

## PSY 1010-010 CHAPTER 1: PSYCHOLOGY AND SCIENTIFIC THINKING

### I. What is Psychology? Science versus Intuition

A. Although common sense can be useful for some purposes, it's sometimes wrong

B. William James: the founder of American psychology

### C. Psychology & Levels of Analysis

1. psychology: the scientific study of the mind, brain, & behavior

2. levels of analysis: like rungs on a ladder that range from the brain - the mind

a. Molecular level: Variations in an individual's genes

b. Neurochemical level: Differences in levels of the brain's chemical messengers

c. Neurological/physiological level: Differences in the size & functioning of various brain structures among individuals

d. Mental level: Thoughts/feelings on a particular issue

e. Behavioral level: Micro-level interactions & how they are affected

f. Social level: Macro-level interactions & how they are affected

### D. What Makes Psychology Distinctive and Fascinating

1. Human behavior is difficult to predict because all actions are multiply determined, meaning that they are produced by many factors

2. Psychological influences are rarely independent of one another, making it difficult to pinpoint a single cause to an issue

3. Individual differences in thinking, emotion, personality, and behavior make it difficult to form explanations of behavior that apply to everyone

4. Reciprocal determinism: we mutually influence each others behavior

5. Cultural differences play a similar role as individual differences

### E. Why We Can't Always Trust Our Common Sense

1. Often our common sense can lead us to believe two things that can't both be true simultaneously

2. Naïve realism: the belief that we see the world exactly as it is

a. can lead us to draw incorrect conclusions about human nature

3. Sometimes our common sense is right, we just need to learn when to trust it

### F. Psychology as a Science

1. Science is an approach that begins with empiricism, the premise that knowledge should initially be acquired through observation

2. scientific theory: an explanation for a large number of findings in the world & generate predictions regarding new data that can be tested (hypothesis)

3. Misconceptions: A theory explains only one event, or is just an educated guess

4. Confirmation Bias: the tendency to seek out evidence that supports our own beliefs & opposes the contradicting evidence (mother of all biases)

5. Belief Perseverance: the tendency to stick to our initial beliefs even when evidence contradicts them

### G. Metaphysical Claims: The Boundaries of Science

1. Metaphysical Claims: assertions about the world that we can't test

### H. Recognizing That We Might Be Wrong

1. Scientific knowledge is almost always tentative & potentially open to revision

## II. Psychological Pseudoscience: Imposters of Science

### A. The Amazing Growth of Popular Psychology

1. Much of the circulating information is untested

### B. What is Pseudoscience

1. pseudoscience: a set of claims that seem scientific, but aren't

a. can be tested, but lack safeguards against bias

2. Warning signs of pseudoscience

a. Overuse of ad hoc immunizing hypothesis: an escape hatch/loophole that defenders of a theory use to protect this theory from falsification

b. lack of self-correction: belief perseverance causes claims to rarely be updated

c. Overreliance on anecdotes: secondhand evidence that's based on subjective impressions

3. Our brains are predisposed to make order out of disorder & sense out of nonsense

a. patternicity is our tendency to see meaningful images in meaningless visual stimuli

b. It leads to a sense of control in an uncontrollable world

4. Terror management theory: our awareness of our own inevitable death leaves many of us with an underlying sense of fear

a. We cope with these feelings by adopting cultural worldviews that reassure us that our lives possess a broader meaning

5. Logical fallacies: traps in thinking that can lead to mistaken conclusions

a. Emotional reasoning: using our emotions as guides for evaluating validity

b. Bandwagon: assuming that a claim is correct simply because many people believe it

c. Not me: believing that we are immune from errors in thinking that affect other people

↳ bias blind spot: most people are unaware of their own biases, but are keenly aware of the same bias in others

### C. The Dangers of Pseudoscience: Why Should We Care?

1. Opportunity Cost: What we give up → In seeking cures that don't work, we give up the opportunity to experience one that does work
2. Direct Harm: Some pseudoscientific "cures" cause psychological/physical damage or even death
3. An inability to think scientifically as citizens

## III. Scientific Thinking: Distinguishing Fact from Fiction

A. Scientific Skepticism: evaluating all scientific claims with an open mind, but insisting on persuasive evidence before accepting them

1. A willingness to keep an open mind to all claims
2. A willingness to accept claims only after researchers have subjected them to careful scientific tests

### B. A Basic Framework for Scientific Thinking

1. Critical thinking: a set of skills for evaluating all claims in an open-minded and careful fashion
2. Ruling out Rival Hypotheses: whenever we evaluate a psychological claim, we should ask ourselves whether we've excluded other plausible explanations for it
3. Correlation is NOT Causation: it is possible that A causes B, that B causes A, or that a third variable C causes both A and B
4. Falsifiability: whenever we evaluate a psychological claim, we should ask whether one could disprove it, or whether it is consistent with any conceivable body of evidence
5. Replicability: a study's findings can be duplicated consistently
  - a. Decline effect: the fact that the size of certain psychological findings appears to be shrinking over time
6. Extraordinary Claims Require Extraordinary Evidence
7. Occam's Razor: whenever we evaluate a psychological claim, we should ask ourselves whether the explanation offered is the simplest explanation that accounts for the data