

Suggested Answers to Review Questions

Chapter 2: Quantitative, Qualitative, and Mixed Research

2.1. What are the key features of quantitative and qualitative research?

Just look at Table 2.1, which shows the key characteristics of these two approaches in their pure or extreme forms as well as the characteristics of mixed research. I will mention a few of these here. Quantitative research uses the deductive or confirmatory or “top down” scientific method; it is used primarily for description, explanation, and prediction. It is based on quantitative data, in particular on the analysis of variables. The results describe statistical relationships and a goal is to *generalize* the results. In qualitative research, in contrast, the “bottom up” or inductive exploratory method is used; it is used primarily for the purposes of description and exploration and to gain an understanding of how people think and experience their lives. It is based on qualitative data which during analysis are examined for patterns, themes, and holistic features. A narrative report is presented and generalization is usually not a goal because the focus is on the local, the personal, and the subjective.

Here is Table 2.1 on the two next pages for your convenience:

■ **TABLE 2.1** Emphases of Quantitative, Mixed, and Qualitative Research

	<i>Quantitative Research</i>	<i>Mixed Research</i>	<i>Qualitative Research</i>
Scientific method	Confirmatory or “top-down” The researcher <i>tests</i> hypotheses and theory with data.	Confirmatory and exploratory	Exploratory or “bottom-up” The researcher <i>generates</i> or <i>constructs</i> knowledge, hypotheses, and grounded theory from data collected during fieldwork.
Ontology (i.e., nature of reality/truth)	Objective, material, structural, agreed-upon	Pluralism; appreciation of objective, subjective, and intersubjective reality and their interrelations	Subjective, mental, personal, and constructed
Epistemology (i.e., theory of knowledge)	Scientific realism; search for Truth; justification by empirical confirmation of hypotheses; universal scientific standards	Dialectical pragmatism; pragmatic justification (what works for whom in specific contexts); mixture of universal (e.g., <i>always</i> be ethical) and community-specific needs-based standards	Relativism; individual and group justification; varying standards
View of human thought and behavior	Regular and predictable	Dynamic, complex, and partially predictable Multiple influences include environment/nurture, biology/nature, freewill/agency, and chance/fortuity.	Situational, social, contextual, personal, and unpredictable
Most common research objectives	Quantitative/numerical description, causal explanation, and prediction	Multiple objectives; provide complex and fuller explanation and understanding; understand multiple perspectives	Qualitative/subjective description, empathetic understanding, and exploration
Interest	Identify general scientific laws; inform national policy.	Connect theory and practice; understand multiple causation, nomothetic (i.e., general) causation, and idiographic (i.e., particular, individual) causation; connect national and local interests and policy.	Understand and appreciate particular groups and individuals; inform local policy.
“Focus”	Narrow-angle lens, testing specific hypotheses	Multilens focus	Wide-angle and “deep-angle” lens, examining the breadth and depth of phenomena to learn more about them
Nature of observation	Study behavior under controlled conditions; isolate the causal effect of single variables.	Study multiple contexts, perspectives, or conditions; study multiple factors as they operate together.	Study groups and individuals in natural settings; attempt to understand insiders’ views, meanings, and perspectives.
Form of data collected	Collect quantitative data based on precise measurement using structured and validated data-collection instruments.	Collect multiple kinds of data.	Collect qualitative data such as in-depth interviews, participant observation, field notes, and open-ended questions. The researcher is the primary data-collection instrument.
Nature of data	Variables	Mixture of variables, words, categories, and images	Words, images, categories
Data analysis	Identify statistical relationships among variables.	Quantitative and qualitative analysis used separately and in combination.	Use descriptive data; search for patterns, themes, and holistic features; and appreciate difference/variation.

Results	Generalizable findings providing representation of objective outsider viewpoint of populations	Provision of “subjective insider” and “objective outsider” viewpoints; presentation and integration of multiple dimensions and perspectives	Particularistic findings; provision of insider viewpoints
Form of final report	Formal statistical report (e.g., with correlations, comparisons of means, and reporting of statistical significance of findings)	Mixture of numbers and narrative	Informal narrative report with contextual description and direct quotations from research participants

2.2. What are the key features of mixed methods research?

Mixed research is the third and newest research methodology paradigm. As you can see in Table 2.1 it tries to mix the best of qualitative and quantitative research into research studies. Philosophically, mixed research takes an eclectic, pragmatic, and commonsense approach, suggesting that the researcher mixes quantitative and qualitative in a way that works best for the given research question being studied in a particular context. Mixed research often uses both deductive and inductive methods, obtains both quantitative and qualitative data, attempts to corroborate and complement findings, and takes a balanced approach to research. Later in the chapter you will learn about the *fundamental principle of mixed research* which states that when planning and conducting mixed research, the researcher should mix methods or procedures in a way that the resulting mixture or combination has complementary strengths (broadly viewed) and nonoverlapping weaknesses.

2.3. What is the difference between a categorical variable and a quantitative variable? Think of an example of each.

A categorical variable varies in type or kind and a quantitative variable varies in degree or amount. An example of the former is gender, and an example of the latter is class size.

2.4. Why is experimental research more effective than nonexperimental research when a researcher is interested in studying cause and effect?

Strong experimental research designs (i.e., the best experiments) include both manipulation and random assignment; *nonexperimental research has neither of these*. “Manipulation” is an action taken by the researcher in the world (e.g., providing a treatment to one group and a control condition to another group); manipulation allows us to see a manipulation first, and then observe the outcome or result of the manipulation. “Random assignment” makes the groups similar on ALL extraneous variables at the beginning of the experiment; hence, the only difference between the groups will be the level of independent variable received,

allowing the differences observed after the experiment is completed to be attributed to the manipulated independent variable.

2.5. What are the main problems with the simple cases of causal-comparative and correlational research?

The problem with BOTH of these simple cases is that the researcher has no manipulation and no random assignment, and is only able to determine whether a statistical relationship is present. Observing a relationship is NOT enough information to attribute causation! To make a causal attribution, you need to meet three conditions: (1) show that there is a relationship; (2) show that you have the correct time ordering of your variables, that is, if A causes B then A must precede B in time; and (3) all alternative explanations must be ruled out. Again, all the simple cases give us is a relationship (i.e., condition 1). (On the other hand, a well-conducted strong experiment satisfies all three conditions.)

2.6 What are two variables that you believe are positively correlated?

Study time the night before an exam and test grades (i.e., the greater the study time, the higher the grades).

2.7. What are two variables that you believe are negatively correlated?

Amount of time spent partying the night before a test and test grades (i.e., the greater the time spent partying, the lower the grades).

2.8. What are the different types of qualitative research, and what is the defining feature of each of these?

The types are phenomenology, ethnography, narrative inquiry, case study research, and grounded theory research. Here are the definitions, with the key ideas underlined:

- (a) Phenomenology: A form of qualitative research in which the researcher attempts to understand how one or more individuals experience a phenomenon.
- (b) Ethnography: A form of qualitative research focused on describing the culture of a group of people.
- (c) Narrative inquiry: A form of qualitative research that is focused on the study of life experiences as storied phenomenon.
- (d) Case study research: A form of qualitative research that is focused on providing a detailed account of one or more cases.
- (e) Grounded theory research: A qualitative approach to generating a theory from the data that the researcher collects.

2.9. What is mixed research, and what is an example of this kind of research?

Mixed research (also commonly called mixed methods research) is research in which the researcher uses a combination of quantitative and qualitative approaches in a single research study. Example: study the members of the snake handling churches in the Southern Tennessee/West Georgia using participant observation and using quantitative measurement instruments to profile the participants on variables of interest. Both sorts of data will likely provide useful information.

2.10. What are the three research paradigms in education and what are the major types of research in each of these paradigms? (Hint: See Figure 2.4.)

They are quantitative research, qualitative research, and mixed research.

Quantitative research has two major subtypes: experimental and nonexperimental research. **Qualitative research** has six major subtypes: phenomenology, ethnography, narrative inquiry, case study, grounded theory, and historical research. **Mixed methods research** uses a combination of quantitative and qualitative research methods.

Here is Figure 2.4 for your convenience.

■ **FIGURE 2.4** Research typology (Later chapters will add a third level to this typology.)

