

## Intro to Scientific Reasoning

### -Consumers and Producers

- may become a 'research producer'
- you *all* become 'research consumers'
  - FC-facilitated communication (help ppl with disabilities communicate, usually a mental disability.); bad research
  - 'Red Study'- different colors affect different emotions; good research

### -Four Scientific Cycles:

1. Theory-Data cycle: when scientists collect data to test, change or update their theories

Laptop example(stop working, how to fix it, collect data,etc)

Harlows Monkey- why are babies so connected to their mothers?

Contact comfort: do babies love their mothers because they feed them or because they comfort them? Data supported contact comfort theory.

2. Basic-Applied Research Cycle:

basic research: research whose goal is to enhance the general body of knowledge, without regard for direct application to practical problems.

applied research: research whose goal is to find a solution to a particular real-world problem

3. Peer- review cycle: scientific articles are peer reviewed' before being published.

- gate-keepers of research
- very rigorous and difficult to get published

4. Journal to journalism cycle:

-After publishing paper in scientific journal research will sometimes be published in popular press.

### Benefits & Risks

- Can be beneficial but need two elements...
- Is the Study important?
  - choose sensational findings instead of important findings
  - don't always choose peer-reviewed research
- Is the study accurate?
  - Journalists don't always understand details of research
  - will present inaccurate findings that readers assume are correct
  - Example: 'Mozart effect'

Two goals can overlap and influence each other  
'Red Study'

Start with basic and then apply ('translation' research)

What makes a good theory?

1. supported by data
2. falsifiable: theory needs to lead to predictions that could prove to be wrong and thus challenge the theory itself.
  - a. Freud- cannot truly measure the id,ego,or superego, so one cannot test these concepts
3. Parsimonious (Occams razor): if two theories explain data equally well, opt for the simpler theory

Not about 'proving' something true

Can support or be consistent with current theory

Look at 'weight of evidence'-not a single study

Ex: parents' happiness

#### Theory VS Hypothesis

Theory: a statement that describes general principles about how variables relate to one another.

Hypothesis: states specific outcomes that the researcher expects to observe if the theory is accurate

-One theory can lead to many hypotheses.

Data: set of observations