

Chapter 2 (Part 2)

Experimental Research

- Investigators manipulate some aspect of a situation and examine the impact of this manipulation on the way participants respond
- Establish cause and effect (causation) by proving that manipulating one variable leads to changes in another
- Independent variables- variables that experimenter manipulates or whose effects the experimenter assesses
- Dependent variables- participants' responses in a study, hypothesized to depend on the influence of the independent variables
- Conditions- versions of the independent variable that vary across experimental groups
- **Steps in Conducting an Experiment:**
 - Framing a Hypothesis
 - Predicting relations among two or more variables
 - States relationship between independent and dependent variable
 - Operationalizing Variables
 - Converting abstract concepts into testable form
 - Operationalizing- turning an abstract concept into a form that can be defined by some set of operations or actions
 - Developing a Standardized Procedure
 - Setting up experimental and control conditions; attending to demand characteristics; attending to researcher bias
 - Control group- participants in an experiment who receive a relative neutral condition to serve as a comparison to other groups; exposed to zero level of the independent variable
 - Demand characteristics- cues in the experiment that reveal the experimenter's purpose; bad because may respond in the way they think experimenter wants them to respond
 - Blind studies- participants are kept unaware of important aspects of research
 - Placebo effect- phenomenon in which an experimental manipulation produces an effect because participants believe it will produce an effect (ex: participants' symptoms went away after taking medicine, but it was only sugar pills; made themselves better just by thinking it)
 - Single-blind study- participants are kept blind to crucial information about the experimental condition in which they have been placed (ex: not knowing about placebo pills)
 - Double-blind study- both participants and researchers are blind to the status of participants
 - Selecting and Assigning Participants
 - Randomly assigning participants to different conditions

- Confounding variable- could produce effects that are confused with the effects of the independent variable; happens when participants are not chosen randomly
 - Applying Statistical Techniques to the Data
 - Describing the data and determining the likelihood that differences between the conditions reflect causality or chance
 - Analyzing data:
 - Descriptive statistics- numbers that describe data from a study in a way that summarizes their essential features
 - Inferential statistics- procedures for assessing whether the results obtained with a sample are likely to reflect characteristics of the population as a whole
 - Drawing Conclusions
 - Evaluating whether or not the data support the hypothesis; suggesting future studies to address limitations and new questions raised by the study
- Limitations in Conducting Experimental Research
 - Many complex phenomena cannot be tested in the lab
 - Quasi-experimental designs- employ the logic of experimental methods, but lack absolute control over variables

Correlational Research

- Assesses the degree to which two variables are related, so that knowing the value of one can lead to prediction of the other
- Correlate- assess the extent to which the measure of one variable predicts the measure of a second variable
- Correlation coefficient- an index of the extent to which two variables are related
- Positive correlation- relation between two variables in which the higher one is, the higher the other tends to be
- Negative correlation- relation between two variables in which the higher one is, the lower the other tends to be
- Correlation is an index of the linear relationship between variables
- Correlation matrix- a table presenting the correlations among several variables

How to Evaluate a Study Critically

- Does the theoretical framework make sense?
- Is the sample adequate and appropriate?
- Are the measures and procedures adequate?
- Are the data conclusive?
- Are the broader conclusions warranted?
- Does the study say anything meaningful?
- Is the study ethical?