



Questionnaire Design



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Steps to design a questionnaire



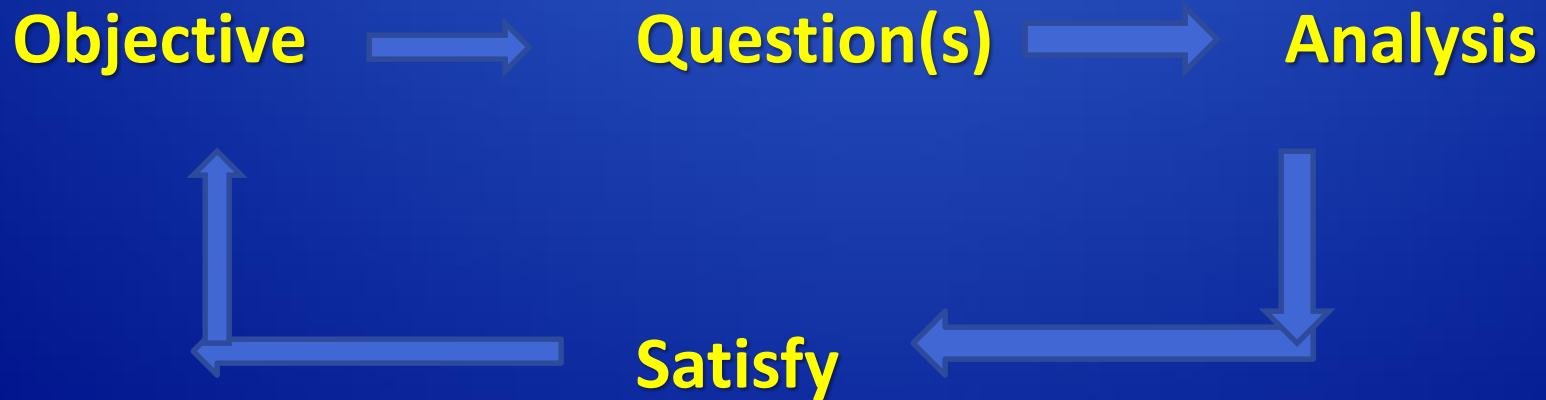
- 1. Write out the primary and secondary aims of your study.**
- 2. Write out concepts/information to be collected that relates to these aims.**
- 3. Review the current literature to identify already validated questionnaires that measure your specific area of interest.**
- 4. Compose a draft of your questionnaire.**
- 5. Revise the draft.**
- 6. Assemble the final questionnaire.**

Define the aims of the study

VERY IMPORTANT



- Write out primary and secondary aims using one sentence per aim. (target population)
- Formulate a plan for the statistical analysis of each aim.



2: Define the variables to be collected



- Detailed list of the information to be collected .
 - KAP
 - Needs
 - Risk factors, behavior, diet, habit
 - Demographics , associates
 - Some combination of these concepts
- **Translate into variables that can be measured.**
- Define the role of each variable in the statistical analysis:
 - Predictor (independent)
 - Outcome (dependent)
 - Confounder and/or effect modifier.

3: Review the literature



- Review current literature to identify related surveys and data collection instruments that have measured aims similar your aims.
- You may get:
- Validated questionnaires.
- Saving your time.
- Detailed items.
- Comparison of results.

4: Compose the first draft.



- **Determine the mode of survey administration:**
 - Face-to-face interview.
 - Self-administered survey (i.e. mail survey).
 - Telephone survey.
 - E mail survey.
- Add more questions than will be included in the final draft.
- Longer questionnaires reduce the response rate.
- Place the most important items in the first half of the questionnaire.
- Make sure questions flow naturally from one to another.



- At the top, of questionnaire clearly state:
 - The purpose of the study
 - How the data will be used
 - Instructions on how to fill out the questionnaire
 - Your policy on confidentiality
- Include identifying data on each page of a multi-page, paper-based questionnaire such as a respondent ID number in case the pages separate

Assemble the final questionnaire



- Group questions concerning major subject areas together and introduce them by heading or short descriptive statements.
- Order questions in order to stimulate recall.
- Order and format questions to ensure unbiased and balanced results.
- Place the most important items in the first half of the questionnaire.
- Make sure questions flow naturally from one to another.

5: Revise



- Shorten the set of questions. If a question does not address one of the aims, discard.
- Refine the questions included and their wording by testing them with a variety of respondents.
 - Ensure the flow is natural.
 - Verify that terms and concepts are familiar and easy to understand for your target audience.
 - Keep recall to a minimum and focus on the recent past.

Testing the Survey Instruments



1. Focus groups discussions
2. Cognitive interviews
3. Field pre-testing

Field Pre-test



- Small-scale study in which all the conditions of the full scale-survey are simulated
- Survey modes
- Interviewer oral debriefing and written reports

Warning signs:

- Variation (Skewed distributions).
- Response rate .
- “No opinion” and “Don’t know” rates.
- Response Patterns.
- Flow of the questionnaire.

Construct a question



Question:

- How many cups of coffee or tea do you drink in a day?

Answer key [1]:



- Question: How many cups of coffee or tea do you drink in a day?
- **Principle:** Ask for an answer in only one dimension.
- **Solution:** Separate the question into two –
 - (1) How many cups of coffee do you drink during a typical day?
 - (2) How many cups of tea do you drink during a typical day?

Field Pre-test



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Construct a Question



- **Question:**

- **What brand of computer do you own?**
 - **(A) IBM PC**
 - **(B) Apple**

Answer key [2]:



- Question: What brand of computer do you own?
 - (A) IBM PC
 - (B) Apple
- **Principle:** Avoid hidden assumptions. Make sure to accommodate all possible answers.
- **Solution #s 1 and 2:**
 - (1) Make each response a separate dichotomous item
 - Do you own an IBM PC? (Circle: Yes or No)
 - Do you own an Apple computer? (Circle: Yes or No)
 - (2) Add all possible response categories & allow for multiple responses
 - What brand of computer do you own? (Circle all that apply)
 - Do not own computer
 - IBM PC
 - Apple
 - Other (please specify) _____

Answer key [3]:



- Question: Have you had pain in the last week?
 Never Seldom Often Very often
- **Principle:** Make sure question and answer options match.
- **Solution:** Reword either question or answer to match.
 - How often have you had pain in the last week?
 Never Seldom Often Very Often

Construct a question



Survey given to teenagers

- Question: Where did you grow up as a child ?
 - Country
 - Farm
 - City

Answer key [4]: (Assume asking a teenager/adolescence)



- Question: Where did you grow up as a child ?
 - Country
 - Farm
 - City
- **Principle:** Avoid questions having non-mutually exclusive answers.
- **Solution:** Design the question with mutually exclusive options (meaning they do not overlap each other)
 - Where did you grow up as a child?
 - House in the countryside
 - Farm house in the countryside
 - Large City neighborhood
 - Small town semi urban / rural
 - Other (please specify) _____

Construct a question



Question:

- Are you against drug abuse? (Circle: Yes or No)

Yes

No

Answer key [5]:



- Question: Are you against drug abuse? (Circle: Yes or No)
- **Principle:** Write questions that will produce variability in the responses.
- **Solution:** Eliminate the question.

Answer key [6]:



- **Question:** Which one of the following do you think increases a person's chance of having a heart attack the most? (Check one.)
[] Smoking [] Being overweight [] Stress
- **Principle:** Encourage the respondent to consider each possible response to avoid the uncertainty of whether a missing item may represent either an answer that does not apply or an overlooked item.
- **Solution:** Which of the following increases the chance of having a heart attack?
 - Smoking: [] Yes [] No [] Don't know
 - Being overweight: [] Yes [] No [] Don't know
 - Stress: [] Yes [] No [] Don't know
 -

Answer key [7]:



■ **Question:**

- (1) Do you currently have a life insurance policy?
(Circle: Yes or No)
- If no, go to question 3.
- (2) How much is your annual life insurance premium?

■ **Principle:** Avoid branching as much as possible to avoid confusing respondents.

■ **Solution:** If possible, write as one question.

- How much did you spend last year for life insurance? (Write 0 if none).

QUALITIES OF THE QUESTIONS:



1. **The number of questions should be determined in relevance to the proposed objectives.**
2. **Avoid irrelevant questions.**
3. **The questions must be simple, short, inquire about one thing at a time.**
4. **Avoid sensitive and very personal questions, however, if the topic is of such a nature, leave them to the end.**
5. **Avoid leading questions.**
6. **Arrange questions in an orderly manner .**
7. Questions relating to the same issue should be kept together.
8. **Avoid technical terms.**
9. **Use local language of community.**

OBJECTIVES



- Validity and reliability of Instruments
- Main mistakes in preparing questionnaires
- Types of questions
- Types of variables



Which one is better?



?



Validity and Reliability



**Reliable
Not Valid**



**Low Validity
Low Reliability**



**Not Reliable
Not Valid**



**Both Reliable
and Valid**

Main Mistakes (Introd.)



An introduction should:

- Include the name of the organization conducting the survey, to ensure the validity to the respondent (in some special cases a “blind” survey is required, and the name will not be given)
- Let the respondent know how long the interview will take
- Let the respondent know that their responses will be confidential and anonymous

Main Mistakes (Q1)



1. Personal information, such as income, should always be kept until the end of the interview

2. Use of pre-coded income categories

- 1. less than 4000
- 2. 4000 - 7999
- 3. 8000-13999
- 4. 14000 or above
- 77. Refused
- 99. Don't know



Categorical Variable
(Ordinal)

For continuous variables like
age, height, weight, etc.
avoid using pre-coded options

Main Mistakes (Q2)



Use simple, clear language

“fitness and recreation opportunities”, or “sports and fitness activities”

- 1. Yes
- 2. No
- 77. Refused
- 99. Don't know



Categorical Variable
(Nominal)

Main Mistakes (Q3)



Avoid asking “aided awareness” questions.
Keep questions short.

Q3. Have you recently seen, read, or heard anything about fitness and recreation programs in your community?

1. Yes

2. No

77. Refused

99. Don't know

Main Mistakes (Q4)



Don't ask two different questions and give one response category

Divide into two questions

- Are you currently a member of a gym or fitness club?

1. Yes

2. No

77. Refused

99. Don't know



Categorical Variable
(Nominal)

- Do you participate in any regular physical fitness program?

1. Yes

2. No

77. Refused

99. Don't know

Main Mistakes (Q5)



Use skip pattern if necessary

Q.4 Are you currently a member of a gym or fitness club?

- 1. Yes
- 2. No -----> Go to Question 6
- 77. Refused
- 99. Don't know

Q.5 Please tell me what regular physical activity you participate in.

Open-Ended
Question

Main Mistakes (Q6)



Keep related questions together

Don't use abbreviations (PSA – public service announcement)

- Q.6 Where did you read, see, or hear this information?
 1. Radio
 2. TV
 3. Weekly Newspaper
 4. Daily Newspaper
 77. Refused
 99. Don't know



Categorical Variable
(Nominal)

Main Mistakes (Q7)



Don't ask two different questions and give one response category

Use the same format for the whole questionnaire

- Q.7 How would you rate the quality of the PSA(s) that you saw or heard?
 1. Excellent
 2. Good
 3. Fair
 4. Poor
 5. Terrible
 77. Refused
 99. Don't know



Categorical Variable
(Ordinal)

Main Mistakes (Q8)



Use simple, common language

Record the “action” in a more objective, direct manner

- Q.7 Would you say that after sawing the advertisement in the media you started participating in local physical activity programs more frequently than before?
 1. Yes
 2. No
 77. Refused
 99. Don't know

Closed-Ended
Question

Main Mistakes (Q9)



Don't use leading questions
Keep related questions together

- What do you recall about the information that you read, saw, or heard?

Open-Ended
Question

Main Mistakes (Q10)



The introduction tells that the information they give is confidential. Asking for personal information after ensuring confidentiality needs to be explained clearly, and the respondent reassured that their name will not be associated with their responses.

The best way to do so is to state why you are asking, and then give them the option to provide the information, otherwise it can lead to some hostility.



Reference book & page number for the lecture resource

- What's wrong with this questionnaire, The health communication unit, Dalla Lana School of Public Health, Toronto, Canada
- Ashry Gad Mohamed, Lecture on Questionnaire Design, College of Medicine & KKHU
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Thank you

Questions?