tr>
<tr>
<td>3.00</td>
<td>0.2</td>
</tr>
<tr>
<td>4.00</td>
<td>0.0</td>
</tr>
<tr>
<td>5.00</td>
<td>-0.2</td>
</tr>
<tr>
<td>6.00</td>
<td>-0.4</td>
</tr>
</tbody>
</table>

Money (green line) decreases as Life satisfaction increases.

Love (red line) increases as Life satisfaction increases.
Experienced Emotion

The Adaptation-Level Principle:

Happiness is Relative to Our Prior Experience— If our current condition— income, grade point average, or social prestige, for example— increases, we feel an initial surge of pleasure. We then adapt to this new level of achievement, come to consider it as normal, and require something even better to give us another surge of happiness.
Experienced Emotion

- Adaptation-Level Phenomenon
  - tendency to form judgments relative to a “neutral” level
    - brightness of lights
    - volume of sound
    - level of income
  - defined by our prior experience

- Relative Deprivation
  - perception that one is worse off relative to those with whom one compares oneself
**Happiness is...**

<table>
<thead>
<tr>
<th>Researchers Have Found That Happy People Tend to</th>
<th>However, Happiness Seems Not Much Related to Other Factors, Such as</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have high self-esteem (in individualistic countries)</td>
<td>Age</td>
</tr>
<tr>
<td>Be optimistic, outgoing, and agreeable</td>
<td>Gender (women are more often depressed, but also more often joyful)</td>
</tr>
<tr>
<td>Have close friendships or a satisfying marriage</td>
<td>Education levels</td>
</tr>
<tr>
<td>Have work and leisure that engage their skills</td>
<td>Parenthood (having children or not)</td>
</tr>
<tr>
<td>Have a meaningful religious faith</td>
<td>Physical attractiveness</td>
</tr>
<tr>
<td>Sleep well and exercise</td>
<td>Money</td>
</tr>
</tbody>
</table>
How to be Happier

1. Realize that enduring happiness doesn’t come from financial success.
2. Take control of your time
3. Act happy
4. Seek work and leisure that engages your skills.
5. Join the “movement” movement
6. Give your body the sleep it wants
7. Give priority to close relationships
8. Focus beyond self
9. Be grateful
10. Nurture your spiritual self
Close Up: Opponent-Process Theory of Emotion

- **Opponent process theory**--every initial emotional reaction triggers an opposing emotion that diminishes the intensity of the initial emotional reaction.
Bike Tumbler
Human Cannonball
Jerk
Cats
Load your bike
Olympic Dive
Riding the escalator
Going Home on Friday
Noah