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Selecting a Data Collection Technique[1]

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Data collection techniques include screening records and reports, direct observation of behavior, face-to-face interviews, telephone interviews, and mail questionnaires. If valid information is readily available in records and reports, then further data collection may not be necessary; or, if direct observation is feasible and will provide the information needed, then there may be no need to ask people to respond to questions. However, these techniques are often not feasible or are inadequate to provide the quality or quantity of information desired. Consequently, survey instruments may be necessary to gather data from which judgments about programs can be made.

To select a survey instrument, there are several factors to consider:

1. **technical adequacy:** reliability, validity, freedom from bias, etc.

2. **practicality:** cost, political consequences, duration, personnel needs, etc.

3. **ethics:** protection of human rights, privacy, legality, etc.

One should consider all of these factors to arrive at a decision. Usually a compromise is reached that will produce a balance among these criteria without violating any of them to the point that the technique is inadequate, unfeasible, or ethically indefensible (Stufflebeam et al. 1985).

RELIABILITY AND VALIDITY

It is generally agreed that "good" measures must be reliable and valid. *Reliability* is usually concerned with stability over time. *Validity* is concerned with whether or not the item actually elicits the intended information. Understanding these two terms is important to understanding measurement in both theoretical and applied data gathering settings (Carmines, 1979).

In the field of testing, people are generally concerned with the reliability and validity of a test as a whole. However, most questionnaires are concerned with distinct questions or items. Consequently, Extension tends to be concerned with the reliability and validity of the individual items on questionnaires.

Reliable items

A reliable questionnaire item consistently conveys the same meaning. Will a person reading the question interpret it the same way each time he or she reads it? If the question does not convey a single meaning to a given person, we cannot be sure which meaning the respondent had in mind when answering the question. For example, what does the term "cultural opportunities" mean? Arts? Different ways

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of life? The use of this term would likely cause reliability problems.

A simple and expedient way to test the reliability of items is to ask others (colleagues, some of the respondent groups, etc.) to tell in their own words what specific terms mean. Through this process, one can identify items that may not have a clear meaning to the respondent group, and can adjust them accordingly. Specificity contributes to reliability.

Testing and retesting is a method often used in testing circles to check reliability. However, this approach has limited usefulness with questionnaires because facts, situations, or opinions can and do change over time. Consequently, different answers over a time span would not necessarily indicate reliability problems.

Valid Items

Questionnaire items are valid if they are successful in eliciting true responses relevant to the information desired. If the response is to be valid, it is essential that the respondent understand the question as it is understood by those conducting the survey.

Also the respondent must be able to respond; he or she must have the information. If the respondent does not have the information, a "don't know" category could still make the question valid.

To check validity, use the same approach as testing for reliability. Ask others (colleagues, relatives, friends, etc.) to explain what the question is asking. Through this process one can identify questions that do not seem to elicit the kind of information desired.

Pre-test

After conducting the initial tests of reliability and validity, pre-test the instrument. Through a pre-test, one can identify any problems with the instrument or the data collection process.

A simple approach is to draw a small sample, at least 20 people from the same population that is to be surveyed. Send them the instrument. Follow up, either by telephone or in face-to-face interviews, with those who responded, to check their perception of the meaning of questions, terms, instructions, etc. Follow-up on non-responses to determine why they did not respond so that any other problem can be identified.

For a telephone survey, conduct the pre-test in a manner similar to that described above, then follow up, generally in the same conversation, with additional conversation about the survey, checking to make sure that the questions mean the same thing to them as to you.

Always pre-test on the population that you will be sampling. Unless it is very long, pre-test the entire questionnaire, to test not only the questionnaire but also the whole data collection system.

BIAS

When a response is affected by factors other than the concept a question is designed to measure, then the response is biased. A biased response provides inaccurate information. For example, if in answering a question measuring knowledge of history a student does not know the answer but guesses correctly, then the score on the question does not reflect the student's knowledge, but his or her "luck."

The problem of social desirability bias is a significant one in survey research (Sudman and Bradburn, 1982). When the question is about socially desirable or undesirable behavior or attitudes, the respondent tends to appear or act in a socially desirable way, especially in a face to face interview, which may not reflect the true state of affairs.

- **Example 1**
  Have you received a ticket for going through a red light in the past 12 months? (circle your response)

  YES

  NO

- **Example 2**
  Have you, yourself, ever happened to try marijuana? (circle your response)

  YES

  NO

These two questions measure socially undesirable behavior. The respondent may be reluctant to report

such an incidence. As a result, the response may be biased and underestimate the occurrence of these behaviors, and a decision based on the collected information is not valid.

The wording of a question may contribute to a biased response.

- **Example 1**
  Are you in favor of forcing state, county, and municipal employees to pay union dues to hold their government jobs? (circle your response)

  YES

  NO

- **Example 2**
  Do you want union officials, in effect, to decide how many municipal employees you, the taxpayer, must support? (circle your response)

  YES

  NO

The non-neutral word "forcing" and the clear tendencies implied in the questions sway the respondent's opinion. Questions like these are clearly biased.

When selecting a technique, one must consider whether the technique brings any bias into the data. A non-judgmental attitude on the part of the interviewer or careful wording of the questions may help eliminate the problem.

COMPARISON OF THREE TECHNIQUES: FACE-TO-FACE INTERVIEW, TELEPHONE INTERVIEW, AND MAIL QUESTIONNAIRE

Three commonly used approaches to data collection involving survey instruments are face-to-face interviews, telephone interviews, and mail questionnaires. Each method has certain strengths and weaknesses; consequently, it is difficult or impossible to select one as being "best." The researcher with limited resources who wants to survey a large sample of his clientele scattered throughout a geographic area may have only one choice — the mail questionnaire. Similarly, one who finds it necessary to complete a survey in a short period of time will probably find that the telephone is the only way to get the job done. If faced with surveying a low-income, low-education population, chances are that the face-to-face interview will be the only acceptable method. Most survey decisions are not as clear cut, however. They involve finding the most desirable, or "least objectionable," balance among the pros and cons of the different techniques.

According to Galpin (1987), the advantages of mail questionnaires are that they are easy to distribute and tabulate. Also, they reach a large sample, and are less expensive. However, the researcher is not able to interact with the respondent — the researcher is not even able to be sure that the intended respondent is the actual respondent — and the respondent may find the whole survey process too impersonal. Also, the researcher may have a low response rate.

A telephone survey for less sensitive and controversial topics may produce a high response rate if the survey is conducted skillfully. However the personal contact in the telephone survey can bring social bias into the study (James et al. 1984).

Don Dillman sets forth in his book (1978) on mail and telephone surveys the following considerations for selection among the face-to-face interview, the telephone interview, and the mail questionnaire in Table 1.

USE OF NEWSPAPER

One study conducted in a rural Florida community revealed that reliable data can be collected with the use of a local newspaper (Taylor, Summerhill et al., 19867). There was no difference between a probablistic sample of respondents to the mail survey and a convenience sample of respondents to the newspaper survey on 80 percent of the items tested. There was a difference in the two groups' responses concerning certain demographic and subject matter variables.

The newspaper offers many advantages for data collection. Generally, one can expect responses from many more people using the newspaper than one can using a mail survey. However, even if the response rate to a newspaper survey is not high, the surveys returned are usable. In the Florida study just cited, the mail survey return rate was 81% and the newspaper return rate was only 10%, but the newspaper yielded 318% more usable surveys than did the mail survey. Another advantage to using the newspaper is that one can obtain a response rapidly.

Table 1. Considerations for Selection (Performance Characteristics)

	Face-to-Face	Mail	Telephone
1. Collecting Information from Sample			
a. Likelihood the selected respondents will be reached	Medium	High	High
b. Adequate response rates			
(1) Heterogeneous samples	High	Medium	High
(2) Homogeneous samples	High	High	High
2. Questionnaire Construction and Design			
a. Allowable length of questionnaire	High	Medium	Medium
b. Types of questions			
(1) Allowable complexity	High	Medium	Low
(2) Success with open-ended questions	High	Medium	Low
(3) Success with screen questions	High	Medium	Low
(4) Success with controlling sequence	High	Low	High
(5) Success with tedious or boring questions	High	Low	Medium
c. Success in avoiding item non-response	High	Medium	High
d. Insensitivity to questionnaire construction procedures	High	Low	Medium
3. Obtaining Accurate Answers			
a. Likelihood that social desirability bias can be avoided	Low	High	Medium
b. Likelihood that interviewer distortion and subversion can be avoided	Low	High	Medium
c. Likelihood that contamination by others can be avoided	Medium	Medium	High
4. Administrative Requirements			
a. Likelihood that personnel requirements can be met	Low	High	High
b. Potential speed of implementation	Low	Low	High
c. Keeping costs low:			
(1) Overall potential for low per interview costs	Low	High	Medium
(2) Insensitivity of costs to increasing geographical dispersion	Low	High	Medium
The following table presents a comparison of the relative strengths of face-to-face interviews, telephone interviews, and mail questionnaires for data collection, based on the characteristics indicated above.			
1. Number of dimensions face-to-face ranked higher than others	--	9	5
2. Number of dimensions mail ranked higher than others	6	--	6
3. Number of dimensions telephone ranked higher than others	8	9	--
Personnel and cost considerations may cause one to lean to the use of mail questionnaires or telephone interviews for information collection, except in surveys involving very small numbers.			

Citing the Florida study again, four days after the newspaper was delivered to subscribers, 45% of the total returns had been received. It would take at least one month to obtain this kind of a response rate using mail surveys. Using the newspapers also involves much less labor than does using a mail survey, and the cost is less, even free in some newspapers. Finally, the newspaper may be a very creditable resource to use when collecting data. Voters make decisions based on polls conducted by newspapers (Atkin, 1964), and national policy makers appear to formulate policy based on public opinion data newspapers have obtained (Anderson, 1980).

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