2017 Sep 8

Psychology: Scientific Study of Mind and Behaviour

TA: Mon 12-1 UBC Hospital 2nd F

Empiricism: evidence-based, observable
Scientific method: falsified theories tested against measurable reality

- **Sleep consolidates learning**

- **Feeling of knowing (F.O.K)**
    - Repeated exposure, recognition facility, familiarity
    - NOT actual knowledge
    - Re-reading, highlighting- increases feeling more than knowing
    - **Recall vs Recognize**
        - Recognition increases feeling of knowing
        - Recall requires more effort but increases actual knowing
        - Recall by testing: quizzes, each cold recall strengthens your memory

Scientific theories are falsifiable

- Intelligence= Connections
    - Brains are like muscles
    - More connections in a challenging environment
    - Music builds bridges in the brain
    - Increase IQ
    - **Brain grow and strengthen with exercise**

Successful Learning

1. **Pacing :**regular work, everyday
2. **Practice:** recall, not recognition (recite> read)
3. **Persistence :** everyday

History

*Learning Objectives: Know **key people** and **movements** in the development of 20th century psychology*

Wilhelm ***Wundt*** (1832–1920)- first "psychologist"

- Used introspection for structure of mind (similar to Siddartha Gautama, 600 BCE)

William ***James*** (1842–1910), first American psychologist

- Looked for adaptive function of mind (inspired by Darwin)

Sigmund ***Freud*** (1856–1939), not really a psychologist, but important theorist

- Introduced **psychoanalysis**, less scientist, more theorist
- Explored the unconscious, repressions, dreams

Gestalt psychology: Koffka-the whole is **other** than sum of parts- you create your reality (Eg. incomplete picture of dice and dogs)

Behaviorism:

- Rejects introspection, look only at observable behavior (empirical)
- Thorndike's **law of effect**
- Very influential; input stimuli, output behavior

Humanism (Maslow, Rogers)- know what they are famous for respectively

- Rejecting reductionism
- practicing unconditional positive regard, empathy

Cognitive Revolution

- Science of mental mechanisms; **Chomsky**
- Coincides with technology, internal processes with mind

Feminist, Multicultural influences

- Until recently the culture of psychology has been mostly W.E.I.R.D.
- **W**estern, **E**ducated, **I**ndustrialized, **R**ich , **D**emocratic

---

Contemporary Psychology

Learning Objectives: Describe current areas of study

Evolutionary psychology

- Adaptive problems, Cognitive program, Neurophysiological Basis

Biological psychology and Neuroscience

- What determines your behaviour

Cognitive psychology

- What your software is
- Human intelligence, language, thinking and solving, memory, attention, perception

Developmental psychology

- How we grow and change

Social psychology

- How we interact with people
- EG. **Milgram's** obedience research; **Zimbardo's** prison study; **Asch** on conformity

Personality psychology

- Individual differences
- REMEMBER BIG FIVE (traits)!
  - Openness
  - Conscientiousness
  - Extraversion
  - Agreeableness
  - Neuroticism

Health psychology

- Interaction of biological, psychological and sociocultural factors in health

Clinical psychology (counseling)

- Diagnosis and treatment of psychological and behavioural disorders

Other areas

- Industrial-Organizational psychology
- Forensic psychology
- Sports psychology

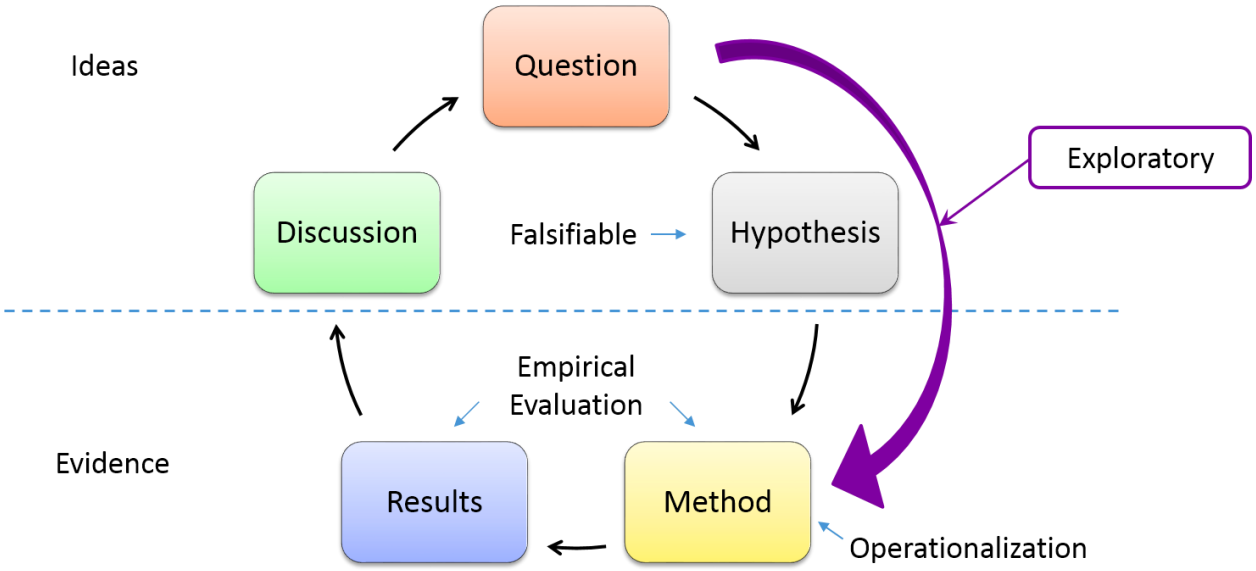
Research 1

Learning Objectives:

- *Define science*
- *Describe five stages of general scientific method*
- *Describe five categories of methods*
- *Explain related key concepts*

Science: systematic study of the structure and behaviour of the physical and natural world through observation and experiment.

Scientific Method (know these five!)



Methodologies

1. **Archival**: data already collected

2. **Clinical / Case Studies**: deep, narrow (in-depth examples)- cannot generalize

3. **Observation**: Naturalistic (ecological validity-whole context is accurate to "natural state") / Structured
    - Observer Bias
    - Inter-Rater Reliability (interpret things differently with multiple observers)
    - Should not interfere

4. **Surveys**
    - Self-report Bias

5. **Experiments**
    - Manipulation

Concepts

- **Generalizability**
    - Can the results apply to general population?

- **Sample- individuals vs Population- groups in general you want to study**
    - Random samples (representative of all *men)
    -
- **Longitudinal- change in time vs Cross-sectional- at the same time**
    - Attrition- drop out < longitudinal studies
    -

Q: Does watching violence inspire violence?

Hypothesis

- Testable

Methods

Q: Can subliminal suggestion change behaviour?
H: Indirect exposure to words about aging will make participants feel older and this walk slower
M: students did scrambled sentence exercises- that's why they thought the experiment was about

- Got exercises with lots of words about aging
- All were timed as they walked dorn

C: primed to think about aging, people feel older

OBSERVERS ARE BIASED!

Research 2

Learning Objectives:

- How research ethics are maintained
- What a correlation coefficient is
- How experimental methods establish causality
- Ways to control for confounds
- How research is reported

Ethics and Research:

1. **Institutional Review Board (IRB)**
    a. **B**ehavioral **R**esearch **E**thics **B**oard (BREB)- psychology
2. **Informed Consent**
3. **Deception**- participants have to innocent; certain level of deception to have authentic results
4. **Debriefing-** was this subliminal/ in the radar?; clarify
5. **Minimal Risk-** normal life= very little ethical issue

Correlation terms:

Correlations exercise linkLinks to an external site.

- r>>1, positive correlation; slope; r<<-1 negative correlation

Range

- (minimum - maximum)

Sample size (n)

- number of observations (cases)

Outlier:

- an unusual or extreme case which may distort a pattern; an inconsistent case

Confirmation bias

- tendency to strengthen rather than question our beliefs; we see what we want to see

****Correlation**

- Not causation!
- Correlation can be co-incidental (ice cream vs crime rise in the summer); predator-prey- both directions

---

Experiment terms:

Falsifiable temporal precedence- set a situation; a time; do something and see what happens;

- Falsifiable: can go either way
- Temporal: in time
- Precedence: manipulation happens before outcome
    - eg. whether suntan lotion makes you drown (before in time)

Operationalization

- Taking something you want to understand into concrete way (turn concept into practical; measurable)

Manipulation / Condition

- Treatment vs Control
- Not always possible (**quasi-experiment**)- similar to exp; but cannot completely control over independent variable (eg. weather; tv)

Independent / Dependent Variables (IVs, DVs)

- Independent: outcome
- Dependent: controlling factors

Random Selection (of a sample)

- Unbiased sample

Random Assignment (to conditions)

- **Experimenter has to control**

Single / Double-blind

- Participator does know what's going on

Demand Characteristics / Placebo Effect

- **expectations**

Quasi-Experimental

- **No complete control**

Reporting Research:

Statistical Analysis

- To show that the results are not just by chance

Peer Review

- **Other experts have to criticize and validate**

Replication

- **Reproduce it, get same results**

Retraction

- **Articles Got hold up; mistake; pull out**

Research 3

Learning Objectives:

- Measurement and error
- Random and systematic error
- Confidence intervals, statistical significance
- Interpreting error bars
- Differentiating reliability and validity

Measurement

- Estimates
- The **lack of precision** of estimates is called the "error"
- Eg. 137+/-11

True value

Random error (noise)

- Averages out estimates> still ok
- Eg. Human error (observation)- Weighing

Systematic error (bias)

- Changes estimates? Not ok
- Eg. Scale not tare/ flaws in experiments

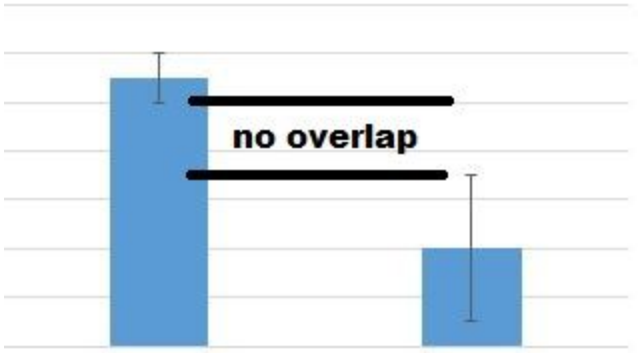
Confidence interval

- Range where we expect the true value to be

Statistical significance

- Unlikely to have occurred by chance

Error bars

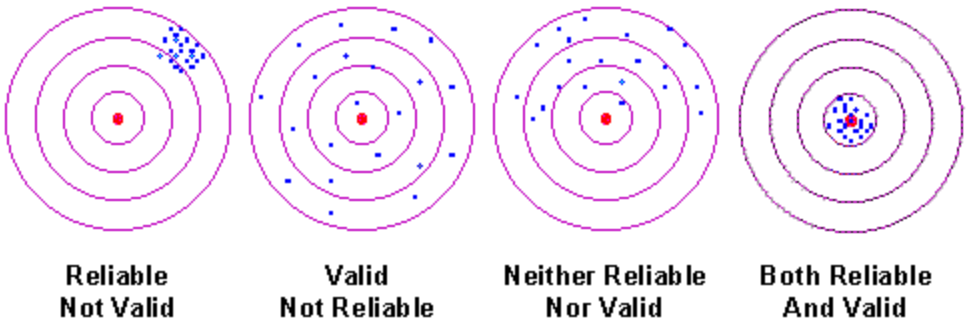
- 

statistically significant

Reliability

- Can you get the same value **repeatedly**

Validity



- Getting the **true** value