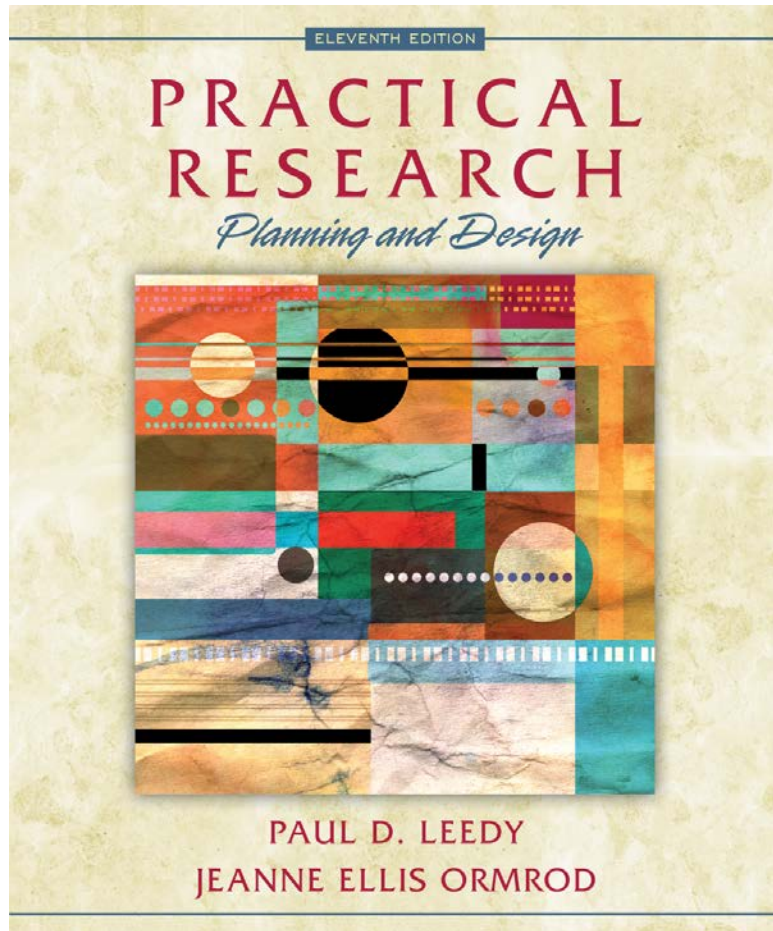


Practical Research

11th edition

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Chapter 4

Planning Your Research Project

Research Design

- Design = Overall structure for the study
 - The procedures the researcher follows
 - The data the researcher collect
 - The data analyses the researcher conducts

Planning a General Approach

- Think broadly about the problem as arising out of a particular area
- Are you studying
 - People
 - Things
 - Records
 - Thoughts & ideas
 - Dynamics & energy

Planning a General Approach

Think about the kinds of data you need to address your problem

- Do you need/can you find participants
- Do you have the right equipment and skills
- Do you know how to interpret the data and draw conclusions from them

Research Planning: Selecting a Particular Research Methodology

- Planning
 - Determining the general approach to a study
 - May be similar across disciplines
- Methodology
 - The techniques one uses to collect and analyze data
 - May be specific to a particular academic discipline

The Nature and Role of Data in Research

- Data are pieces of information that help form a bigger picture
- Data are transient — what is true at any point in time may not be true at another point in time

The Nature and Role of Data in Research

- Data may be primary or secondary
 - Primary data are closest to the truth (the source)
 - Secondary data are derived from primary data
 - Distorted by interpretations and communication

Planning for Data Collection

- What data are needed
- Where are the data located
- How will the data be obtained
- What limits will be placed on the nature of acceptable data
- How will the data be interpreted

Linking Data and Methodology

- Quantitative methods
 - Involve collecting numerical data
- Qualitative methods
 - Involve collecting textual or image-based data
- Mixed methods
 - Use both quantitative and qualitative methods in the same study

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To Determine an Approach, First Ask Yourself These Questions:

- What is my purpose?
- What is the nature of the process?
- What are the data like/how are they collected?
- How are data analyzed?
- How are the findings communicated?

Also Consider These Issues:

- Your comfort with the assumptions of the qualitative tradition
- The audience for your study
- The nature of the research question
- The extensiveness of the related literature
- The depth of what you want to discover
- The amount of time you have available for conducting the study

Also Consider These Issues:

- The extent to which you are willing to interact with the people in your study
- The extent to which you feel comfortable working without much structure
- Your ability to organize and draw inferences from a large body of information
- Your writing skills

Select a Research Methodology

- Action research
- Case study
- Content analysis
- Correlational research
- Design-based research
- Developmental research
- Ethnography
- Experimental research
- Ex post facto research
- Grounded theory research
- Historical research
- Observation study
- Phenomenological research
- Quasi-experimental research
- Survey research

Considering the Validity of Your Method

- Validity of the research project is defined as its
 - Accuracy
 - Meaningfulness, and
 - Credibility

Internal Validity

- The extent to which the design and data of a research study allow the researcher to draw accurate conclusions about cause-and-effect and other relationships within the data

Researchers must take precautions to eliminate other possible explanations for the results

Strategies to Increase Internal Validity

- A controlled laboratory study
- A double-blind experiment
- Unobtrusive measures
- Triangulation

External Validity

- The extent to which:
 - results of a research study apply to situations beyond the study itself
 - conclusions can be generalized

Strategies to Increase External Validity

- Conduct the study in a real-life setting
- Use a representative sample
- Replicate the study in a different context

Increasing Validity in Qualitative Research

- Triangulate
 - Compare multiple data sources
- Spend time in the field
- Analyze outliers and contradictory instances
- Use thick description

Increasing Validity in Qualitative Research

- Acknowledge and address personal biases
- Seek respondent validation
 - Take conclusions back to participants to evaluate
- Seek feedback from others

Measurement

- Limiting the data of any phenomenon—substantial or insubstantial— so that those data may be interpreted and, ultimately, compared to a particular qualitative or quantitative standard

Measurement

- Limiting the data **of any phenomenon—substantial or insubstantial**— so that those data may be interpreted and, ultimately, compared to a particular qualitative or quantitative standard
 - **Substantial = have physical substance.**
 - **Insubstantial = exist only as concepts, ideas, opinions, feelings, or other intangible entities.**

Measurement

- Limiting the data of any phenomenon—substantial or insubstantial— **so that those data may be interpreted** and, ultimately, compared to a particular qualitative or quantitative standard
 - **transformed into new discoveries, revelations, and enlightenments.**

Measurement

- Limiting the data of any phenomenon—substantial or insubstantial— so that those data may be interpreted and, ultimately, compared to a particular qualitative or quantitative standard
 - norms, averages, conformity to expected statistical distributions, goodness of fit, accuracy of description

Measurement: Example

Measuring interpersonal dynamics in a small group

- Ask each person: Who do you like most, who do you like least, and who evokes neutral feelings
- Allow the researcher to identify patterns and draw conclusions

Scales of Measurement

- A scale specifies the categories of measurement
- Scales ultimately dictate the statistical procedures (if any) that can be used in processing numerical data

Nominal Scale

- Measures data by assigning names or dividing into discrete categories
 - Boys, girls
 - North of Main Street, South of Main Street
- Statistical procedures
 - Mode
 - Percentage
 - Chi-square test

Ordinal Scale

- Rank-order data as more/higher or less/lower
- Think in terms of greater or less than
- Elementary, high school, college, or graduate education
- Unskilled, semiskilled, or skilled labor
- Statistical procedures = median, percentile rank, Spearman's rank-order correlation

Interval Scale

- Equal units of measurement
- Zero point established arbitrarily
- Fahrenheit (F) and Celsius (C) scales
- Rating scales, such as surveys, assumed to fall on interval scales
- Statistical procedures = means, standard deviations, Pearson product moment correlations

Ratio Scale

- Equal measurement units (similar to interval scale)
- Absolute zero point (0 = total absence of the quality being measured)
- Distance
- Ratio = can express values in terms of multiples and fractional parts

Summary & Comparison

- Nominal scale: One object is different from another
- Ordinal scale: One object is bigger or better or more of anything than another
- Interval scale: One object is so many units (e.g., degrees, inches) more than another
- Ratio scale: One object is so many times as big or bright or tall or heavy as another

Validity & Reliability of Measurement

- Validity = the extent to which a measurement instrument measures what it is intended to measure
- Reliability = the consistency with which a measurement instrument yields a certain result when the entity being measured hasn't changed

Validity of Measurement Instruments

- Face Validity
 - Is extent to which an instrument looks like it measures a characteristic
 - Relies on subjective judgment
- Content Validity
 - Is extent to which a measurement instrument is a representative sample of the content area being measured

Validity of Measurement Instruments

- Criterion Validity
 - The extent to which the results of an assessment correlate with another, related measure
- Construct Validity
 - The extent to which an instrument measures a characteristic that cannot be directly observed but is assumed to exist (such as intelligence)

Determining Validity

- Table of specifications
 - The researcher constructs a two-dimensional grid listing the specific topics and behaviors that reflect achievement in the domain.
- Multitrait-multimethod approach
 - Two or more different characteristics are each measured using two or more different approaches. The two measures of the same characteristic should be highly related.

Determining Validity

- Judgment by a panel of experts
 - Several experts in a particular area are asked to scrutinize an instrument to ascertain its validity for measuring the characteristic in question

Reliability

- Reliability is the consistency with which a measuring instrument yields a certain result when the entity being measured hasn't changed.
- Instruments designed to measure social and psychological characteristics (insubstantial phenomena) tend to be even less reliable than those designed to measure physical (substantial) phenomena.

Determining the Reliability of a Measurement Instrument

- Interrater reliability
 - the extent to which two or more individuals evaluating the same product or performance give identical judgments
- Test-retest reliability
 - the extent to which a single instrument yields the same results for the same people on two different occasions

Determining the Reliability of a Measurement Instrument

- Equivalent forms reliability
 - The extent to which two different versions of the same instrument yield similar results
- Internal consistency reliability
 - The extent to which all of the items within a single instrument yield similar results

Enhancing Reliability and Validity

- Goals: Reduce error, reduce bias
- Strategies for increasing reliability:
 - Standardize the procedures
 - Establish clear criteria
 - Train the researchers well
- Strategies for increasing validity:
 - Consult the literature
 - Share drafts
 - Conduct pilot studies

The Value of a Pilot Study

Pilot study: a brief exploratory investigation before the main study to

- Try out particular procedures, measurement instruments, or methods of analysis
- Determine the feasibility of the study
- Identify what approaches will and will not be effective in solving the overall research problem

Ethical Issues

- Participants must be protected from harm
 - Benefits to participants must outweigh risks
 - Participants should be debriefed

Ethical Issues

- Participation must be voluntary and informed
 - Individuals know what they are being asked to do
 - Individuals can decline without penalty
 - Individuals know they can withdraw at any time without penalty

Ethical Issues

- Participants have a right to privacy
 - Data and information about participants are confidential
 - Identifiable data should not be shared (even in class) without written consent
 - Names should be coded to ensure anonymity

Ethical Issues

- Researchers must be honest
 - Data should be trustworthy
 - Reports should be complete and accurate
 - Contributors should be credited

Ethical Issues

- Research must be reviewed before data collection begins
 - Institutions maintain an IRB (review board) and sometimes IACUC
 - Scholars and researchers across disciplines
 - Review proposals to assess risks and ensure that participants' rights are honored

Ethical Issues

- Researchers are expected to adhere to professional code of conduct within their field
- Visit the homepage of your own professional organization to learn more