The Science of Psychology
What is Psychology?

**Definition**
- The scientific study of behavior and mental processes

**Behavior**
- Outward or overt actions (things that can be observed)
  - Talking
  - Facial expressions

**Mental Processes**
- Internal activity of our mind
  - Thinking
  - Feeling
  - Remembering
Overarching Themes

1. Attitudes
2. Metacognition
3. Attribution
## Attitudes

**Definition**
- An attitude consists of having positive, negative or mixed feelings or thoughts toward a person, object or idea.

**Examples**
- TiVo is awesome.
- “I think the news media in this country is decent, but I don’t like how it’s becoming polarized and I would like to see a stronger movement toward objective reporting.”

**Examples**
- I think college exit exams are a bad idea.
Overarching Themes

Metacognition

**Definition**
- Thinking about thinking
- Awareness or analysis of one’s own thinking process

**Example**
- A car turns right, into your lane, and cuts you off, forcing you to slam on your breaks. You honk your horn and flash to the person driving the middle finger…
Attribution

Definition
• The process of explaining one’s own behavior and the behavior of others
• People are driven (have very strong desires) to explain theirs and others’ behavior

Example
• While in the cafeteria on campus, you see one of your classmates in a suit and tie
  * Presentation
  * Sense of style

Example
• You are feeling tired today
  * Not enough sleep
  * Persistent Low-Level infection

Take Home Message
• We are constantly making attributions and one of the goals of this class is to give you the tools to monitor your attribution process
How Do We Know What We Know?

Methods Of Knowledge Acquisition

**Intuition**
- The power or faculty of gaining knowledge from your own mind without evident rational thought

**Rationalism**
- Gaining knowledge through the process of reasoning

**Authority**
- Obtaining knowledge from another person

**Personal Experience**
- Gaining knowledge through life experiences
Empiricism (The Scientific Method)

- Gaining knowledge through systematic observations and experimentation

Characteristics

1. **Empirical**: knowledge is gained through observation (the collection of data)
2. **Systematic**: observations are obtained in a methodical step-by-step fashion
3. **Control**: Eliminating the factors that might influence the behavior being observed

The Goal of Empiricism

- To eliminate biases and errors in the acquisition of knowledge

- So, are the other methods of knowledge acquisition less valid?
  - *Not necessarily*
A Brief History of Psychology

When did psychology become a science?
How did psychology become a science?
What did the early founders of psychology study?
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Influential Seeds

**Philosophers**
- For thousands of years philosophers have exam the human mind and its connection to the human body

**Examples**
- Aristotle (384–322 B.C.)
  * Relationship between the soul and the body (both are aspect of the same underlying structure)
- Plato (427–347 B.C.)
  * Dualism: the body and the soul are separate

**Examples**
- Descartes (1596–1650)
  * Believed the soul was found in the pineal gland
Medicine

• For thousands of years people have investigated how the body works

Examples

• Ancient Egyptians (~1500 B.C.)
  * Archeologists have found evidence of men titled “physicians”
  * Made discoveries that the heart, pulse rates, blood and air were important to the body

Examples

• 1400’s
  * Universities in Western Europe had developed that could be classified as ‘medical schools’
Psychophysics
• A study of the relationship between a physical stimuli and the psychological impressions of the stimuli

Examples
• Ernst Heinrich Weber (1759–1878)
  * Thresholds: the study of upper and lower thresholds of what can be perceived with the senses
  * Human hearing: 20–20,000 Hz

Examples
• Gustov Theodor Fechner
  * Just-Noticeable Differences: Experiments in which subjects were exposed to two stimuli (weights) and asked if there is a difference between them
• Fechner’s research methods became widely practiced in early experimental psychology
Influential Seeds

**Take Home Message**

- Psychophysics established lawful relationships between physical stimulus differences and experienced physical differences
- These lawful relationships opened the possibility of the *scientific study* of mental processes
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The Birth Of A Science

Wilhelm Wundt

• Known as the “father of psychology”
• Highly prolific career
  * Directed 186 doctoral theses
  * Published 88 articles within four years of opening his lab
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The Birth Of A Science

**Goals**

- To discover the elements of consciousness
- To discover the *laws* of combinations of elements

**Introspection Research**

- Research assistants would be presented with a stimuli and would then methodically report the *thoughts* that they had
Wundt’s Legacy

• Established the first psychology research lab in Leipzig (1879)
  * First time psychology gained status as a separate discipline
• By the end of his life, most major universities included psychology as a formal discipline
After becoming a formal discipline, numerous people, at similar times, formulated competing systems about what psychology should study.

**Structuralism (late 1800s)**

- Titchener & Wundt
- The study of the structure and basic elements of the mind
  - Believed experience of the mind could be broken down into its individual emotions and sensations
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Competing Systems

**Functionalism** (late 1800s)

* William James

- A study of how the mind functions
- The mind can’t be “broken into parts” because consciousness is an ever-flowing stream
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Competing Systems

**Gestalt Psychology** (early 1900s)

* Max Wertheimer

- The study of perception of patterns and whole figures

**Gestalt**: ‘the whole is greater than the sum of its parts’
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Cliff Notes On Gestalt Psychology

• **Law of Closure** — The mind may experience elements it does not perceive through sensation, in order to complete a regular figure.
Law of Similarity — The mind groups similar elements into collective entities or totalities. This similarity might depend on relationships of form, color, size, or brightness.
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Cliff Notes On Gestalt Psychology

- **Law of Continuity** — The mind continues visual, auditory, and kinetic patterns
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Competing Systems

Psychoanalysis (late 1800s)
  * Sigmund Freud (1856 – 1939)
  • A practice devoted to solving psychological problems by uncovering the mind's unconscious conflicts

Freud's Contributions
  • Attention to:
    * Unconscious influences
    * Theories of personality
      * Ego, id, superego
    * Emphasis on motivation, development
Behaviorism (early 1920s)

* John Watson
* Ivan Pavlov

- Science of behavior that focuses on only observable behavior

Origins

- At the time, there was much arguing among structuralists about ideas of the mind
- Watson wanted psychology to become a “hard” science

* Therefore, physical, observable measurements were needed
Of Babies And Rats

- At the time Freud’s views of unconscious repression were beginning to dominate the field of psychology
- Watson believed that psychological phenomenon could have simpler explanations
- Specifically: believed phobias are learned through a process of conditioning
Watson took a baby, known as “Little Albert” and taught him to fear a white rat by making a loud, scary noise every time the infant saw the rat.

Eventually seeing the rat would make the infant cry.

His goal was to prove that psychological phenomena (characteristics, traits, personality, etc.) were a product of a stimulus-response relationship.
Take Home Message

- Over the past 125 years psychology has evolved, generating and adopting numerous ideas and systems of study
Modern Perspectives

The Big Picture
• Today, there are several systems of psychology that offer different frameworks for the attributions (causes) of behavior

Behavioral Example (Laumann, 1994)
How often do you think about sex?
• 90% of men report thinking about sex at least once per day
• 33% of men report thinking about sex several times per day
• 25% of women report thinking about sex every day
Modern Perspectives

**Psychodynamic**
- Modern version of psychoanalysis
- Focused on development of a sense of self and discovery of motivation

**Behaviorism**
- Study observable behaviors and how the environment shapes the individual

**Humanistic Perspective**
- Explores the ability of humans to achieve their potential
- Studied what makes us uniquely human, e.g., appreciating beauty

**Biopsychological**
- The study of how biology of the body (genetics, hormones, etc.) influence behavior

**Cognitive**
- The study of mental processes: memory, intelligence, perception, problem solving and learning
Modern Perspectives

**Sociocultural**
- Social Psychology
- Cultural Psychology
  - The study of the relationship between social behavior and culture

**Evolutionary**
- Seeks to explain behavior and traits in light of an evolutionary motive
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Important Contributors

Margaret F. Washburn
- First woman to receive her Ph.D. in psychology
- Published *The Animal Mind* (1908)
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Important Contributors

**Francis Cecil Sumner**
- First African American to receive a Ph.D. in psychology (1920)
- Conducted seminal research on the topic of racial justice and black/white relations
- Contributed to the research regarding segregation and the developing child, which was used in support of Brown vs. Board of Education