

# EXP3604C: Cognitive Psychology

## Intro to Cognitive Psychology

01/10/2013

### The Science Game

- The primary goal is to arrive at an understanding of reality (and the people and minds in it) that is “true”
- The way in which you go about formulating this understanding makes the endeavor scientific or not

### Playing the Science Game

- How can we tell if someone is lying?
- 3 Non-Scientific (and arguably more “natural”) ways to answer this question
  - 1) We can consult our experience:
    - o What seems to have been true for me in the past?
  - 2) We can consult intuition:
    - o What feels like the true answer?
  - 3) We can consult tradition and authority:
    - o What does my culture believe to be true?
    - o What do trusted and knowledgeable people claim to be true?

### What's the problem?

- Most people for most of history used these methods to come to now what was true about people and the world
- So what's wrong with beliefs and knowledge based on experience, intuition, tradition, and authority

### The Problem with Experience

- Experience is confounded
- Experience does not allow systematic comparison
- Most cognitive processes are automatic and unconscious

## The Problem with Intuition

- We are prone to making a number of cognitive biases in judgment and reasoning:
  - Ex: The availability heuristic (more memorable= more likely)
  - Ex: Rank these causes of death in terms of frequency:  
Homicide, Suicide, Flu, Heart Disease
- Our beliefs are shaped and reinforced in our interpersonal relationships and group memberships (called Social Reality)
  - Asch's (1951) conformity studies and Branscombe and Wann's (1994) pledge studies
- Once our beliefs are formed, they tend to be reinforced through "confirmation biases"
  - Ex: What does Stephen Colbert really believe?

## The Problem with Authority and Tradition

- Authorities themselves may be just as prone to these biases
- Sometimes we are unaware at how extensively our culturally-learned assumptions influence our worldview and its "facts"
- Ex: The case of English

## Playing the Science Game

- What is our alternative?
- What do we have to do if we want to scientifically answer the question: How do we know when people are lying?

## The "Golden Rule" of Science

- Scientific claims must be subject to empirical tests that produce empirical evidence
- Empirical evidence is:
  - An observation or measurement that contributes to either verifying or falsifying a claim about what's true
  - Independent of the observer; the evidence will be the same no matter who observes it
- Empirical testing is:

- o Any situation or procedure that creates empirical evidence which allows a claim on truth to be verified or falsified
- o Empirical tests must be replicable and verifiable

#### The “Golden Assumption” of the Science Game

- If an object of study exists in nature, it is knowable:
  - o In other words, it’s possible to fully describe and explain even highly complex things, like brains, beliefs, time, memory, and love
- The object of study is lawful
  - o If we could perfectly control all of the input variables, we could perfectly predict and control the outcome

#### Two Types of Causal Explanations in Cognitive Psychology

- Ultimate Causes vs. Proximate Causes
- Ultimate causes are concerned with the Evolutionary reasons why a cognitive process or phenomenon exists:
  - o What adaptive value did it have?
  - o How does it function to increase the fitness of an organism?
- Steven Pinker:
  - o Survival and reproduction is a series of subtasks
  - o The mind is a system of organs and computation that allowed our ancestors to outsmart objects, animals, plants, and each other
  - o The mind is a “Kluge”

#### Two Types of Causal Explanations in Cognitive Psychology

- Proximate causes focus less on the WHY and more on the HOW
  - o Ex: What causes you to read and understand this sentence?
- Proximate explanations in cognitive psychology largely take an Information Processing perspective:
  - o Cognitive processes happen in a series of sequential stages