

Questionnaire development: 5. The pretest

Linda Del Greco, EdD
Wikke Walop, PhD

The final stage in questionnaire development is the pretest: the dress rehearsal of the study. Regardless of the time, money and effort spent to develop a questionnaire, there is no guarantee that it will perform in the field as planned.

The number of pretest trials to be conducted cannot be decided in advance. Instead the pretest should be repeated with new subjects until the researcher is satisfied. The conditions should be identical to those of the study, including the choice and use of subjects.

There is no formula to determine the number of subjects required. Some investigators have stated that 10 to 50 subjects for each pretest is adequate.¹⁻⁴ Therefore, the decision on the sample size is subjective and is influenced by the availability of subjects.

Questions

The value of each question is determined by the responses elicited. A poorly worded question may yield a wide variety of responses that do not relate to the question, and this leaves the researcher with unusable information.

A question that appears to be appropriate and worded properly may yield a wrong response because it is interpreted differently by each respondent. For example, during the pretesting of a questionnaire measuring normal life patterns we

asked the following question to verify each patient's diagnosis: "Why were you seeing Dr. X from hospital Y?" The question caused confusion, as illustrated by the following answer: "I saw Dr. X because my uncle was sick many years ago and that's the doctor he used." The final form of the question reads: "Before we proceed with the interview, I'd like to verify my records, which indicate that you were recently treated by Dr. X at hospital Y. Is that correct?" If Yes the interviewer asks: "May I ask what Dr. X was treating you for?"

Other questions that appear appropriately worded may result in patients venting their feelings rather than answering the question; such questions need to be redrafted.

A question may be routinely left blank by all respondents. For example, in a study of patients with lung cancer the following question was used: "Here is a card showing amount of yearly income. Next to each amount is a letter. Would you please tell me what letter best represents your salary or earnings from work for the last 12 months that you worked?". Many of the patients stated that they were retired and could not remember what they had earned in their last year of employment. In addition, subjects may not respond if the question seems insulting or incomprehensible.

An established questionnaire or questions from an established questionnaire can be used if the characteristics of the study group are similar to those of the group for which that questionnaire was originally designed; the greater the difference the more likely the questions will have to be changed. Different responses to an established questionnaire from subjects of different cultural backgrounds may reflect problems with the vocabulary rather than with the variable being investigated. Moreover, there are differences between generations of people, and questions need to be re-examined for appropriateness. For example, the question "What is Mars?", which at one time could measure only knowledge of the solar system, is no

From the Department of Epidemiology and Biostatistics, McGill University, and the Division of Clinical Epidemiology, Department of Medicine, Montreal General Hospital

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Reprint requests to: Dr. Linda Del Greco, New York Hospital, 21 Bloomingdale Rd., White Plains, NY 10605, USA

longer useful because Mars is also a chocolate bar.

The question format may have to be changed after the answers are examined. Some questions may not be answered in a closed format but will be if open-ended. In addition, any questions that are leading or double-barrelled or have inappropriate vocabulary or double negatives will likely be identified during the pretest.

Skip patterns

Questions on a given topic are usually clustered; when a skip pattern is used the first question determines whether the interviewer should be directed to skip to the next set of questions. These patterns help to determine the quality of the data to be gathered. The pretest will identify those patterns that are not working as planned. Changes in the spacing, type or printing features of the questionnaire may ameliorate the problem.

Responses

Since people often express themselves non-verbally, it is important to observe the reactions of pretest subjects. Do certain questions appear to be painful? Does the subject appear to be withholding information or answering dishonestly? If so, the interviewer should make a note and at the end of the interview ask the subject to evaluate these questions and comment on his or her reactions. This review of the comments may facilitate revisions.

Subjects' comments

At the end of the pretest interview subjects are asked if they think any questions should be added or omitted. The person who designed the questionnaire has often had a different perspective. During the pretest of a questionnaire on discrimination against cancer patients in the work force,⁵ we found that we had overlooked the patients' concerns that their friends and coworkers treat them differently because of the cancer. We were able to modify the questionnaire by adding questions concerning coworkers.

Questionnaire design

The sequence of the questions as well as the general design of the questionnaire can also be examined during the pretest. Is there enough room after each question to record the responses? Are the questions sufficiently separated to ensure that none are inadvertently overlooked? Does the interview proceed logically and smoothly?

Length

The pretest allows the researcher to estimate the completion time of the questionnaire. Long questionnaires will likely tire or bore the subjects and may result in inaccurate responses or failure to finish the interview. Therefore, interviews should be kept under 1 hour. For subjects who are ill or in hospital, 30 minutes may be more suitable. The questionnaire can be shortened or divided into two parts.

Ego involvement

Although the pretest is critical, the most difficult step comes afterward, when the comments and suggestions must be reviewed with an open and objective mind. It is easier to revise an established questionnaire than your own because of the absence of ego involvement. The questionnaire and the study will likely improve as a result of changes from the pretest. Although there is no guarantee that all potential problems will be uncovered, ignored problems will recur during the study.

References

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Scientific method

Science proceeds by successive answers to questions more and more subtle, coming nearer and nearer to the very essence of phenomena.

— Louis Pasteur (1822-1895)