5.6: Experimental Research (Summary)

Key Takeaways

- An experiment is a type of empirical study that features the manipulation of an independent variable, the measurement of a dependent variable, and control of extraneous variables.

- An extraneous variable is any variable other than the independent and dependent variables. A confound is an extraneous variable that varies systematically with the independent variable.

- Experimental research on the effectiveness of a treatment requires both a treatment condition and a control condition, which can be a no-treatment control condition, a placebo control condition, or a wait-list control condition. Experimental treatments can also be compared with the best available alternative.

- Experiments can be conducted using either between-subjects or within-subjects designs. Deciding which to use in a particular situation requires careful consideration of the pros and cons of each approach.

- Random assignment to conditions in between-subjects experiments or counterbalancing of orders of conditions in within-subjects experiments is a fundamental element of experimental research. The purpose of these techniques is to control extraneous variables so that they do not become confounding variables.

- Studies are high in internal validity to the extent that the way they are conducted supports the conclusion that the independent variable caused any observed differences in the dependent variable. Experiments are generally high in internal validity because of the manipulation of the independent variable and control of extraneous variables.

- Studies are high in external validity to the extent that the result can be generalized to people and situations beyond those actually studied. Although experiments can seem “artificial”—and low in external validity—it is important to consider whether the psychological processes under study are likely to operate in other people and situations.

- There are several effective methods you can use to recruit research participants for your experiment, including through formal subject pools, advertisements, and personal appeals. Field experiments require well-defined participant selection procedures.

- It is important to standardize experimental procedures to minimize extraneous variables, including experimenter expectancy effects.
• It is important to conduct one or more small-scale pilot tests of an experiment to be sure that the procedure works as planned.

References


Exercises

- Practice: List five variables that can be manipulated by the researcher in an experiment. List five variables that cannot be manipulated by the researcher in an experiment.
- Practice: For each of the following topics, decide whether that topic could be studied using an experimental research design and explain why or why not.
  - Effect of parietal lobe damage on people’s ability to do basic arithmetic.
  - Effect of being clinically depressed on the number of close friendships people have.
  - Effect of group training on the social skills of teenagers with Asperger’s syndrome.
  - Effect of paying people to take an IQ test on their performance on that test.
- Discussion: Imagine that an experiment shows that participants who receive psychodynamic therapy for a dog phobia improve more than participants in a no-treatment control group. Explain a fundamental problem with this research design and at least two ways that it might be corrected.
- Discussion: For each of the following topics, list the pros and cons of a between-subjects and within-subjects design and decide which would be better.
  - You want to test the relative effectiveness of two training programs for running a marathon.
  - Using photographs of people as stimuli, you want to see if smiling people are perceived as more intelligent than people who are not smiling.
  - In a field experiment, you want to see if the way a panhandler is dressed (neatly vs. sloppily) affects whether or not passersby give him any money.
  - You want to see if concrete nouns (e.g., dog) are recalled better than abstract nouns (e.g., truth).
- Practice: List two ways that you might recruit participants from each of the following populations:
  - elderly adults
  - unemployed people
  - regular exercisers
  - math majors
• Discussion: Imagine a study in which you will visually present participants with a list of 20 words, one at a time, wait for a short time, and then ask them to recall as many of the words as they can. In the stressed condition, they are told that they might also be chosen to give a short speech in front of a small audience. In the unstressed condition, they are not told that they might have to give a speech. What are several specific things that you could do to standardize the procedure?