

# Chapter 11

## DESIGNING QUESTIONNAIRES

Throughout this book, we have discussed methodological issues in the context of error and ways to manage such error. At this point, we turn to the questions asked of respondents and consider the sources of error due to the nature of the questions themselves, such as question selection, structure, wording, order of presentation, and so on.

We begin by considering the dimensions of the questionnaire design process, focusing on explaining the steps involved in designing a quality data collection instrument. Very simply, a quality instrument does two things: It accurately portrays to the respondent what is desired by the researcher, and it accurately reports to the researcher information about the respondent. Many years ago, a practitioner stated that a questionnaire should be viewed as “spoken questions that are put down on paper. A questionnaire is not a document—it’s a conversation.” This task, though simple in concept, is sometimes monumental in application. Proper procedures for developing a questionnaire are required, and these are based on several key questions and concerns:

1. What information do we need?
2. What type of data is required?
3. What questionnaire type is used to collect this data?
4. Develop question content, format, and phrasing.
5. Develop response format.
6. Sequence and layout the questionnaire.
7. Pretest the questionnaire.
8. Revise the questionnaire (Repeat 1–7).

Peterson (2000, p. 14) summarizes the steps in questionnaire construction as shown in Figure 11.1.

## ASKING QUESTIONS

The major source of error for questionnaires and individual questions is response error. However, nonresponse error also may be relevant if such factors as the complexity, length, or subject matter of the instrument or individual questions are the cause of the respondent's refusal to participate. How the quality of the questionnaire can affect response rate in a survey has not been given due attention (Carroll, 1994). For more information, see Exhibit 11.1. Response error occurs if the reported value differs from the actual value of the variable concerned. Strictly speaking, response error can also be due to the interviewer or investigator. This aspect of response error was discussed in Chapter 5.

As discussed previously, a respondent is a person who either provides information actively (through communication) or passively (by his or her behavior being observed). Response error, therefore, includes errors arising through communication, observation, or both. To discover the source of the response error, a researcher must consider the stages involved in providing information. The information must first be formulated; that is, it must be assimilated and made accessible for transmission. This may be a case of simply remembering and reporting, or may involve something as detailed as researching company records to find the requested information. Once this has been accomplished, it must be transmitted. Errors can arise in either stage or in both. The term *inaccuracy* denotes errors arising in the formulation stage; the term *ambiguity* regards errors arising in the transmission stage.

Since the purpose of making this distinction in types of response errors is to help understand and control this important source of error, this chapter examines each type of error in some detail.

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1. Review information requirements of problem, opportunity, decision to be made, and so on.
  2. Develop and prioritize a list of potential research questions to provide required information.
  3. Evaluate each potential research question:
    - Can potential study participants understand the question?
    - Can potential study participants answer the question?
    - Will potential study participants answer the question?
  4. Determine types of question to be asked?
    - Open-end questions
    - Closed-end questions
  5. Decide on specific wording of each question to be asked.
  6. Determine questionnaire structure.
  7. Evaluate questionnaire.
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**Figure 11.1** Steps in Constructing a Questionnaire

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**EXHIBIT 11.1** How to Affect Survey Response Rate Through Questionnaire Design

There are a few relatively simple things that can be done to a questionnaire to help stimulate response rates beyond the normal industry average.

First, at times, use nontraditional ways to structure questions on the questionnaire. Keep the questions simple in appearance, but sophisticated. For example, if a researcher is interested in the importance a respondent attaches to six factors that may have influenced a decision, instead of using a traditional rating scale for each factor, a constant sum scale can be used and the respondent asked to allocate, say, 100 points among the six factors to reflect importance.

Second, mix up response formats on the items you are asking respondents to complete. A questionnaire that repeats the same response format over and over again can appear boring to a respondent. As we indicated in an earlier chapter, interest in a study can have a huge positive impact on response rates.

Third, never assume that respondents know what you want them to do with any question. Specific directions should be given for each group or section of items included in the questionnaire.

Fourth, pay particular attention to visual aspects of the questionnaire. Such issues as layout, typeface, shadings, using boxes where appropriate, and color of paper can affect whether a particular respondent participates. Visual dimensions may vary by mode of data collection. Visual effects are a form of nonverbal communication. Not only may response rates be affected, but the quality of collected data may also be affected (Sanchez, 1992).

Fifth, all items should be numbered. This can be done within each section, or, if the questionnaire is relatively short, within the entire questionnaire itself. Doing this assists the respondent in self-report questionnaires and helps the interviewer in non-self-report questionnaires.

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## INACCURACY

Inaccuracy refers to errors made in the formulation of information. There are two types of inaccuracies: predictive and concurrent inaccuracies. Predictive inaccuracy, as a source of response error, is a special case caused by inaccurate intentions. Concurrent inaccuracy occurs when the respondent intentionally does not provide accurate information. Concurrent inaccuracies are a major concern for many kinds of information obtained from respondents (information on past behavior, socioeconomic characteristics, level of knowledge, and opinion-attitude).

To explain predictive inaccuracy, suppose that a male respondent is asked, "Do you intend to buy a new automobile within the next six months?" His answers are limited to "Yes," "No," or "Uncertain." A brief examination of possible answers and subsequent actions indicates that there are two different kinds of inaccuracies. If the respondent answers "Yes," but really has no intention of buying a car within this period or, conversely, answers "No," but does intend to buy a car, then we may say that there is concurrent inaccuracy in his statement. Suppose, however, that his present intention is to buy a new car; he so indicates in his answer, and then he does not, in fact, buy one within six months. Or, alternatively, he does not now intend to buy, he answers "No" to the question, and then buys a car within the six-month period. There is no concurrent inaccuracy in either case; the response has reflected the actual intention of the person. The intention, however, was not followed. This situation is a predictive inaccuracy.

A similar type of predictive inaccuracy can occur when marketing researchers try to predict actual market response to a price by asking consumers, “How much are you willing to pay for Product X?” Differences between predicted and actual purchases may occur because the true range of prices acceptable to the consumer may change between the time of data collection and the point of purchase for a number of reasons, such as budget constraints or windfalls, the price of substitutes at point of purchase, search costs, and purchase urgency.

Now, let’s focus on concurrent inaccuracies and their sources. Both our everyday experiences and empirical evidence suggest that there are two basic sources from which inaccurate information may result:

- The inability of the respondent to provide the desired information
- The unwillingness of the respondent to provide the desired information

In those instances where observation is used, this statement may also be applied to the observer; the observer may be unable or unwilling to provide the desired information.

### **Inability to Respond**

Even such a simple and straightforward question as “What is the model year of your family car?” may result in an information-formulation problem, particularly if the car is several years old. If the additional question were asked, “What brand or brands of tires do you now have on your car?” most respondents would have even more difficulty in providing an accurate answer without looking at the tires. Finally, if respondents were asked, “What reasons did you have for buying Brand A tires instead of some other brand?” most respondents would have even more difficulty in providing an accurate answer.

In addition to the two basic sources of inaccuracies, Semon (2000a, 2000b) reports that there are three major types of inaccuracies:

- **Memory error:** A respondent gives the wrong factual information because he or she simply does not remember an event asked about. It may be due to underestimating or overestimating the time that had elapsed since an event occurred. Better questionnaire and survey design can help reduce this error, but many proven techniques are not used because they add to the length of the survey. For instance, in a personal or telephone interview survey a follow-up call can be made to confirm the answers given.
- **Ignorance error:** This is due to research design in terms of question content and sampling. A question (or even an entire questionnaire) may be unrealistic, deficient, or directed to the wrong persons. If a potential respondent perceives the questionnaire, or individual questions, to be irrelevant, it probably is.
- **Misunderstanding:** This can be a matter of careless question design. Poorly defined terms and words with different meanings can lead to inaccurate, or even deliberately falsified responses. Proper question design would avoid words with multiple meanings and definitions, or would clearly define the context in which the word is being used in the questionnaire.

Respondents must be able to determine what is expected of them. Also, problems can arise when respondents are unfamiliar with the expected patterns of interaction involved in any interview situations. This can be especially important in international and multicultural research. Exhibit 11.2 gives additional information.

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## EXHIBIT 11.2 Response Error and Questionnaire Design

One of the keys to minimizing concurrent errors is for researchers to better translate the clients' information needs into a set of practical questions that respondents can and will answer to the best of their ability. When serving as senior vice-president of marketing at PepsiCo Restaurants International, Dwight Risky suggested that any marketing research question can be charted in a two-by-two matrix by plotting the urgency and importance of the question (Murphy, 1997). This matrix breaks down into four categories:

- Important/urgent
- Unimportant/urgent
- Important/nonurgent
- Unimportant/nonurgent

Questions falling in the first and last categories are easy to identify. It is the other two categories that can cause most of the problems. Often, the urgent/unimportant questions are best answered by a judgment-call than by extensive research. In contrast, the important/nonurgent questions are the ones that often need to be addressed. In the short run, a company will carry on without answers to these questions. But these answers may be essential to the long-term future direction of the company.

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### Unwillingness to Respond

When we move to the problem of unwillingness of respondents to provide accurate information, the topic is more complex. Here we are dealing with the motivations of people: why they are not willing to accurately provide the information desired. No fully accepted general theory of motivation has yet emerged from the behavioral sciences to explain this behavior, other than general theoretical concepts that attempt to explain survey response behavior. As discussed in Chapter 5, any or none of these might be applicable in any given situation. There is no conclusive evidence favoring one theory to the exclusion of the others. However, by again applying everyday experiences to this problem, and adding some research findings and the accumulated experiences of practitioners, several reasons are suggested why people may not be willing to make accurate information accessible.

Except in those instances where the respondent provides information by being observed in a natural situation, there are always costs (negative utilities) attached to his or her formulating information. The time required is one such cost that is always present. Others include perceived losses of prestige and some degree of invasion of privacy.

When possible to do so, a respondent will tend to act in a manner that will reduce these costs. Such behavior will sometimes result in inaccurate information being provided.

#### *Time Costs*

Perhaps the most common reason for respondent unwillingness to provide accurate information, or any information for that matter, is the result of the time required to make the

information available. A person may simply be busy and wish to complete the interview as quickly as possible. In this circumstance it is not unusual for the respondent to decide that abrupt answers are the easiest and quickest way of terminating the interview. Rather than reflecting on or verifying the information provided, the respondent gives hasty, ill-considered answers and resists probing if attempted, leading to inaccurate information. In addition, time pressures may lead respondents to not answer all questions, thus providing incomplete data.

Another aspect of the time dimension is that this potential respondent may not be in a "comfortable" position to provide the information at the time requested (he or she may have just come home, sat down to a meal, have a child doing something, etc.). This arises for data collection in telephone and personal interviews. Rather than asking "May I ask you some questions?" as an introductory comment, it would seem preferable to ask, "Do you have time now to answer questions, or would you rather set a time when I could contact you again?" Experience has shown this latter technique only slightly lowers response rates.

### ***Perceived Losses of Prestige***

When information involving the prestige of the respondent is sought, there is always a tendency toward inaccurate formulation in the direction of the higher-prestige responses. Although all experienced researchers recognize this tendency, two problems remain:

1. Recognizing the items of information that the respondent will interpret as having prestige content
2. Measuring the resulting amount of inaccuracy

Information that affects prestige is often sensitive information.

Some information items have prestige content associated with them by virtually all respondents. Among these are such socioeconomic characteristics as age, income, educational level, and occupation. Other informational items, such as place of birth or residence, are more difficult to identify as having prestige content. People who live in rural areas or in suburbs are prone to give the nearest city in answer to questions concerning where they live. In part, this no doubt reflects a belief that the investigator would not otherwise recognize the location given; it may also reflect a higher level of prestige associated with being born or living in a large and well-known city.

An example of a still more subtle prestige association that resulted in a sizable error in information obtained is the experience of a marketing research firm that conducted a study on nationally known brands of beer. One of the questions asked was, "Do you prefer light or regular beer?" The response was overwhelmingly in favor of light beer. Since sales data indicated a strong preference for regular beer, it was evident that the information was inaccurate. Subsequent investigation revealed that the respondents viewed people who drank light beer as being more discriminating in taste. They had, therefore, given answers that, in their view, were associated with a higher level of prestige.

Measuring the amount of inaccuracy is a difficult task. In the ideal case, it requires that information be available on the item from sources external to the sample, and further, that these external data be more accurate than those obtained from the respondents. Clearly, in most cases such data are not available; if there were, the information would not have been collected from the respondents.

One solution to this problem is to ask for the information in two different ways. When one is obtaining information on respondents' ages, for example, it is a common practice to ask early in the interview, "What is your present age?" and later "In what year were you born?" or "In what year did you enter high school?" or "In what year did you graduate from high school?" In one study, when respondents were asked, "Are you afraid to fly?" very few people indicated any fear of flying. In a follow-up study, when they were asked, "Do you think your neighbor is afraid to fly?" (a technique known as the *third-person technique*), most of the neighbors turned out to have severe anxieties about flying.

A method used to obtain information about sensitive matters is the randomized-response technique (Campbell & Joiner, 1973; Fox & Tracy, 1986; Reinmuth & Geurts, 1975). When using this technique the investigator presents two questions, either of which can be answered by a "Yes" or a "No," one innocuous ("Were you born in May?") and the other sensitive ("Did you shoplift any items from the Downtown Mall during the month of December?"). The respondent is asked to flip a coin or use a randomizing device (provided with the survey) to select the question to answer. The respondent is instructed not to in any way communicate to the interviewer which question was answered. Only the answer "Yes" or "No" is given.

The proportion of respondents who answered "Yes" to the sensitive question can be estimated from the formula

$$P(\text{yes}|\text{sensitive question}) = \frac{P(\text{yes}) - P(\text{innocent question}) P(\text{yes}|\text{innocent question})}{P(\text{sensitive question})}$$

In the example, if the proportion of respondents who answered "Yes" is .06, the proportion born in May (determined from the Census of Population) is .08, and the probability of answering each question is .5, the estimated proportion who answered "Yes" to the shoplifting question would be

$$P(\text{yes}|\text{shoplifting question}) = \frac{.06 - (.5)(.08)}{.5} = .04$$

This is a point estimate of the (hypothetical) proportion of the population from which the sample was drawn who shoplifted at the place during the period specified.

This example of the randomized technique is simplified. There are approaches that can use a single question, but the mathematical and statistical properties tend to be more complex. For most marketing applications, the two-question structure will work nicely. All that is needed is a suitable randomizing device (for which the investigator knows the relevant distributions) and knowledge of the distribution of responses to the innocuous question. Although this technique is perhaps most easily administered in person, there have been approaches suitable for telephone and mail administration, as shown in Exhibit 11.3 (Stem & Steinhorst, 1984). Umesh and Peterson (1991) provide an evaluation of this technique.

### ***Invasion of Privacy***

Clearly, some topics on which information is sought are considered to be private matters. When such is the case, both nonresponse and inaccuracy in the responses obtained can be anticipated. Matters about which respondents resent questions include money matters or

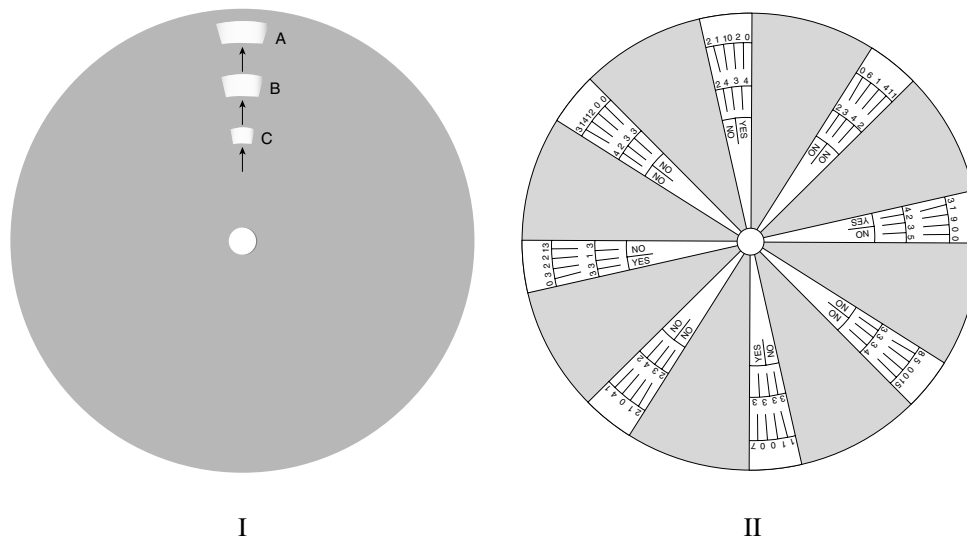
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finance, family, life, personal hygiene, political beliefs, religious beliefs, and even job or occupation. Either indirect questions or the randomized-response technique can sometimes be used to avoid intrusion. If direct questions are used concerning such matters, they should be placed as near the end of the questionnaire as other considerations permit.

It should be recognized, however, that invasion of privacy is an individual matter. Thus, what one person considers to be sensitive information may not be viewed that way by others. In fact, it has been suggested that researchers often view topics as sensitive that a majority of respondents would not view as sensitive. Because the response to the way in which questions are asked and the order in which they are asked will be affected by the "sensitivity" of the requested information, the investigator should attempt to determine sensitivity if it is suspected to be a problem. One way of handling this is adding questions in the pretest stage that ask about the extent of sensitivity to topics and specific questions. A comprehensive treatment of sensitive information and how to ask questions about it is given by Bradburn and Sudman (1979).

### EXHIBIT 11.3 Randomized Response

One approach to administering the randomized response approach to obtain sensitive information by mail and/or telephone involves the use of a spinner (the randomizing device) and questionnaire. A cover (I) fits over a base (II) with instructions on the bottom (III) to form the device. This device may then be used with a questionnaire (IV).



SOURCE: We are deeply indebted to Donald E. Stem, Washington State University, for allowing us to use illustrations of his spinner randomizing device. Reprinted with permission of Donald E. Stern, Jr.





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Another approach to randomized response by mail is to have the randomizing device built-in the questionnaire itself. The following questionnaire illustrates this approval:

Do you have a telephone in your family unit?  Yes  No

1. Your telephone number is of the form 7 \_ \_ - W X Y Z. If the digit in the W position is 0, 1, or 2, check Agree; if it's 3, 4, 5, 6, 7 or 8, respond to the statement; if it's 9, check Disagree.

Manufacturers should be doing more to encourage the recycling of containers and materials that would otherwise be tossed onto the trash pile, even if this means an increase in the price of their products.

Agree  Disagree  No response

2. Your telephone number is of the form 7 \_ \_ - W X Y Z. If the digit in the X-position is 0 or 1, check True; if it's 2, 3, 4, 5, 6, 7 or 8, respond to the statement; if it's 9, check False.

I deposit recyclable materials such as newspapers, aluminum containers, glass containers, etc. on a regular basis at an appropriate recycling center.

True  False  No response

3. Your telephone number is of the form 7 \_ \_ - W X Y Z. If the digit in the Y position is 0 or 1, check True; if it's 2, 3, 4, 5, 6, 7 or 8, respond to the statement; if it's 9, check False.

I make a conscious effort at conserving fuel by a cutback in my home thermostat setting and/or a reduction in my use of automobile gasoline.

True  False  No response

4. Your telephone number is of the form 7 \_ \_ - W X Y Z. If the digit in the Z position is 0 or 1, check Agree; if it's 2, 3, 4, 5, 6, 7 or 8, respond to the statement; if it's 9, check Disagree.

The current welfare program plays an important as well as beneficial role in our society.

Agree  Disagree  No response

## AMBIGUITY

Ambiguity may be defined as the errors made in interpreting spoken or written words or behavior. Ambiguity, therefore, occurs in the transmission of information, through either communication or observation.

### Ambiguity in Communication

Ambiguity is present in all languages. Unambiguous communication in research requires that the question asked and the answers given each mean the same thing to the questioner and the respondent. A two-step process is therefore involved:

1. Question as understood by respondent is same as question as understood by questioner
2. Answer as understood by questioner is same as answer as understood by respondent

The first step in this process is the controlling one. If the question is not clearly understood by the respondent, frequently the answer will not be clearly understood by the questioner. To illustrate this point, in an actual research project on tomato juice, the question

*Do you like tomato juice?*

*Yes No Neither like nor dislike*

was changed, after pretesting, to

*Do you like the taste of tomato juice?*

*Yes No Neither like nor dislike*

Even a careful reading of these two questions may not disclose any real difference in their meaning. The analyst who drew up the question assumed that “like” refers to taste. In pretesting, however, it was discovered that some housewives answered “Yes” with other referent in mind. They “like” the amount of Vitamin C their children get when they drink tomato juice, they “liked” the tenderizing effect that tomato juice has when used in cooking of meat dishes, and so on. If the wording of the question had not been changed, there would have been a complete misunderstanding in some cases of the simple, one-word answer “Yes.”

A related issue is one where *implicatures* are added to questions by respondents (Barnes, Jr. & Dotson, 1989). A receiver of a message in any communication is expected to take what is said, along with what is inferred, and derive what is implicated. One source of implicatures is the use of elliptical sentence structure. An elliptical sentence is a shortened form of other sentences. When such a sentence is used, something that is sought is left out. Examples are, “How come?,” “What?,” and “How?” The respondent of a questionnaire, after reading an elliptical sentence, first considers the context of the sentence and then adds the missing parts. When the mental process of transformational rule is the same in both researcher and respondent, communication occurs unambiguously. If the process differs, communication is lost and interpretation of a person’s response is faulty and ambiguity exists.

The understanding of questions is an issue that goes beyond ambiguity. All too often a respondent may not understand a question, but may have no opportunity to request clarification. In mail and online surveys, the extreme response is to not respond at all. In telephone or personal interview settings, the more captive individual might participate even though specific questions or topics are not fully understood. The quality of such data, of course, would be highly questionable. However, the mode of interviewing might be used to mitigate this potential problem. Most personal and telephone interviewing uses *standardized interviewing*, in which the interpretation of questions is left up to the respondent. The interviewer is not permitted to answer any query raised. In contrast, in conversational interviewing the interviewer should answer the respondent’s query with whatever words it takes to help the respondent understand the question from the survey designer’s perspective, without unduly influencing the response. One interesting approach taken in online surveys by [www.surveipro.com](http://www.surveipro.com), [www.surveyz.com](http://www.surveyz.com), and [www.perfectsurveys.com](http://www.perfectsurveys.com) is to use context-sensitive help. The respondent can click on it to receive further clarification or instruction for a given question. In a recent study of households using telephone interviewing, Conrad and Schober (2000) found that compared to strictly standardized interviewing, conversational interviewing improved respondents’ comprehension of questions, but at a cost; the time to complete an interview was lengthened. Depending upon the particular questionnaire, this may be a small price to pay for better understanding.

How serious a problem ambiguity represents is subjective. A study conducted more than 20 years ago using telephone interviews reported a 74.9 percent incidence of question

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understanding, and this understanding varied systematically with the socioeconomic characteristics of respondents (Peterson, Kerin, & Sabertehrani, 1982). The danger, of course, lies in having a “significant” incidence of question misunderstanding but not knowing it. Thus, examining question understanding should be a part of every survey whenever possible. Used in this manner it can help interpret and gain further insights into the data (Exhibit 11.4).

The question both initiates and gives direction to the communication process in research. In addition, the form and wording of the question, unlike that of the answer, can be completely controlled by the researcher. It is not surprising, therefore, that a large number of investigations have been carried out on both the form and wording of questions. It is appropriate that we consider both question form and question wording and their relationships to ambiguity.

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#### EXHIBIT 11.4 Using “Question Understanding” for Explanation

Consider the data below, which are raw responses to the question “Government regulation is necessary to protect and improve the quality of life.”

Question Understanding	Response			
	<i>Agree</i>	<i>Uncertain</i>	<i>Disagree</i>	<i>Total</i>
MALE RESPONDENTS:				
Good	447	10	332	839
Fair/poor	128	11	33	172
FEMALE RESPONDENTS:				
Good	453	17	215	685
Fair/poor	248	20	72	340
TOTAL	1326	58	652	2036

From these data, several percentages can be calculated. For example, while 65.1 percent of the total sample agreed with the statement, 61.8 percent of the males and 68.4 percent of the females agreed. But the data reveals more specific interpretations:

- Of the males whose question understanding was “good,” 59.2 percent agreed.
- Of the males whose question understanding was “fair/poor,” 74.4 percent agreed.
- Of the females whose question understanding was “good,” 66.1 percent agreed.
- Of the females whose question understanding was “fair/poor,” 72.9 percent agreed.

Generally, of the survey participants whose question understanding was “good,” 62.3 percent agreed with the statement. Hence, in certain instances question understanding can be used to enhance the interpretation of, and even, to a limited extent, “explain” item responses.

(Peterson, Kerin, & Sabertehrani, 1982)

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## Forms of Questions and Answers

Underlying every question is a basic reason for asking it. If the reason for it is clear when constructing a question, there is a higher probability that the desired response will be obtained. Table 11.1 shows nine different types of questions (based on the nature of content), the broad reason underlying asking each type of question, and some examples of each type. Based on this structure, and the information in Table 11.2, which deals with standard answer formats, we are able to distinguish four basic question/answer types:

1. Free-answer (open-ended text)
2. Dichotomous and multiple choice answers (select  $k$  of  $n$ )
3. Rank order answers
4. Constant sum answers

### *Free Answer or Open-Ended Text Answers*

The free answer (or open-ended text question) is, as the name implies, a question that has no fixed alternatives to which the answer must conform. The respondent answers in his or her own words and at the length he or she chooses, subject of course to any limitations imposed by the questionnaire itself. Interviewers are usually instructed to make a verbatim record of the answer.

An example of a free-answer question in the tomato-juice study already referred to is

*What suggestions could you make for improving tomato juice?*

The suggestions made included packaging it in glass containers, finding some way to keep it from separating, and improving the flavor by adding lemon juice, salt, or hot spices.

Free-answer questions are usually shorter than multiple-choice and dichotomous questions. A corollary characteristic is that free-answer questions are also invariably less complex in sentence structure than multiple-choice questions on the same issue, and are usually less complex than dichotomous questions.

Common sense suggests, and reading tests have confirmed, that short and simply structured sentences are more easily understood than long and complex ones. The tendency toward ambiguity of the long and complex sentence is accentuated, if anything, by listening to it rather than reading it. Further, there would seem to be no reason to believe that the findings would be any different for question than for declarative statements. Based on these premises, we should be on reasonably sound grounds for drawing inferences about the relative probability of ambiguity in questions and answers based on length and complexity of structure.

Free-answer questions place greater demands on the ability of the respondents to express themselves. As such, this form of question provides the opportunity for greater ambiguity in interpreting answers. To illustrate, consider the following verbatim transcript of one female respondent's reply to the question

*What suggestions could you make for improving tomato juice?*

"I really don't know. I never thought much about it. I suppose that it would be nice if you could buy it in bottles because the can turns black where you pour the juice out after it has been opened a day or two. Bottles break, though."

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**Table 11.1** Basic Question Types

<i>Type of Question</i>	<i>Goal of Question</i>	<i>Positioning of Question</i>
Factual or behavioral	To get information.	Questions beginning with what, where, when, why, who and how.
Explanatory	To get additional information or to broaden discussion.	How would that help? How would you go about doing that? What other things should be considered?
Attitudinal	To get perceptions, motivations, feelings, etc., about an object or topic.	What do you believe to be the best? How strongly do you feel about XYZ?
Justifying	To get proof to challenge old ideas and to get new ones.	How do you know? What makes you say that?
Leading	To introduce a thought of your own.	Would this be a possible solution? What do you think of this plan?
Hypothetical	To use assumptions or suppositions.	What would happen if we did it this way? If it came in blue would you buy it today?
Alternative	To get a decision or agreement.	Which of these plans do you think is best? Is one or two o'clock best for you?
Coordinative	To develop common agreement. To take action.	Do we all agree that this is our next step?
Comparative	To compare alternatives or to get a judgment anchored by another item.	Is baseball more or less exciting to watch on TV than soccer?

Should the conclusion be drawn that she had “no suggestion,” “suggested packaging in a glass container,” or “suggested that some way be found to prevent the can from turning black around the opening?” Note that she seems to have made the implicit assumption that the bottle would not turn black around the opening.

One way to overcome some of these problems, at least in personal and telephone surveys, is to have interviewers probe respondents. When this is done, primary concern should be for probing for clarity rather than additional information. One practitioner has gone so far as to suggest that questionnaires should clearly instruct interviewers to probe only once for additional information, and to continue to probe for clarity until the interviewer understands a respondent's reply.

From the criteria previously stated, we may tentatively conclude that the free-answer question provides the lowest probability of the questions being ambiguous, but the highest probability of the answers being ambiguous, compared with the other two question forms (see Exhibit 11.5).

**Table 11.2** Standard Answer Formats Based on Task

**Select 1/n—pick-1:** The respondent is given a list of  $n$  options and is required to choose one option only.

**Select  $k/n$ —pick- $k$ :** The respondent gets a set of  $n$  options to select from but this time chooses up to  $k$  options ( $k = n$ ).

**Select  $k1/n$  and Rank  $k2/k1$ —pick and rank:** This question type is similar to pick- $k$ , but in addition to selecting  $k1$  options from a list of  $n$  options, the respondent is then asked to rank  $k2$  of those options selected.

**Select  $k1/k2/n$ —pick-and-pick:** Respondent is asked to select  $k1$  options in Category 1 and  $k2$  options in Category 2. Each option can be selected in only one of the two categories.

**Rank  $k/n$ —rank:** In this question the respondent gets  $n$  options and is asked to rank the top  $k$  ( $k = n$ ).

**Integer Rating:** The respondent is asked to rate on a linear scale of 1 to  $n$  the description on the screen or accompanying prop card (for example, 1 for completely disagree to 5 for completely agree). Only integer responses are accepted.

**Continuous Rating:** This is similar to integer rating, except that the response can be any number (not necessarily an integer number) within the range (for example, 5.2 on a scale of 0 to 10).

**Constant Sum:** The respondent is provided with a set of attributes (5, 10, etc.) and is asked to distribute a total of  $p$  points across those attributes.

**Yes/No:** This type of question entails a yes/no answer.

**Integer—integer-#:** The respondent is asked for a fact that can be expressed in integer number form. A valid range can be provided for error checking. Example: Age.

**Real—real-#:** Similar to integer-# except that the answer expected is in the form of a real (not necessarily an integer) number. Example: Income. A valid range can be provided for error checking.

**Character:** The respondent types in a string of characters as a response. Example: Name. No error checking is done on this type of input.

**Multiple Integer Ratings:** This question type is identical to integer-scale except that multiple questions (classified as “options”) can appear on a single screen. Each question is answered and recorded separately.

**Multiple Real Number Ratings:** This question type is identical to real-scale except that multiple questions (classified as “options”) can appear on a single screen. Each question is answered and recorded separately.

### ***Dichotomous and Multiple-Choice Answers***

The select  $k$  of  $n$  format is the workhorse of survey building and provides the general form for both dichotomous and multiple-choice answer types. Three general forms of questions are frequently used:

#### ***Select Exactly 1 of $n$ Answers:***

When  $k = 1$ , the type of answer scale is dependent on  $n$ , the number of answers. A dichotomous question has two fixed answer alternatives of the type “Yes/No,” “In favor/Not in favor,” “Use/Do not use,” and so on. The question quoted earlier,

*Do you like the taste of tomato juice?*

is an example of a dichotomous question. Multiple-choice questions are simply an extension of the dichotomous question that have more answer points and often take the form of an ordered or interval measurement scale.

---

### EXHIBIT 11.5 Open-Ended Questions and Answers

The advantages of the open-ended format are considerable, but so are its disadvantages (Sudman and Bradburn, 1982). In the hands of a good interviewer, the open format allows and encourages respondents to give their opinions fully and with as much nuance as they are capable of. It also allows respondents to make distinctions that are not usually possible with the fixed alternative formats, and to express themselves in language that is comfortable for them and congenial to their views. In many instances it produces vignettes of considerable richness and quotable material that will enliven research reports.

The richness of the material can also be a disadvantage if there is need to summarize the data in concise form. One example is the need to reduce the complexity of the data to fewer or simpler categories and in order to place the data into categories that can be counted. Coding of free-response material is not only time consuming and costly, but also introduces some amount of coding error. This is known as *content analysis*.

Open-ended questions also take somewhat more time to answer than closed questions. They also require greater interviewer skill to recognize ambiguities of response and to probe and draw respondents out, particularly those who are reticent and not highly verbal, to make sure that they give answers that can be coded. Open-ended response formats may work better with telephone interviews, where a close supervision of interview quality can be maintained, although there is a tendency for shorter answers to be given on the telephone. No matter how well controlled the interviewers may be, however, factors such as carelessness and verbal facility will generate greater individual variance among respondents than would be the case with fixed alternative response formats.

In general, the free-response format requires more psychological work on the part of respondents; that is, respondents must think harder about the question and pay more attention to what is being asked and marshal their thoughts in order to respond to the interviewers' questions. If the question comes more or less out of the blue, the respondent's thoughts will not be organized and may emerge somewhat haphazardly and in a confused fashion. What is reported first, however, may be important to the investigator as an indicator of the saliency of issues or the importance of things to the respondents.

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SOURCE: From Sudman, S. & Bradburn, N., *Asking Questions: A Practical Guide to Questionnaire Design*, copyright © 1982. This material is used by permission of John Wiley & Sons, Inc.

Traditional multiple-choice questions also are of the select  $k$  of  $n$  answer form, but have more than two possible answers. For example, an agreement scale could have three, five, or seven possible answers.

Three answers: Agree/Neutral/Disagree

Five answers: Strongly Agree/Agree/Neither/Disagree/Strongly Disagree

Seven answers: Very Strongly Agree/SA/A/N/D/SD/Very Strongly Disagree



As with all select  $k$  of  $n$  answers, the specific text associated with the answer options is variable and could measure many different constructs such as affect (liking), satisfaction, loyalty, purchase likelihood, and so forth.

### **Select Exactly $k$ of $n$ Answers**

When questions are developed that accept or require multiple responses within a set of answers, the form “exactly  $k$  of  $n$ ” or “as many as  $k$  of  $n$ ” can be used. This general form asks the respondent to indicate that several answers meet the requirements of the question. In the “exactly” case, questions can be formatted to require “exactly”  $k$  answers, (where  $k$  is greater than 1), as when the respondent is asked to “select the best three of the 10 possible answers” (in other words, select exactly three of 10). This type of question might be

*Please identify the three (3) of the following service activities that are most likely to be outsourced in the next 12 months.*

- |   |  |
|---|--|
| <input type="checkbox"/> Retirement benefits            | <input type="checkbox"/> Recruitment         |
| <input type="checkbox"/> Medical benefits               | <input type="checkbox"/> Security services   |
| <input type="checkbox"/> Health services/medical        | <input type="checkbox"/> Training, education |
| <input type="checkbox"/> Management/Executive selection | <input type="checkbox"/> Travel services     |
| <input type="checkbox"/> Organization development       | <input type="checkbox"/> Work/Life programs  |

### **Select as Many as $k$ of $n$ Answers**

A variable number of answers may also be appropriate, particularly where long lists of attributes or features are given. In these cases, the respondent is asked to select as many as  $k$  of the  $n$  possible answers, where  $k$  can be any number from 2 to  $n$ . For example, in the previous question, the respondent could select as many as three (one, two, or three) of 10 possible answers. The question might be reworded to read something like

*Please identify which service activities are most likely to be outsourced in the next 12 months (check all that apply).*

### **Rank-Order Questions/Answers**

As discussed in Chapter 9, rank-order questions increase the power of the measurement scale by including the characteristic of order to the data. Whereas the categorical data associated with many dichotomous or multiple-choice items does not permit us to say that one item is greater than another, rank-order data allows for the analysis of differences. Rank-order questions use an answer format that requires the respondent to assign a rank position for the first, second, and so forth up to the  $n$ th item to be ordered. This format of assigning position numbers can be very versatile, resulting in different types of questions that can be asked. Respondents may be asked to rank a specified subset from the list (such as their first, second, and third choices from a list), or to rank all items in the list. Typical questions might include identifying preference rankings, attribute association strength, first to last, most recent to least recent or relative position (most, next most, and so forth, until either a set number of items is ordered or all items may be ordered).

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When this type of question is administered online or using a CATI system, additional options for administration may exist, including randomization and acceptance/validation of ties in the ranking. Randomization of the answer order helps to control for presentation order bias. It is well established that in elections, being the first on the list increases chances of receiving the voter's election. Similar bias occurs in questions where the same answer appears at the top of the list for each respondent, and is controlled by presenting the choice options in a different random order for each respondent.

Tied rankings are another issue to be considered when a rank-order question is constructed. When ties are permitted, several items may be evaluated as having the same rank. In general, this is not a good idea because it weakens the data. However, if ties truly exist, then the ranking should reflect this. Rank-order questions are generally a difficult type of question for respondents to answer, especially if the number of items to be ranked goes beyond five or seven.

### ***Constant Sum Questions/Answers***

A constant sum question is a powerful question type that permits collection of ratio data, meaning that the data is able to express the relative value or importance of the options (option A is twice as important as option B). This type of question is used when you are relatively sure of the reasons for purchase, or you want to evaluate a limited number of reasons that you believe are important. An example of a constant sum question follows:

*The following question asks you to divide 100 points between a set of options to show the importance you place on each option. Distribute the 100 points giving the more important reasons a greater number of points. The computer will prompt you if your total does not equal exactly 100 points.*

*When thinking about the reasons you purchased our TargetFind data mining software, please allocate 100 points to the following reasons according to their relative importance.*

<i>Seamless integration with other software</i>	_____
<i>User friendliness of software</i>	_____
<i>Ability to manipulate algorithms</i>	_____
<i>Level of pre- and post-purchase service</i>	_____
<i>Level of value for the price</i>	_____
<i>Convenience of purchase/quick delivery</i>	_____
<b><i>Total</i></b>	<b><i>100 points</i></b>

### **Question Ambiguity**

Ambiguity is critical in both the respondent's understanding and proper consideration of the question, and in the researcher's understanding of the answer's meaning. In this section we discuss issues in question structure and form that can greatly influence and improve the quality of your questionnaire.

### ***Neutrality and Don't Know or No Opinion***

When a third alternative “Neither like nor dislike” is added to the example dichotomous question discussed previously, it becomes multiple choice and allows for those people who do not have a definite liking or disliking for tomato juice.

*Do you like the taste of tomato juice?*

*Yes*    *No*    *Neither*

It is usually desirable to provide a category of this type to avoid forcing the respondent to make a definite stand when he or she may really be neutral. Similarly, it may be desirable to add other types of categories such as “don’t know,” “no opinion,” or “not applicable,” as the nature of the question and question format dictates. For example, “don’t know” would apply to a question dealing with fact, whereas “no opinion” would apply to an attitude. Unfortunately there is a tendency to treat neutral, no opinion and don’t know responses as indicating the same thing, something they obviously do not.

One potential problem with offering a “don’t know” or “no opinion” option is that a false negative error may arise. This type of error occurs when a respondent reports not having an attitude when he or she really does have one. Quite often people who appear on first glance to have no attitude turn out to take a position if they are asked other questions on the same topic (Gilljam & Granberg, 1993). Attitudes that turn up only on the follow-up questions may be used to predict behavior to a significant degree. It is possible, however, that people who appear to have attitudes because of what they say on the follow-up questions may be guilty of creating a false positive error—this is created by the researcher’s persistence. A false positive error occurs when a person appears to have an attitude when he or she really does not. So, offering a “don’t know” option can lead to a reduced incidence of false positives. In addition, use of filter questions and easy-out alternatives also can lower the number of false positives. Filter questions are used to sort out respondents for whom detailed follow-up questions may not apply and therefore should not be asked (Knauper, 1998). A risk with using a filter question is that there will be an underreporting of events in which the researcher is interested; for example, more respondents are filtered out than intended as a more extreme question meaning has been conveyed. It is clear that protecting against false positives and false negatives seem to be counter to each other. There is no evidence that one of these errors is generally more serious than the other.

There is some evidence that offering a “no-opinion” response in attitudinal studies does not improve the quality of the data obtained (Krosnick et al., 2002). The over-time consistency of attitudes does not increase, nor does the statistical predictability of obtained responses. The idea that “no opinion” options discourage respondents from providing meaningless answers to survey questions is highly questionable. Many, and perhaps most, respondents who choose an explicitly offered “no opinion” response option may have meaningful attitudes, but the possibility that some people do so because they truly do not have attitudes cannot be dismissed (Krosnick et al.). Where does this leave us? It appears that offering a “no opinion” (or “don’t know” where applicable) option does not improve things, but it also does not appear to make things worse. One impact is that the probably effective sample size will be decreased, leading to reduced statistical power. But for researchers who prefer to offer a “no opinion” option, two things can be done to compensate for this. First, the original sample

size can be increased. Second, respondents who say they have no opinion can then be asked if they lean toward one of the substantive response options (Krosnick et al.). Use of the “no opinion” and “don’t know” options appears to be a matter of researcher preference.

### ***Dichotomous Questions***

In terms of length and complexity of structure, the dichotomous question falls between the free-answer questions (shortest and least complex) and the multiple-choice questions (longest and most complex). The dichotomous question places the least demands on the respondent in terms of formulating and expressing an answer. With respect to ambiguity in dichotomous questions, therefore, we may tentatively conclude that this form of question provides roughly an average probability of the question’s being ambiguous, but the lowest probability of the answer’s being ambiguous, compared with the other two forms.

### ***Multiple-Choice Questions***

The multiple-choice question provides several set alternatives for the answer to it. In this respect it is in the middle ground between the free-answer and the dichotomous question.

Below is an example of the multiple-choice type of question from the tomato juice study:

*Why do you use the brand you do?*

- It is reasonably priced*
- I like the taste*
- The brand I’m used to and rely on*
- Other reason*

It should be noted that this question could have been asked as a free-answer question, and as a series of dichotomous questions. The choice between the free-answer and the multiple-choice forms of asking a question must always be made if the same question is not asked in both forms.

The multiple-choice question must be longer and more complex than either the free-answer or dichotomous questions in order to state the several alternatives. The statement of the alternatives is provided to assist the respondent in recalling and in formulating his or her answer. In giving this assistance, however, added opportunities to misunderstand the question are also provided.

A common source of ambiguity in the multiple-choice question is the difficulty of making the alternatives mutually exclusive. In the above example this requirement was met reasonably well. (It might be argued, however, that one would have to be “used to” and be able to “rely on” the taste’s being consistently the same in order to give the “taste” alternative as the answer.) Another common source of ambiguity in multiple-choice questions is the implied restriction on alternatives. The example strongly implies that the respondent should have a single, most important reason for using the brand. This may very well not be the case.

In attempting to reduce the burden of respondents, self-report questionnaires often use the technique of asking respondents to examine a list of items and mark, circle, or check all that apply. This is useful in asking about alternative behaviors, attitudes, influencing factors, and so forth. For example, in a study done by *Money* magazine in the mid-1990s, one question asked used the technique described above:

Where would you place the greatest blame for escalating health-care costs?  
(Circle as many as you wish.)

- a. Rising doctors' fees
- b. Rising cost of medications
- c. Inefficiency and waste at hospitals
- d. Rising insurance premiums
- e. Frivolous malpractice lawsuits
- f. Fraud in Medicare, Medicaid or private insurance programs
- g. Too much government bureaucracy
- h. Other

A question has been raised whether respondents really do mark "all that apply" as requested (Rasinski, Mingay, & Bradburn, 1994). The alternative is to ask about each of the items in a yes/no format. For example, the *Money* magazine question shown above could be worded:

Please indicate whether you think each of the following factors adds to escalating health-care costs by checking "Yes" or "No."

- |  |                              |                             |
|--|------------------------------|-----------------------------|
| a. <i>Rising doctors' fees</i>                                       | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| b. <i>Rising cost of medications</i>                                 | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| c. <i>Inefficiency and waste at hospitals</i>                        | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| d. <i>Rising insurance premiums</i>                                  | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| e. <i>Frivolous malpractice lawsuits</i>                             | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| f. <i>Fraud in Medicare, Medicaid, or private insurance programs</i> | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
| g. <i>Too much government bureaucracy</i>                            | Yes <input type="checkbox"/> | No <input type="checkbox"/> |

These all-that-apply instructions and the explicit yes/no instructions are considered to be functionally equivalent. The limited research on this matter suggests that respondents tend to give more answers when explicit yes/no instructions are given. Unfortunately, it is unknown whether this also means that more accurate reporting has occurred.

Whitlark and Smith (forthcoming) do report that there is an optimal number of  $k$  of  $n$  that should be picked. That number is approximately one-third. A value of  $k$  greater or less than that reduces the ability to discriminate or accurately profile the issue being investigated.

At the same time, there is no evidence that the mark-all-that-apply approach provides less accurate reporting. So the researcher should use common sense when deciding which approach to use. Let the nature of the question itself dictate and decide which would be less burdensome for the respondent. If the number of items is small, it would seem reasonable to use the yes/no format.

There is a tendency for the alternatives appearing first and last in a multiple-choice question to be used as answers more frequently than those in other positions. This systematic error, often called position bias or order bias, may be indicative of ambiguity in the question. In a "classic" experiment reported by Payne (1951), in which several alternatives were presented in different positions to matched samples of respondents results were that the top position, on the average, out-drew the middle position by six percentage points. The bottom position out-drew the middle position by two percentage points. In no instance did the middle position out-draw the top or bottom position.

This problem can be solved satisfactorily in most cases by rotating the order of the alternatives. This may be done by printing cards for each of the desired different orders of alternatives and instructing the interviewers to use the cards in a prescribed sequence. For mail or other self-report instruments, rotation means that different questionnaires must be prepared. Practical and economic considerations will limit the extent to which this can be done. Response order effects are discussed in more depth by Sudman, Bradburn, and Schwarz (1996).

With respect to ambiguity in multiple-choice questions, we may tentatively conclude that this form of question provides the highest probability of the question's being ambiguous, and an average probability of the answer's being ambiguous, compared with the other two forms.

Table 11.3 summarizes our tentative conclusions concerning the form of question and the probability of ambiguity. These conclusions should not be used as the final arbiter on the choice of question form. Some question forms are suited better to eliciting certain kinds of information than others. In "reason why" questions, for example, one would normally use free-answer or multiple-choice questions rather than dichotomous ones.

Each question form has been used extensively and has its proponents. There is no one "best" form of question for obtaining all types of information from respondents. Figure 11.2 (see p. 436) shows examples of different types of question taken from two questionnaires, a simple customer satisfaction questionnaire used by Sizzler Restaurants and a product usage questionnaire for a toothpaste brand. Figure 11.3 (see p. 438) reproduces a questionnaire that is totally open-ended. One broad question is asked, and the respondent is free to say anything he or she wants.

### **Question Wording**

The wording of questions is a critical consideration when obtaining information from respondents. Consider the following three questions and the percentage of affirmative responses to each from three matched samples of respondents (Payne, 1951, pp. 8–9).

- Do you think anything should be done to make it easier for people to pay doctor or hospital bills? (82 percent replied "Yes.")
- Do you think anything could be done to make it easier for people to pay doctor or hospital bills? (77 percent replied "Yes.")
- Do you think anything might be done to make it easier for people to pay doctor or hospital bills? (63 percent replied "Yes.")

These questions differ only in the use of the words *should*, *could*, and *might*. Although these three words have different connotations, they are sometimes used as synonyms. Yet the responses, at the extreme, are 19 percentage points apart.

**Table 11.3** Form of Question and Relative Probability of Ambiguity

<i>Form of Question</i>	<i>Relative Probability of Ambiguity</i>	
	<i>Question</i>	<i>Answer</i>
Free-answer	Lowest	Highest
Dichotomous	Average	Lowest
Multiple-choice	Highest	Average

As another example consider the following questions, posed by Rasinski (1989), for which labels for the issues of concern were changed:

- Are we spending too much, too little, or about the right amount on welfare (23.1 percent replied “too little”); assistance to the poor (62.8 percent replied “too little”)
- Are we spending too much, too little, or about the right amount on halting the rising crime rate (66.8 percent replied “too little”); law enforcement (52.9 percent replied “too little”)

In these questions, a more descriptive and more positive explanation is used and there is as much as 39.3 percent difference in evaluation.

### ***Framing Questions***

This last example is related to what is known as *framing* in communication. Information framing effects reflect the difference in response to objectively equivalent information depending upon the manner in which the information is labeled or framed. Levin, Schneider, and Gaeth (1998) and Levin et al. (2001) identify three distinct types of framing effects:

- Attribute framing effects. Occur when evaluations of an object or product are more favorable when a key attribute is framed in positive rather than negative terms.
- Goal framing effects. Occur when a persuasive message has different appeal depending on whether it stresses the positive consequences of performing an act to achieve a particular goal or the negative consequences of not performing the act.
- Risky choice framing effects. Occur when willingness to take a risk depends upon whether potential outcomes are positively framed (in terms of success rate) or negatively framed (in terms of failure rate).

Which type of potential framing effect should be of concern to the research designer depends upon the nature of the information being sought in a questionnaire. At the simplest level, if intended purchase behavior of ground beef was being sought, the question could be framed as “80 percent lean” or “20 percent fat.” This is an example of attribute framing. It should be obvious that this is potentially a pervasive effect in question design, and is something that needs to be addressed whenever it arises. More detailed discussion of these effects are given by Hogarth (1982).

The ability to construct clear, unambiguous questions is an art rather than a science. It has remained so despite the extensive investigations and accumulated experience of practitioners over the past four decades. Although principles of question wording have evolved, they are more indicative than imperative.

According to Oppenheim (1992, pp. 128–130), these principles can be summarized by asserting that ambiguity in question wording arises from one or more of the following sources:

1. Question length
2. Respondent unfamiliarity with one or more words
3. Ambiguity of one or more words in context
4. Two questions combined in one
5. Lack of specificity

A brief discussion on each of these sources of ambiguity in question wording is in order.

*(Text continues on page 439)*

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**A. Sizzler**

We would like you to rate some specific characteristics about your visit to Sizzler today.

**A. Taste of the food**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

**C. Value for the money**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

**E. Efficiency of service**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

Multiple-Choice

**B. Size of the portion**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

**D. Employee attitude**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

**F. Cleanliness**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

Was the food cooked as ordered?

- Yes  No

Dichotomous

Was the food served at the proper temperature?

- Yes  No

Menu item ordered \_\_\_\_\_

Open-end

Please rate some specific characteristics about the Buffet Court (if ordered).

**A. Quality**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

**B. Cleanliness**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

**C. Variety**

- (1.)  Excellent  
 (2.)  Above Average  
 (3.)  Average  
 (4.)  Below Average  
 (5.)  Poor

Multiple-Choice

What additional items would you like for the Buffet Court? \_\_\_\_\_

What did you like best about your visit today? \_\_\_\_\_

Open-end

What did you like least about your visit today? \_\_\_\_\_

**Overall, how would you rate your eating experience at Sizzler today? Was it:**

- (1.)  Excellent (2.)  Above Average (3.)  Average (4.)  Below Average (5.)  Poor

Multiple-Choice

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_

**Figure 11.2** Illustration of Question Types



**B. Sensodyne Toothpaste**

**BEFORE MAILING, MOISTEN THIS AREA, FOLD IN HALF AND SEAL**

Miss.  
 Ms.  
 Mrs.  
 Mr.

Last Name	First Name	
Street Address	Apt. #	
City	State	Zip Code

Home Telephone (area code) Female 2.  Your Sex: Male 1.  Your Age | | |

- |  |   |   |
|--|---|---|
| <p>1. How many tubes of Fresh Mint Sensodyne® have you used?</p> <p>1. <input type="checkbox"/> One      2. <input type="checkbox"/> Two<br/>                 3. <input type="checkbox"/> Three or More</p>  | <p>5. How do you feel about buying Fresh Mint Sensodyne® again?</p> <p>1. <input type="checkbox"/> I will buy it again<br/>                 2. <input type="checkbox"/> I will not buy it again<br/>                 3. <input type="checkbox"/> I don't know</p>   | <p>Dichotomous<br/>Open-end</p>           |
| <p>2. What is your overall opinion of Fresh Mint Sensodyne®?</p> <p>1. <input type="checkbox"/> Excellent    2. <input type="checkbox"/> Very Good<br/>                 3. <input type="checkbox"/> Good            4. <input type="checkbox"/> Fair        5. <input type="checkbox"/> Poor</p> | <p>6. How did you first learn about Fresh Mint Sensodyne®?</p> <p>1. Recommended by dentist<br/>                 2. Tried various brands<br/>                 3. <input type="checkbox"/> Television<br/>                 4. <input type="checkbox"/> Friend/Relative/Druggist<br/>                 5. <input type="checkbox"/> Saw in store<br/>                 6. <input type="checkbox"/> Coupon/Newspaper Insert/Magazine<br/>                 7. <input type="checkbox"/> On sale<br/>                 8. <input type="checkbox"/> Received sample<br/>                 9. <input type="checkbox"/> Other _____</p> | <p>Dichotomous</p> <p>Multiple-Choice</p> |
| <p>3. What do you like about Fresh Mint Sensodyne®?</p> <p>_____</p> <p>_____</p>  | <p>7. If recommended by a Dentist, did you receive a sample of Fresh Mint Sensodyne®?</p> <p>1. <input type="checkbox"/> Yes<br/>                 2. <input type="checkbox"/> No</p>  | <p>Open-end</p>                           |
| <p>4. What do you dislike about Fresh Mint Sensodyne®?</p> <p>_____</p> <p>_____</p>   |   |   |

**Figure 11.2** (Continued)

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<p>8. If you were given a sample of French Mint Sensodyne®, how many samples did you receive?  <input type="text"/> <input type="text"/></p> <p>9. How many times a week do you use Fresh Mint Sensodyne®?  <input type="text"/> <input type="text"/></p> <p>10. Just before you started to use Fresh Mint Sensodyne®, what product, if any, were you using for your teeth sensitivity problem?</p> <p>1. <input type="checkbox"/> Original Sensodyne®</p> <p>2. <input type="checkbox"/> Cool Gel Sensodyne®</p> <p>3. <input type="checkbox"/> Denquel®</p> <p>4. <input type="checkbox"/> Promise®</p>	<p>5. <input type="checkbox"/> Aquafresh Sensitive®</p> <p>6. <input type="checkbox"/> Other _____</p> <p>7. <input type="checkbox"/> Sensitivity Protection Crest®</p> <p>11. What other toothpaste(s) do you use in addition to Fresh Mint Sensodyne®?</p> <p>1. None - Use Fresh Mint Sensodyne® exclusively</p> <p>2. <input type="checkbox"/> Sensodyne® Cool Gel</p> <p>3. <input type="checkbox"/> Original Formula Sensodyne®-SC</p> <p>4. <input type="checkbox"/> Sensodyne® w/Baking Soda</p> <p>5. <input type="checkbox"/> Any regular toothpaste</p> <p>6. <input type="checkbox"/> Any tartar control toothpaste</p> <p>7. <input type="checkbox"/> Any baking soda toothpaste</p> <p>8. <input type="checkbox"/> Any baking soda peroxide toothpaste</p> <p>9. <input type="checkbox"/> Any other desensitizing toothpaste</p>	<p>Open-end</p> <p>Multiple-Choice</p> <p>Multiple-Choice</p>
---	--	---

Horizon Air	Please give us your thoughts.	
<p>The Horizon people serving you today would like to hear from you, and so would I. How well did we meet your expectations? Was there anyone in particular who served you exceptionally well? We'd like to thank and recognize them on your behalf. Was there anything that we could have done better? Is there anything that we're not currently doing that you would like to see us do? We love new ideas! Anything that is important to you is important to us. If you need more room, you can write to me at the address on this card or fax me your comments at (206) 248-6200.</p> <p>Thanks for flying with us today and for sharing your thoughts.                  Jeff Pinneo                  Vice President, Customer Services</p>	<p>Name: <input type="checkbox"/> Mr. <input type="checkbox"/> Mrs. _____</p> <p>Flight # _____</p> <p>Flight Date _____</p> <p>From _____</p> <p>To _____</p> <p>Your Company Name _____</p> <p>Daytime Phone ( ) _____</p> <p>Purpose of trip? <input type="checkbox"/> Business  <input type="checkbox"/> Pleasure <input type="checkbox"/> Other</p> <p>Number of Horizon roundtrips in last 12 months _____</p> <p>(Complete return address information on other side if you would like a reply)</p>	
<p>Dear Horizon: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		

**Figure 11.3** Completely Open-Ended Questionnaire  
 SOURCE: Reprinted with permission from Horizon Air.

**1. Questions that are too long.** There is a class of questions known as “flabbergasters” that are long, complex, and verge on being incomprehensible. A classic example is a reported 13-line question asking farm managers whether they used mostly inductive or deductive logic. Each word in a question is a potential source of ambiguity. The greater the number of words, the more complex the structure of the question must become. For both these reasons, brevity in question construction is a virtue. As a general rule-of-thumb, questions should be held to no more than 20 words if at all possible.

The following question has been paraphrased from one actually used on a survey in a different field:

*Do you think of new-car dealers as being independent business people like appliance dealers and furniture merchants who own their own stores, or as being employees of the automobile companies?*

Suppose, if you will, that this question is being read to you rather than your reading it. It refers to three different types of businesses, as well as to owning one’s business versus being employed by a manufacturer. The researcher who constructed this question went to the trouble of using at least 10 extra words, which add opportunities for having the question misunderstood. Do you think that you would be more likely to understand the question above or this revised and shortened version?

*Do you think of new-car dealers as owning their business, or as being employees of the automobile companies?*

**2. Questions that use one or more words that are unfamiliar to the respondent.** The vocabulary used in questions should match that normally used by the respondents as closely as possible. For example, the wording of the question

*Do you think that the processing of dehydrated soups reduces the caloric content?*

might well be appropriate if it is to be asked of a group of food chemists. It would require a heroically optimistic researcher, however, to seriously consider asking this question of a sample of consumers. There are at least four words that individually, and in some cases collectively, would be unfamiliar to some consumers.

The principle of matching question vocabulary and respondent vocabulary is not always easy to follow. In the case of a group of food chemists, there is a similarity of training and a common usage of terms. It is probable that their individual vocabulary levels are uniformly high. For this group, question vocabulary and respondent vocabulary can be matched reasonably well. In the case of consumers, however, vocabulary levels vary widely.

When the sample of respondents is large and nonhomogeneous in background, it is desirable to word the question at the lowest vocabulary level represented in the sample. The researcher must guard against the use of more difficult synonyms for their simpler equivalents such as “observe” instead of “see,” “obtain” instead of “get,” and “purchase” instead of “buy.”

The question should be worded to be understood by the respondent—not to impress him or her with the researcher’s vocabulary.

**3. Questions that use one or more words that are ambiguous in context.** A common source of ambiguity of words in context is the way in which the question is constructed. Some illustrations of ambiguities arising from poor sentence structure are given below.

*If Security Bank were to install an automatic teller machine and discontinue Saturday teller assisted hours, would you change your banking practice? (Would you use the machine, change banking hours, or change banks?)*

A more serious and less easily corrected source of ambiguity of words in context is words that have two or more meanings. Most words have several meanings out of context, and we rely on the topic being discussed to indicate the intended meaning. In these questions the meaning intended should be clear. In many cases, however, the intended meaning of a word is not clear from the context in which it is used. Consider the following question:

*Have you been satisfied with the service provided by the Sight and Sound Company?*

In this question, both the words “you” and “service” are subject to misinterpretation. Does “you” mean the person being addressed only, or does it include this person’s family? Does “service” refer to the assistance and consideration given the customer in making purchases, or does it refer to the repair of equipment done by the company?

Contextual effects are especially troublesome in research involving foreign markets, or any multicultural market. Some countries are what are known as linguistic high-context countries (Asian countries, for example), whereas others (like the United States and Canada) are low-context countries. In a high-context country, words by themselves carry little meaning. How the words are used, or their context, provides the meaning. Consequently, ambiguity in context may be quite significant in international marketing research.

**4. Combined Questions.** Careless question wording sometimes results in two questions being asked as one. A question asked of commuters is illustrative of such questions:

*Which would you say is the more convenient and economical way to commute, by car or by train?*

It is obvious that the respondent who believed that one method was more convenient and the other more economical could not logically answer the question as it was asked. Combined questions should be avoided. The above question should have been broken into two separate questions, one dealing with “convenience” and the other with “economy.”

**5. Questions that lack specificity.** Ambiguity often arises because of the vagueness of questions. A question such as

*Do you listen to FM radio stations regularly?*

will involve ambiguity because it is by no means clear whether “regularly” means three times a day, twice a week, once a month, or some other frequency of listening. If the question is to be understood correctly, the desired information must be clearly specified.

### ***Procedures for Recognizing and Reducing Ambiguity in Communication***

Every research design that uses communication to obtain information should have as many safeguards against ambiguity as possible. Procedures should be employed to recognize where ambiguity may be present and to reduce it to the lowest practicable level.

Three procedural steps are useful for these purposes and should be considered in every project:

1. Alternative question wording
2. Pretesting
3. Verification by observation

**1. Alternative question wording.** We have already seen that the present state-of-the-art question formulation cannot guarantee unambiguous questions. In questions where there is reason to suspect that ambiguity may exist, it is advisable to consider alternative wordings and forms of questions to be asked of sub-samples of respondents.

The simplest application of this procedure applies to dichotomous questions. If it is believed that the order in which the alternatives are stated may influence the responses, the question can be asked of half the sample of respondents with the alternatives in one order, and of the other half with the order reversed. For example, the question

*Which make of car would you say is more powerful, Ford or Chevrolet?*

can be asked of half the respondents, and the question

*Which make of car would you say is more powerful, Chevrolet or Ford?*

of the other half. If the order of the alternatives does, in fact, affect the responses, this will become apparent and can be allowed for when interpreting the results.

The use of this simple experimental technique costs little more than having an extra set of questionnaires printed. In personal and telephone interviewing situations, the interviewers can be instructed to change the order for one-half the interviews, and the cost will be nil. For electronic modes of data collection, again two sets of questionnaires are constructed at little or no cost. It may reveal no significant differences in response. If so, it will usually be worth the cost involved simply to know that this is the case. Where significant differences in response are discovered, it will be even more worthwhile as a warning in interpreting the information.

**2. Pretesting.** Pretesting of questionnaires is a virtual necessity (Converse & Presser, 1986, pp. 51–75). The only way to gain real assurance that questions are unambiguous is to try them. Pretesting is usually done initially by asking proposed questions of associates. To be truly effective, however, pretesting of questions should be conducted by asking them of a group of respondents who are similar to those to be interviewed in the final sample.

A typical way to assess problems with individual questions included in the questionnaire is to ask those participating whether they had any trouble with each of the questions. For a self-report survey (nonelectronic or electronic), a simple way is to add a sheet that asks about each question and requests a response on some type of scale—understanding, difficulty in responding, and so forth. This may indicate if there are “problems” but may not indicate the exact nature of the problem.

If the pretest is done by an interviewer, each respondent can be asked about each question and probing can get more depth in the response. Another method, one which requires that pretest be done by personal interview, has been suggested by Bolton and Bronkhorst (1995) and Bolton (1993). This method was developed for GTE's use to pretest its customer satisfaction questionnaires, and involves the use of concurrent verbal protocols and an automatic coding scheme, designed to measure respondents' cognitive difficulties answering questions about low-involvement, low-frequency events. As respondents go through and respond to a questionnaire during a pretest interview, they concurrently verbalize aloud their thoughts. While this occurs, there is automatic coding of the verbal reports, which would then be content analyzed. Obviously, this procedure requires much more time and effort than is usually devoted to design and evaluation of pretests, and may not be appropriate for many studies.

It is the rule, rather than the exception, that questions will be revised as a result of pretesting. Several versions of a question may need to be considered as a result of pretesting before the final version is decided upon.

**3. Verification by observation.** Whenever cost, time, and the type of information desired permit, information obtained through communication should be verified by observation. The housewife may state that the only brand of toothpaste she buys for her children is Crest. Where possible, it is desirable to verify this statement partially by observing whether this is the only brand of toothpaste she now has on hand.

Clearly, verification by observation is not always possible or practical. In the above example, the housewife may object to a pantry audit. Even greater difficulties would be involved in attempting to verify via observation her statement that her children brush before going to bed.

### Ambiguity in Observation

Although it has been suggested that, where practical to do so, information obtained by communication should be verified by observation, the implication should not be drawn that observation is free of ambiguity. If we conduct an in-home audit and find that Crest is the only brand on hand, this in itself does not disclose whether it was purchased or received as a gift, whether it is used or not, or, if used, for what purpose.

In making observations, we each select, organize, and interpret visual stimuli into a picture that is as meaningful and as coherent to us as we can make it. Which stimuli are selected and how they are organized and interpreted are highly dependent on both the backgrounds and frames of reference of the observer. If a customer, a floorwalker, and the department manager are each standing side by side on the mezzanine overlooking the jewelry department, what each "sees" will very likely differ markedly from the others.

The trained observer will invariably "see" more that relates to his or her specialty in an ambiguous situation than the untrained observer. As an illustration, many years ago a cereal manufacturer ran a promotional campaign involving a drawing contest for children. Each child who entered was required to submit (along with a box top) a picture he or she had drawn that depicted Brand X cereal being eaten. The contest was run, the prizes awarded on the basis of artistic merit, and the brand manager turned his attention to other matters. A short time later a psychologist who worked for the company happened to see the pictures. He asked to be permitted to study them. He found that a sizable proportion of them showed a child eating cereal alone, often with no other dishes on the table. This suggested to him that cereal is often eaten by children as a between-meal snack. Later studies by the company's marketing research

department showed that cereals are eaten between meals by children in greater amounts than are eaten for breakfast. The advertising program of the company was subsequently changed to stress the benefits of its cereals as between-meal snacks.

## SOME CONCLUDING COMMENTS

We have not discussed broader issues of overall questionnaire design, question sequencing, and so forth (see Table 11.4). This is not to say that these are not important issues. To the contrary, they are. For example, research has shown that questions appearing early in a questionnaire and early within their respective groups (when the questionnaire is so organized) are more likely to be answered and may influence responses to later questions than are questions placed elsewhere. This is the question-order effect issue. Question-order effects can occur along two different dimensions (Moore, 2002): (a) the relative judgments that respondents make about each of the items being evaluated (the item dimension); and (b) the judgments made about the larger framework within which the evaluations are being made (the framework dimension). As in the case of response order, rotation of questions may help reduce any such effects. But the researcher has to be careful not to destroy any logical sequencing of questions within a topic area.

Similarly, a well-known principle is that questionnaire design should follow a *funnel approach* with respect to where variable kinds of questions should be placed (e.g., sensitive, important, hard to answer, demographic). There are two ways to look at the funnel technique. First, it is a sequencing of questions where one proceeds from the general to the specific (or from easier questions to answer to those more difficult), keeping in mind that there must be topic consistency. A second view is that a set of funnel questions exists in a form of a “contingency tree” in that each succeeding question is contingent on a respondent’s answer to the preceding question, as shown in Figure 11.4 (Peterson, 2000, page 110). One advantage of this approach is that it minimizes the chance that respondents are asked irrelevant questions or questions to which they do not know the answers. These issues are covered rather thoroughly in books that are more narrowly focused (Peterson, 2000; Dillman, 2000; Bourque & Fiddler, 2003a, 2003b; Labaw, 1988; Converse & Presser, 1986; Payne, 1951).

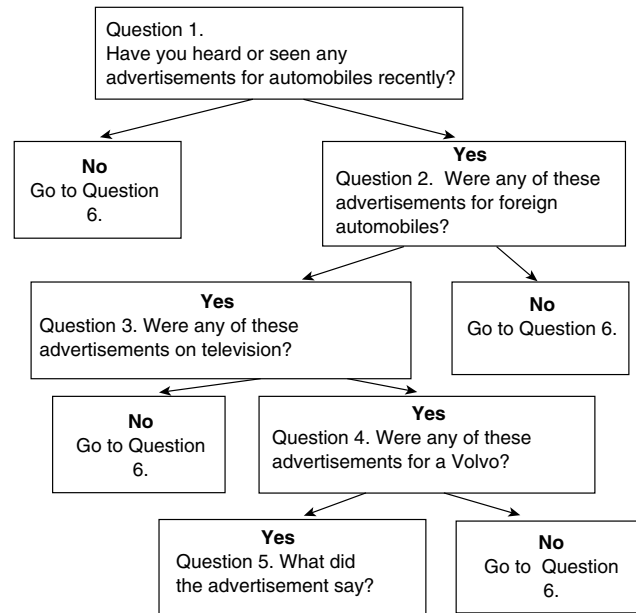
What is clear, however, is that there is no such thing as a “pure” optimum length of questionnaire, as usually understood by marketing researchers. There may be an *operational* optimum length. Such an optimum would be determined by interest value of the topic(s) covered, their importance, the motivation of the respondent, the quality of the interviewer where one is used, and a myriad of other considerations.

One issue is that of comparability across different populations when doing cross-cultural/national research. An area of great concern to marketing researchers is the differences that have existed among countries in demographic variation and categorizations. The European Society for Opinion and Research (ESOMAR) worked on the development of a common questionnaire that can be used for Pan-European and multicountry surveys. Figure 11.5 shows one English language version (ESOMAR, 1990, p. 4).

Another issue that arises in cross-cultural/national research is the question of whether or not to translate a questionnaire. A typical cross-national study has the questionnaire developed by someone in one country, and it is then to be administered in another country. In a few rare cases and for certain “populations,” the questionnaire can be administered in the language of the country in which it was developed, even if the languages differ. For example, an English language questionnaire may be able to be used in Denmark and The Netherlands

(Text continues on p. 447)

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**Figure 11.4** Funnel Questions

SOURCE: From Peterson, R., *Constructing Effective Questionnaires*, copyright © 2000. Reprinted by permission of Sage Publications, Inc.

**Table 11.4** Major Aspects of Questionnaire Design

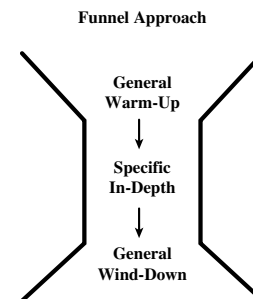
<i>Researcher Question</i>	<i>Audit Questions</i>	<i>Possibilities</i>
What information is to be sought?	What is the purpose of the study?	Descriptive: Awareness, attitudes, importance, acceptabilities, preference, past behavior, trial, use, market position
What information is to be presented at the end of the research project?	What am I trying to describe, segment, or predict?	Segment the market: Attitude, benefit, demographic, psychographic, usage
	How do I identify or classify results by market segment?	Estimate/predict: Market share, elasticity
	Can I picture the tables and graphs to be presented when the final data is analyzed?	
What type of data is required?	Are we conducting exploratory research or can Structured Direct methods be used?	How is the data to be collected?
What type of questionnaire is appropriate to collect this data?	Are respondents willing to provide the requested info?	Focus groups, mail questionnaire, phone interview, personal interview, combination, Internet/e-mail

*(Continued)*



**Table 11.4** (Continued)

<i>Researcher Question</i>	<i>Audit Questions</i>	<i>Possibilities</i>
How is the questionnaire to be administered?	Do we need special considerations? Disguise needed? In-depth interviews? Projective methods?	
Question content, question format, question phrasing	Does the question answer the study objective(s)? Do respondents have the ability to answer the question? Does the statement communicate? Does the question purpose match the question? Can the result be interpreted?	Consider: Able to answer, time required, prestige, privacy, etc. Question types: Open-ended, dichotomous, multiple-choice, measurement scale, etc. Question wording: Biased wording, length, unfamiliar words, ambiguous content, combined quest., specificity, etc. Some question types Demographics, attribute strength, attribute importance, satisfaction, preference, future behavior, trade-offs, psychographics, etc.
Response format of the individual questions.	Is there a better way to measure this response? Does the question purpose match the response format? How is the data analyzed? Can the result be interpreted?	Measurement level: Nominal, ordinal, interval, ratio?  Scaling objective: Scale stimuli, scale respondents  Scale type: Paired comparison, ranking methods, rating methods, etc.
Sequencing and layout of the questionnaire	How many questions should be added or deleted? Do questions flow building on previous questions? Are similar response formats grouped together?	Funnel approach: General—Warm-up Specific—In-depth General—Wind-down
Re-examine, rethink and revise	Review questionnaire re-examine steps 1–4	
Pretest and revise	Formal pretest of survey	



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I	II	III												
<p>(1) Sex: M <input type="checkbox"/> F <input type="checkbox"/></p> <p>(2) What is your age? <input type="checkbox"/> <input type="checkbox"/></p> <p>(3) How many people live in your household, including yourself? <input type="checkbox"/> <input type="checkbox"/></p> <p>(4) How many children under 15 are there? <input type="checkbox"/> <input type="checkbox"/></p> <p>(5) Are you, in your household . . .</p> <ul style="list-style-type: none"> <li>• The person who contributes most to the household income? YES <input type="checkbox"/> NO <input type="checkbox"/></li> <li>• The person mainly responsible for ordinary shopping and looking after the home? YES <input type="checkbox"/> NO <input type="checkbox"/></li> </ul> <p>(6) Are you . . . ?</p> <ul style="list-style-type: none"> <li>• Married/living together <input type="checkbox"/></li> <li>• Single <input type="checkbox"/></li> <li>• Separated/divorced/widowed <input type="checkbox"/></li> </ul> <p>(7) At what age did you finish full-time education? <input type="checkbox"/> <input type="checkbox"/> Still studying (E10) ▶ q.13</p> <p>(8) Any time after that, did you . . .</p> <ul style="list-style-type: none"> <li>• Resume general education at a later stage in your life? YES <input type="checkbox"/> ▶ q.9 NO <input type="checkbox"/> ▼</li> <li>• Take any apprenticeship/professional training for your job? YES <input type="checkbox"/> ▶ q.9 NO <input type="checkbox"/> ▶ q.10</li> </ul> <p>(9) How many months did your . . . (further education/prof. training) last in total? <input type="checkbox"/> <input type="checkbox"/></p>	<p>(10) At present, are you . . . ?</p> <ul style="list-style-type: none"> <li>self-employed <input type="checkbox"/> ▶ q.11A <input type="checkbox"/></li> <li>• in a paid employment <input type="checkbox"/> ▶ q.11B <input type="checkbox"/></li> <li>• temporarily not working <input type="checkbox"/> ▶ B</li> <li>• retired <input type="checkbox"/> ▶ B</li> <li>• not working/responsible for ordinary shopping and looking after the home (E13) <input type="checkbox"/> ▶ q.13</li> <li>• And formerly, have you been . . . ?</li> </ul> <p>(11) What kind of work do you do? (What position do you hold?)</p> <p><u>A – Self-Employed</u></p> <ul style="list-style-type: none"> <li>• PROFESSIONAL (Doctor, Lawyer, Accountant, Architect)(E2) <input type="checkbox"/> ▶ q.12 (in actual profession)</li> <li>• GENERAL MANAGEMENT <input type="checkbox"/> (Exec./Manag. Dir., Officer, Mgr)</li> <li>• MIDDLE MANAGEMENT <input type="checkbox"/> (Dmt/Branch Head, Junior Mgr) - How many employees are you responsible (or heading)? GM MM</li> </ul> <p>0–5: (E4) (E6) <input type="checkbox"/> ▶ q.12 6 or +:(E1) (E5) <input type="checkbox"/> ▶ q.12</p> <ul style="list-style-type: none"> <li>• OTHER EMPLOYEMENT <input type="checkbox"/> ▶ Do you work mainly in an office? YES (E8) <input type="checkbox"/> ▶ q.12 NO <input type="checkbox"/></li> <li>– In your job, do you spend much of your time writing or working with figures? YES (E11) <input type="checkbox"/> NO (E14) <input type="checkbox"/></li> </ul>	<p>(12) How many hours per week do you normally work? <input type="checkbox"/> <input type="checkbox"/></p> <p>(13) Do you, or anyone else in your household, own . . . ?</p> <ul style="list-style-type: none"> <li>• a color TV set Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• a video recorder Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• a radio-clock Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• a video camera/camcorder Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• a PC/home computer Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• an electric deep fryer Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• an electric drill Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• a still camera Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• at least 2 cars Y <input type="checkbox"/> N <input type="checkbox"/></li> <li>• a second home or a vacation house/flat Y <input type="checkbox"/> N <input type="checkbox"/></li> </ul> <p>(14) Your main home: do you . . . ?</p> <ul style="list-style-type: none"> <li>• rent it <input type="checkbox"/></li> <li>• own it <input type="checkbox"/></li> </ul> <p>(15) Which foreign languages do you understand well enough to read a newspaper or listen to radio news?</p> <table border="0"> <tr> <td>Danish <input type="checkbox"/></td> <td>Greek <input type="checkbox"/></td> </tr> <tr> <td>Dutch <input type="checkbox"/></td> <td>Italian <input type="checkbox"/></td> </tr> <tr> <td>English <input type="checkbox"/></td> <td>Portuguese <input type="checkbox"/></td> </tr> <tr> <td>French <input type="checkbox"/></td> <td>Spanish <input type="checkbox"/></td> </tr> <tr> <td>German <input type="checkbox"/></td> <td>Swedish <input type="checkbox"/></td> </tr> <tr> <td>Other <input type="checkbox"/></td> <td></td> </tr> </table> <p>FULL ADDRESS</p> <p>(16) • REGION (17) • SIZE OF TOWN USING THE LOCAL, USUAL CATEGORIES (As documented in available statistics on universe)</p>	Danish <input type="checkbox"/>	Greek <input type="checkbox"/>	Dutch <input type="checkbox"/>	Italian <input type="checkbox"/>	English <input type="checkbox"/>	Portuguese <input type="checkbox"/>	French <input type="checkbox"/>	Spanish <input type="checkbox"/>	German <input type="checkbox"/>	Swedish <input type="checkbox"/>	Other <input type="checkbox"/>	
Danish <input type="checkbox"/>	Greek <input type="checkbox"/>													
Dutch <input type="checkbox"/>	Italian <input type="checkbox"/>													
English <input type="checkbox"/>	Portuguese <input type="checkbox"/>													
French <input type="checkbox"/>	Spanish <input type="checkbox"/>													
German <input type="checkbox"/>	Swedish <input type="checkbox"/>													
Other <input type="checkbox"/>														

**Figure 11.5** A Sample Questionnaire for Demographics

SOURCE: Copyright © 1990 by ESOMAR® - The World Association of Research Professionals. Originally published by ESOMAR.

as the incidence of English-speaking is very high in these two countries. The issue often is one of cultural comfort versus loss in meaning. Any time a questionnaire is translated, there will be some loss in meaning. A normal procedure for translation is to follow a translation/back-translation process. The extent to which a questionnaire can be successfully translated depends upon (a) the lack of semantic equivalence across languages; (b) the lack of conceptual equivalence across cultures; and (c) the lack of normative equivalence across societies. This is a specialized topic and is covered in depth by Behling and Law (2000).

## SUMMARY

This chapter looked at issues involved in asking questions of respondents. The exposition was in the context of response error and what might be done to control and, it is hoped, eliminate as much of this error as possible. Some general principles of question formation were presented.

It is often difficult to separate the questionnaire and questions asked in a marketing research study from the mode of data collection used. This is especially so for surveys or when a survey method (communication) is used in an experiment. The interview (telephone or personal) can be a key element in errors of inaccuracy and ambiguity arising. This is especially so for surveys designed to produce quantitative data about some population—a common type of marketing research project—and for cross-cultural/national studies as well.

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## ASSIGNMENT MATERIAL

1. The manufacturer of a certain brand of nationally advertised and distributed frozen fruit juices has retained you as a consultant to advise on a questionnaire that is being prepared. The purpose of the survey is to determine consumer opinion and attitudes about frozen versus fresh fruit juices. Personal interviews are to be conducted on a randomly selected sample of families.
  - a. The questions listed below are being considered for the questionnaire. Comment on each, indicating whether you would leave the question as it is or change it. If you think it should be changed, rewrite it as you believe it should be asked.
    - (1) *Do you or any of your family drink fruit juices?*  
Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes:
    - (2) *Is the juice drunk at a meal or between meals or both*  
At meal \_\_\_\_\_ Between meals \_\_\_\_\_ Both \_\_\_\_\_
    - (3) *Do you prefer frozen or fresh juices?*  
Frozen \_\_\_\_\_ Fresh \_\_\_\_\_
    - (4) *What advantages, if any, do you believe using fresh juice has over using frozen juice?*
    - (5) *What advantages, if any, do you believe using frozen juice has over using fresh juice?*

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(6) *What brand or brands of juice do you regularly buy?*

*Don't know*

(7) *On this card is a list of fruit juices. Tell me which are your family's first, second, and third choices.*

*grape* \_\_\_\_\_

*tomato* \_\_\_\_\_

*lime* \_\_\_\_\_

*lemonade* \_\_\_\_\_

*orange* \_\_\_\_\_

*V-8* \_\_\_\_\_

*other* \_\_\_\_\_

(8) *What is the last brand of juice bought by your family?* \_\_\_\_\_

*Don't know*

b. Classify each of the above questions by type (free-answer, multiple-choice, or dichotomous).

2. The No-Fault Insurance Company, a relatively small company specializing in insuring automobiles, was interested in learning in what proportion of automobile accidents, in which the police were not called, an insuree was involved who had been driving under the influence of alcohol or some form of drugs. A member of the company's marketing research department took a simple random sample of 100 accidents by their insurees over the past 12 months in which there was no police investigation. The insuree was interviewed personally and, after a suitable introduction, handed a card with the following instructions printed on it:

PLEASE READ THIS CARD ALL THE WAY  
THROUGH BEFORE DOING ANY OF THE THINGS REQUESTED

1. The interviewer will hand you a penny after you have finished reading the card and have asked any questions you may have.

Please flip the penny and determine whether it came up HEADS or TAILS without letting the interviewer know which it was.

2. The side of the coin that came up will determine which of the two questions given below you will answer. Please answer the question with "YES" or "NO" only and do not say anything else as we do not want the interviewer to know which question you answer.
3. If the penny came up HEADS, answer "YES" or "NO" (only) to the question:  
"Was your mother born in August?"
4. If the penny came up TAILS, answer "YES" or "NO" (only) to the question:  
"Before your last automobile accident had you been drinking alcohol or taken any drugs (including tranquilizers) that might have caused you to be unable to drive as well as you usually do?"
5. If you have any questions about any of these instructions, please ask the interviewer for an explanation before you flip the penny. If the instructions are followed properly, **ONLY YOU SHOULD KNOW WHICH QUESTION YOU ANSWERED.**

Responses were obtained from 91 persons (four had died or otherwise could not be contacted and five refused to answer). Twenty-four (24) of the respondents answered "Yes."

- a. What is the estimated proportion of respondents who answered "Yes" to the question concerning driving after drinking alcohol or taking drugs?
  - b. What are the nonsampling errors that are actually or potentially present in this estimate?
  - c. Should these nonsampling errors be reflected in the estimate? If so, how?
3. A U.S. senator sent the questionnaire reproduced below to a mailing list of his constituents. Comment on the questionnaire indicating
- a. Your evaluation of each question
  - b. Your appraisal of the questionnaire as a device for informing the senator of his constituents' opinions

#### QUESTIONNAIRE

1. Under present law, families who run small businesses and farms are often forced to sell their holdings rather than pass them on to the next generation owing to the burden of estate taxes. Would you favor legislation to ease this burden?  
Yes \_\_\_\_\_ No \_\_\_\_\_
2. Of the following areas of federal spending, choose one in which you would prefer to make a budget cut:
  - a. Public welfare payments \_\_\_\_\_
  - b. Public works projects \_\_\_\_\_
  - c. Defense spending \_\_\_\_\_
  - d. Foreign assistance programs \_\_\_\_\_
  - e. Food stamps \_\_\_\_\_
  - f. Education \_\_\_\_\_
  - g. Other \_\_\_\_\_
3. Do you believe that charitable organization, such as churches and nonprofit hospitals should remain tax-exempt?  
Yes \_\_\_\_\_ No \_\_\_\_\_
4. Which one of the following would you choose as the most important in solving the energy shortage over the next 20 years?
  - a. Solar/geothermal power development \_\_\_\_\_
  - b. Nuclear power development \_\_\_\_\_
  - c. Conservation of present sources  
of energy \_\_\_\_\_
  - d. Expansion of domestic oil reserves \_\_\_\_\_
  - e. Increased use of coal \_\_\_\_\_
5. Which one of the following would you say is the most important effort Congress could make to prevent crime?
  - a. Enact harsher penalties to deter crimes \_\_\_\_\_

- b. Reenact the death penalty for certain crimes \_\_\_\_\_
- c. Enact restrictions on violence on television \_\_\_\_\_
- d. Increase funding for the courts \_\_\_\_\_
- e. Increase funding for law enforcement agencies \_\_\_\_\_
- f. Reform the country's prison system \_\_\_\_\_
6. Most of the economic indicators for the nation show positive signs of a recovery. Unemployment is down to 7.6 percent, personal incomes are up, and the prime lending rate is down.
- a. Do you feel that we are in a recovery? Yes \_\_\_\_\_ No \_\_\_\_\_
- b. Do you feel that the economy has stabilized? Yes \_\_\_\_\_ No \_\_\_\_\_
- c. Do you expect inflation to increase? Yes \_\_\_\_\_ No \_\_\_\_\_
- d. Do you believe that unemployment will stabilize Yes \_\_\_\_\_ No \_\_\_\_\_
- Should Congress finance more jobs producing programs with tax revenues?
- Yes \_\_\_\_\_ No \_\_\_\_\_
7. In each of the following areas do you feel that Congress' efforts should be increased?
- a. Energy research and development Yes \_\_\_\_\_ No \_\_\_\_\_
- b. Health care and insurance Yes \_\_\_\_\_ No \_\_\_\_\_
- c. Crime control Yes \_\_\_\_\_ No \_\_\_\_\_
- d. Tax reform Yes \_\_\_\_\_ No \_\_\_\_\_
- e. Preservation of the environment Yes \_\_\_\_\_ No \_\_\_\_\_
- f. Other Yes \_\_\_\_\_ No \_\_\_\_\_

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