Instruments for Participant Communication

Learning Objectives

After reading this chapter, you should understand . . .

1 The link forged by the management-research question hierarchy between the management dilemma and the communication instrument.

2 The influence of communication method on instrument design.

3 The three general classes of information and what each contributes to the instrument.

4 The influence of question content, question wording, response strategy, and preliminary analysis planning on question construction.

5 Each of the numerous question design issues influencing instrument quality, reliability, and validity.

6 Sources for measurement questions.

7 The importance of pretesting questions and instruments.

Bringing Research to Life

"While visiting my hometown," shared Jason, "I was invited to a dinner meeting—at the country club, no less—to plan our Palm Grove High School reunion."

"So, you overcame your deeply ingrained *reverse* snobbery, and went?" asked Myra.

"Let's say that I was curious. It started poorly. I arrived during cocktail hour, feeling altogether out of place among the crowd. The old resentments returned. Then Stanton shambles over to me. I'd been the outcast with no leadership skills, no musical skills, no sports skills, no car. Stanton was the class scoundrel, whose dad owned the bank. As repulsive as he was, he had the right car, the right clothes, and the right address. He's become fleshy and dissipated, but he still dresses beautifully. When he clapped his meaty paw heartily on my shoulder, I felt an electrical thrill of . . . acceptance. Nina, the beautiful Nina, who after 10 years is still ensconced on a pedestal, whose father had been mayor for as long as anyone remembers and publisher of the newspaper, smiled at me, the whole bunch of them turned ever so slightly toward me, and suddenly—I belonged."

"Remarkable, Jason," said Myra. "You are so gullible!"

"Stanton—Stan to his friends—is a vice president, Nina is an associate publisher, and the others own auto dealerships, radio stations, majority shares in airlines, sports franchises. Stanton said he had been *following my career closely,* and that by all accounts I was doing *brilliantly* in economics research for *major corporations* and *federal agencies,* even consulting with CEOs *person-to-person* on matters of *top policy."*

"Stanton was buttering you up."

"And I believed every hyperbole as if they were describing my actual life. Stanton wanted to know if I collected information about people's incomes, their banking, their 'love lives' . . . Nina, too, asked about *that* topic, though also about whether I polled people's reading habits and TV watching.

"As to the reunion, the fundamentals were easy enough to plan. But we came inevitably to the question of publicity: What, who, and how? And that was when Stanton said, 'We all know that Jason here is a hotshot pollster with a gold-plated reputation, and I am sure we can count on him to do something special.'

"Before I knew it, Stanton and Nina had maneuvered me into taking a mail poll of our entire class, which would become the basis of a citywide barrage of newspaper publicity. We would ask in my mail poll about graduates' lives and livelihoods to place a story on the business page and ask about their families and avocations for the lifestyle section, and we would no doubt find some angle by which to grub for space in other sections. I was to draft a dozen questions and forward them to Stanton for duplication and mailing. The surveys would be mailed back to Stanton and coded by his secretary. Then a data file would be e-mailed to me for analysis."

"Well," said Myra, "it was simple and straightforward, and you have done this several times for church groups and nonprofits, though I recollect that in each instance you grumbled about entrusting such sensitive work to 'amateurs.' What did Stan do to turn this into a disaster?"

"On the Monday following our dinner, the program committee wrote a letter to all our graduates, in which they laid out their plans in a general sort of way and also trumpeted that one of their own alumni—who was an important consultant to the nation's 50 top companies—would be conducting a scientific and authoritative mail survey, toward having ready for the reunion a picture of where the class had traveled and how high it had risen since graduation. Again they flattered me, and they urged every member of the class to respond fully and openly. The hoopla must have been extensive, because my mother

called to tell me that she had encountered some of my classmates and their parents in the supermarket, and all had expressed considerable excitement. I've got to admit that I began to believe my own press clippings. I was the scientific wunderkind of our graduating class. As to the questions, when I wrote them they turned out to be fairly innocuous items from the University of Michigan's general social survey from the previous year, not original with me, but used by permission. I sent the survey to Stanton.

"Four weeks passed. I chafed with eagerness to receive the data diskettes but did not even receive my own questionnaire to fill out and return. This was strange, I thought; I had heard nothing. Stanton and Nina failed to return my calls.

"Then my mother phoned and said she'd seen Lucia in the supermarket, and Lucia said she thought I was a pig. Now Lucia's brother was my best pal, and I'd taken Lucia to the senior dance and had been a perfect gentleman. She teaches kindergarten now, and she called me a pig. And later another fellow—a semithug who had played football—told Mother I had better not come back to town, because there was a bunch who planned to 'set me straight' if they saw me. And one day the principal saw Mom coming down the street and ran into the men's room of a service station—to avoid her."

"What was going on?"

"After asking a few of the right people, Mom extracted a copy of the survey Stanton mailed."

He reached into his desk and passed Myra a sheet that had been angrily torn, then taped together.

"It appears that, without asking me, Stanton and Nina added a few questions to satisfy their own prurient curiosities."

The type was very small for a mail survey. She ran her finger down the sheet, at first reading each item approvingly. Suddenly her finger paused over one question, then advanced slowly over several others. Her mouth opened in astonishment, and she slowly blushed, turning progressively more florid, from brow to shoulders. She dropped the survey sheet and covered her mouth, but was unable to stifle first a gasp, then a guffaw.

"Why they most certainly were naughty, Jason, weren't they? I would never ask anyone such questions—I would not even admit that people in a small town had even heard of these things." She removed her eyeglasses and studied his unhappy face. "And you say this went out over your name?"

"Yes. I've made a mess of things, Myra. To save the cost of printing and mailing the survey and coding the data, I allowed Stanton to take control and insert his creepy questions. My reputation is ruined in the town where I grew up, people will be looking strangely at Mom for years, and we have lost the opportunity to learn about the fortunes of my classmates. The worst part is, of course, that I let my emotions cloud my good scientific judgment. I am going to write a letter of apology and hope that Nina allows it to run in her father's newspaper. I'll make up a cock-and-bull story about a mistake at the printer's."

"Too bad nobody will ever believe that story," commiserated Myra.

Developing the Instrument Design Strategy

New researchers often want to draft questions immediately. They are reluctant to go through the preliminaries that make for successful surveys. Exhibit 12–1 is a suggested flowchart for instrument design. The procedures followed in developing an instrument vary from study to study, but the flowchart suggests three phases. Each phase is discussed in this chapter, starting with a review of the management-research question hierarchy and its application to the MindWriter customer satisfaction study. We conclude the chapter with a discussion of procedures for pretesting the completed instrument.

EXHIBIT 12–1   Flowchart for Instrument Design
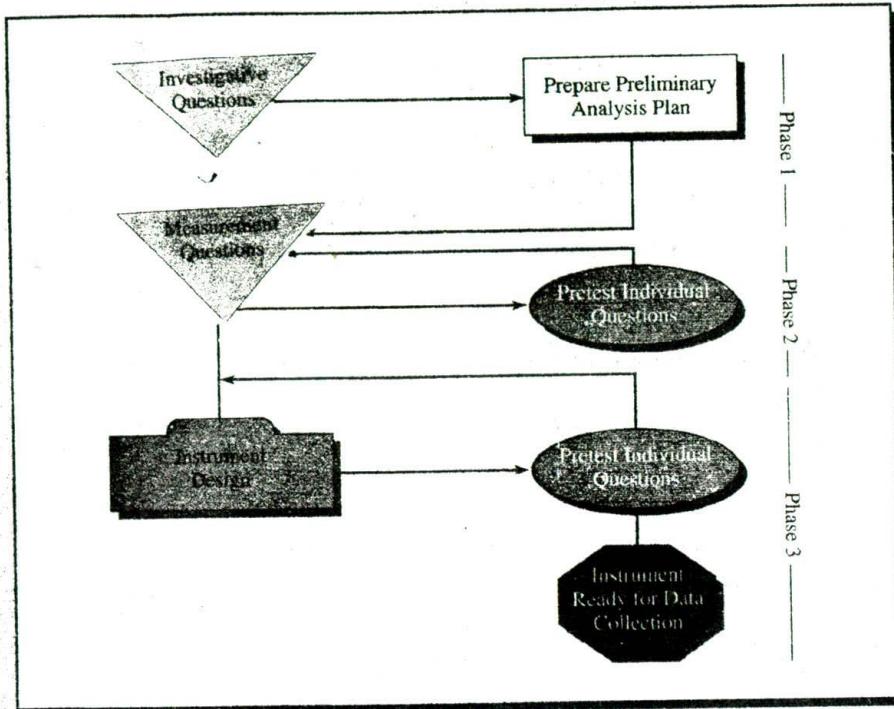
## Management-Research Question Hierarchy Revisited: Phase 1

We discussed how to refine a management dilemma and take it through the research process in Chapter 3 and depicted the process in Exhibit 3–1.

The management-research question hierarchy is the foundation of successful instrument development (see Exhibit 12–2). The process of moving from the general management dilemma to specific measurement questions goes through four question levels:

1. **Management question**—The dilemma, stated in question form, that the manager needs resolved.

2. **Research question(s)**—The fact-based translation of the question the researcher must answer to contribute to the solution of the management question.

3. **Investigative questions**—Specific questions the researcher must answer to provide sufficient detail and coverage of the research question. Within this level, there may be several questions as the researcher moves from the general to the specific.

4. **Measurement questions**—Questions participants must answer if the researcher is to gather the needed information and resolve the management question.

Addressing the *management-research question hierarchy* is the first step in planning for the collection of data. Investigative questions are the core of the researcher's information needs. In many studies, an exploratory investigation helps the researcher understand all dimensions of the subject. In the Prince Corporation image study (see Chapter 8), many exploratory interviews were needed to ensure all investigative topics were

EXHIBIT 12–2   Flowchart for Instrument Design: Phase 1
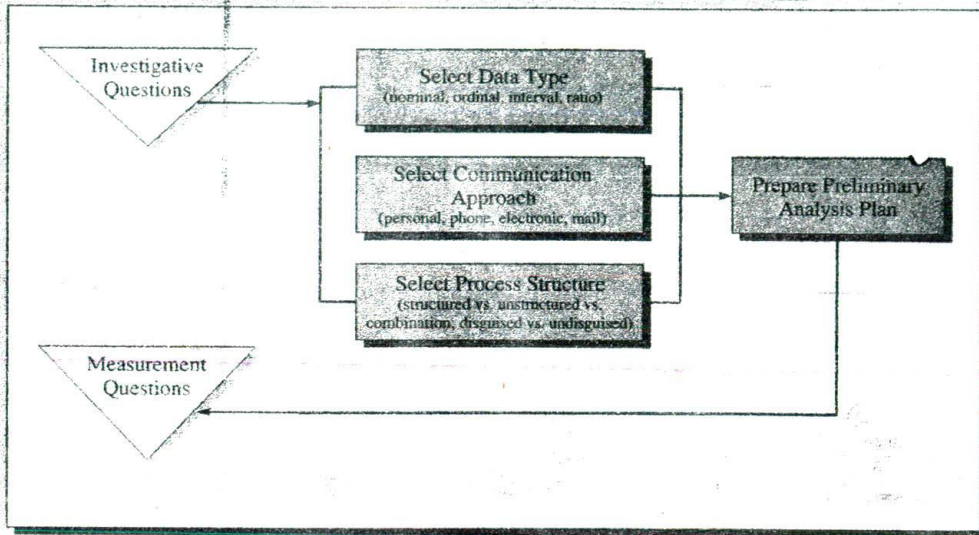
covered. In the Albany Outpatient Laser Clinic study (see Chapter 11), the eye surgeon would know from experience the types of medical complications that could result in poor recovery. Thus, the list of information needs (investigative questions) would be specific and easily developed without extensive exploration studies. The cochairs of Jason's high school reunion planning committee obviously had a hidden agenda. Jason had one list of investigative questions, and they had a distinctly different list. In the MindWriter project, exploration was limited to several interviews and an in-depth study of company service records because the concepts were not complicated and the researchers had experience in the industry.

The MindWriter "Close-Up" in this section reveals the thinking that leads to the final questionnaire and shows you the direction of this chapter. Normally, once the researcher understands the connection between the investigative questions and the potential measurement questions, a strategy for the survey is the next logical step. This proceeds to getting down to the particulars of instrument design. The following are prominent among the strategic concerns.

ANAGEMENT

Tip

1. What type of data is needed to answer the management question?

2. What communication approach will be used?

3. Should the questions be structured, unstructured, or some combination?

4. Should the questioning be undisguised or disguised? If the latter, to what degree?

Close-Up

Instrument Design for MindWriter

Replacing an imprecise management question with specific measurement questions is an exercise in analytical reasoning. We described that process incrementally in the MindWriter "Close-Up" features in Chapters 3, 4, and 9. In Chapter 3, Myra and Jason's fact finding at MindWriter resulted in their ability to state the management dilemma in terms of management, research, and investigative questions. Adding context to the questions allowed them to construct the proposal described in Chapter 4. In Chapter 9, they returned to the list of investigative questions and selected one question to use in testing their scaling approach. Here is a brief review of the steps Jason and Myra have taken so far and the measurement questions that have resulted.

Synopsis of the Problem

MindWriter Corporation's new service and repair program for laptop computers, CompleteCare, was designed to provide a rapid response to customers' service problems. Management has received several complaints, however. Management needs information on the program's effectiveness and its impact on customer satisfaction. There is also a shortage of trained technical operators in the company's telephone center. The package courier is uneven in executing its pickup and delivery contract. Parts availability problems exist for some machine types. Occasionally, customers receive units that are either not fixed or damaged in some way.

Management Question: What should be done to improve the CompleteCare program for MindWriter laptop repairs and servicing to enhance customer satisfaction?

Research Questions

1. Should the technical representatives be given more intensive training, or not?

2. Should ABC Courier Service be replaced by an overnight air transport, or not?

3. Should the repair diagnostic and repair sequencing operations be modified, or not?

4. Should the return packaging be modified to include premolded rigid foam inserts, conforming-expanding foam protection, or neither?

5. Should metropolitan repair centers be established to complement or replace in-factory repair facilities, or not?

Investigative Questions

a. Are customers' expectations being met in terms of the time it takes to repair the systems? What is the customers' overall satisfaction with the CompleteCare service program and the MindWriter product?

b. How well is the call center helping customers? Is it helping them with instructions? What percentage of customers' technical problems is it solving without callbacks or subsequent repairs? How long must customers wait on the phone?

c. How good is the transportation company? Does it pick up and deliver the system responsively? How long must customers wait for pickup and delivery? Are the laptops damaged due to package handling?

d. How good is the repair group? What problems are most common? What repair processes are involved in fixing these problems? For what percentage of laptops is the repair completed within the promised time limit? Are customers' problems fully resolved? Are there new problems with the newer models? How quickly are these problems diagnosed?

e. How are repaired laptops packaged for return shipping? What is the cost of alternative rigid foam inserts and expandable-foam packaging? Would new equipment be required if the packaging were changed? Would certain shipping-related complaints be eliminated with new packaging materials?

The extensive scope of the research questions and resulting measurement questions forced MindWriter to reassess the scope of the desired initial research study, to determine where to concentrate its enhancement efforts. Management chose a descriptive rather than a prescriptive scope.

Measurement Questions

The measurement questions used for the self-administered package insert instrument are shown in Exhibit 12-3.[1] Of the investigative questions in (b), the first two are addressed as "responsiveness" and "technical competence" with telephone assistance in the questionnaire. The second two investigative questions in (b) may be answered by accessing the company's service database. The questionnaire's three-part question on courier service parallels investigative question (c). Specific service deficiencies will be recorded in the "Comments/Suggestions" section. Investigative questions under (d) and (e) are covered with questionnaire items 3, 4, and 5. Since deficiencies in item 5 may be attributed to both the repair facility and the courier, the reasons will be cross-checked during analysis. Questionnaire item 6 uses the same language as the last investigative question in (a). Questionnaire item 7 is an extension of item 6 but attempts to secure an impression of behavioral intent to use CompleteCare again. Finally, the last item will make known the extent to which change is needed in CompleteCare by revealing repurchase intention as linked to product and service experience.

EXHIBIT 12-3   Measurement Questions for the MindWriter Study

MindWriter personal computers offer you ease of use and maintenance. When you need service, we want you to rely on **CompeteCare,** wherever you may be. That's why we're asking you to take a moment to tell us how well we've served you.	Met few expectations Met some expectations Met most expectations Met all expectations Exceeded expectations 1 2 3 4 5
	1. Telephone assistance with your problem:
	a. Responsiveness 1 2 3 4 5
	b. Technical competence 1 2 3 4 5
	2. The courier service's effectiveness:
	a. Arrangements 1 2 3 4 5
	b. Pickup speed 1 2 3 4 5
	c. Delivery speed 1 2 3 4 5
	3. Speed of the overall repair process. 1 2 3 4 5
	4. Resolution of the problem that prompted service/repair. 1 2 3 4 5
	5. Condition of your MindWriter on arrival. 1 2 3 4 5
	6. Overall impression of CompleteCare's effectiveness. 1 2 3 4 5
	7. Likelihood of using CompleteCare on another occasion.
	(1 = very unlikely 3 = neither likely nor unlikely 5 = very likely) 1 2 3 4 5
	8. Likelihood of repurchasing a MindWriter based on:
	(1 = very unlikely 3 = neither likely nor unlikely 5 = very likely)
	a. Service/repair experience 1 2 3 4 5
	b. Product performance 1 2 3 4 5
	Comments/Suggestions: _____
	_____
	How may we contact you to follow up on any problems you have experienced?
	(___) _____
	Last Name First Name Phone
	City State Zip
	Service Code

©Cooper Research Group, Inc., 1993. Used by permission. See reference note 1.

Type of Data

Data type determines the analytical procedures that are possible during data analysis. Chapter 8 discussed nominal, ordinal, interval, and ratio data and how the characteristics of each type influence the analysis (statistical choices and hypothesis testing). We demonstrate how to code and extract the data from the instrument, select appropriate descriptive measures or tests, and analyze the results in Chapters 15-19.

Communication Approach

As discussed in Chapter 11, communication-based research may be conducted by personal interview, telephone, mail, computer, or some combination of these. Decisions regarding which method to use as well as where to interact with the participant (at home, at a neutral site, at the sponsor's place of business, etc.) will affect the design of the instrument. In personal interviewing and computer questioning, it is possible to use graphics and other questioning tools more easily than when questioning is done by mail or phone. The differing delivery mechanisms result in different introductions, instructions, instrument layout, and conclusions.

In the MindWriter example, these decisions were easy. The dispersion of participants, the necessity of a service experience, and budget limitations all dictated a mail

S N A P S H O T

During the controversy surrounding Napster and the music industry in 2000–2002, *American Demographics* wanted to run a story on intellectual property right violations. It turned to TaylorNelsonSofres (TNS) Intersearch and its *Express* omnibus study to determine current attitudes on copyright violations. Each week, Wednesday through Sunday, the *Express* study reaches 1,000 carefully chosen males and females by phone. *Express* is not a panel; different participants are selected each week. *American Demographics* editor Rebecca Gardyn discussed with Intersearch the topic and the information it wanted to know. "One question they had was whether respondents had appropriated copyrighted material without paying for it," shared Brenda Edwards, vice president of marketing communications for Intersearch.

Express follows a general rule-of-thumb that a particular client's questions not exceed two minutes of phone time on the omnibus. This translates to approximately six simple, standard questions (not complex multipart, multiscale, or branching questions). "A client receives the data pertaining to

their questions from *Express* on Monday afternoon by 3:00 P.M.," explains Edwards. The data thus gathered provided substantiation for the *American Demographics* article published in September 2000. Eight percent of those responding "knew someone" who had copied computer software; 14 percent knew someone who had copied a prerecorded videocassette; 28 percent knew someone who had copied a prerecorded audio cassette or disk; 20 percent knew someone who had downloaded music free of charge from the Internet; and 46 percent knew someone who had photocopied pages from a book or magazine. You can see the actual study questions and the cross-tabulated data as they were delivered to *American Demographics* on this text's website.

www.intersearch.tnsofres.com

www.americandemographics.com

survey where the participant received the instrument either at home or at work. The danger in using a telephone survey as a follow-up to nonparticipants is that memory decay might alter participants' answers due to the passage of time between return of the laptop and MindWriter contact with the participant by telephone.

Some of the same issues dictated a mail survey in Jason's reunion study; we could add to the previous list the sensitivity of the prurient questions added by Stanton and Nina and the desire of most participants to maintain anonymity in the face of such questions. In the Prince Corporation study, there was a desire to use telephone interviews because of cost savings. However, the study objectives called for data that could not be collected easily by telephone. Edna probably would have preferred a personal interview to the self-administered study provided by the Albany clinic.

Question Structure

The degree of question and response structure also must be decided upon. Response strategy decisions (the type of question used) depend on the content and objectives of specific questions. Question wording is affected largely by the communication mode chosen and attempts to control bias. Questionnaires and **interview schedules** (*interview schedule* is an alternative term for the questionnaire used in an interview) can range from those that have a great deal of structure to those that are essentially unstructured. Both questionnaires and interview schedules contain three types of measurement questions.

MANAGEMENT
Tip

- Administrative questions.
- Classification questions.
- Target questions (structured or unstructured).

Administrative questions identify the participant, interviewer, interview location, and conditions. These questions are rarely asked of the participant but are necessary to study patterns within the data and identify possible error sources. **Classification questions** are

usually sociological-demographic variables that allow participants' answers to be grouped so patterns are revealed and can be studied. **Target questions** address the investigative questions of a specific study. Target questions may be **structured** (they present the participants with a fixed set of choices, often called *closed questions*) or **unstructured** (they do not limit responses but do provide a frame of reference for participants' answers, sometimes referred to as *open-ended questions*).

In the MindWriter self-administered mail questionnaire, it was necessary to use structured questions to get the most information possible from the limited space on the form. In the exploratory stages of the Prince Corporation study, both questions and responses were unstructured, but in the final project both were largely structured. At the Albany clinic, Edna faced a series of open-ended questions, because anticipating medications and health history for a wide variety of individuals would be a gargantuan task for a researcher and would take up far too much space. Jason's reunion study was limited to 12 questions from the University of Michigan's lifestyle index, all of which are structured questions to facilitate analysis of data from large numbers of participants on a repeat basis.

The type of interview also affects question structure. In extremely unstructured interviews, the interviewer's task is to encourage the participant to talk in-depth about a set of topics. The **in-depth interview** encourages participants to share as much information as possible in an unconstrained environment. The interviewer uses a minimum of prompts and guiding questions.

Many of the Snapshot features developed for this text involved in-depth interviews with unstructured questions.

With more focused in-depth interviews, the researcher provides additional guidance by using a set of questions to promote discussion and elaboration by the participant. In these interviews, the researcher guides the topical direction and coverage. Whether the interview is focused or more in-depth, the aim is to provide a relaxed environment in which the participant will be open to fully discuss topics. This kind of questioning is often used in exploratory research or where the investigator is dealing with complex topics that do not lend themselves to structured interviewing. If we were doing case research among various participants in a major event, a substantial portion of the questioning would be unique to each participant and would benefit from an unstructured approach.

Interviews with participants in **focus groups** are widely used in exploratory research. As we noted in Chapter 6, the interviewer-moderator generally has a list of specific points he or she would like to see discussed, and these are used to prompt the group members. When the discussion stays within these bounds, the interviewer lets group members continue their interaction.

Disguising Objectives and Sponsors

Another consideration in communication instrument design is whether the purpose of the study should be disguised. Some degree of disguise is often present in survey questions, especially to shield the study's sponsor. A **disguised question** is designed to conceal the question's true purpose. We disguise the sponsor and the objective of a study if the researcher believes that participants will respond differently than they would if both or either were known.

The accepted wisdom is that often we must disguise the study's objective or sponsor or abandon the research. The decision about when to use disguised questioning may be made easier by identifying four situations where disguising the study objective is or is not an issue:

- Willingly shared, conscious-level information.
- Reluctantly shared, conscious-level information.

- Knowable, limitedly-conscious-level information.
- Subconscious-level information.

Willingly Shared, Conscious-Level Information   When requesting this type of information, either disguised or undisguised questions may be used, but the situation rarely requires disguised techniques. Example: "Have you attended the showing of a foreign language film in the last six months?" In the MindWriter study, the questions revealed in Exhibit 12-3 ask for information that the participant should know and be willing to provide.

Reluctantly Shared, Conscious-Level Information   When we ask for an opinion on some topic on which participants may hold a socially unacceptable view, we often use projective techniques (a disguised questioning method) because participants may not give their true feelings or may give stereotyped answers. The researcher can encourage more accurate answers by phrasing the questions in a hypothetical way or by asking how "people around here feel about this topic." The assumption is that responses to these questions will indirectly reveal the participant's opinions. In Jason's high school reunion study, the objective for collecting information on classmates' love lives was not disclosed—in part that is why most people did not return the study. As the researcher, Jason surely wishes that his identity were not disclosed.

Knowable, Limitedly-Conscious-Level Information   Asking about individual attitudes when participants know they hold the attitude but have not explored why they hold the attitude may encourage the use of disguised questions. A classic example is a study of government bond buying during World War II.[2] A survey sought reasons why, among people with equal ability to buy, some bought more war bonds than others. Frequent buyers had been personally solicited to buy bonds while most infrequent buyers had not received personal solicitation. No direct *why* question to participants could have provided the answer to this question because participants did not know they were receiving differing solicitation approaches. Example: "What is it about air travel during stormy weather that attracts you?"

Subconscious-Level Information   Seeking insight into the basic motivations underlying attitudes or consumption practices may or may not require disguised techniques. **Projective techniques** (such as sentence completion tests, cartoon or balloon tests, and word association tests) thoroughly disguise the study objective, but they are

Information gathered by Census 2000, the most comprehensive survey in the United States, is used for allocating funds at the federal, state, and local levels, as well as for numerous marketing and human resource purposes.

often difficult to interpret. Example: Interview probes—"Would you say, then, that the attitude you just expressed indicates you oppose or favor requiring adult drivers to declare their position on being an organ donor at the time of license renewal?"

We revisit the CityBus (Chapter 7), Prince Corporation (8), Albany Laser Clinic (11), and Metro University (7) studies throughout this chapter.

In the MindWriter study, the questions were direct, and the specific information sought was undisguised. Customers knew they were evaluating their experience with the service and repair program at MindWriter; thus the purpose of the study and its sponsorship were also undisguised. While the sponsorship of the study that Burbidge conducted for CityBus was revealed, the objective of the study (where and when advertising should be run to announce changes in the bus route and schedule) was not revealed. In the Prince Corporation study, the questions concerned only a few companies, giving the sponsor only a limited disguise. Many questions sought direct answers, but sometimes indirect questioning was used to seek answers on sensitive topics or to reduce stereotypical answers. While the sponsor of the Albany clinic study was obvious, multiple interpretations from several questions suggest that the study's objective was not apparent.

Preliminary Analysis Plan

You might find it useful to review Exhibit 11–1, "Data Collection Approach," in Chapter 11.

Researchers are concerned with adequate coverage of the topic and with securing the information in its most usable form. A good way to test how well the study plan meets those needs is to develop "dummy" tables that display the data one expects to secure. This serves as a check on whether the planned measurement questions meet the data needs of the research question. It also helps the researcher determine the type of data needed for each question—a preliminary step to developing measurement questions for investigative questions.

# Constructing and Refining the Measurement Questions: Phase 2

Drafting the questions begins once you develop a complete list of investigative questions and decide on the collection processes to be used. In Phase 2 (see Exhibit 12–4) you draft specific measurement questions considering subject content, the wording of each question (influenced by the degree of disguise and the need to provide operational definitions for constructs and concepts), and response strategy (each producing a different level of data as needed for your preliminary analysis plan). In Phase 3 you must address topic and question sequencing. We discuss these topics sequentially, although in practice the process is not orderly. For this discussion, we assume the questions are structured. The order, type, and wording of the measurement questions, the introduction, the instructions, the transitions, and the closure in a quality communication instrument should accomplish the following:

- Encourage each participant to provide accurate responses.
- Encourage each participant to provide an adequate amount of information.
- Discourage each participant from refusing to answer specific questions.
- Discourage each participant from early discontinuation of participation.
- Leave the participant with a positive attitude about survey participation.

Question Content

Four questions, covering numerous issues, guide the instrument designer in selecting appropriate question content:

EXHIBIT 12–4   Flowchart for Instrument Design: Phase 2
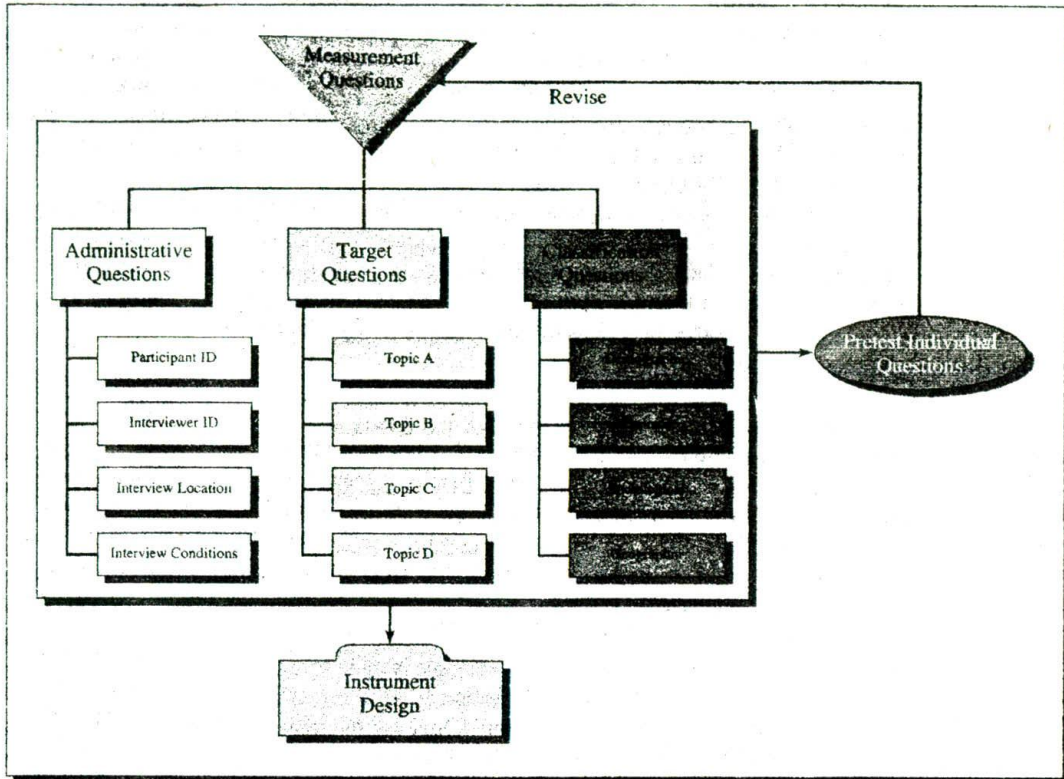
MANAGEMENT
Tip

- Should this question be asked?
- Is the question of proper scope and coverage?
- Can the participant adequately answer this question, as asked?
- Will the participant willingly answer this question, as asked?

Should This Question Be Asked?
Issue 1: Purposeful versus Interesting.   Questions that merely produce "interesting information" cannot be justified on either economic or research grounds. Challenge each question's function. Does it contribute significant information toward answering the research question? Will its omission limit or prevent the thorough analysis of other data? Can we infer the answer from another question? A good question designer knows the value of learning more from fewer questions.

Is the Question of Proper Scope and Coverage?
Issue 2: Incomplete or Unfocused.   We can test this content issue by asking, "Will this question reveal all we need to know?" We sometimes ask participants to reveal their motivations for particular behaviors or attitudes by asking them, "Why?"

This simple question is inadequate to probe the range of most causal relationships. When studying product use behavior, for example, direct two or three questions on product use to the heavy-use consumer and only one question to the light user.

Questions are also inadequate if they do not provide the information you need to interpret responses fully. If you ask about the Prince Corporation's image as an employer, have you recognized that different groups of employees may have different reactions? Do you need to ask the same question about other companies so you can evaluate relative attitudes?

In the Albany clinic study, Edna was asked, "Have you ever had or been treated for a recent cold or flu?" If Edna answers yes, what exactly has she told the researcher that would be of use to her eye surgeon? Wouldn't it be likely that the surgeon is interested in medication taken to treat colds or flu within, say, the prior 10 days? This question also points to two other problems of scope and coverage: the multiple question and the imprecise question.

Issue 3: Multiple Questions.   Does the question request so much content that it should be broken into two or more questions? While reducing the overall number of questions in a study is highly desirable, don't try to ask **double-barreled questions:** two or more questions in one that the participant might need to answer differently to preserve the accuracy of the data. The question posed to Edna ("Have you ever had or been treated for a recent cold or flu?") fires more than two barrels. It asks four questions in all. Here's another common example posed to menswear retailers: "Are this year's shoe sales and gross profits higher than last year's?" Couldn't sales be higher with stagnant profits, or profits higher with level or lower sales? This second example is more typical of the problem of multiple questions. A less obvious **multiple question** is the question we ask to identify a family's TV station preference. A better question would ask the station preference of each family member separately or, alternatively, screen for the member who most often controls channel selection on Monday evenings during prime time. Also, it's highly probable that no one station would serve as an individual's preferred station when we cover a wide range of time (8–11 P.M.). This reveals another problem, the imprecise question.

Issue 4: Precision.   To test a question for precision ask, "Does the question ask precisely what we want and need to know?" We sometimes ask for a participant's income when we really want to know the family's total annual income before taxes in the past calendar year. We ask what a participant purchased "last week" when we really want to know what he or she purchased in a "typical 7-day period during the past 90 days." Edna was asked her cold and flu history during the time frame "ever." It is hard to imagine an 80-year-old woman who has never experienced a cold or flu and equally hard to assume Edna hasn't been treated for one or both at some time in her life.

A second precision issue deals with common vocabulary between researcher and participant. To test your question for this problem, ask, "Do I need to offer operational definitions of concepts and constructs used in the question?"

Can the Participant Answer Adequately?
Issue 5: Time for Thought.   Although the question may address the topic, is it asked in such a way that the participant will be able to frame an answer, or is it reasonable to assume that the participant can determine the answer? This is also a question that drives sample design, but once the ideal sample unit is determined, researchers often assume that participants who fit the sample profile have all the answers, preferably on the tips of their tongues. To frame a response to some questions takes time and thought; such questions are best left to self-administered questionnaires.

Issue 6: Participation at the Expense of Accuracy.   Participants typically want to cooperate in interviews; thus they assume giving any answer is more helpful than denying knowledge of a topic. Their desire to impress the interviewer may encourage them to give answers based on no information. A classic illustration of this problem occurred with the following question:[3] "Which of the following statements most closely coincides with your opinion of the Metallic Metals Act?" The response pattern shows that 70 percent of those interviewed had a fairly clear opinion of the Metallic Metals Act; however, *there is no such act.* The participants apparently assumed that if a question was asked, they should provide an answer. Given reasonable-sounding choices, they selected one even though they knew nothing about the topic.

To counteract this tendency to respond at any cost, **filter questions** are used to qualify a participant's knowledge. If the MindWriter service questionnaire is distributed via mail to all recent purchasers of MindWriter products, we might ask, "Have you required service for your machine since its purchase?" Only those for whom service was provided could provide the detail and scope of the responses indicated in the investigative question list. If such a question is asked in a phone interview, we would call the question a **screen,** because it is being used to determine whether the person on the other end of the phone line is a qualified sample unit.

Assuming that participants have prior knowledge or understanding may be risky. The risk is getting many answers that have little basis in fact. The Metallic Metals Act illustration may be challenged as unusual, but in another case, a Gallup report revealed that 45 percent of the persons surveyed did not know what a "lobbyist in Washington" was, and 88 percent could not give a correct description of "jurisdictional strike."[4] This points to the need for operational definitions as part of question wording.

Issue 7: Presumed Knowledge.   The question designer should consider the participants' information level when determining the content and appropriateness of a question. In some studies, the degree of participant expertise can be substantial, and simplified explanations are inappropriate and discourage participation. In asking the public about gross margins in menswear stores, we would want to be sure the "general public" participant understands the nature of "gross margin." If our sample unit were a merchant, explanations might not be needed. A high level of knowledge among our sample units, however, may not eliminate the need for operational definitions. Among merchants, gross margin per unit in dollars is commonly accepted as the difference between cost and selling price; but when offered as a percentage rather than a dollar figure, it can be calculated as a percentage of unit selling price or as a percentage of unit cost. A participant answering from the "cost" frame of reference would calculate gross margin at 100 percent; another participant, using the same dollars and the "selling price" frame of reference, would calculate gross margin at 50 percent. If a construct is involved and differing interpretations of a concept are feasible, operational definitions may still be needed.

Issue 8: Recall and Memory Decay.   The adequacy problem also occurs when you ask questions that overtax participants' recall ability. People cannot recall much that has happened in their past, unless it was dramatic. Your mother may remember everything about your arrival if you were her first child: the weather, time of day, even what she ate prior to your birth. If you have several siblings, her memory of subsequent births may be less complete. If the events surveyed are of incidental interest to participants, they will probably be unable to recall them correctly even a short time later. An unaided recall question, "What radio programs did you listen to last night?" might identify as few as 10 percent of those individuals who actually listened to a program.[5]

Issue 9: Balance (General versus Specific).   Answering adequacy also depends on the proper balance between generality and specificity. We often ask questions in terms too general and detached from participants' experiences. Asking for average annual consumption of a product may make an unrealistic demand for generalization on people who do not think in these terms. Why not ask how often the product was used last week or last month? Too often participants are asked to recall individual use experiences over an extended time and to average them for us. This is asking participants to do the researcher's work and encourages substantial response errors. It may also contribute to a higher refusal rate and higher discontinuation rate.

There is a danger in being too narrow in the time frame applied to behavior questions. We may ask about movie attendance for the last seven days, although this is too short a time span on which to base attendance estimates. It may be better to ask about attendance, say, for the last 30 days. There are no firm rules about this generality-specificity problem. Developing the right level of generality depends on the subject, industry, setting, and experience of the question designer.

Issue 10: Objectivity.   The ability of participants to answer adequately is also often distorted by questions whose content is biased by what is included or omitted. The question may explicitly mention only the positive or negative aspects of the topic or make unwarranted assumptions about the participant's position. Consider an experiment in which the following two forms of a question were asked:

A. What is your favorite brand of ice cream? _____

B. Some people have a favorite brand of ice cream while others do not have a favorite brand. In which group are you? (please check)

❏ I have a favorite brand of ice cream.

❏ I do not have a favorite brand of ice cream.

What is your favorite (if you have a favorite)? _____

Fifty-seven randomly chosen graduate business students answered version A, and 56 answered version B. Their responses are shown in the accompanying table.

Response	Version A	Version B
Named a favorite brand	77%[*]	39%[*]
Named a favorite flavor rather than a brand	19	18
Had no favorite brand	4	43
Total	100%	100%
	$n = 57$	$n = 56$

[*] Significant difference at the 0.001 level.

The probable cause of the difference in brand preference is that A is a **leading question.** It assumes and suggests that everyone has a favorite brand of ice cream and will report it. Version B indicates the participant need not have a favorite.

A deficiency in both versions is that about one participant in five misinterpreted the meaning of the term *brand*. This misinterpretation cannot be attributed to low education, low intelligence, lack of exposure to the topic, or quick or lazy reading of the question. The subjects were students who had taken at least one course in marketing in which branding was prominently treated. (Word confusion difficulties are discussed in greater detail later in this chapter.)

Will the Participants Answer Willingly?

Issue 11: Sensitive Information.   Even if participants have the information, they may be unwilling to give it. Some topics are considered too sensitive to discuss with strangers. These vary from person to person, but one study suggests the most sensitive topics concern money matters and family life.[5] More than one-fourth of those interviewed mentioned these as the topics about which they would be "least willing to answer questions." Participants of lower socioeconomic status also included political matters in this "least willing" list.

Participants also may be unwilling to give correct answers for ego reasons. Many exaggerate their incomes, the number of cars they own, their social status, and the amount of high-prestige literature they read. They also minimize their ages and the amount of low-prestige literature they read. Many participants are reluctant to try to give an adequate response. Often this will occur when they see the topic as irrelevant to their own interests or to their perception of the survey's purpose. They participate half-heartedly, often answer with "don't know," give negative replies, refuse to be interviewed, or give stereotypical responses. The lack of response to Jason's high school reunion survey was attributed to the inclusion of questions about classmates' lascivious activities. This information was far too sensitive to risk being mentioned in a potentially embarrassing article in the hometown paper.

Question Wording

It is frustrating when people misunderstand a question that has been painstakingly written. This problem is partially due to the lack of a shared vocabulary. The difficulty of understanding long and complex sentences or involved phraseology aggravates the problem further. Our dilemma arises from the requirements of question design (the need to be explicit, to present alternatives, and to explain meanings). All contribute to longer and more involved sentences.[7]

The difficulties caused by question wording exceed most other sources of distortion in surveys. They have led one social scientist to conclude:

> To many who worked in the Research Branch it soon became evident that error or bias attributable to sampling and to methods of questionnaire administration were relatively small as compared with other types of variations—especially variation attributable to different ways of wording questions.[8]

While it is impossible to say which wording of a question is best, we can point out several areas that cause participant confusion and measurement error. The diligent question designer will put a given question through many revisions before it satisfies these criteria.[9]

MANAGEMENT
Tip

- Is the question stated in terms of a shared vocabulary?
- Does the question contain vocabulary with a single meaning?
- Does the question contain unsupported or misleading assumptions?
- Does the question contain biased wording?

- Is the question correctly personalized?
- Are adequate alternatives presented within the question?

The Albany clinic study illustrated several of these problems. The multiple question about Edna's "referring physician" and "physician most knowledgeable about her health" was further distorted by a request for a phone number. Edna didn't know which doctor's phone number was being requested. By offering space for only one number, the data collection instrument implied that both parts of the question might refer to the same doctor. The questions about past medical history did not offer clear directions. Questions (about having the flu) either did not include time frames or had unrealistic time frames (the term "ever"). The question about "intact teeth" generated several plausible interpretations. Another question about neck movement assumed every participant had the same operational definition for "limited motion of your neck." A talented researcher did not design the clinic's study questionnaire.

The MindWriter study (see Exhibit 12–3) simplified the process by using the same response strategy for each factor the participant was asked to evaluate. The study basically asks, "How did our CompleteCare service program work for you when you consider each of the following factors?" It accomplishes this as it sets up the questioning with, "Take a moment to tell us how well we've served you." Because the sample includes CompleteCare users only, the underlying assumption that participants have used the service is acceptable. The language is appropriate for the participant's likely level of education. And the open-ended question used for "comments" adds flexibility to capture any unusual circumstances not covered by the structured factor list.

Issue 12: Shared Vocabulary.
Because surveying is an exchange of ideas between interviewer and participant, each must understand what the other says, and this is possible only if the vocabulary used is common to both parties.[10] Two problems arise. First, the words must be simple enough to allow adequate communication with persons of limited education. This is dealt with by reducing the level of word difficulty to simple English words and phrases (more is said about this in the section on word clarity).

In the Marriott concierge study introduced in Chapter 2, researchers anticipated a potential problem by arranging for bilingual interviewers.

Technical language is the second issue. Even highly educated participants cannot answer questions stated in unfamiliar technical terms. Technical language also poses difficulties for interviewers. In one study of how corporation executives handled various financial problems, interviewers had to be conversant with technical financial terms. This necessity presented the researcher with two alternatives—hiring people knowledgeable in finance and teaching them interviewing skills or teaching financial concepts to experienced interviewers.[11] This vocabulary problem also exists where similar or identical studies are conducted in different countries and multiple languages.

A great obstacle to effective question wording is the choice of words. Questions to be asked of the public should be restricted to the 2,000 most common words in the English language.[12] Even the use of simple words is not enough. Many words have vague references or meanings that must be gleaned from their context. In a repair study, technicians were asked, "How many radio sets did you repair last month?" This question may seem unambiguous, but participants interpreted it in two ways. Some viewed it as a question of them alone; others interpreted "you" more inclusively, as referring to the total output of the shop. There is also the possibility of misinterpreting "last month," depending on the timing of the questioning. Using "during the last 30 days" would be much more precise and unambiguous. Typical of the many problem words are *any, could, would, should, fair, near, often, average,* and *regular.* One author recommends that after stating a question as precisely as possible, we should test each word against this checklist:

MANAGEMENT

Tip

- Does the word chosen mean what we intend?
- Does the word have multiple meanings? If so, does the context make the intended meaning clear?
- Does the word chosen have more than one pronunciation? Is there any word with similar pronunciation with which the chosen word might be confused?
- Is a simpler word or phrase suggested or possible?[13]

In the Prince Corporation study, what percentage of the population would understand the terms *conglomerate* or *multinational company?* We cause other problems when we use abstract concepts that have many overtones or emotional qualifications.[14] Without concrete referents, meanings are too vague for the researcher's needs. Examples of such words are *business, government,* and *society.* Suppose that in the Prince Corporation study we asked the question, "How involved is business in the affairs of our society?" What is meant by "involved"? What parts of "society"? Is there such a thing as "business" per se?

Shared vocabulary issues are addressed by using the following:

MANAGEMENT

Tip

- Simple rather than complex words.
- Interviewers with content knowledge.
- Commonly known, unambiguous words.
- Precise words.

Issue 13: Unsupported Assumptions.   Unwarranted assumptions contribute to many problems of question wording. A metropolitan newspaper, *Midwest Daily,* conducted a study in an attempt to discover what readers would like in its redesigned lifestyle section. One notable question asked readers: "Who selects your clothes? You or the man in your life?" In this age of educated, working, independent women, the question managed to offend a significant portion of the female readership. In addition, *Midwest Daily* discovered that many of its female readers were younger than researchers originally assumed and the only man in their lives was their father, not the spousal or romantic relationship alluded to by the questions that followed. Once men reached this question, they assumed that the paper was interested in serving only the needs of female readers. The unwarranted assumptions built into the questionnaire caused a significantly smaller response rate than expected and caused several of the answers to be uninterpretable.

Issue 14: Frame of Reference.   Inherent in word meaning problems is also the matter of a frame of reference. Each of us understands concepts, words, and expressions in light of our own experience. The U.S. Bureau of the Census wanted to know how many people were in the labor market. To learn whether a person was employed, it asked, "Did you do any work for pay or profit last week?" The researchers erroneously assumed there would be a common frame of reference between the interviewer and participants on the meaning of *work.* Unfortunately, many persons viewed themselves primarily or foremost as homemakers or students. They failed to report that they also worked at a job during the week. This difference in frame of reference resulted in a consistent underestimation of the number of people working in the United States.

In a subsequent version of the study, this question was replaced by two questions, the first of which sought a statement on the participant's major activity during the week. If the participant gave a nonwork classification, a second question was asked to determine if he or she had done any work for pay besides this major activity. This revision

increased the estimate of total employment by more than 1 million people, half of them working 35 hours or more per week.[15]

The frame of reference can be controlled in two ways. First, the interviewer may seek to learn the frame of reference used by the participant. When asking participants to evaluate their reasons for judging a labor contract offer, the interviewer must learn the frames of reference they use. Is the contract offer being evaluated in terms of the specific offer, the failure of management to respond to other demands, the personalities involved, or the personal economic pressures that have resulted from a long strike?

Second, it is useful to specify the frame of reference for the participant. In asking for an opinion about the new labor contract offer, the interviewer might specify that the question should be answered based on the participant's opinion of the size of the offer, the sincerity of management, or another frame of reference of interest.

Issue 15: Biased Wording.   Bias is the distortion of responses in one direction. It can result from many of the problems already discussed, but word choice is often the major source. Obviously such words or phrases as *politically correct* or *fundamentalist* must be used with great care. Strong adjectives can be particularly distorting. One alleged opinion survey concerned with the subject of preparation for death included the following question: "Do you think that decent, low-cost funerals are sensible?" Who could be against anything that is decent or sensible? There is a question about whether this was a legitimate survey or a burial service sales campaign, but it shows how suggestive an adjective can be.

Congressional representatives have been known to use surveys as a means of communicating with their constituencies. "Would you have me vote for a balanced budget if it means higher costs for supplemental Social Security benefits which you have already earned?" Questions are often worded, however, to imply the issue stance that the representative favors.

We can also strongly bias the participant by using prestigious names in a question. In a historic survey on whether the war and navy departments should be combined into a single defense department, one survey said, "General Eisenhower says the army and navy should be combined," while the other version omitted his name. Given the first version (name included), 49 percent of the participants approved of having one department; given the second version, only 29 percent favored one department.[16]

We also can bias response through the use of superlatives, slang expressions, and fad words. These are best excluded unless they are critical to the objective of the question. Ethnic references should also be stated with care.

Issue 16: Personalization.   How personalized should a question be? Should we ask, "What would *you* do about . . . .?" Or should we ask, "What would *people with whom you work* do about . . . ?" The effect of personalization is shown in a classic example reported by Cantril.[17] A split test was made of a question concerning attitudes about the expansion of U.S. armed forces in 1940:

Should the United States do any of the following at this time?

A. Increase our armed forces further, even if it means more taxes.

B. Increase our armed forces further, even if you have to pay a special tax.

Eighty-eight percent of those answering question A thought the armed forces should be increased, while only 79 percent of those answering question B favored increasing the armed forces.

These and other examples show that **personalizing questions changes responses**, but it is not clear whether this change is for better or for worse. We often cannot tell which method is superior. Perhaps the best that can be said is that when either form is acceptable, we should choose that which appears to present the issues more realistically. If there are doubts, then split survey versions should be used.

Issue 17: Adequate Alternatives. Have we adequately expressed the alternatives with respect to the point of the question? It is usually wise to express each alternative explicitly to avoid bias. This is illustrated well with a pair of questions that were asked of matched samples of participants.[18] These forms were used:

A. Do you think most manufacturing companies that lay off workers during slack periods could arrange things to avoid layoffs and give steady work right through the year?

B. Do you think most manufacturing companies that lay off workers in slack periods could avoid layoffs and provide steady work right through the year, or do you think layoffs are unavoidable?

	A	B
Company could avoid layoffs	63%	35%
Could not avoid layoffs	22	41
No opinion	15	24

Often the above issues are simultaneously present in a single question. Exhibit 12–5 reveals several questions drawn from actual mail surveys. We've identified the problem issues and suggest one solution for improvement. While the suggested improvement might not be the only possible solution, it does correct the issues identified. What other solutions could be applied to correct the problems identified?

Response Strategy

A third major decision area in question design is the degree and form of structure imposed on the participant. The various response strategies offer options that include **unstructured response** (or *open-ended response*, the free choice of words) and **structured response** (or *closed response*, specified alternatives provided). Free responses, in turn, range from those in which the participants express themselves extensively to those in which participants' latitude is restricted by space, layout, or instructions to choose one word or phrase, as in a "fill-in" question. Closed responses typically are categorized as dichotomous, multiple-choice, checklist, rating, or ranking response strategies.

Situational Determinants of Response Strategy Choice
Several situational factors affect the decision of whether to use open-ended or closed questions.[19] The decision is also affected by the degree to which these factors are known to the interviewer. The factors are:

MANAGEMENT
Tip

- Objectives of the study.
- Participant's level of information about the topic.
- Degree to which participant has thought through the topic.
- Ease with which participant communicates.
- Participant's motivation level to share information.

EXHIBIT 12-5 Reconstructing Questions

Example 1

Improved Measurement Question

Which reason BEST explains your purpose for THIS personal pleasure hotel stay?

☐ Dining
☐ Shopping
☐ Entertainment
  ☐ was this for a... ☐ Sport-related event?
  ☐ Theater, musical, or other performance?
  ☐ Museum or exhibit?
☐ Visit friend/relative
  ☐ was this for a special event? ☐ YES ☐ NO
☐ Vacation
  ☐ was this primarily for ... ☐ Sightseeing?
  ☐ Weekend escape?
☐ Other: _____

Poor Measurement Question

If your purpose for THIS hotel stay included personal pleasure, for what ONE purpose specifically?

☐ Visit friend/relative   ☐ Sightseeing
☐ Weekend escape   ☐ Family event
☐ Sporting event   ☐ Vacation
☐ Other: _____

Problems: Checklist appears to offer options that are neither exhaustive nor mutually exclusive. Also, it doesn't fully address the content needs of understanding why people choose a hotel when they travel for personal reasons versus business reasons.

Solution: Organize the alternatives. Create subsets within choices; use color or shading to highlight subsets. For coding ease, expand the alternatives so the participant does not frequently choose "Other."

Example 2

Improved Measurement Question

Considering your personal eating experiences away from home in the last 30 days, did you purchase an appetizer or dessert more than half the time?

	More Than Half the Time	Less Than Half the Time
Purchased an appetizer	☐	☐
Purchased a dessert	☐	☐

☐ Purchased neither appetizers nor desserts.

Poor Measurement Question

When you eat out, do you frequently order appetizers and dessert?
☐ YES   ☐ NO

Problems: Double-barreled question; no time frame for the behavior; "Frequently" is an undefined construct for eating behavior; depending on the study's purpose, "order" is not as powerful a concept for measurement as others (e.g., purchase, consume, or eat).

Solution: Split the questions; expand the response alternatives; clearly define the construct you want to measure.

Example 3

Improved Measurement Question

In the last six months, have you been a spectator at a basketball game played by college teams on a college campus?
☐ YES   ☐ NO

Poor Measurement Question

Have you ever attended a college basketball game?
☐ YES   ☐ NO

Problems: Nonspecific time frame; likely to experience memory decay; nonspecific screen (not asking what you really need to know to qualify a participant).

Solution: Replace "ever" with a more appropriate time frame; screen for the desired behavior.

Example 4

Improved Measurement Question

Did you purchase a dress coat for your personal use in the last 60 days?
☐ YES   ☐ NO
Thinking of this dress coat, how much did you pay? (to the nearest dollar) $_____ .00
Was this coat purchase made at a discounted price?
☐ YES   ☐ NO

Poor Measurement Question

How much did you pay for the last coat you purchased?

Problems: Question faces serious memory decay as a coat may not be purchased each year; aren't asking if the coat was a personal purchase or for someone else; nor do you know the type of coat purchased; nor do you know whether the coat was purchased for full price or at a discount.

Issue 18: Objective of the Study.   If the objective of the question is only to classify the participant on some stated point of view, then the closed question will serve well. Assume you are interested only in whether a participant approves or disapproves of a certain corporate policy. A closed question will provide this answer. This response strategy ignores the full scope of the participant's opinion and its antecedents. If the objective is to explore a wider territory, then an open-ended question (free-response strategy) is preferable.

Open-ended questions are appropriate when the objective is to discover opinions and degrees of knowledge. They are also appropriate when the interviewer seeks sources of information, dates of events, and suggestions, or when probes are used to secure more information. When the topic of a question is outside the participant's experience, the open-ended question may offer the better way to learn his or her level of information. Open-ended questions also help to uncover certainty of feelings and expressions of intensity, although well-designed closed questions can do the same.

Finally, it may be better to use open-ended questions when the interviewer does not have a clear idea of the participant's frame of reference or level of information. Such conditions are likely to occur in exploratory research or in pilot testing. Closed questions are better when there is a clear frame of reference, the participant's level of information is predictable, and the researcher believes the participant understands the topic.

Issue 19: Thoroughness of Prior Thought.   If a participant has developed a clear opinion on the topic, a closed question does well. If an answer has not been thought out, an open-ended question may give the participant a chance to ponder a reply, then elaborate on and revise it.

Issue 20: Communication Skill.   Open-ended questions require a stronger grasp of vocabulary and a greater ability to frame responses than do closed questions.

Issue 21: Participant Motivation.   Experience has shown that closed questions typically require less motivation and answering them is less threatening to participants. But the response alternatives sometimes suggest which answer is appropriate; for this reason, closed questions may be biased.

While the open-ended question offers many advantages, closed questions are generally preferable in large surveys. They reduce the variability of response, make fewer demands on interviewer skills, are less costly to administer, and are much easier to code and analyze. After adequate exploration and testing, we can often develop closed questions that will perform as effectively as open-ended questions in many situations. Experimental studies suggest that closed questions are equal or superior to open-ended questions in many more applications than is commonly believed.[20]

Response Strategies Illustrated

The characteristics of participants, the nature of the topic(s) being studied, the type of data needed, and your analysis plan dictate the response strategy. Examples of the strategies described in this section are found in Exhibit 12–6.

Free-Response Strategy   **Free-response questions,** also known as *open-ended questions,* ask the participant a question while the interviewer pauses for the answer (which is unaided), or the participant records his or her ideas in his or her own words in the space provided on a questionnaire.

EXHIBIT 12–6   **Alternative Response Strategies**

Free response	What factors influenced your enrollment in Metro U?
Dichotomous selection	Did you attend either of the "A Day at College" programs at Metro U? ❏ YES ❏ NO
(Paired-comparison dichotomous selection)	In your decision to attend Metro U, which was more influential: the semester calendar or the many friends attending from your hometown? ❏ Semester calendar. ❏ Many friends attending from hometown.
Multiple choice	Which one of the following factors was most influential in your decision to attend Metro U? ❏ Good academic reputation. ❏ Specific program of study desired. ❏ Enjoyable campus life. ❏ Many friends from home attend. ❏ High quality of the faculty.
Checklist	Which of the following factors encouraged you to apply to Metro U? (Check all that apply.) ❏ Tuition cost. ❏ Specific program of study desired. ❏ Parents' preferences. ❏ Opinion of brother or sister. ❏ Many friends from home attend. ❏ High school counselor's recommendation. ❏ High quality of the faculty. ❏ Good academic reputation. ❏ Enjoyable campus life. ❏ Closeness to home.

Rating

Each of the following factors has been shown to have some influence on a student's choice in applying to Metro U. Using your own experience, for each factor please tell us whether the factor was "strongly influential," "somewhat influential," or "not at all influential."

	Strongly Influential	Somewhat Influential	Not at All Influential
Good academic reputation	❏	❏	❏
Enjoyable campus life	❏	❏	❏
Many friends from home attend	❏	❏	❏
High quality of the faculty	❏	❏	❏
Semester calendar	❏	❏	❏

Ranking

Please rank-order your top three factors from the following list based on their influence in encouraging you to apply to Metro U. Use 1 to indicate the most encouraging factor, 2 the next most encouraging factor, etc.

_____ Closeness to home.
_____ Enjoyable campus life.
_____ Good academic reputation.
_____ High quality of the faculty.
_____ High school counselor's recommendation.
_____ Many friends from home attend.
_____ Opinion of brother or sister.
_____ Parents' preferences.
_____ Specific program of study desired.
_____ Tuition cost.

Dichotomous Response Strategy   A topic may present clearly *dichotomous* choices: Something is a fact or it is not; a participant can either recall or not recall information; a participant attended or didn't attend an event. **Dichotomous questions** suggest opposing responses, but this is not always the case. One response may be so unlikely that it would be better to adopt the middle-ground alternative as one of the two choices. For example, if we ask participants whether they are underpaid or overpaid, we are not likely to get many selections of the latter choice. The better alternatives to present to the participant might be "underpaid" and "fairly paid."

In many two-way questions, there are potential alternatives beyond the stated two alternatives. If the participant cannot accept either alternative in a dichotomous question, he or she may convert the question to a multiple-choice or rating question by writing in his or her desired alternative. For example, the participant may prefer an alternative such as "don't know" to a yes-no question, or "no opinion" when faced with a favor-oppose option. In other cases, when there are two opposing or complementary choices, the participant may prefer a qualified choice ("yes, if X doesn't occur," or "sometimes yes and sometimes no," or "about the same"). Thus, two-way questions may become multiple-choice or rating questions and these additional responses should be reflected in your revised analysis plan. Dichotomous questions generate nominal data.

Multiple-Choice Response Strategy   **Multiple-choice questions** are appropriate where there are more than two alternatives or where we seek gradations of preference, interest, or agreement; the latter situation also calls for rating questions. While such questions offer more than one alternative answer, they request the participant to make a single choice. Multiple-choice questions can be efficient, but they also present unique design problems.

Assume we ask whether mine safety rules should be determined by the (1) mine companies, (2) miners, (3) federal government, or (4) state government. One type of problem occurs when one or more responses have not been anticipated. For example, the union has not been mentioned in the alternatives on mine safety rules. Many participants might combine this alternative with "miners," but others will view "unions" as a distinct alternative. Exploration prior to drafting the measurement question attempts to identify the most likely choices.

A second problem occurs when the list of choices is not exhaustive. Participants may want to give an answer that is not offered as an alternative. This may occur when the desired response is one that combines two or more of the listed individual alternatives. Many people may believe the federal government and the miners acting jointly should set mine safety rules, but the question does not include this response. When the researcher tries to provide for all possible options, the list of alternatives can become exhausting. We guard against this by discovering the major choices through exploration and *pretesting* (discussed in detail below). We may also add the category "other (please specify)" as a safeguard to provide the participant an acceptable alternative for all other options. In our analysis of a self-administered questionnaire we may create a combination alternative.

Yet another problem occurs when the participant divides the question of mine safety into several questions, each with different alternatives. Some participants may believe rules dealing with air quality should be set by a federal agency, while those dealing with length of workday or number of workers per square foot should be set by mine company and union representatives. Still others want local management-worker

committees to make rules. To address this problem, the instrument designer would need to divide the question. Pretesting should reveal if a multiple-choice question is really a multiple question.

Another challenge in alternative selection occurs when the choices are not mutually exclusive (the participant thinks two or more responses overlap). In a multiple-choice question that asks students, "Which one of the following factors was most influential in your decision to attend Metro U?" these response alternatives might be listed:

1. Good academic reputation.

2. Specific program of study desired.

3. Enjoyable campus life.

4. Many friends from home attend.

5. High quality of the faculty.

Some participants might view items 1 and 5 as overlapping, and some may see items 3 and 4 in the same way.

It is also important to seek a fair balance in choices. One study showed that an off-balance presentation of alternatives biases the results in favor of the more heavily offered side.[21] If four gradations of alternatives are on one side of an issue and two are offered reflecting the other side, responses will tend to be biased toward the better-represented side.

It is necessary in multiple-choice questions to present reasonable alternatives—particularly when the choices are numbers or identifications. If we ask, "Which of the following numbers is closest to the number of students enrolled in American colleges and universities today?" the following choices might be presented:

1. 75,000

2. 750,000

3. 7,500,000

4. 25,000,000

5. 75,000,000

It should be obvious to most participants that at least three of these choices are not reasonable, given general knowledge about the population of the United States.

The order in which choices are given can also be a problem. Numbers are normally presented in order of magnitude. This practice introduces a bias. The participant assumes that if there is a list of five numbers, the correct answer will lie somewhere in the middle of the group. Researchers are assumed to add a couple of incorrect numbers on each side of the correct one. To counteract this tendency to choose the central position, put the correct number at an extreme position more often when you design a multiple-choice question.

Order bias with non-numeric alternatives often leads the participant to choose the first alternative (*primacy effect*) or the last alternative (*recency effect*) over the middle ones. Using the *split-ballot technique* can counteract this bias. To implement this strategy in face-to-face interviews, list the alternatives on a card to be handed to the participant when the question is asked. Cards with different choice orders can be alternated to

ensure positional balance. Leave the choices unnumbered on the card so participants reply by giving the choice itself rather than its identifying number. It is a good practice to use cards like this any time there are four or more choice alternatives. This saves the interviewer's reading time and ensures a more valid answer by keeping the full range of choices in front of the participant.

In most multiple-choice questions, there is also a problem of ensuring that the choices represent a unidimensional scale—that is, the alternatives to a given question should represent different aspects of the same *conceptual dimension.* In the college selection example, the list included features associated with a college that might be attractive to a student. This list, while not exhaustive, illustrated aspects of the concept "college attractiveness factors within the control of the college." The list did not mention other factors that might affect a school attendance decision. Parents and peer advice, local alumni efforts, and one's high school adviser may influence the decision, but these represent a different conceptual dimension of "college attractiveness factors"—those not within the control of the college.

Multiple-choice questions usually generate nominal data. When the choices are numbers, this response structure will produce at least interval and sometimes ratio data. When the choices represent ordered numerical ranges (for example, a question on family income) or a verbal rating scale (for example, a question on how you prefer your steak prepared: well done, medium well, medium rare, or rare), the multiple-choice question generates ordinal data.

Checklist Response Strategy   When you want a participant to give multiple responses to a single question, you will ask the question in one of three ways. If relative order is not important, the **checklist** is the logical choice. Questions like "Which of the following factors encouraged you to apply to Metro U? (Check all that apply)" force the participant to exercise a dichotomous response (yes, encouraged; no, didn't encourage) to each factor presented. Of course you could have asked for the same information as a series of dichotomous selection questions, one for each individual factor, but that would have been time- and space-consuming. Checklists are more efficient. Checklists generate nominal data.

Rating Response Strategy   **Rating questions** ask the participant to position each factor on a companion scale, either verbal, numeric, or graphic. "Each of the following factors has been shown to have some influence on a student's choice to apply to Metro U. Using your own experience, for each factor please tell us whether the factor was 'strongly influential,' 'somewhat influential,' or 'not at all influential.' " Generally, rating-scale structures generate ordinal data; some carefully crafted scales generate interval data.

Ranking Strategy   When relative order of the alternatives is important, the **ranking question** is ideal. "Please rank-order your top three factors from the following list based on their influence in encouraging you to apply to Metro U. Use 1 to indicate the most encouraging factor, 2 the next most encouraging factor, etc." The checklist strategy would provide the three factors of influence, but we would have no way of knowing the importance the participant places on each factor. Even in a personal interview, the order in which the factors are mentioned is not a guarantee of influence. Ranking as a response strategy solves this problem.

One concern surfaces with ranking activities. How many presented factors should be ranked? If you listed the 15 brands of potato chips sold in a given market, would you have the participant rank all 15 in order of preference? In most instances it is helpful to remind yourself that while participants may have been selected for a given study due to their experience or likelihood of having desired information, this does not mean that they have knowledge of all conceivable aspects of an issue, only with some. It is always better to have participants rank only those elements with which they are familiar. If you want motivation to remain strong, avoid asking a participant to rank more than seven items even if your list is longer. Ranking generates ordinal data.

All types of response strategies have their advantages and disadvantages. Several different strategies are often found in the same questionnaire, and the situational factors mentioned earlier are the major guides in this matter. There is a tendency, however, to use closed questions instead of the more flexible open-ended type. Exhibit 12–7 summarizes some important considerations in choosing between the various response strategies.

Sources of Existing Questions

The tools of data collection should be adapted to the problem, not the reverse. Thus, the focus of this chapter has been on crafting an instrument to answer specific investigative questions. But inventing and refining questions demands considerable time and effort. For some topics, a careful review of the related literature and an examination of existing instrument sourcebooks can shorten this process.

A review of literature will reveal instruments used in similar studies that may be obtained by writing the researchers or, if copyrighted, purchased through a clearinghouse. Many instruments are available through compilations and sourcebooks. While these tend to be oriented to social science applications, they are a rich source of ideas for tailoring questions to meet a manager's needs. Several compilations are recommended; we have suggested them in Exhibit 12–8.[22]

Borrowing items from existing sources is not without risk. It is quite difficult to generalize the reliability and validity of selected items or portions of a questionnaire that have been taken out of the original context. Pretesting is also warranted if it is necessary to report the reliability and validity of the instrument being constructed. Time and situation-specific fluctuations should be scrutinized. Remember that the original estimates are only as good as the sampling and testing procedures, and many researchers you borrow from may not have reported that information.

S N A P S H O T   KNowSanDiego

Television advertisers have struggled since the 1950s to reach their ideal customers with publicly available media. KNSD, although affiliated with NBC since 1977, was purchased in 1997 by NBC, considered by many to be the world leader in news, entertainment, and sports programming. Starting in 1990 and every year thereafter, this television station has won the Emmy for *Outstanding News Station* in San Diego. So to retain its title of superiority, it contracted with SRI (Stanford Research Institute) to do research to achieve a better understanding of who actually watches KNSD. SRI created the VALS system for segmenting customer groups by values and lifestyles, not just demographics. The VALS approach requires a compre-

hensive survey of viewers. Participants were asked numerous questions about their TV viewing, entertainment, shopping, and other behaviors, as well as about their attitudes, likes, and dislikes. Dozens of measurement questions were included in this massive study of San Diego, just so advertisers could choose appropriate programs on which to advertise, and so that KNSD could claim to really KNowSanDiego! You can take a sample VALS survey by visiting the SRI website.

www.sri.com

www.nbc739.com

EXHIBIT 12–7   Characteristics of Response Strategies

Characteristics	Dichotomous	Multiple Choice	Checklist	Rating	Rank Ordering	Free Response
Type of data	Nominal	Nominal, ordinal, or ratio	Nominal	Ordinal or interval	Ordinal	Nominal or ratio
Usual number of answer alternatives provided	2	3 to 10	10 or fewer	3 to 7	10 or fewer	None
Desired number of participant answers	1	1	10 or fewer	7 or fewer	7 or fewer	1
Used to provide . . .	Classification	Classification, order, or specific numerical estimate	Classification	Order or distance	Order	Classification (of idea), order, or specific numerical estimate

EXHIBIT 12–8   Sources of Questions

Author(s)	Title	Source
Philip E. Converse, Jean D. Dotson, Wendy J. Hoag, and William H. McGee III, eds.	*American Social Attitudes Data Sourcebook, 1947–1978*	Cambridge, MA: Harvard University Press, 1980
Alec Gallup and George H. Gallup, ed.	*The Gallup Poll Cumulative Index: Public Opinion, 1935–1997*	Wilmington, DE: Scholarly Resources, Inc., 1999
George H. Gallup, Jr., ed.	*The Gallup Poll: Public Opinion 1998*	Wilmington, DE: Scholarly Resources, Inc., 1999
Elizabeth H. Hastings and Philip K. Hastings, eds.	*Index to International Public Opinion 1986–1987*	Westport, CT: Greenwood Press, 1988
Philip K. Hastings and Jessie C. Southwick, eds.	*Survey Data for Trend Analysis: An Index to Repeated Questions in the U.S. National Surveys Held by the Roper Public Opinion Research Center*	Storrs, CT: Roper Center for Public Opinion Research, Inc., 1974
Elizabeth Martin, Diana McDuffee, and Stanley Presser	*Sourcebook of Harris National Surveys: Repeated Questions 1963–1976*	Chapel Hill: Institute for Research in Social Science, University of North Carolina Press, 1981
National Opinion Research Center	*General Social Surveys 1972–1985: Cumulative Code Book*	Chicago: NORC, 1985
John P. Robinson, Robert Athanasiou, and Kendra B. Head	*Measures of Occupational Attitudes and Occupational Characteristics*	Ann Arbor: Institute for Social Research, University of Michigan, 1968
John P. Robinson, Philip R. Shaver, and Lawrence S. Wrightsman	*Measures of Personality and Social-Psychological Attitudes*	San Diego, CA: Academic Press, 1991

Language, phrasing, and idioms can also pose problems. Questions tend to age and may not appear (or sound) as relevant to the participant as freshly worded ones would. Integrating existing and newly constructed questions is problematic. When adjacent questions are relied on to carry context in one questionnaire and then are not selected for the customized application, the newly selected question is left without necessary meaning.[23] Whether an instrument is constructed from scratch or adapted from the ideas of others, pretesting is recommended.

Drafting and Refining the Instrument: Phase 3

MANAGEMENT
Tip

As depicted in Exhibit 12–9, Phase 3 of instrument design—drafting and refinement—is a multistep process.

1. Develop the participant-screening process (personal or phone interview), along with the introduction.

2. Arrange the measurement question sequence:
   a. Identify topic groups.
   b. Establish a logical sequence for the question groups and questions within groups.
   c. Develop transitions between these groups.

EXHIBIT 12–9   Flowchart for Instrument Design: Phase 3
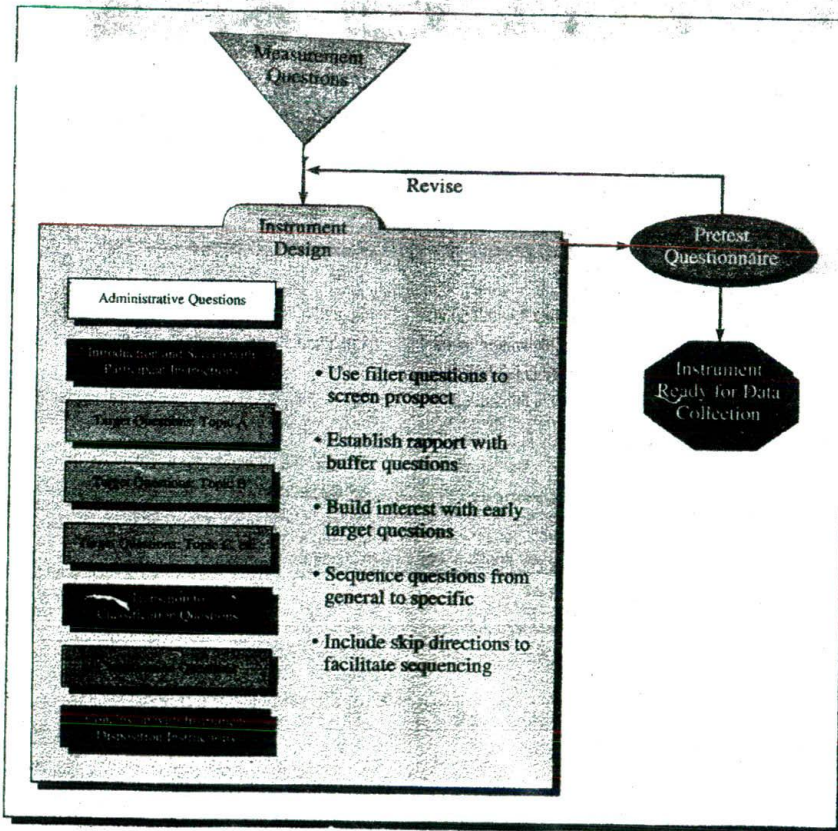
3. Prepare and insert instructions—for the interviewer or participant—including termination, skip directions, and probes.

4. Create and insert a conclusion, including a survey disposition statement.

5. Pretest specific questions and the instrument as a whole.

Introduction and Participant Screening

The introduction must supply the sample unit with the motivation to participate in the study. It must reveal enough about the forthcoming questions, usually by revealing some or all of the topics to be covered, for participants to judge their interest level and their ability to provide the desired information. In any communication study, the introduction also reveals the amount of time participation is likely to take. In a personal or phone interview, the introduction usually contains a filter or screen question to determine if the potential participant has the knowledge or experience necessary to participate in the study. The introduction also reveals the research organization or sponsor (unless the study is disguised) and possibly the objective of the study. At a minimum, a phone or personal interviewer will introduce himself or herself to help establish critical rapport with the potential participant. Exhibit 12–10 provides a sample introduction and other components of a telephone study of nonparticipants to a self-administered mail survey.

EXHIBIT 12–10   Sample Components of Communication Instruments

Introduction	Good evening. May I please speak with (name of participant)? Mr. (participant's last name), I'm (your name), calling on behalf of MindWriter Corporation. You recently had your MindWriter laptop serviced at our CompleteCare Center. Could you take five minutes to tell us what you thought of the service provided by the center?
Transition	The next set of questions asks about your family and how you enjoy spending your nonworking or personal time.
Instructions for . . . *a.* Terminating (following filter or screen question)	I'm sorry, today we are only talking with individuals who eat cereal at least three days per week, but thank you for speaking with me. (Pause for participant reply.) Good-bye.
b. Participant discontinue	Would there be a time I could call back to complete the interview? (Pause; record time.) We'll call you back then at (repeat day, time). Thank you for talking with me this evening. Or: I appreciate your spending some time talking with me. Thank you.
c. Skip directions (between questions or groups of questions)	3. Did you purchase boxed cereal in the last 7 days? ❏ Yes ❏ No (skip to question 7)
d. Disposition instructions	A postage-paid envelope was included with your survey. Please refold your completed survey and mail it to us in the postage-paid envelope.
Conclusion *a.* Phone or personal interview	That's my last question. Your insights and the ideas of other valuable customers will help us to make the CompleteCare program the best it can be. Thank you for talking with us this evening. (Pause for participant reply). Good evening.
b. Self-administered (usually precedes the disposition instructions)	Thank you for sharing your ideas about the CompleteCare program. Your insights will help us serve you better.

Measurement Question Sequencing

Often the content of one question (called a **branched question**) assumes other questions have been asked and answered. The psychological order of the questions is also important; question sequence can encourage or discourage commitment and promote or hinder the development of researcher-participant rapport.

The design of survey questions is influenced by the need to relate each question to the others in the instrument. The basic principle used to guide sequence decisions is: *The nature and needs of the participant must determine the sequence of questions and the organization of the interview schedule.* Four guidelines are suggested to implement this principle:

1. The question process must quickly awaken interest and motivate the participant to participate in the interview. Put the more interesting topical target questions early.

2. The participant should not be confronted by early requests for information that might be considered personal or ego threatening. Put questions that might influence the participant to discontinue or terminate the questioning process near the end.

3. The questioning process should begin with simple items and move to the more complex, and move from general items to the more specific. Put taxing and challenging questions later in the questioning process.

4. Changes in the frame of reference should be small and should be clearly pointed out. Use transition statements between different topics of the target question set.

Online surveys are becoming increasingly common, due in large part to their speed in data collection, flexibility in containing not only verbal but graphical elements, access to difficult-to-contact or inaccessible participants, and their lower cost of large-sample completion. Each mouse click by a participant on one of the response buttons generates an entry in a detailed statistical database. Designers often put only one or two questions to a screen so that the participant must submit data frequently—thus eliminating total data loss caused by early participant discontinuation. Many Web surveys comprise an invitation to participate followed by a detailed survey incorporating a variety of response strategies. This online survey conducted by Informative, Inc., is designed to evaluate Nortel Networks' website. The image shows the original invitation plus the first screen of the survey containing two response strategies, a multiple-choice/single response, and a multi-item rating scale.

Awaken Interest and Motivation We awaken interest and stimulate motivation to participate by choosing or designing questions that are attention getting and not controversial. If the questions have human-interest value, so much the better. It is possible that the early questions will contribute hard data to the major study objective, but their major task is to overcome the motivational barrier.

Sensitive and Ego-Involving Information Regarding the introduction of sensitive information too early in the process, two forms of this error are common. Most studies need to ask for personal classification information about participants. Participants normally will provide these data, but the request should be made toward the end. If made immediately, it often causes participants to feel threatened, dampening their interest and motivation to continue. It is also dangerous to ask any question at the start that is too personal. For example, participants in one survey were asked whether they suffered from insomnia. When the question was asked immediately after the interviewer's introductory remarks, about 12 percent of those interviewed admitted to having insomnia. When a matched sample was asked the same question after two **buffer questions** (neutral questions designed chiefly to establish rapport with the participant), 23 percent admitted suffering from insomnia.[24]

Complex to Simplistic Deferring complex questions or simple questions that require much thought can help reduce the number of "don't know" responses that are so prevalent early in interviews.

General to Specific The procedure of moving from general to more specific questions is sometimes called the **funnel approach.** The objectives of this procedure are to learn the participant's frame of reference and to extract the full range of desired information while limiting the distortion effect of earlier questions on later ones. This process may be illustrated with the following series of questions:

1. How do you think this country is getting along in its relations with other countries?

2. How do you think we are doing in our relations with Iran?

3. Do you think we ought to be dealing with Iran differently than we are now?

4. (*If yes*) What should we be doing differently?

5. Some people say we should get tougher with Iran and others think we are too tough as it is; how do you feel about it?[25]

The first question introduces the general subject and provides some insight into the participant's frame of reference. The second question narrows the concern to a single country, while the third and fourth seek views on how the United States should deal with Iran. The fifth question illustrates a specific opinion area and would be asked only if this point of toughness had not been covered in earlier responses. Question 4 is an example of a branched question; the response to the previous question determines whether or not question 4 is asked of the participant.

There is also a risk of interaction whenever two or more questions are related. Question-order influence is especially problematic with self-administered questionnaires, because the participant is at liberty to refer back to questions previously answered. In an attempt to "correctly align" two responses, accurate opinions and attitudes may be sacrificed. The two questions shown in the following table were asked in a national survey at the start of World War II:[26]

Question	Percent Answering Yes	
	A. Asked First	B. Asked First
A. Should the United States permit its citizens to join the French and British armies?	45%	40%
B. Should the United States permit its citizens to join the German army?	31	22

Apparently, some participants who first endorsed enlistment with the Allies felt obliged to extend this privilege to joining the German army. Where the decision was first made against joining the German army, a percentage of the participants felt constrained from approving the option to join the Allies.

Question Groups and Transitions   The last question-sequencing guideline suggests arranging questions to minimize shifting in subject matter and frame of reference. Participants often interpret questions in the light of earlier questions and miss shifts of perspective or subject unless they are clearly stated. Participants fail to listen carefully and frequently jump to conclusions about the import of a given question before it is completely stated. Their answers are strongly influenced by their frame of reference. Any change in subject by the interviewer may not register with them unless it is made strong and obvious. Most questionnaires that cover a range of topics are divided into sections with clearly defined transitions between sections to alert the participant to the change in frame of reference. Exhibit 12–10 provides a sample of a transition in the CompleteCare study when measurement questions changed from service-related questions to personal and family-related questions.

Instructions

Instructions to the interviewer or participant attempt to ensure that all participants are treated equally, thus avoiding building error into the results. Two principles form the foundation for good instructions: clarity and courtesy. Instruction language needs to be unfailingly simple and polite.

Instruction topics include:

MANAGEMENT
Tip

- **Termination of an unqualified participant**—How to terminate an interview when the participant does not correctly answer the screen or filter questions.

- **Termination of a discontinued interview**—How to conclude an interview when the participant decides to discontinue.

- **Skip directions**—Instructions for moving between topic sections of an instrument when movement is dependent on the answer to specific questions or when branched questions are used.

- **Disposition instructions**—Telling the respondent to a self-administered instrument about the disposition of the completed questionnaire.

In a self-administered questionnaire, instructions must be contained within the survey instrument. Personal interviewer instructions sometimes are in a document separate from the questionnaire (a document thoroughly discussed during interviewer training) or are distinctly and clearly marked (highlighted, printed in colored ink, or boxed on the computer screen) on the data collection instrument itself. Sample instructions are presented in Exhibit 12–10.

Conclusion

The role of the conclusion is to leave the participant with the impression that his or her involvement has been valuable. Subsequent researchers may need this individual to participate in new studies. If every interviewer or instrument expresses appreciation for participation, cooperation in subsequent studies is more likely. A sample conclusion is shown in Exhibit 12–10.

Overcoming Instrument Problems

MANAGEMENT

Tip

There is no substitute for a thorough understanding of question wording, question content, and sequencing issues. However, the researcher can do several things to help improve survey results, among them:

- Build rapport with the participant.
- Redesign the questioning process.
- Explore alternative response strategies.
- Use methods other than surveying to secure the data.
- Pretest all the survey elements.

Build Rapport with the Participant   Most information can be secured by direct undisguised questioning if rapport has been developed. Rapport is particularly useful in building participant interest in the project, and the more interest participants have, the more cooperation they will give. One can also overcome participant unwillingness by providing some material compensation for cooperation. This approach has been especially successful in mail surveys.

The assurance of confidentiality also can increase participants' motivation. One approach is to give discrete assurances, both by question wording and interviewer comments and actions, that all types of behavior, attitudes, and positions on controversial or sensitive subjects are acceptable and normal. Where you can say so truthfully, *guarantee* that participants' answers will be used only in combined statistical totals. If participants are convinced that their replies contribute to some important purpose, they are more likely to be candid, even about taboo topics.

Redesign the Questioning Process   You can redesign the questioning process to improve the quality of answers by modifying the administrative process and the response strategy. We might show that confidentiality is indispensable to the administration of the

Managers may sometimes need information quickly to resolve a problem or take advantage of a brief window of opportunity. RTI International, an industry leader in the development and use of state-of-the-art software systems to improve the quality of survey data, formed a strategic alliance with Knowledge Networks to use its probability-based panel of U.S. households to conduct fast-turnaround studies. The Web-enabled panel offers clients access to a statistically valid random sample of households (not just Internet users) who participate in studies via the Internet from their homes. "It's proved a great way for researchers to get very quick access to many (or just a few) sample members," claims Tim Gabel, RTI's director of research computing.
www.rti.org
www.knowledgenetworks.com
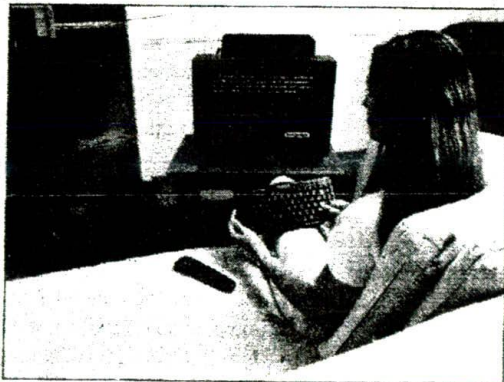
survey by using a group administration of questionnaires, accompanied by a ballot-box collection procedure. Even in face-to-face interviews, the participant may fill in the part of the questionnaire containing sensitive information and then seal the entire instrument in an envelope. While this does not guarantee confidentiality, it does suggest it.

We can also develop appropriate questioning sequences that will gradually lead a participant from "safe" questions to those that are more sensitive. As already noted in our discussion of disguised questions, indirect questioning (using projective techniques) is a widely used approach for securing opinions on sensitive topics. The participants are asked how "other people" or "people around here" feel about a topic. It is assumed the participants will reply in terms of their own attitudes and experiences, but this outcome is hardly certain. Indirect questioning may give a good measure of the majority opinion on a topic but fail to reflect the views either of the participant or of minority segments.

With certain topics, it is possible to secure answers by using a proxy code. When we seek family income classes, we can hand the participant a card with income brackets like these:

A. Under $25,000 per year.   C. $50,000 to $74,999 per year.

B. $25,000 to $49,999 per year.   D. $75,000 and over per year.

The participant is then asked to report the appropriate bracket as either A, B, C, or D. For some reason, participants are more willing to provide such an obvious proxy measure than to verbalize actual dollar values.

Explore Alternative Response Strategies   At the original question drafting, try developing positive, negative, and neutral versions of each type of question. This practice dramatizes the problems of bias, helping you to select question wording that minimizes such problems. Sometimes use an extreme version of a question rather than the expected one.

Minimize nonresponses to particular questions by recognizing the sensitivity of certain topics. In a self-administered instrument, for example, asking a multiple-choice question about income or age, where incomes and ages are offered in ranges, is usually more successful than using a free-response question (such as, What is your age, please? _____).

We discuss the use of similar unobtrusive measures in Chapter 13.

Use Methods Other Than Surveying   Sometimes surveying will not secure the information needed. A classic example concerns a survey conducted to discover magazines read by participants. An unusually high rate was reported for prestigious magazines, and an unusually low rate was reported for tabloid magazines. The study was revised so that the subjects, instead of being interviewed, were asked to contribute their old magazines to a charity drive. The collection gave a more realistic estimate of readership of both types of magazines.[27] Another study on the use of similar unobtrusive measures cites many other types of research situations where unique techniques have been used to secure more valid information than was possible from a survey.[28]

The Value of Pretesting

The final step toward improving survey results is pretesting (see Exhibits 12–4 and 12–10). There are abundant reasons for pretesting individual questions, questionnaires, and interview schedules. In this section we discuss several and raise questions to help you plan an effective test of your instrument. Most of what we know about pretesting is prescriptive. According to contemporary authors,

There are no general principles of good pretesting, no systematization of practice, no consensus about expectations, and we rarely leave records for each other. How a pretest was conducted, what investigators learned from it, how they redesigned their questionnaire on the basis of it—these matters are reported only sketchily in research reports, if at all.[29]

Nevertheless, conventional wisdom suggests that **pretesting** not only is an established practice for discovering errors but also is useful for training the research team. Ironically, professionals who have participated in scores of studies are more likely to pretest an instrument than is a beginning researcher hurrying to complete a project. Revising questions five or more times is not unusual. Yet inexperienced researchers often underestimate the need to follow the design-test-revise process.

Participant Interest An important purpose of pretesting is to discover participants' reactions to the questions. If participants do not find the experience stimulating when an interviewer is physically present, how will they react on the phone or in the self-administered mode? Pretesting should help to discover where repetitiveness or redundancy is bothersome or what topics were not covered that the participant expected. An alert interviewer will look for questions or even sections that the participant perceives to be sensitive or threatening or topics about which the participant knows nothing.

Meaning Questions that we borrow or adapt from the work of others carry an authoritativeness that may prompt us to avoid pretesting them, but they are often most in need of examination. Are they still timely? Is the language relevant? Do they need context from adjacent questions? Newly constructed questions should be similarly checked for meaningfulness to the participant. Does the question evoke the same meaning as that intended by the researcher? How different is the researcher's frame of reference from that of the average participant? Words and phrases that trigger a "what do you mean?" response from the participant need to be singled out for further refinement.

Question Transformation Participants do not necessarily process every word in the question. They also may not share the same definitions for the terms they hear. When this happens, participants modify the question to make it fit their own frame of reference or simply change it so it makes sense to them. Probing is necessary to discover how participants have transformed the question when this is suspected.[30]

Continuity and Flow In self-administered questionnaires, questions should read effortlessly and flow from one to another and from one section to another. In personal and telephone interviews, the sound of the question and its transition must be fluid as well. A long set of questions with nine-point scales that worked well in a mail instrument would not be effective on the telephone unless you were to ask participants to visualize the scale as the touch keys on their phone. Moreover, transitions that may appear redundant in a self-administered questionnaire may be exactly what needs to be heard in personal or telephone interviewing.

Question Sequence Question arrangement can play a significant role in the success of the instrument. Many authorities recommend starting with stimulating questions and placing sensitive questions last. Since questions concerning income and family life are most likely to be refused, this is often good advice for building trust before getting into a refusal situation. However, interest-building questions need to be tested first to be

sure they are stimulating. And when background questions are asked earlier in the interview, some demographic information will be salvaged if the interview stops unexpectedly. Pretesting with a large enough group permits some experimentation with question sequence.

Skip Instructions In interviews and questionnaires, skip patterns and their contingency sequences may not work as envisioned on paper. **Skip patterns** are designed to route or sequence the response to another question contingent on the answer to the previous question (branched questions). Pretesting in the field helps to identify problems with box-and-arrow schematics that the designers may not have thought of. By correcting them in the revision stage, we also avoid problems with flow and continuity.

Variability With a small group of participants, pretesting cannot provide definitive quantitative conclusions but will deliver an early warning about items that may not discriminate among participants or places where meaningful subgrouping may occur in the final sample. With 25 to 100 participants in the pretest group, statistical data on the proportion of participants answering yes or no or marking "strongly agree" to "strongly disagree" can supplement the qualitative information noted by the interviewers. This information is useful for sample size calculations and for getting preliminary indications of reliability problems with scaled questions.

Length and Timing Most draft questionnaires or interview schedules suffer from lengthiness. By timing each question and section, the researcher is in a better position to make decisions about modifying or cutting material. In personal and telephone interviews, labor is a project expense. Thus, if the budget influences the final length of the questionnaire, an accurate estimate of elapsed time is essential. Videotaped or audiotaped pretests may also be used for this purpose. Their function in reducing errors in data recording is widely accepted.

Pretesting Options

There are various ways that pretesting can be used to refine an instrument. They range from informal reviews by colleagues to creating conditions similar to those of the final study.

Researcher Pretesting Designers typically test informally in the initial stages and build more structure into the tests along the way. Fellow instrument designers can do the first-level pretest. Their many differences of opinion are likely to create numerous suggestions for improvement. Usually at least two or three drafts can be effectively developed by bringing research colleagues into the process.

Participant Pretesting Participant pretests require that the questionnaire be field-tested by sample participants or participant surrogates (individuals with characteristics and backgrounds similar to the desired participants).

Field pretests also involve distributing the test instrument exactly as the actual instrument will be distributed. Most studies use two or more pretests. National projects may use one trial to examine local reaction and another to check for regional differences. Although many researchers try to keep pretest conditions and times close to what they expect for the actual study, personal interview and telephone limitations make it desirable to test in the evenings or on weekends in order to interview people who are not available for contact at other times.

Test mailings are useful, but it is often faster to use a substitute procedure. In the MindWriter example, the managers who were interviewed in the exploratory study were later asked to review the pilot questionnaire. The interviewers left them alone and returned later. Upon their return, they went over the questions with each manager. They explained that they wanted the manager's reactions to question clarity and ease of answering. After several such interviews, the instrument was revised and the testing process was repeated with customers. With minor revision, the questionnaire was reproduced and prepared for inserting into the computer packing material.

Collaborative Pretests. Different approaches taken by interviewers and the participants' awareness of those approaches affect the pretest. If the researcher alerts participants to their involvement in a preliminary test of the questionnaire, the participants are essentially being enlisted as collaborators in the refinement process. Under these conditions, detailed probing of the parts of the question, including phrases and words, is appropriate. Because of the time required for probing and discussion, it is likely that only the most critical questions will be reviewed. The participant group may therefore need to be conscripted from colleagues and friends to secure the additional time and motivation needed to cover an entire questionnaire. If friends or associates are used, experience suggests that they introduce more bias than strangers, argue more about wording, and generally make it more difficult to accomplish other goals of pretesting such as timing the length of questions or sections.[31]

Occasionally, a highly experienced researcher may improvise questions during a pretest. When this occurs, it is essential to record the interview or take detailed notes so the questionnaire may be reconstructed later. Ultimately, a team of interviewers would be required to follow the interview schedule's prearranged sequence of questions. Only experienced investigators should be free to depart from the interview schedule during a pretest and explore participants' answers by adding probes.

Noncollaborative Pretests. When the researcher does not inform the participant that the activity is a pretest, it is still possible to probe for reactions but without the cooperation and commitment of time provided by collaborators. The comprehensiveness of the effort also suffers because of flagging cooperation. The virtue of this approach is that the questionnaire can be tested under conditions approaching those of the final study. This realism is similarly useful for training interviewers.

SUMMARY

The instrument design process starts with a comprehensive list of investigative questions drawn from the management-research question hierarchy. Instrument design is a three-phase process with numerous issues within each phase: (1) developing the instrument design strategy, (2) constructing and refining the measurement questions, and (3) drafting and refining the instrument.

Several choices must be made in designing a communication study instrument. Surveying can be a face-to-face interview, or it can be much less personal, using indirect media and self-administered questionnaires. The questioning process can be unstructured, as in in-depth interviewing, or the questions can be clearly structured. Responses may be unstructured and open-ended or structured with the participant choosing from a list of possibilities. The degree to which the objectives and intent of the questions should be disguised must also be decided.

3   Instruments obtain three general classes of information. Target questions address the investigative questions and are the most important. Classification questions concern participant characteristics and allow participants' answers to be grouped for analysis. Administrative questions identify the participant, interviewer, and interview location and conditions.

4   Question construction involves three critical decision areas. They are (1) question content, (2) question wording, and (3) response strategy. Question content should pass the following tests: Should the question be asked? Is it of proper scope? Can and will the participant answer adequately?

       Question wording difficulties exceed most other sources of distortion in surveys. Retention of a question should be confirmed by answering: Is the question stated in terms of a shared vocabulary? Does the vocabulary have a single meaning? Does the question contain misleading assumptions? Is the wording biased? Is it correctly personalized? Are adequate alternatives presented?

       The study's objective and participant factors affect the decision of whether to use open-ended or closed questions. Each response strategy generates a specific level of data, with available statistical procedures for each data type influencing the desired response strategy. Participant factors include level of information about the topic, degree to which the topic has been thought through, ease of communication, and motivation to share information. The decision is also affected by the interviewer's perception of participant factors.

       Both dichotomous response and multiple-choice questions are valuable, but on balance, the latter are preferred if only because few questions have only two possible answers. Checklist, rating, and ranking strategies are also common.

5   Question sequence can drastically affect participant willingness to cooperate and the quality of responses. Generally, the sequence should begin with efforts to awaken the participant's interest in continuing the interview. Early questions should be simple rather than complex, easy rather than difficult, nonthreatening, and obviously germane to the announced objective of the study. Frame-of-reference changes should be minimal, and questions should be sequenced so early questions do not distort replies to later ones.

6   Sources of questions for the construction of questionnaires include the literature on related research and sourcebooks of scales and questionnaires. Borrowing items has attendant risks, such as time and situation-specific problems, or reliability and validity. Incompatibility of language and idiom also needs to be considered.

7   Pretesting the instrument is recommended to identify problems before the actual collection of data begins. Insights and ideas for refining instruments result from thoroughness in pretesting. Effective revision is the result of determining participant interest, discovering if the questions have meaning for the participant, checking for participant modification of a question's intent, examining question continuity and flow, experimenting with question-sequencing patterns, evaluating skip instructions for the interviewers, collecting early warning data on item variability, and fixing the length and timing of the instrument.

KEY TERMS

administrative question 361
branched question 384
buffer question 385
checklist 379
classification question 361
dichotomous question 377
disguised question 362
double-barreled question 366
filter question 367
focus group 362

free-response question 375
funnel approach 385
in-depth interview 362
interview schedule 361
leading question 368
multiple-choice question 377
multiple question 366
pretesting 389
projective techniques 363

ranking question 379
rating question 379
screen question 367
skip pattern 390
structured question 362
structured response 373
target question 362
unstructured question 362
unstructured response 373

EXAMPLES

Company	Scenario	Page
Albany Outpatient Laser Clinic	A survey of patients awaiting eye surgery.	Throughout
American Demographics	Used TaylorNelsonSofres Intersearch to measure attitudes on copyright for a special issue on privacy.	361
Census 2000	The largest survey in the United States; provides data for a variety of purposes.	363
Gallup	Participants provide answers to questions they don't understand.	367
Informative, Inc.	A provider of real-time customer feedback to Nortel Networks through the deployment of an Internet survey.	384
Knowledge Networks	A provider of probability-sampled Web-based surveys, working with RTI International on Internet surveys.	387
KNSD	A San Diego TV station that undertook a segmentation study—KNowSanDiego—of its viewing audience.	380
Metro University*	Conducted a study of student interest in a membership-dining club.	Throughout
Midwest Daily*	Conducted a study of readership in designing a new lifestyle section.	371
MindWriter*	Customer satisfaction survey included with repaired laptops after servicing by the CompleteCare Center.	Throughout
National Opinion Research Center	A source of questions for measuring U.S. trends.	381
Nortel Networks Corporation	A company with a portfolio of products, services, and solutions, working with Informative, Inc., to evaluate the quality of its website via an Internet survey.	384
Palm Grove High School*	The 10-year reunion planning committee is planning to assess the success of its graduates via a questionnaire.	BRTL, Throughout
Prince Corporation*	A study of corporate image and character among stakeholders.	357
Roper Starch Worldwide	A source of questions for measuring U.S. trends.	381

RTI International	A research company with extensive CATI and CAPI capabilities working with Knowledge Networks on a Web-based panel.	387
SRI (Stanford Research Institute)	The creator of the VALS survey, used by numerous product and service marketers to gain an understanding of the influences of values and lifestyles on purchase behavior.	380
TaylorNelsonSofres (TNS) Intersearch	Provider of *Express*, a weekly omnibus study used by *American Demographics* to measure attitudes about copyright issues.	361
U.S. Census Bureau	Designed a confusing question regarding participants' employment.	371
University of Michigan	The source of lifestyle index questions used in MindWriter's CompleteCare study.	362

*Due to the confidential and proprietary nature of most research, the names of some companies have been changed.

DISCUSSION QUESTIONS

Terms in Review

1. Distinguish between:
   a. Direct and indirect questions.
   b. Open-ended and closed questions.
   c. Research, investigative, and measurement questions.
   d. Alternative response strategies.

2. Why is the survey technique so popular? When is it not appropriate?

3. What special problems do open-ended questions have? How can these be minimized? In what situations are open-ended questions most useful?

4. Why might a researcher wish to disguise the objective of a study?

5. One of the major reasons why survey research may not be effective is that the survey instruments are less useful than they should be. What would you say are the four possible major faults of the survey instrument design?

6. Why is it desirable to pretest survey instruments? What information can you secure from such a pretest? How can you find the best wording for a question on a questionnaire?

7. One design problem in the development of survey instruments concerns the sequence of questions. What suggestions would you give to researchers designing their first questionnaire?

8. One of the major problems facing the designer of a survey instrument concerns the assumptions made. What are the major "problem assumptions"?

Making Research Decisions

9. Below are six questions that might be found on questionnaires. Comment on each as to whether or not it is a good question. If it is not, explain why. (Assume that no lead-in or screening questions are required. Judge each question on its own merits.)
   a. Do you read *National Geographic* magazine regularly?
   b. What percentage of your time is spent asking for information from others in your organization?
   c. When did you first start chewing gum?
   d. How much discretionary buying power do you have each year?
   e. Why did you decide to attend Big State University?
   f. Do you think the president is doing a good job now?

10. In a class project, students developed a brief self-administered questionnaire by which they might quickly evaluate a professor. One student submitted the following instrument. Evaluate the questions asked and the format of the instrument.

Professor Evaluation Form

1. Overall, how would you rate this professor? _____ Good _____ Fair _____ Poor

2. Does this professor

   a. Have good class delivery? _____
   b. Know the subject? _____
   c. Have a positive attitude toward the subject? _____
   d. Grade fairly? _____
   e. Have a sense of humor? _____
   f. Use audiovisuals, case examples, or other classroom aids? _____
   g. Return exams promptly? _____

3. What is the professor's strongest point? _____

4. What is the professor's weakest point? _____

5. What kind of class does the professor teach? _____

6. Is this course required? _____

7. Would you take another course from this professor? _____

11. Below is a copy of a cover letter and mail questionnaire received by a professor who is a member of the American Society of Training Directors. Please evaluate the usefulness and tone of the letter and the questions and format of the instrument.

Dear ASTD Member:

In partial fulfillment of master's degree work, I have chosen to do a descriptive study of the industrial trainer in our area. Using the roster of the ASTD as a mailing list, your name came to me. I am enclosing a short questionnaire and a return envelope. I hope you will take a few minutes and fill out the questionnaire as soon as possible, as the sooner the information is returned to me, the better.

Sincerely,
Professor XYZ

Questionnaire

Directions: Please answer as briefly as possible.

1. With what company did you enter the field of training? _____

2. How long have you been in the field of training? _____

3. How long have you been in the training department of the company with which you are presently employed? _____

4. How long has the training department in your company been in existence?
_____

5. Is the training department a subset of another department? If so, what department?
_____

6. For what functions (other than training) is your department responsible?
_____

7. How many people, including yourself, are in the training department of your company (Local plant or establishment) _____

8. What degrees do you hold and from what institutions? _____
Major _____ Minor _____

9. Why were you chosen for training? What special qualifications prompted your entry into training? _____

_____

10. What experience would you consider necessary for an individual to enter into the field of training with your company? Include both educational requirements and actual experience. _____

Bringing Research to Life

12. Design the letter that might accompany Jason's high school reunion study to encourage participant rapport and involvement.

13. What questions should have been asked on Jason's high school reunion study to obtain the necessary data to develop the ostensibly desired newspaper article?

From Concept to Practice

14. Using Exhibits 12–1, 12–2, 12–4, and 12–9, develop the flowchart for the high school reunion study in Question 13.

WWW Exercises

Visit our website for Internet exercises related to this chapter at www.mhhe.com/business/cooper8

CASES

INQUIRING MINDS WANT TO KNOW—NOW!

KNSD SAN DIEGO

MASTERING TEACHER LEADERSHIP

NCR: TEEING UP A NEW STRATEGIC DIRECTION

PEBBLE BEACH CO.

THE CATALYST FOR WOMEN IN FINANCIAL SERVICES

T-SHIRT DESIGNS

VIOLENCE ON TV

VOLKSWAGEN'S BEETLE

*All cases indicating a video icon are located on the Instructor's Videotape Supplement. All nonvideo cases are in the case section of the textbook. All cases indicating a CD icon offer a data set, which is located on the accompanying CD.

REFERENCE NOTES

1. The MindWriter questionnaire used in this example is based on a pilot instrument by Cooper Research Group, Inc., 1993, for an unidentified client who shares the intellectual property rights. No part of the format, question wording, sequence, scale, or references to MindWriter° 2000 may be produced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from Cooper Research Group, Inc. Reprinted with permission.

2. Dorwin Cartwright, "Some Principles of Mass Persuasion," *Human Relations* 2 (1948), p. 266.

3. Sam Gill, "How Do You Stand on Sin?" *Tide*, March 14, 1947, p. 72.

4. Stanley L. Payne, *The Art of Asking Questions* (Princeton, NJ: Princeton University Press, 1951), p. 18.

5. *Unaided recall* gives respondents no clues as to possible answers. *Aided recall* gives them a list of radio programs that played last night and then asks them which ones they heard. See Harper W. Boyd, Jr., and Ralph Westfall, *Marketing Research*, 3rd ed. (Homewood, IL: Irwin, 1972), p. 293.

6. Gideon Sjoberg, "A Questionnaire on Questionnaires," *Public Opinion Quarterly* 18 (Winter 1954), p. 425.

7. More will be said on the problems of readability in Chapter 20, "Presenting Results: Written and Oral Reports."

8. S. A. Stouffer et al., *Measurement and Prediction: Studies in Social Psychology in World War II*, vol. 4 (Princeton, NJ: Princeton University Press, 1950), p. 709.

9. An excellent example of the question revision process is presented in Payne, *The Art of Asking Questions*, pp. 214–25. This example illustrates that a relatively simple question can go

through as many as 41 different versions before being judged satisfactory.

10. Robert L. Kahn and Charles F. Cannell, *The Dynamics of Interviewing* (New York: Wiley, 1957), p. 108.
11. Ibid., p. 110.
12. Payne, *The Art of Asking Questions*, p. 140.
13. Ibid., p. 141.
14. Ibid., p. 149.
15. Gertrude Bancroft and Emmett H. Welch, "Recent Experiences with Problems of Labor Force Measurement," *Journal of the American Statistical Association* 41 (1946), pp. 303–12.
16. National Opinion Research Center, *Proceedings of the Central City Conference on Public Opinion Research* (Denver, CO: University of Denver, 1946), p. 73.
17. Hadley Cantril, ed., *Gauging Public Opinion* (Princeton, NJ: Princeton University Press, 1944), p. 48.
18. Payne, *The Art of Asking Questions*, pp. 7–8.
19. Kahn and Cannell, *The Dynamics of Interviewing*, p. 132.
20. Barbara Snell Dohrenwend, "Some Effects of Open and Closed Questions on Respondents' Answers," *Human Organization* 24 (Summer 1965), pp. 175–84.
21. Cantril, *Gauging Public Opinion*, p. 31.
22. Jean M. Converse and Stanley Presser, *Survey Questions: Handcrafting the Standardized Questionnaire* (Beverly Hills, CA: Sage Publications, 1986), pp. 50–51.

23. Ibid., p. 51.
24. Frederick J. Thumin, "Watch for These Unseen Variables," *Journal of Marketing* 26 (July 1962), pp. 58–60.
25. F. Cannell and Robert L. Kahn, "The Collection of Data by Interviewing," in *Research Methods in the Behavioral Sciences*, eds. Leon Festinger and Daniel Katz (New York: Holt, Rinehart & Winston, 1953), p. 349.
26. Cantril, *Gauging Public Opinion*, p. 28.
27. Perceival White, *Market Analysis* (New York: McGraw-Hill, 1921).
28. Eugene J. Webb, Donald T. Campbell, Richard D. Schwartz, and Lee Sechrest, *Unobtrusive Measures: Nonreactive Research in the Social Sciences* (Chicago: Rand McNally, 1966).
29. Converse and Presser, *Survey Questions*, p. 52.
30. W. R. Belson, *The Design and Understanding of Survey Questions* (Aldershot, England: Gower, 1981), pp. 76–86.
31. The sections on methods and purposes of pretesting have been largely adapted from Converse and Presser, *Survey Questions*, pp. 51–64, and Survey Research Center, *Interviewer's Manual*, rev. ed. (Ann Arbor: Institute for Social Research, University of Michigan, 1976), pp. 133–34. For an extended discussion of the phases of pretesting, see Converse and Presser, *Survey Questions*, pp. 65–75.

REFERENCES FOR SNAPSHOTS AND CAPTIONS

Express

Interview with Brenda Edwards, vice president marketing communications, TNS Intersearch, July 2001.

Informative, Inc.

Interview with Christin Nowakowski, senior manager of marketing communications, Informative, Inc., August 20, 2001.

KNSD

McGraw-Hill Video Library.
"About VALS: The Proven Segmentation System," SRI Consulting Business Intelligence (http://future.sri.com/VALS/about.shtml).

"The VALS Segment Profiles," SRI Consulting Business Intelligence (http://future.sri.com/VALS/types.shtml).
"About Us," KNSD (NBC739) (www.knsd.com); (http://publish.nbc739.com/tvsd/email/index.shtml); (http://publish.nbc739.com/tvsd/about/backup.history.shtml); (http://publish.nbc739.com/tvsd/about/backup.marketing.shtml).

RTI International, Inc.

Interview with Tim Gabel, director of research computing, RTI International, Inc., December 14, 2001.

CLASSIC AND CONTEMPORARY READINGS

Converse, Jean M., and Stanley Presser. *Survey Questions: Handcrafting the Standardized Questionnaire*. Beverly Hills, CA: Sage Publications, 1986. A worthy successor to Stanley Payne's classic. Advice on how to write survey questions based on professional experience and the experimental literature.

Dillman, Don A. *Mail and Internet Surveys: The Tailored Design Method*. New York: Wiley, 1999. A contemporary treatment of Dillman's classic work.

Fink, Arlene, and Jaqueline Kosecoff. *How to Conduct Surveys: A Step-by-Step Guide*. Thousand Oaks, CA: Sage Publications, 1998. Emphasis on computer-assisted and interactive surveys and a good section on creating questions.

Kahn, Robert L., and Charles F. Cannell. *The Dynamics of Interviewing*. New York: Wiley, 1957. Chapters 5 and 6 cover questionnaire design.

Payne, Stanley L. *The Art of Asking Questions*. Princeton, NJ: Princeton University Press, 1951. An enjoyable book on the many problems encountered in developing useful survey questions. A classic resource.

Sudman, Seymour, and Norman N. Bradburn. *Asking Questions: A Practical Guide to Questionnaire Design*. San Francisco: Jossey-Bass, 1982. This book covers the major issues in writing individual questions and constructing scales. The emphasis is on structured questions and interview schedules.

CHAPTER 13

Observational Studies

Learning Objectives

After reading this chapter, you should understand . . .

1   When observation studies are most useful.

2   The distinctions between monitoring nonbehavioral and behavioral activities.

3   The strengths of the observation approach in research design.

4   The weaknesses of the observation approach in research design.

5   The three perspectives from which the observer-participant relationship may be viewed in observation studies.

6   The various designs of observation studies.

Bringing Research to Life

Myra had just finished telling Jason about a hair-raising few weeks in the Middle East during her days as a foreign correspondent when Dorrie arrived laden with mugs of coffee and cookies. "I come bearing coffee and other late-night stimulants, against my own best advice," shared Dorrie. "But I see you're already on a break."

"Just sharing scary experiences," smiled Myra.

"For scariness, nothing matches Jason's experience with Otto Darnell," claimed Dorrie.

"You mean *the* Otto Darnell, the infamous 'O Darn,' who dropped the winning pass in the Rose Bowl?" asked Myra.

"That Otto, yes," said Jason. "He dropped the pass with 20 seconds to go—and in the end zone—and all he could say was, 'Oh, darn,' hence his nickname. On paper he looked like an All-American wide receiver. But he was always dropping things, and if he were here I would not offer him a cup of coffee over Dorrie's white carpet.

"Otto's uncle owns an electronics assembly plant (ProSec) that makes miniature TV cameras for industrial and bank security and such. Right after the Rose Bowl, he asked us up, to maybe take Otto's mind off his football foul-up and also to brainstorm a production problem. Around 5 o'clock every afternoon, the quality of assembled cameras deteriorated. Uncle Fred had six women assembling the cameras—good, loyal, hard workers—and he could not pinpoint the quality problem. If he sat and watched them, they were on their best behavior and followed standard operating procedures, and their quality stayed up. Likewise, if they knew he was spying on them with one of his cameras. But if they suspected that he'd stopped watching, bugs began to creep into quality, and always around 5 P.M.

"Otto and I questioned the women. They denied deviating from the standards, and, of course, they were not going to 'rat out' anybody in their group. But Otto was watching carefully and told me later that five of the women took covert glances at a sixth, Bertha, who looked fidgety. She was a huge, good-natured, serious woman, ferociously devoted to an honest day's work, to my uncle, and to the company; but she looked nervous. And she would not look Otto in the eyes.

"Otto gets the idea of filming the six women from outside, without much likelihood that they would see us, so long as we didn't attract their attention to the window.

"The problem was, this was a fifth-story window. So we decided to lower a camera, attached by cable to a TV-video monitor-recorder, by a pole from a sixth-floor window. I was supposed to watch the monitor and tell Otto, 'pan left,' 'pan right,' until we had rolled enough tape to see where the problem was.

"No sooner had Otto opened the window than I heard, 'Oh, darn.' He had dropped the camera, and I could see it swinging below the window by its thread of optical cable. So I leaned way out the window to snare it, knowing that if Otto were to set his hands on it, he would surely make matters worse. Not that they weren't bad enough—as time was flying.

"I felt Otto grab me by the ankles and amid my frantic protests he lowered me out the window. In a stage whisper he said, 'Grab it, and hold it, and pan it left and right, very slowly.'

"So there I was upside down and trying not to look down at the five-and-a-half-story drop into a snowbank.

"I could see the six women at work, and every now and then Bertha would dip her hand into her left smock pocket and bring her hand up to her mouth