Key Concepts and Steps in Qualitative and Quantitative Research

Selected Key Research Terms

Quantitative Term	**Qualitative Term**
Subject	---
Participant	Study participant
Respondent	Informant
---	Phenomena
Concepts, constructs	Constructs, concepts
Variables	---
Data (numeric values)	Data (narratives)
Relationships	Patterns of association

Faces and Places of Research

- **Study subject or participant:** people being studied or cooperating in study

- **Study site:** the overall location for a study (e.g., Portland)
  - ✓ **Multisite studies:** tend to yield more diverse group of study participants, potentially enhancing generalizability of findings

Concepts and Constructs

- **Concepts** are abstractions of particular aspects of human behavior or characteristics (e.g., pain, weight)
- **Constructs** are slightly more complex abstractions (e.g., self-care)
- **Theories** knit concepts into a coherent system that purports to explain phenomena.
- Empirically tested and verified.
- Provide different explanations for different phenomena

Variable

- A characteristic or quality that takes on different values, i.e., that varies from one person to the next
- **Examples*:***
  - Blood type
  - Weight
  - Length of stay in hospital
- The term "**variable**" is used almost exclusively in quantitative research.

For example

- If a researcher tests the effectiveness of patient-controlled analgesia compared with intramuscular analgesia in relieving pain after surgery, some patients would be given one type of analgesia & others would receive the other
- In this study, method of pain management is a variable because different patients are given different analgesic methods

Types of Variables

- **Continuous** (e.g., height, weight) versus **categorical** (e.g., marital status, gender)
- **Independent variable**—the presumed cause (of a dependent variable)
- **Dependent variable**—the presumed effect (of an independent variable)
  - ✓Often referred to as the **outcome variable** or **outcome**
  - ✓Example: smoking (IV) → lung cancer (DV)

Example 1

- A study might examine the effect of a **nurse-initiated exercise intervention** (the independent variable) on **osteoporosis** (the dependent variable)
- Another study might investigate the effect of **osteoporosis** (the independent variable) on **bone fracture incidence** (the dependent variable)

Example 2

- *Research question:* What is the effect of ginger on nausea and vomiting during pregnancy?
- *Independent variable*: ??
- *Dependent variables: ??*

Answer: Ginger (IV) and nausea & vomiting (DV)

Definitions of Concepts & Variables

- **Conceptual definition**: the abstract or theoretical meaning of a concept being studied. Scientific/text book definition

- **Operational definition**: the operations (measurements) a researcher must perform to measure the concept and collect the desired information

Example of operational definitions

- If you were studying ways of helping people stop smoking, smoking cessation would be an outcome measure (dependent variable)

You could measure smoking cessation as:

- a person not smoking a cigarette for 1 month, or
- as a person who has not smoked in a year, or
- a 50% reduction in the number of cigarettes smoked.

Question

- Which of the following best describes a dependent variable?
  - A. Outcome being measured
  - B. A person's gender
  - C. Presumed cause
  - D. Measurements performed

Answer

- A. Outcome being measured

- Rationale: The dependent variable is the presumed effect or outcome of an independent variable (the presumed cause). Gender typically is a categorical variable. The operations (measurements) to be performed for data collection refer to the operational definition of a variable.

Data

- **Data** (singular = datum): the pieces of information researchers collect in a study
  - ✓Quantitative researchers collect numeric (quantitative) data
  - ✓Qualitative researchers collect narrative (verbal) data.

Example of Quantitative Data

- **Question:** Thinking about the past week, how depressed would you say you have been on a scale from 0 to 10, where 0 means “not at all” and 10 means “the most possible”?

- **Data:**
  9 (subject 1)
  0 (subject 2)
  4 (subject 3)

Example of Qualitative Data

- **Question:** Tell me about how you've been feeling lately—have you felt sad or depressed at all, or have you generally been in good spirits?

- **Data:** Well, actually, I've been pretty depressed lately. I wake up each morning and I can't seem to think of anything to look forward to. I just can't seem to shake the blues.

Relationships

- A relationship is a bond or connection between variables.

  ✓**Cause-and-effect** (causal) relationship

  (e.g., cigarette smoking and lung cancer)

  ✓**Associative** (functional) relationship

  (e.g., gender and life expectancy)

Relationships are expressed in two basic forms:

1) “if more of Variable X, then more of (or less of) Variable Y.”

- Example: there is a relationship between height & weight: With more height, there tends to be more weight (i.e., taller people tend to weigh more than shorter people)

2) Involves relationships expressed as group differences (confusing for students)

- Example: there is a relationship between gender & height: Men tend to be taller than women

Major Classes of Quantitative Research

- **Experimental research**
  - ✓ Researchers actively introduce an intervention or treatment.
  - ✓ Called **clinical trials** in medical research
- **Non-experimental research**
  - ✓ Researchers collect data without intervening or introducing treatments.
  - ✓ Called **observational research** in medical research

Qualitative Research: Disciplinary Traditions

- **Grounded theory research**
  - ✓Seeks to understand key social psychological processes
- **Phenomenological research**
  - ✓Focuses on the lived experiences of humans
- **Ethnographic research**
  - ✓Focuses on the patterns and lifeways of a cultural group

Phases in a Quantitative Study

- Phase 1: Conceptual Phase
- Phase 2: Design and Planning Phase
- Phase 3: Empirical Phase
- Phase 4: Analytic Phase
- Phase 5: Dissemination Phase

Major Steps in a Quantitative Study

- Phase 1: Conceptual Phase
  - ✓Formulating/delimiting the problem
  - ✓Reviewing related literature
  - ✓Undertaking **clinical fieldwork**
  - ✓Defining the framework and developing conceptual definitions
  - ✓Formulating **hypotheses**

Major Steps in a Quantitative Study (cont.)

- Phase 2: Design and Planning Phase
  - ✓Selecting a **research design**
  - ✓Developing **intervention protocols**
  - ✓Identifying the **population**
  - ✓Designing the **sampling plan**
  - ✓Specifying methods to measure variables and collect data
  - ✓Developing methods to protect human/animal rights
  - ✓Finalizing the research plan

Major Steps in a Quantitative Study (cont.)

- Phase 3: Empirical Phase
  - ✓Collecting the data
  - ✓Preparing data for analysis (e.g., **coding** the data)

Major Steps in a Quantitative Study (cont.)

- Phase 4: Analytic Phase
  - ✓ Analyzing the data (through **statistical analysis**)
  - ✓ Interpreting results

Major Steps in a Quantitative Study (cont.)

- Phase 5: Dissemination Phase
  - ✓ Communicating the findings in a **research report** (e.g., in a journal article)
  - ✓ Putting the evidence into practice

Question

- Which of the following would be done first when designing and planning a quantitative study?
  - A. Developing intervention protocols
  - B. Identifying the population
  - C. Designing the sampling plan
  - D. Formulating a research design

Answer

- D. Formulating a research design

- Rationale: The first step in designing and planning a quantitative study is formulating a research design. This is followed by developing intervention protocols, identifying the population, and designing the sampling plan.

Activities in a Qualitative Study

- Conceptualizing and planning the study
- Conducting the study

Activities in a Qualitative Study (cont.)

- Conceptualizing and planning the study
  - ✓Identifying the research problem
  - ✓Doing a literature review
  - ✓Selecting sites and **gaining entrée**
  - ✓Developing an overall approach
  - ✓Addressing ethical issues

Activities in a Qualitative Study (cont.)

- Conducting the study: undertaking iterative activities through **emergent design**
  - ✓Making sampling decisions
  - ✓Deciding what questions to ask
  - ✓Collecting data
  - ✓Evaluating integrity and quality
  - ✓Analyzing and interpreting data
  - ✓Making new decisions