

Chapter 1: Research Design Explained

scientific approach: a way of using unbiased observation to form and test beliefs. (p. 2-3)

replicate: repeat. A skeptical researcher should be able to repeat (replicate) another researcher's study and obtain the same pattern of results. One key to a replicable study is having objective operational definitions of your variables (p. 8)

Operational definition: a "recipe" for how you are going to measure or manipulate a variable; the specific, observable, concrete steps involved in measuring or manipulating that particular factor. (p. 5)

testable: capable of being disproven, corrected, or revised based on the evidence. (p. 4)

objective: unbiased; based on observable, physical evidence. (p. 3)

Chapter 2: Research Design Explained

construct: a mental state that can't be directly observed or manipulated, such as love, intelligence, hunger, feeling warm, and aggression (p. 29).

construct validity: the degree to which the study actually measures and manipulates the elements that the researcher claims to be measuring and manipulating. If the operational definitions of the constructs are poor, the study will not have good construct validity. For example, a test claiming to measure "aggressiveness" would not have construct validity if it really measured assertiveness. (p. 30)

internal validity: the degree to which the study demonstrates that a particular factor **caused a change** in behavior. If a study lacks internal validity, the researcher may falsely believe that a factor causes an effect when it really doesn't. Most studies involving humans do not have internal validity because they can't rule out the possibility that some other factor may have been responsible for the effect. Unfortunately, steps taken to increase internal validity (such as keeping nontreatment factors constant) could harm the study's external validity. (p. 27)

experiment: a special type of study (not all studies are experiments!) that allows researchers to determine the cause of an effect; usually involves randomly assigning participants to groups. (p. 28)

external validity: the degree to which the results of the study can be **generalized** to other places, people, or times. (p. 33)

ethical: conforming to a profession's principles of what is morally correct behavior. In the case of psychological research, the American Psychological Association has established guidelines and standards of morally appropriate behavior. Usually, ethical human research must be approved by an internal review board (IRB) and involve both informed consent and debriefing. To learn more about these guidelines and standards, see Table 2-2, Table 2-3, Table 2-4, and Appendix C. (p. 35)

informed consent: Giving potential participants information about the study, especially in terms of factors that might lead them to refuse to be in the study, before they decide whether to participate. (p. 35)

debrief, debriefing: Explaining the purpose of the study, answering any questions, and undoing any harm that the participant may have experienced as a result of participating in the study. (p. 35)

Internal Review Board (IRB): a committee of at least five members--one of whom must be a nonscientist--that review proposed research and monitor approved research in an effort to protect human research participants. To see a diagram of the IRB process, see Figure 2-6 (p. 39). For animal subjects, the equivalent committee is the Internal Animal Care and Use Committee (IACUC). (p. 38)

Chapter 2 Summary

At one level, there are two basic problems about doing research to get answers to questions about human behavior.

- 1 The study you do may be unethical.
- 2 The study you do may not answer the question.

At another level, there is only one problem: Is the study ethical?

According to APA's ethical principles (which every researcher should consult before doing a study), a study is ethical if the potential benefits of the study outweigh the study's potential for harm. Thus, there are two ways to increase the chances that your study is ethical.

First, reduce the potential for harm. Following the nine guidelines in Box 2.1 (p. 59) can help reduce the potential for harm.

Second, make your study worth doing. This means:

- 1 Having an interesting, important research question; and
- 2 Collecting data that will allow you to answer that question.

Mitchell and Jolley address point 1 (developing an interesting, important research question) in Chapter 3. But what about point 2 (collecting data that will allow you to answer your research question)? Obviously, your study should have validity. But what type of validity? The type of validity you will need will depend on your research question.

If your research question is about whether something **causes** a certain **effect**, your study must have **internal validity**. Establishing internal validity is not easy (see Figure 2.1 on p. 48). Only studies that are **experiments** (and most studies are not experiments--see the colored table on p. 49) have internal validity. Thus, if you want to make cause-effect statements, you should do an experiment. To do an experiment, you must have a treatment that you manipulate, and you must **randomly assign** participants to different types or amounts of that treatment.

Alternatively, if your research question is about what percentage of people do some behavior, you need a study that has **external validity**. One key to having external validity is to have a large, random, representative sample of participants. **Random sampling** from a population helps you to **generalize** your results to a larger population.

If your research question involves measuring or manipulating some state of mind (hunger, stress, fear, motivation, love, etc.), then you need construct validity. As figures 2.2 (p.50) and 2.3 (p. 52) illustrate, achieving construct validity is not easy.