

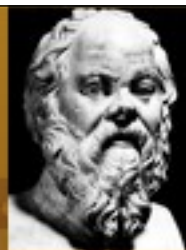
Psychology as a Science

What is a science?

- Root of science is scio—to know
- But there are many domains of knowledge that are not considered sciences (although they may make use of science):
 - Theology
 - Law
 - Engineering
 - Medicine
- What makes science different from other domains of knowledge?

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The Demands on Definitions



- Goal of a definition:
 - To specify the conditions needed and that suffice to make something an instance of the kind in question
- Test of a definition: Are there any counterexamples?
 - Items that meet the definition but are not instances of the kind in question
 - Items that are instances of the kind in question but that fail to meet the definition

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The Futility of Definitions: Defining GAME

- Two definitions from The American Heritage Dictionary
 - "A way of amusing oneself; diversion"
 - "A sport or other competitive activity governing by specific rules"
- Are there ways of amusing oneself that don't count as games?
- Are there games that lack competition or specific rules?

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Defining *Human Being*

If not a definition, how else to delimit sciences?

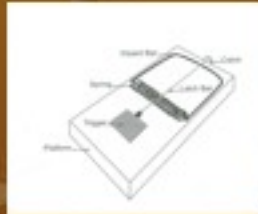
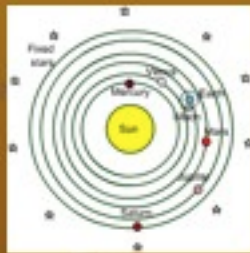
- Exemplars—Physics, chemistry, physiology
- Similarity to examples
 - but need to specify dimensions—astrology is, on some dimensions, similar to astronomy
- Theories about the phenomena—sciences involve modes of inquiry that seek to explain phenomena in the world in terms of other phenomena and ??

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What is Explanation?

Two (sometimes agreeing, sometimes conflicting) traditions:

- To explain is to bring under a law
 $f=ma$
 $f=k(m_1m_2/d^2)$
 $PV=nRT$
- To explain is to characterize the causal mechanism that brought the phenomenon about



What is Psychology to Explain?

The mind—Not as obvious as you think

- Let's test your memory

Memory is easily misled

Original list:

table	wood
sit	cushion
legs	swivel
seat	stool
couch	sitting
desk	rocking
recliner	bench
sofa	

Test list:

couch
shoe
chair

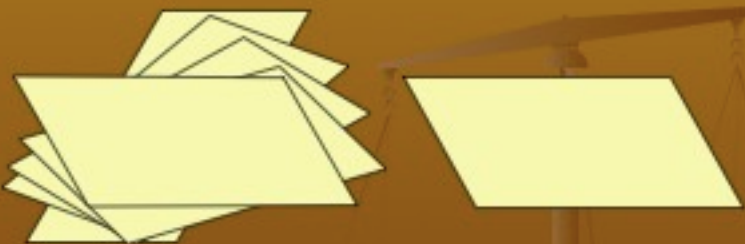
Recall for the lure "chair" is stronger than for many items on the original list.
The words on the list are the 15 closest semantic associates of "chair" in English

Dees, Roediger, McDermott Paradigm

How reliable is vision?



How reliable is vision?

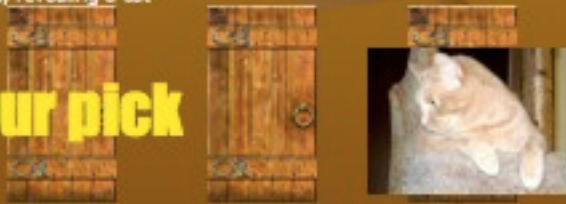


How good is human reason?

Behind one of these doors I have hidden money, behind the other two a cat

You get to pick which one to open. But before you do, I will open one of the other doors, revealing a cat

Your pick



Now I give you a choice: stay with your first pick, or change to the other

Which is the better option?

<http://www.shodor.org/interactivate/activities/monty3/>

A Bad Doctor's Visit



- You go to see your doctor with a puzzling ailment
- Your doctor tells you that it is characteristic of a disease that is affecting 1% of the population and if you have the disease, it means certain death
- There is a simple test she can perform which is accurate 79% of the time (that is, 21% of the time it gives false positives). You agree to the test.
- Now your doctor looks really worried. The test came back positive
- How worried should you be? How likely are you to die?
- Answer: your risk of death is 8%!

What modes of inquiry does psychology have available?



Research Traditions

- Scientific inquiry has a historical dimension
 - New investigations build upon previous ones
- The successive investigations frequently share some things
 - Assumptions about what the goals of inquiry are
 - Views about what counts as evidence
 - Assumptions about what an explanation should look like
- But sometimes there are radical disagreements about how to proceed—different research traditions

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Research Traditions in Psychology

- 17th-19th centuries: ideas, how they are formed, manipulated, etc.
 - Rationalism—Descartes
 - Empiricism/Associationism—Locke, Hume, Reid, Mill
- Psychology as an offshoot of physiology: Psychophysics
- Analyses of conscious mental states: Brentano, Wundt, James
- Proposal of a dynamic unconscious: Freud
- Repudiation of the mental—Behaviorism: Watson, Hull, Skinner
- Cognitive or information processing approaches—Cognitive psychology, Cognitive science, and Cognitive neuroscience

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