Prelude to the Research Validity Lecture

A RH: is a guess about the relationships between behaviors

In order to test our RH: we have to decide on a research design, sample participants, collect data, statistically analyze those data and make a final conclusion about whether or not our results support our RH:

When we are all done, we want our conclusion to be "valid"

Validity … has lots of types, definitions & procedures but basically it means … Accuracy or Correctness

Major Types of Validity

External Validity
- to what extent can our results can be accurately generalized to other participants, situations, and times ?

Internal Validity
- is it correct to give a causal interpretation to the relationship we found between the variables/behaviors ?

Measurement Validity
- do our variables/data accurately represent the behaviors we intend to study ?

Statistical Conclusion Validity
- have we reached the correct conclusion about whether or not there is a relationship between the variables/behaviors we are studying ?

External Validity

- Whenever we run a study we have to make several decisions…
  - who will be the participants from whom we collect data
  - what stimuli and tasks the participants interact with
  - what will be the setting in which the data are collected
- When the study is completed, the data analyzed and the findings reported (at a conference or published in a journal or textbook), others have to decide whether or not they should try to apply those findings to their own psychological research or practice
- external validity is concerned with evaluating the applicability or generalizability of research findings -- by asking if the participants, stimuli/tasks and setting to which the findings might be applied are sufficiently close to those used to complete the study

Internal Validity

- Whenever we test a causal research hypothesis we have to be able to rule out "confounds" -- alternative hypotheses about what causes what
- For example: If I ...
  - gave 4th graders computer-based math practice and 2nd graders paper-based practice ...
  - found that those with computer-based practice did better on a test ...
  - and claimed that this supported my causal hypothesis that computer-based practice causes better learning …
  - you might point out the "alternative hypothesis" that 4th graders are likely to do better on a math test than 2nd graders no matter how they practice
- internal validity is concerned with evaluating tests of causal research hypotheses to determine if the design eliminates alternative hypotheses (confounds)

Measurement Validity

- Psychological research, based on scientific empiricism, requires data -- measures of behavior
- most of these data are collected using one of two procedures
  - observation -- watching and recording participant's behavior (e.g., recording the number of aggressive behaviors by a child during recess or the number of items a person can remember from a list of 40 nouns)
  - self-report -- asking participants to report their behavior, opinions, etc. (e.g., "Did you vote in the most recent ASUN election?" or "How often do you try to make a new friend?"
- measurement validity is concerned with the accuracy of those measures and the resulting data

Statistical Conclusion Validity

- Scientific empiricism requires data-based evidence and that means we have to analyze the data we collect
- Testing both associative and causal research hypotheses requires that we decide whether or not there is a statistical relationship between the behaviors or variables
- statistical conclusion validity is concerned with evaluating whether or not the data analysis produced the "correct answer"
  - was the data analysis appropriate for the type of data and the research hypothesis?
  - Was the decision about whether or not there is a relationship between the variables accurate?

Practice -- identify the type of validity involved for each below (answers on the next page)

1. I don't know that I should apply your results from college students to my teaching of 4th graders.

2. Are you sure that it is the cognitive-behavior treatment that decreased the participants depression and not just that these folks had someone who would listen to their problems?

3. Was the "Beck Depression Inventory" a good choice for this study?

4. Are you sure there really is a relationship between practice and performance, or is this finding a "fluke"?

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   Statistical Conclusion

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(answers on the next page)

1. I'm not sure it was practice that improved performance, since the group that had the practice also had more previous experience.

2. If cognitive-behavior treatment works, as your study found, why have the other 20 studies all found that it didn't work

3. I'm sure that your method works great in the laboratory, but what about here in the "real world"

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