Chapter 2
Research Methods

Chapter Outline

Basic Terms and Definitions

Independent and Dependent Variables
Functional Relationships
Stimulus and Response
Overt and Covert Behavior
Appetitive and Aversive Stimuli
Motivating Operations
Contiguity and Contingency

Measurement of Behavior

Behavioral Definitions
Recording Methods
Assessing Reliability

Research Designs

Descriptive Research
Experimental Research

Use of Animals in Behavioral Research

Explanation of Opening Scenario

As noted later in the chapter, this scenario illustrates one of the drawbacks with basing decisions on the results of statistical analysis, which is that results that are significant for a group of individuals are not necessarily applicable to an individual.

Dr. Dee Assignment

(See Chapter 1 in this manual for a sample set of instructions.)

1. *Dear Dr. Dee,*

    When my fiancée's old boyfriend arrived back in town last month, I noticed a significant decrease in the frequency with which she called me. I'm absolutely certain she's having an affair with him. What do you think?

    Aren't-I-clever!

2. *Dear Dr. Dee,*

    I keep telling my boyfriend to "shape up," but it doesn't seem to be doing much good. What am I doing wrong?

    Ms. Rather Vague

Relevant Concepts

1. The writer's evidence is based on a simple comparison design that is insufficient for determining cause-and-effect relationships (p. 70–72). There could be several other reasons for the sudden decrease in phone calls from his fiancée then apart from the fact that her old boyfriend has returned to town.

2. What does "shape up" mean? If the writer wishes to suggest improvements to her boyfriend's behavior, she should use more objective, unambiguous descriptions of the behaviors about which she is concerned (p. 58–59).

Study Tip

A better approach to textbook reading, which requires more active involvement with the material, is to first read a paragraph without underlining, but instead searching for the important points in the paragraph. After finishing the paragraph, students should then go back and underline the fewest number of words and phrases needed to convey the important information, ideally while remaining somewhat readable. Another approach to textbook reading is the 3R approach (McDaniel, Howard, & Einstein, 2009), which involves 3 steps: 1) read a section, 2) try to recite to oneself the main points in the section, and 3) review the section, which is paying close attention to the information that one missed reciting in step 2. In all cases, students should

try to find an approach that works for them.

Internet Resources

APA Guidelines for Ethics in Research
http://www.apa.org/science/leadership/care/guidelines.aspx
These are the American Psychological Association guidelines for ethical conduct in the care and use of animals.

Animal Behavior and Welfare Sites
http://grants.nih.gov/grants/olaw/olaw.htm
This website is from the Office of Laboratory Animal Welfare, associated with the National Institutes of Health in the United States. The website provides links to laws and policies associated with animal research.

Centre for the Study of Animal Welfare
http://www.uoguelph.ca/csaw/links/
This website is from the Campbell Centre for the Study of Animal Welfare at the University of Guelph, and it provides many links about animal welfare in Canada and more generally.

Suggested Readings

Barlow, D. H., & Hersen, M. (1984). *Single-case experimental designs: Strategies for studying behavior change* (2nd ed.). New York: Pergamon Press.

Kazdin, A. E. (2008). *Behavior Modification in Applied Settings* (6th ed.). Pacific Grove, CA: Brooks/Cole.

Kazdin, A.E. (2010). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). New York, NY: Oxford University Press.

Miller, L. K. (1997). *Principles of everyday behavior analysis* (3rd ed.). Pacific Grove, CA: Brooks/Cole.

Mukerjee, M. (1997, February). Trends in Animal Research. *Scientific American*, 276 (2), 86–93.

Sidman, M. (1960). *Tactics of scientific research: Evaluating experimental data in psychology.*

New York: Basic Books.

Skinner, B. F. (1956). A case history in scientific method. *American Psychologist*, 11, 221–233.

Quiz Answers

Chapter 2 – Research Methods

Quick Quiz A
1. independent; dependent
2. effect; cause
3. functional; environment; behavior

Quick Quiz B
1. stimulus; response
2. stimulus; stimuli
3. stimulus
4. aversive
5. overt; covert
6. appetitive
7. covert; overt; overt; covert
8. private

Quick Quiz C
1. motivating operation
2. abolishing operation; establishing operation
3. increased; deprivation; establishing
4. contiguity
5. temporal contiguity
6. spatial contiguity
7. contingency
8. contingent upon; contiguous with

Quick Quiz D
1. objective; unambiguous
2. intensity
3. speed; duration; latency
4. topography
5. rate
6. interval; time sample
7. cumulative recorder; no; fast; slow
8. number of words written per hour
9. 75%; inadequate

Quick Quiz E
1. naturalistic observation; descriptive

2. bias
3. functional; cause

Quick Quiz F
1. independent; dependent
2. independent; dependent
3. randomly; experimental; treatment; control
4. comparative; independent
5. a. it requires a large number of subjects
   b. it focuses on the average performance of subjects which may not be relevant to particular individuals
   c. the results are often analyzed at the end of the experiment which may not be suitable for some situations, such as when we need the flexibility to alter a treatment that is proving to be ineffective

Quick Quiz G
1. baseline; treatment
2. does not; functional
3. ABAB; baseline; treatment
4. the behavior needs to return the same level as in the original baseline
5. permanent
6. ethical

Quick Quiz H
1. time; persons; settings; behavior
2. withdraw
3. permanent; unethical

Quick Quiz I
1. gradual
2. closely match
3. reverses direction