Doing Research in Psychology

Lecture 2:

Recap of Key Methodological Principles:

Constructs and Variables:

- Not everything we want to measure is directly observable
- Usually in psychology, we measure constructs – these are abstractions, labels we use to identify a concept that is not directly observable.
- To measure constructs, we measure variables that we think are representative of the construct
- Variables are quantifiable; they are directly measureable

Variables possess attributes: Categorical data: labels that we apply to identify categories, numbers given have no meaning e.g. male = 1, female =2. Quantitative data: values have meaning e.g. 10 is bigger than 9

Some common ways of measuring quantitative variables: Self report, observation and recording, task performance, physiological measures.

Psychological research is concerned with relationships:

- Between predictor (independent) and outcome (dependent) variables
- Independent variable is expected to predict/ have some influence on/affect the dependent variable
- Two types of relationships
    - Association between two or more variables (non experimental design)
    - Differences between two or more levels on an IV as measured by the DV (experimental design)

Experimental design: Keep EVERYTHING the same EXCEPT for the ONE thing we're interested in.

- Thus differences between groups can only be due to how we manipulated the IV and nothing else.
- Good experimental design ensures that possible extraneous variables will have no confounding effect
- Allows the researchers complete control over all aspects of the study e.g. characteristics of participants, procedures used in the experiment.

Quasi- experimental design: examining differences between naturally occurring (therefore not randomly allocated groups).

- Gender (men/women)
- Domestic students vs international students
- Primary vs. high school students
- Young vs. old people
- Limitation: can't claim causation

Non experimental design:

- NO random assignment
- NO manipulation of IV
- In other words, there is no attempt to control what people do or experience

Why correlational method is preferable:

- More interested in the influence of MANY predictors,
- It is unrealistic to manipulate the IV
- Sometimes it could be unethical to manipulate the IV
- It may be impractical to manipulate IV
- Manipulation may not be the best way to answer the research question
- More interested in maximizing external validity

Methods and data:

- Descriptive statistics
- Non experimental designs:
    - Correlations between variables
    - Regressions to analyse relations between many predictors and an outcome variable
- Experimental and quasi- experimental designs
    - Mean differences between conditions on IV as measured by the DV

Validity:

- Construct validity: are we really measuring the thing that we think we are measuring?
    - Are we really manipulating what we think we are manipulating?
- Internal validity: the extent to which we can claim causation (Does the IV cause the DV)
    - Experimental designs usually have high internal validity. We control all aspects of the study, including what might influence the DV
    - Non experimental designs have low internal validity; correlation is not causation: we don't know what might be influencing the DV
- External validity: the extent to which we can generalise (to people/ situations)
    - Usually; experimental designs: low on external validity
    - Non experimental designs: high on external validity

Basic Research: demonstrate a phenomenon exists

Applied research: to what extent does it exist in the real world?

Maximising validity of a measure:

Construct Validity: does it correlate (positively) with

- Another measure of the same construct
- A similar but different construct
- A construct that is conceptually its opposite (no correlation: discriminant validity)

Convergent validity: do other methods produce similar results:

- 3rd party ratings
- Experimental (e.g. in certain situations, do hi and lo scorers behave in the way that you would logically expect?)
- Field studies: does the measure predict behaviours in different contexts (external validity)

Maximising validity of a manipulation:

Construct validity: are we manipulating what we think we are manipulating? Ask participants (manipulation checks)

Internal validity:

- Does A really cause B? Assume tight experimental controls
- Is this the most rigorous test of A→B?
- What factors might moderate A→B?

External Validity:

- How well does the manipulation reflect the real world
- To what extent do we observe the same relationship in the real world?

Maximising validity of a theory or an observed relationship:

- Internal validity: good experimental design to test basic principles
- External validity: in what situations and with whom does it/doesn't it apply?
- Convergent validity: do we get the same findings regardless of method?

Reliability: a measurement process is reliable if it yields the same results every single time with the same measurements.

And assumes the unit hasn't changed between applications of the measure. In other words, how consistent or how stable is the measurement process?

Basic ways of measuring reliability:

- Reliability of the measure across time: test-retest reliability
- Reliability of the measure across/ between people: inter-rater reliability
- Reliability within the measure: internal consistency (questionnaires)

Maximising reliability: more is better. Less items in an experiment; less precision. More items = more precision. The more testing we do, the more confidence we have in our theory, manipulation, measures, conclusions.

Validity and reliability: often you will find that a measure can be: valid but not reliable, or reliable but not valid… If we can't have both validity and reliability, at the very least make sure that your measure is valid. There's not point getting consistent results if you're not measuring what you want to measure.