4. Testing—changes in the score a person makes on the second administration of a test that can be attributed entirely to the effect of having previously taken the test.

5. Instrumentation—any change that occurs in the measuring instrument between the pretesting and posttesting.

6. Regression artifact—the tendency for extreme scores to regress or move toward the mean of the distribution on a second testing.

7. Differential selection—differences that exist in the comparison groups at the outset of the research study and are not due to the independent variable.

8. Additive or interactive effects—differences that exist in the comparison groups because one of the threats, such as maturation or history, affects the groups differently.

9. Differential attrition—difference that exists in the comparison groups because the participants that drop out of the various comparison groups have different characteristics.

In addition to trying to meet the criteria of internal validity, the researcher must attempt to meet the criteria of external validity. In most studies, we want to be able to generalize the results and state that they hold true for other individuals in other settings at different points in time. External validity is achieved if we can generalize the results of our study to the larger target population, at other points in time, in other settings across different treatment variations, and across different outcomes.

Threats to external validity include a lack of population validity, ecological validity, temporal validity, treatment variation validity, and outcome validity. Population validity refers to the ability to generalize to and across subpopulations in the target population. Ecology validity refers to the ability to generalize the results of a study across settings. Temporal validity refers to the extent to which the results of a study can be generalized across time. Treatment variation validity refers to the extent to which the results of the study can be generalized across different variations of the treatment condition. Outcome validity refers to the extent to which the results of the study can be generalized across different outcomes that should be influenced by the treatment condition.

When we conduct a research study, we also need to select measures of the variables we are investigating. This is frequently a difficult process because the variables we study often represent abstract constructs and we must devise some way of measuring these constructs. The technique that most researchers use is operationalism, or selecting a specific operation or set of operations as the representation of the construct they are investigating. Although operationalism is necessary for communicating the way a construct is represented, seldom, if ever, does it provide a complete representation of the construct. Each operationalization of a construct represents only a portion of the construct. This is a problem of construct validity, or the extent to which a higher-order construct is represented in the study.

The majority of this chapter is focused on validity in traditional, quantitative research, especially experimental research. However, validity is also an important issue in qualitative research. Three types of validity in qualitative research are descriptive validity, interpretive validity, and theoretical validity. Descriptive validity refers to the factual accuracy of the account as reported by the qualitative researcher. Interpretive validity is obtained to the degree that the participants' viewpoints, thoughts, intentions, and experiences are accurately understood and reported by the qualitative researcher. Theoretical validity is obtained to the degree to which a theory or theoretical explanation developed from a research study fits the data and is therefore credible and defensible. Internal validity and external validity are also important to qualitative research when the researcher is interested in making cause and effect statements and generalizing, respectively. Twelve strategies that are used to promote validity in qualitative research were discussed.

**KEY TERMS**

- accessible population (p. 240)
- additive and interactive effects (p. 239)
- ambiguous temporal precedence (p. 234)
- attrition (p. 241)
- causal description (p. 230)
- causal explanation (p. 231)
- confounding variable (p. 228)
- construct validity (p. 247)
- data triangulation (p. 255)
- descriptive validity (p. 231)
- differential attrition (p. 241)
- differential selection (p. 239)
- ecological validity (p. 245)
- extended fieldwork (p. 253)
- external validity (p. 242)
- extraneous variable (p. 228)
- history (p. 253)
- instrument calibration (p. 237)
- internal validity (p. 239)
- interpretive validity (p. 251)
- investigator triangulation (p. 251)
- low-inference descriptors (p. 252)
- maturation (p. 238)
- methods triangulation (p. 254)
- multigroup research design (p. 234)
- multiple operationalism (p. 248)
- naturalistic generalization (p. 256)
- negative-case sampling (p. 251)
- one-group pretest-posttest design (p. 239)
- operationalism (p. 247)
- outcome validity (p. 246)
- participant feedback (p. 257)
- pattern matching (p. 253)
- peer review (p. 255)
- population validity (p. 242)
- reactivity (p. 245)
- regression artifact (p. 238)
- reflexivity (p. 249)
- replication logic (p. 256)
- researcher-as-detective (p. 245)
- researcher bias (p. 248)
- selection-history effect (p. 229)
- selection-maturation effect (p. 240)
- statistical conclusion validity (p. 229)
- target population (p. 242)
- temporal validity (p. 245)
- testing (p. 246)
- theoretical validity (p. 252)
- theory triangulation (p. 250)
- third variable (p. 232)
- treatment variation validity (p. 245)

**STUDY TIP:** Visit the companion website for Educational Research at www.ablongman.com/johnsonchapters7e for study questions and multiple-choice questions to see how well you have mastered the material in this chapter. Also look at the other activities we have included to promote your mastery of the material in this chapter.

**DISCUSSION QUESTIONS**

1. In this chapter, we listed and discussed four different types of validity. We also stated that it is unlikely that a researcher will be able to attain all four types in a single study. If only three of the different types of validity can be achieved, which three should the researcher strive for? Does this mean that the one type that is disregarded is less important?

2. In this chapter, we have discussed several criteria for inferring causation. Can we ever be sure that
we have met these criteria? What type of evidence is needed to ensure that each of the criteria have been met?
3. In what type of studies would each of the various threats to internal validity be most prevalent?

RESEARCH EXERCISES

Using Research Navigator, find a quantitative or qualitative research article in an area in which you are interested, such as teacher burnout. When selecting an article, make sure it is about a cause-and-effect issue. Read the article, and then answer questions 1 through 6. If you selected a qualitative article, also answer questions 5 and 6.
1. Is the study a causal descriptive or causal explanatory study? Explain why it is one and not the other.
2. Identify the threats to internal validity that might exist in this study.
3. Identify the constructs that are used in this study and the operations used to define these constructs.
4. What problems might exist in trying to generalize the results of the study, and to whom and what conditions might the results be generalized?
5. Does the study have descriptive validity, interpretive validity, or theoretical validity? If it has any of these, how does the author demonstrate this type of validity?
6. Is internal or external validity an issue in the study, and how are these handled?

RELEVANT INTERNET SITES

http://trochim.human.cornell.edu/kb/intval.htm
A website that provides a discussion of internal validity.

www2.chass.ncsu.edu/garson/pa765/validity.htm
A website that provides an extended discussion of validity as it is applied to drawing conclusions from data.

RECOMMENDED READING


ENDNOTES

1. Donald Campbell (1969) makes a similar point, and he uses the term proximal similarity to refer to the degree of similarity between the people and circumstances in the original research study and the people and circumstances to which you wish to apply the findings. Using Campbell’s term, your goal is to check for proximal similarity.

2. The late Donald Campbell, perhaps the most important research methodologist ever, passed away just five years ago. His book, for example, his introduction to this book.