Week 3 lecture notes - PSYC 3435

Jan 30-Feb 3, 2017

Building a good research question

- Suppose we want to claim that people perform best with a good night of sleep

  1. must FOCUS the idea
     - break more general idea into smaller, more specific ideas
       * what do we mean by "performance" – academic? physical?
       * what do we mean by "good night of sleep" – 8 hours? uninterrupted? 3 hours of REM?
     - develop underlying theoretical model
       * since consolidation of memories happens during REM sleep, we can predict that getting more REM sleep should lead to better recall
  2. must EVALUATE the idea
     - ROT test – is it:
       * replicable?
       * observable?
       * testable?
  3. TEST the idea
     - what are the variables of interest?
     - what is the hypothesized relationship between these variables?
     - how should we test it?

Some definitions

- Operational definition - a definition of an abstract concept that is formulated in terms of how the concept is being measured

    - Example: define "memory ability" as score on a memory test

- External validity - the degree to which results of a study apply (generalize) to individuals/behaviors outside context of the study

- Internal validity - the degree to which a study provides **causal** information about behavior

- Reliability - the degree to which the results of a study are consistent under repeated replications

General research methods

1. Naturalistic observation: observation and description within a natural setting

    - high external validity
    - hard to do well
        - reactivity effects
        - takes a long time
        - need multiple observers

2. Survey methods – questionnaires/interviews that ask people to provide information about themselves

    - widely used
    - best way to collect particular kinds of data (descriptive data, preferences, etc.)
    - large amounts of data very quickly
    - difficult to do correctly with high validity

3. Archival data - examine existing public/private records

4. Note: these are all called "observation without manipulation"

    - Advantages:

(a) can observe complex patterns of behavior

  (b) useful when little is known about subject of study

  (c) may learn something new that would never have been predicted

- Disadvantages:

  (a) cannot establish causality

  (b) threats to internal validity
    - lots of "confounds"
    - lots of alternative explanations

  (c) sometimes results are not reproducible

5. Correlational methods – measure two (or more) variables for each individual and see if the variables co-vary (suggesting they are related)

   - used for
     - making predictions
     - establishing reliability and validity
   - problem: cannot make causal claims!

6. Experiments – manipulating and controlling variables in laboratory experiments

   - involves some type of comparison
     - at least two groups that get compared (random assignment to groups)
     - quasi-experiment - groups NOT randomly assigned
   - types of variables
     - Independent variable (IV) – variable that is manipulated
     - Dependent variable (DV) – variable that is measured
     - Control variable – held constant for all participants in experiment (either through explicit control or randomization)

Class activity for Friday

1. hand out activity sheet. Have students return sheets without names

2. talk about False Consensus Effect (Ross et al., 1977; Mullen et al., 1985)

- Our predictions of others' behaviors tend to err in the direction of our own behaviors
- Example: Ross et al. (1977) found that college students who preferred brown bread estimated that over 50% of other college students preferred brown bread, whereas white-bread eaters estimated more accurately that 37% showed a preference for brown bread.
- We are going to try to replicate this effect with our data:

3. Tasks for students

  - divide into 6 groups... assign one question for each group.
  - in each group: tabulate the answers for assigned question and calculate the mean for personal answers. We'll deal with predicted class mean later. We will rotate the data sheets through each group in batches until all groups have tabulated all data.
  - Write the question means on the board.
  - Give each student one of the data sheets.
  - Have students compute a score for each data sheet as follows:
    - for each question, score a +1 if personal answer and predicted mean are on same side of mean (that is, both above or both below)
    - score a -1 if personal answer and predicted mean are on opposite sides (that is, one above and one below).
    - sum all 6 questions (+1s and -1s) and get a single integer score between -6 and +6
    - write down that score and return paper to front.

4. Task for class

  - What would support for False Consensus effect look like?
  - If people err in the direction of their own behavior tendencies, then the mean score should be positive
  - If people err randomly, then the mean score should be 0.
  - do a single-sample t-test on the scores