PSYU3351: Research Methods in Psychology – Notes Excerpt

Contents

Week 1: Introduction

Lecture

Assessments

- Weekly online quiz (10%)
- Research report (40%)
  - o 2000 words
- Final exam (50%)
  - o 28 MC plus short answer questions

Psychology is the science of the mind, brain, and behaviour

Empiricism: Based on a Greek word meaning *experience*. Involves testing our subjective ideas against objective observations

Research Process Steps

1. *Find research question*
2. *Generate hypothesis based on theory*
   - **Hypothetico-Deductive Method**
     - Deductive reasoning: Hypotheses generated from theory
     - Hypotheses describe/explain the relationship between variables
     - Features of Hypotheses
       1. Testable
       2. Refutable
       3. Positive: Hypotheses state that there **is** a relationship between variables (directional/non-directional)
3. *Define and operationalise variables*
   - **Honours Tip**: Use established methods
4. *Identify participants*
   - **The WEIRDOs Sample Bias**: Western, Educated, Industrialised, Rich, and Democratic cultures
5. *Choose research strategy & design*
   - Describe events (correlational) or explain events (experimental), etc.?
   - **Correlation**: Concludes there is a relationship and a direction (positive/negative), but not necessarily causation. Also subject to third variable problem
   - **Experiment**: Measures impact of IV on DV. Involves experimental condition (levels of IV) and control condition (no IV)

- Extraneous Variable: Variables which are not the DV or IV
- Confounding Variable: Variable in study which is not the measured IV, but that may also influence DV

6. *Carry out research*
7. *Make conclusions*

Week 2: Assessing Research
Reading
External Validity: How well would the results within the study be generalised to outside of that study?

- Three types of generalisations:
    o From a sample to a population
    o From one study to another
    o From a study to a real-world situation
- Threats to external validity:
    o Generalisation across a population
        ▪ Selection bias; college student samples; volunteer bias; participant characteristics (i.e. are all participants too similar in a certain characteristic, e.g. all female); cross-species generalisation
    o Generalisation across features of a study
        ▪ Novelty effect (reacting differently due to novelty of study); multiple treatment interference; experimenter characteristics
    o Generalisation across features of measures
        ▪ Sensitisation (e.g. pre-testing may make one more aware of construct, influencing results on post-testing); generality across response measures (generalisability of operationalisation); time of measurement

Internal Validity: How accurately one can infer causation between variables

- Threats to internal validity
    o Extraneous variables
        ▪ Confounding variables
    o Environmental variables
    o Individual differences
    o Time-related variables

Increasing internal validity by minimising confounds may decrease external validity

Artifacts: Threaten both internal and external validity

- Experimenter bias
- Demand characteristics & participants reactivity – subjects may change their behaviour in context of experiment

Lecture
Threats to Validity

- Internal Validity: Can causation be accurately inferred from the study?
    o Are there confounding variables that could explain results?
- External Validity: Are the results generalisable?

Critical Appraisal

- Balanced appraisal of strengths and limitations
- Involves assessing the *methodology/process* and the *results*
    - o There is a distinction between quality of the research itself and quality of presentation
- Critically reviewing research is important for brainstorming future research and for utilising treatments

Key Assessment Points

- Clarity of research question: Direct? Appropriately narrow?
- Sample appropriateness
    - o Similar baselines, or differences between groups controlled for?
- Appropriate operationalisation
- Quality of experimental design
    - o Minimising bias
    - o Maximising power with appropriate number of participants
    - o Fit of design with RQ
- Appropriateness of statistical analysis

Note: Feasibility trials are initial trials that may not include a control group and may involve small sample sizes. They determine practicality of treatment/intervention, and can be followed up with further studies focussing on determining causal relationships

Formal Assessment Tools

- Assessing quality
    - o CASP (Critical Appraisal Skills Programme): Assessment of quality for specific types of studies
    - o Cochrane's Risk of Bias Tool: Assessment of quality for RCT studies
- Article reporting guidelines
    - o CONSORT (Consolidated Standard of Reporting Trials) checklist
    - o APA JARS (Journal Article Reporting Standards)
- Assessment of evidence strength
    - o NHMRC Evidence Hierarchy: Used by APS when reviewing therapies
        - ▪ Strongest evidence is a systematic review of randomised control trials
- *Pros and cons of assessment tools….*
    - o *Pros*: Quantifies quality; enables cross-study comparisons; irrelevant to journal quality
    - o *Cons*: Assumes equal weight cross items – a paper may fail a critical section of validity, but this is not reflected in the total score
- Overall, these tools are not used today

Critical Appraisal Skills Program (CASP) Checklist

- **Are the results valid?** Random allocation; no confounding variables; similar baselines (or differences are controlled for); etc.
- **What are the results?** Precision of treatment; effect size
    - o Precise results may have smaller SDs, reported Cohen's D, narrow confidence intervals

- **Will the results help locally?** Generalisability; etc.

Appraisal Guideline Biases: Often written for *intervention* studies, less attention to other research

Last-Observation-Carried-Forward: A technique used when performing research where attrition occurs. Whatever the subject's last score was on the DV will be carried forward to all other measures

Analysis of Schizophrenia Article

- Clarity of aims
    - Clear aim which logically follows from discussion
- Random allocation
    - Patients were randomly assigned
- All subjects accounted for
    - Participant drop out accounted for and explained
    - Ideally, methods used so that initial data is not wasted (e.g. LOCF)
- Blinding
    - Double-blind
- Baseline group comparability
    - Similar measures between groups at baseline except for one aspect which was controlled for
- Equal treatment of groups
    - Not mentioned but assumed
- Treatment effect
    - Effect sizes and comparisons laid out
- Precision of results
    - Confidence intervals could be calculated
    - SDs are small
    - Cohen's D reported
- Application of results
    - Used appropriate sample
- All important outcomes considered
    - Treatment results plus side effects were measured for
- Other stuff
    - Did they do power analyses to ensure sample size was adequate?
    - Were they compromised by funding?

Journal Quality

- Peer review process reduces *some* bias
- **Journal Impact Factor:** How often a journal article is cited on average – the higher, the better and more reliable the journal
    - Not fool-proof: Doesn't guarantee quality; paper may be cited due to being bad and controversial

I hope you found this preview of my notes helpful. If so, please consider buying the full notes 😊

- *Naomi*