Lecture Preview
- What is psychology?
- Psychological pseudoscience
- Scientific thinking
- Psychology’s past and present
  - Let’s see what do you know about psychology a little bit 😄
  - Then watch a video 😄

True or False?
- Most people use only about 10% of their brain capacity.
- Hypnosis enhances the accuracy of our memories.
- People tend to be romantically attracted to individuals who are opposite to them in personality and attitudes.
- The lie detector is test is 90 to 95 percent accurate.
- The more people present at an emergency, the more likely it is that at least one of them will help.
- People with schizophrenia have more than one personalities.
- All effective psychotherapies require clients to get to the roots of their problems in childhood.

What is psychology?
- First off, it’s not very easy to define.
- Our definition will be that psychology is the scientific study of the mind, brain, and behavior.
- As a discipline, psychology spans many levels of analysis
  - Runs from biological to social influences
What is psychology?

- **Levels of analysis**
  - Rungs on a ladder of analysis, with lower levels tied most closely to biological influences and higher levels tied most closely to social influences.
  - Why are you enrolled in the department of psychology?
  - Answers to questions like why you become angry or you fall in love?

We can’t understand psychology by focusing on only one level of analysis – but instead by examining all of them.

Each of these panels from everyday life poses a different psychological question:
1. Why do we fall in love?
2. Why do some of us become depressed for no apparent reason?
3. What makes us angry?

Although the science of psychology doesn’t provide easy answers to any of these questions, it does offer valuable insights into them.

I say.... Studying Psychology is Challenging and Fascinating

Why do you think it is so?
In the museum of everyday life, causation isn’t a one-way street. In conversations, one person influences another, who in turn influences the first person, who in turn influences the second person, and so on. This principle, called reciprocal determinism, makes it challenging to pinpoint the causes of behavior.

Challenging and Fascinating

- Five factors make the study of psychology very difficult, but very rewarding.
  1. Human behavior is difficult to predict.
  2. Actions are multiply determined. (But popular psychology usually offer single factor explanations).
  3. Psychological influences are rarely independent of each other.
  4. Individual differences among people
  5. People influence one another — Reciprocal determinism

4. Behavior is shaped by culture
   - Give me examples of differences in people’s behaviors that you think they depend on cultural differences.
     - Emic vs. etic approaches

5. In a study by Chua, Boland, and Nisbett (2005), European Americans tend to focus more on the central details of photographs, like the tiger itself (top), whereas Asian Americans tend to focus more on the peripheral details, like the rocks and leaves surrounding the tiger (bottom).
Challenging and Fascinating

- **Emic vs. etic approaches**

- **Emic**: study the behavior of a culture from the perspective of a native or insider.
  - May better understand the unique characteristics of that culture but may overlook similarities between cultures.

- **Etic**: study the behavior of a culture from the perspective of an outsider.
  - Unintentionally impose perspective from one culture onto others.
  - An example?

Common Sense

Most of us trust our gut intuitions about how the world works.

- Birds of a feather flock together.  
- Absence makes the heart grow fonder.  
- Better safe than sorry.  
- Two heads are better than one.  
- Actions speak louder than words.

Even though each of these ring true, they are in fact opposites!

Intuition vs. Science

- Common sense can be very useful for some purposes, but it’s sometimes completely wrong.
- Our intuitive understanding of the world and ourselves is sometimes wrong.
- We can’t always trust our own judgment, or the judgment of others.

Naïve Realism

- The belief that we see the world precisely as it actually is in truth – “seeing is believing”

- Works well in ordinary life, but consider:
  - The earth seems flat
  - We seem to be standing still, yet the earth is moving around the sun 18.5 miles/sec

- Our beliefs shape our perceptions

Which table is longer?

These two tabletops are identical in length.
When Common Sense is Right.
- Not all common sense is wrong.
- Common sense should serve as a generator for hypotheses, which can then be tested.
- But learning to think like a scientist means learning when—and when not—to trust our common sense.

Psychology as a Science
- Science is not a body of knowledge (e.g. chemistry or physics).
- Science is an approach to evidence, one designed to keep us from fooling ourselves.
- Science begins with empiricism, the premise that knowledge should initially be acquired through observation, but then tests those observations using rigorous methods.

Theories and Hypotheses
- A scientific theory is an explanation for a large number of findings in the natural world.
- Offers an account that ties multiple findings together into one pretty package.
- Does not account only for existing data, but also generate predictions regarding new data we haven’t yet observed.
- Must generate novel predictions that researchers can test.
- Do you know a theory that is mostly criticized as not being a theory in fact?
- A hypothesis is a specific prediction based on a theory, which can then be tested.
- Theories are general explanations, hypotheses are specific predictions derived from them.

Theory Misconceptions
"A theory explains one specific event"
"A theory is just an educated guess"
Why are these both wrong?
Some creationists have argued that evolution is "just a theory." Cobb County, Georgia, briefly required high school biology textbooks to carry this sticker (Pinker, 2002).

Arthur Darbishire (1879–1915), a British geneticist and mathematician. Darbishire’s favorite saying was that the attitude of the scientist should be “one of continual, unceasing, and active distrust of oneself.”

Figure 1.3 Diagram of Wason Selection Task. In the Wason selection task, you must pick two cards to test the hypothesis that all cards that have a vowel on one side have an odd number on the other. Which two will you select?

Science as a Safeguard against Bias
- **Confirmation bias** - tendency to seek out evidence that supports our hypothesis and neglect or distort contradicting evidence
- Scientists need to design studies that may disprove their theories
Science as a Safeguard against Bias
- **Belief perseverance** - tendency to stick to our initial beliefs even when evidence contradicts them
- The “don’t confuse me with the facts” bias
- Why?
- Ross et al.’s suicide notes study.

Metaphysical Claims
- Non-testable assertions fall outside the realm of science
- The existence of God, the soul, or the afterlife
- Does not mean that those questions are unimportant or do not deserve respect but...

We Might Be Wrong
- Good scientists are aware they might be wrong.
- Scientific knowledge is always tentative and open to revision.
- Science forces us to question our findings and conclusions.
- Bits of information, we acquire knowledge through science very slowly.
- Science as a prescription for humility.
- Good scientists never claim to PROVE their theories.
- In writings ⇒ Supports, suggests, appears that, ....

Popular Psychology
- Misinformation explosion.
- About 3,500 self-help books are published each year – only 5% are tested!
- The quality of the information can be good, misleading, or even dangerous.
- The Internet offers easy, quick information, but quality is often questionable.

Frequently, newspapers present headlines of medical and psychological findings, only to retract them weeks or months later. How can we know how much trust to place in them?
What is Pseudoscience?
- A set of claims that seem scientific, but aren’t.
- Pseudoscience lacks the safeguards against confirmation bias and belief perseverance that characterize science.
- Testable beliefs that are not supported by the evidence.
- 41% - extrasensory perception, over 30% - haunted houses, 25% - astrology.

Pseudoscientific and otherwise questionable claims have increasingly altered the landscape of modern life.

Which of these claims is metaphysical and which is probably pseudoscientific?

Warning Signs of Pseudoscience
- Ad hoc immunizing hypothesis
  - Escape hatch to protect against falsification, usually a loophole or exception for negative findings.
- Let’s see a video 😊
- Lack of self-correction
  - E.g. Dooms day believers.
- Overreliance on anecdotes
  - Anecdotes are often not representative, can’t tell us about cause and effect and are often difficult to verify.

Why pseudoscience?
- Our brains are predisposed to make order out of disorder and make sense out of nonsense.
  - The search for Meaningful connections:
    - Apophenia is when we find connections among unrelated or random phenomenon.
    - Pareidolia is seeing meaningful images in meaningless visual stimuli.

Conspiracy theories are manifestations of apophenia. Believers in conspiracies often claim to detect hidden interconnections among powerful people and institutions.
Why pseudoscience?

- Finding comfort in Our Beliefs: We believe what we want to believe.
- Many pseudoscientific beliefs offer control over an uncontrollable world.
  - Whitson and Galinsky’s (2008) deprivation of control study
- Terror management theory and manipulating mortality salience.

Thinking Clearly

- Learning to think scientifically can help us avoid falling prey to pseudoscience.
- Emotional reasoning fallacy (affect heuristic)—using emotions rather than evidence as the guide.
- Bandwagon fallacy—lots of people believe it so it must be true.
- Not Me fallacy—other people may have those biases, but not me.
- Bias blind spot: most people are unaware of their biases but keenly aware of them in others.

Table 1.3

The “Face” on Mars

Figure 1.6 Regaining Control. Do you see an image in either of these pictures? Participants in Whitson and Galinsky’s (2008) study who were deprived of a sense of control were more likely than other participants to see images in both pictures, even though only the picture on the right contains an image (a faint drawing of the planet Saturn).

Table 1.5 Logical Fallacies to Avoid When Evaluating Psychological Claims.
Why should we care?

- Because pseudoscience can be very dangerous.
- Three major reasons to be concerned.
  - Opportunity cost: What we give up.
  - Direct harm
  - Inability to think scientifically
- Although not foolproof, scientific thinking is our best safeguard against human error.

Scientific Skepticism

- Being scientifically skeptical does not mean being close-minded.
- Evaluate claims with an open mind, but insist on persuasive evidence before accepting them.
- Skeptics are willing to change their minds, but must have good evidence before doing so.
Scientific thinking involves ruling out rival hypotheses. In this case, do we know that this woman’s weight loss was due to a specific diet plan? What might be some alternative explanations for her weight loss?

Critical Thinking

A set of skills for evaluating all claims in an open-minded and careful fashion.

This allows us to overcome our own biases (especially the confirmation bias).

Six critical thinking principles will be emphasized in this course.

Critical Thinking Principles

- Ruling out rival hypotheses
- Have important alternate explanations for the finding been considered?
- Correlation vs. causation
- Can we be sure A causes B?
- Sexual lyrics, sexual intercourse behavior (or a C variable).
- Falsifiability
- Can the claim be disproven?
- A theory that can explain everything indeed explains nothing. (A psychic’s explanation about your child’s sex).

Extraordinary Claims

- Is the evidence as convincing as the claims?

Occam’s razor

- Does a simpler explanation fit the data just as well?
- The principle of parsimony – logical simplicity
- If two explanations account equally well for explaining a phenomenon, choose the simpler one! (Shave off the needlessly complicated explanations).

KISS – Keep it simple, stupid

- Replicability
- Can the results be duplicated in other studies?
Correlation isn’t always causation. (Family Circus © Bil Keane, Inc. King Features Syndicate)

Psychology’s Early History
- For many centuries, psychology was indistinguishable from philosophy (even the METU example 😉).
- No research, talking from the armchair.
- In 1879, William Wundt developed the first psychology laboratory in Leipzig, Germany.
- How different must two colors be for us to tell them apart? How long does it take to react to a sound?
- Method of introspection – requires trained observers to carefully reflect and report on mental experiences (reaction time procedures).
- But psychology had to break away from another influence as well—spiritualism.

Psychology’s Early History
- But psychology had to break away from another influence as well—spiritualism.
- Psychology means the study of psyche – spirit or soul.
- Search for paranormal capacities of mediums.
- Separated itself by creating a new field: the psychology of human error and self-deception: how people can fool themselves into believing things that are not supported by evidence 😈.
In the 1800’s, Americans were obsessed with spiritualism and mediums. The public saw psychology and spiritualism as inextricably linked. Psychologists investigated spirit mediums and psychics, finding only fakery and fraud.

Great Theoretical Frameworks

Structuralism
- Major figures were Wundt and E.B. Titchner
- Aimed to identify the most basic elements or structures of psychological experience
- "what?" question

Two major problems killed structuralism:
- Even highly trained introspectionists often disagreed on their subjective reports
- Oswald Kulpe: Imageless thought (thinking accompanied by unconscious experience).

Functionalism: Psychology meets Darwin
- Major figure was William James, heavily influenced by Charles Darwin
- Principles of Psychology (1890)
- Hoped to understand the adaptive purposes of psych characteristics
- "why?" question

Behaviorism
- Major figures were Watson and Skinner
- Focuses on uncovering the general laws of learning by looking outside the organism
- Mind is a black box
- Psychology should deal only with observable behavior, inputs and outputs, not the process in the black box.
Great Theoretical Frameworks

Cognitivism
- Major figures were Piaget and Neisser
- Focuses on the mental processes involved in different aspects of thinking
- Interpretation of rewards and punishments is the determinant of our behavior.
- We learn not only by rewards and punishments but also by insight: grasping the underlying nature of the problems.
- Cognitive and affective neuroscience

Psychoanalysis
- Major figures were Freud and Jung
- Focused on internal psychological processes of which we're unaware
- Two drives: sexuality and aggression
- Decoding symbols
- Slip of the tongue: Freudian slip
- Infant and childhood experience

Two students may react to the same grade on a test—say a B+—in markedly different ways. One may be pleased, the other disappointed. Cognitive psychologists would say that these differing reactions stem from the students’ differing interpretations of what these grades mean to them.

The couch that Sigmund Freud used to psychoanalyze his patients, now located in the Freud museum in London, England. Contrary to popular conception, most psychologists aren’t psychotherapists, and most psychotherapists aren’t even psychoanalysts. Nor do most modern therapists ask patients to recline on couches.

Figure 1.8 Timeline of Major Events in Scientific Psychology.
Contributions to Scientific Psychology
- Structuralism – insistence on systematic data collection and empiricism
- Functionalism – influence of evolutionary theory on modern psych
- Behaviorism – helped to understand how we learn and the importance of scientific rigor

Cognitivism – focus on not only rewards or punishers, but on our interpretation of events
- Psychoanalysis – may have actually retarded scientific advance of clinical psych, but theories of mental processing outside of conscious awareness are holding up

Psychology Today
- Very diverse, as reflected in the 500,000 psychologists worldwide
- There are many types of psychologists who work in many settings

Psychologists Elizabeth Loftus (1) and Paul Meehl (2) are far less well known to the general public than psychologists Dr. Phil (3) and John Gray (4), but they’ve had a much greater impact on how we think about ourselves and the world.
TABLE 1.7 Types of Psychologists, What They Do, and What They Don't Do.

<table>
<thead>
<tr>
<th>Type of Psychologist</th>
<th>What They Do</th>
<th>What They Don't Do</th>
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<tbody>
<tr>
<td>Clinical</td>
<td>Perform assessments, diagnosis, and treatment of mental disorders</td>
<td>Can't prescribe medication in most states.</td>
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<tr>
<td></td>
<td>Conduct research on mental health, social, learning, and cognitive processes</td>
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<tr>
<td></td>
<td>Work with people experiencing temporary or self-contained problems</td>
<td></td>
</tr>
<tr>
<td>Counseling</td>
<td>Provide therapy and counseling</td>
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<tr>
<td></td>
<td>Help individuals develop and maintain effective behavior</td>
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Types of Psychologists

- Clinical
  - Except in NM and LA, they cannot prescribe medication (though psychiatrists M.D.s can)
  - Therapists may have different degrees (Psy.D., M.S.W., Ph.D., etc.)
- Counseling
  - Work with people experiencing temporary or self-contained problems (e.g., marital or occupational difficulties)
Types of Psychologists

- School
  - Assess and develop intervention programs
  - Differs from educational psychology
- Developmental
  - Study why and how people change over time
  - Most work with infants and children
- Experimental
  - Use sophisticated research methods to study memory, language, and thinking of humans

Types of Psychologists

- Biopsychologists
  - Examine physiological bases of behavior
  - Most work in research settings
- Forensic
  - Assess, diagnose, and assist with rehabilitation and treatment of prison inmates
  - Others conduct research on eyewitnesses or juries

Great Debates in Psychology

- Two great debates have shaped the field of psychology, both currently and in the past.
- Nature-nurture
  - Are our behaviors attributable mostly to our genes or our rearing environments?
  - John Locke – tabula rasa
  - Behavior genetics and twin study designs
    - Evolutionary psychology or sociobiology
      - E.g. Anxiety

Great Debates in Psychology

- Free will - determinism
  - To what extent are our behaviors freely selected rather than caused by factors outside of our control?
  - Environment, automatic behavior

How Psychology Affects Our Lives

- Two broad categories of research
  - Basic examines how the mind works
  - Applied examines how we use basic research to solve real-world problems.
- Yellow fire engine, three brake lights, commercials, and standardized tests are all examples of influence of psychology
Increasingly, today's fire trucks are lime-yellow rather than red. That's because psychological research has demonstrated that lime-yellow objects are easier to spot in the dark than red objects.

Thanks to psychological research, advertisers know that placing a model's face on the left and written text on the right of an advertisement best captures readers' attention.

A classic simultaneous eyewitness lineup. Although police commonly use such lineups, most research suggests that they're more prone to error than sequential lineups.

The classic doll studies of Kenneth and Mamie Clark paved the way for the 1954 Supreme Court decision of Brown v. Board of Education, which mandated racial integration of public schools.

Conclusions

- Learning to think scientifically will help you make better decisions not only in this course, but in everyday life.

- When confronted with claims from popular psychology and popular culture, remember to "insist on evidence."