

PRINCIPLES OF FORMS DESIGN AND INTERVIEWING FOR DATA COLLECTION

Phyllis L. Pirie, Ph.D.
Director, Data Collection Services
Division of Epidemiology
University of Minnesota



Abstract: *This article highlights common principles for writing items for forms, forms design, and interviewing for data collection. When writing items, have a clear purpose for every question, word questions identically for every respondent, acknowledge the participant's reality, and respect the respondent's time and sensibilities. When designing forms, provide a complete script for the interviewer, clearly differentiate instructions from what is to be read aloud, use prepared introductory and transitional statements to make the interview flow smoothly, use a "skip" sequence to assure that important questions are asked and to avoid asking inappropriate questions, and put sensitive questions toward the end of the interview. When interviewing, ensure that each respondent hears exactly the same question, read in exactly the same way, and that respondents feel comfortable enough to answer questions accurately and honestly.*

Although clinical trials are quite different from public opinion surveys, the interviewing and data collection principles of the survey field are applicable to clinical trials. These principles are common to research interviewing regardless of the type of data you are collecting. In clinical trials, researchers collect much important information by interviewing patients (e.g., quality of life data, symptoms, side effects, and some adverse events). Thus, even though core data for assessing outcomes may not come from interviewing, interviewing is very important in clinical research, as well as in public opinion research.

You cannot conduct good interviews unless you have good questions. Interviewing is like writing a script for a play; the scriptwriter and the actor must work together to deliver a credible performance. The work of the question writer and the interviewers (the data collectors) must fit together.

The goals for the interview are to enable the study participant to provide his/her own honest, unbiased responses and to provide accurate information. We want to set up a situation where participants can tell us their truth as they understand it and provide their best information. From the research side, the resulting data should be high quality (few missing items), replicable (reliable), and accurate (valid).

Principles of Writing Items

Table 1 outlines the principles of writing items.

The first principle is to have a clear purpose for every question. This looks obvious, but many questions have no clear purpose. This creates problems.

For example, many surveys ask, "Do you have any children?" There are many gray areas around that question and participants may have trouble providing an accurate answer.

TABLE 1
Principles of Writing Items

Have a clear purpose for every question
Word questions identically for every respondent
Acknowledge the participant's reality
Respect the respondent's time and sensibilities

Possible reasons to ask this question are to learn about the person's reproductive ability, as a prelude to family history, or to assess family responsibility or social integration. What you want to learn makes a difference. Do you want to know only about birth children? What about adopted children or step-children? Do you want to know only about children who are living? A better version of this question (if appropriate to your purpose) is, "Do you have any

biological children, that is, children you (gave birth to/fathered)?"

The second principle comes from the core principal of research, which specifies that every unit being researched is handled the same way: word questions identically for every respondent. Any important definitions or caveats about the question must be shared with everybody. Use language that everybody can understand.

A problematic example is the question, "Have you ever been pregnant?," when followed by instructions to the interviewer that say, "IF ASKED: INCLUDES MISCARRIAGES, ABORTIONS, OTHER NON-VIABLE PREGNANCIES." The "if asked" is the problem. Only the most articulate and self-confident people will say, "does that include miscarriages or abortions?" Thus, people may be getting different questions. The solution is to build the definition into the question: "Have you ever been pregnant? This would include pregnancies that were not carried to term, for example, miscarriages or abortions."

The third principle is that questions should acknowledge the participant's reality. Questions should avoid asking for technical information that the participant is not likely to have. They should include terms that the participant can understand and answer categories that cover possible answers. Answer categories should be exhaustive and mutually exclusive.

A problematic example is the question, "Does your health coverage pay for part or all of the cost of smoking cessation assistance, for example, the nicotine patch or a smoking cessation program?" This is not quite real to participants. Many people do not know what "cessation" means, or have the

technical information about whether their health coverage pays for this.

Similarly, respondents will have a hard time with the question, "When you engaged in physical activity during the past month, for how many minutes or hours did you keep at it?" That is really hard to answer and answers can vary. For example, the participant may have run 30 minutes but played tennis for 90 minutes. There is no one good answer. We encourage researchers to say something such as, "On average, during the past month, how many minutes or hours of physical activity did you get each week?" This is still a bit of a problem for participants because they have to add up many things in their head, but it better reflects their reality.

The fourth principle is that questions must respect the respondent's time and sensibilities. Avoid inappropriate or repetitive questions. Explain the need for sensitive information, which is often necessary. For example, "These next questions concern personal behaviors during sexual intercourse. This information is important for the researchers to understand possible exposures you may have had. Let me assure you that the information is used only by the researchers and will not be shared with anyone outside the study."

Technical Issues in Question Writing

There are many technical issues in question writing. Avoid double-barreled questions, that is, a question that combines two questions, for example, "Are you able to do things like run and swim without difficulty?" What about a person who swims well but cannot run?

Avoid using the word "not" in an agree/ disagree question. For example, "Do you agree or disagree

with the following statement? My health has not given me much trouble in the past six months." If the participant agrees with that, the question is fine. But if the participant disagrees, the mental thinking must be, "my health has not given me much trouble." It becomes very difficult to disagree with a statement like that because of the word "not." We go through a lot of convolutions to delete the word "not" from our questions.

Be careful of the word "regularly," which people over-interpret. We have had problems with questions such as, "Do you exercise regularly?" because some people think that means every day. Tell them what you mean, for example, "Do you exercise regularly-by regularly, I mean at least three times a week?"

Using examples within an item may mislead participants; they get fixated on the example and forget the question. For example, "Do you suffer from any chronic medical condition such as asthma or diabetes?" may cause people to not respond about other conditions. It is difficult to define chronic medical conditions, but sometimes it is best to find another way of saying it without using examples.

Time frames are sometimes a problem and should be clearly specified. If you are asking questions about the past, you need to specify "in the last week, in the last year, ever," and so forth. Think about long and short time frames. If you want to ask if the participant has seen a health care practitioner for his/her diabetes, do you want a short time frame such as a week or a month or a long time frame such as a year or several years? People work harder to recall information related to a short time frame. Sometimes you need to ask about longer time frames due to the nature of the research,

but shorter time frames can provide more accurate information. If you are asking about a chronic medical condition, short time frames can be confusing.

Answer categories are open- or closed-ended. In closed-ended questions, we give participants the answers and they pick one. Open-ended questions let participants choose how to answer. Most questions in data collection are closed-ended.

In a few situations, an open-ended question is better. For example, “How many drinks of alcohol do you have in an average week?” is open ended. The closed-ended question says “How many drinks of alcohol do you have in an average week-less than 2, 3-5, 5-10, 11-14, or more than 14?” The problem with the closed-ended question is the way the categories were set up. The top category is only two drinks a day, which is a pretty low cut-off. The closed-ended answer categories tend to lower the self-reported amount of drinking.

Experience, knowing the rules, and reviewing your forms for compliance with the rules can only get you so far. In order to know whether you have done a good job of asking things that reflect reality for the participants, you must get inside their heads a little. That is why we do exhaustive pre-testing, even if it looks simple and straightforward. We focus on the respondents’ understanding of each item. We pick up any cues that they do not understand the item or have an answer that we have not covered. We also consider the sequence and context of items.

Principles of Forms Design

Once you have figured out what questions to ask, follow the principles of forms design (Table 2). The form should provide a complete script for the interviewer, showing all the

words he or she should say. Different staff are more or less articulate and thorough so you want to provide the words to use.

The fourth principle is to use the “skip” sequence to assure that important questions are asked and to

TABLE 2
Principles of Forms Design

The questionnaire should provide a complete script for the interviewer, showing all the words he or she should say
Clearly differentiate instructions to the interviewer from what is to be read aloud
Use prepared introductory and transitional statements to make the interview flow smoothly
Use “skip” sequence to assure important questions are asked and to avoid asking inappropriate questions
Put sensitive questions toward the end of the interview

A problematic example is a question that asks the interviewer, “In the last three months since his/her previous examination, did the participation experience any of these: wheezing, shortness of breath, cough?” This does not tell the interviewer what to say to get this information, whether there are any definitions he/she should provide, or how to define the months.

The second principle is to clearly differentiate instructions to the interviewer from what is to be read aloud. In my organization, we use all capital letters for instructions. It does not matter how you do this as long as you are consistent.

The third principle is to use prepared introductory and transitional statements to make the interview flow smoothly. A few words of transition are often needed or abrupt changes in question style will throw respondents. Give data collectors the words to use. For example, “These next few questions concern health habits. Again, there are no right or wrong answers. We are interested in finding out about you and your health habits.”

avoid asking inappropriate questions (those that do not pertain to the person). The fifth principle is to put sensitive questions toward the end of the interview. Start with innocuous questions and build up to the sensitive questions.

Principles of Interviewing

Table 3 outlines the principles of interviewing.

There are two core rules:

- Each respondent should hear exactly the same question, read in the exactly the same way
- Respondents should feel comfortable that they can answer each question accurately and honestly.

Everything else flows from these core rules, which are translated into specific rules of interviewing. Read each question exactly as written in the order specified. Encourage respondents to use the pre-specified answer categories. If people give you a mixed answer, you can say, “well, the answers I have in front of me are

x, y, and z. Which should I check?"
Do not assume you know the answer to a question before asking it.

Reading too fast is a major issue. Take the time to let people comprehend what you just said. Do not react positively or negatively to responses. This is hard and can cause role conflict. For example, if you are both an intervention counselor and an interviewer, you want to react. The cleanest way to not react is to use a data collection interviewer who is separate from the intervention staff.

Use neutral probes if the response is unclear. For example, "could you tell me more about that?" or "what did you mean by that?" Write down pertinent additional comments that are not captured in the data that may help you figure out later what respondents meant by their answers.

There are some helpful strategies in interviewing. Use silence to encourage fuller answers. A little silence while you are waiting for participants to formulate an answer can sometimes produce a better answer. If appropriate, encourage the participant to give an approximate answer (e.g., "Your best guess is fine."). Offer praise for full interview participation, but not for specific content or answers (e.g., "Thanks, you've been very helpful.").

Conclusion

Good interviewing is possible only if good questionnaire writing and good questionnaire formatting have preceded it. Good interviewing is designed to improve the quality and validity of the data.

TABLE 3
Principles of Interviewing

Core Rules of Interviewing:

- Each respondent should hear exactly the same question, read in the exactly the same way
- Respondents should feel comfortable that they can answer each question accurately and honestly

Specific Rules of Interviewing:

- Read each question exactly as written
- Read the questions in the order specified
- Encourage respondents to use the pre-specified answer categories
- Do not assume you know the answer to questions before asking them
- Do not read too fast!
- Do not react positively or negatively to responses
- Use neutral probes if the response is unclear
- Write down pertinent additional comments not captured in the data