

How to Design a Survey

EAST RESEARCH-SCHOLARSHIP
COMMITTEE

The Process



This ppt from the EAST Research-Scholarship Committee will help you with this

The Principal Investigator is responsible for this

Outline

1. Prepare:

1. Definitions
2. Objectives of conducting a survey
3. What to know before starting
 1. What is your research question?
 2. Who is your audience?
 3. How do you design your survey questions?

2. Test:

1. How do you validate your questionnaire?
 1. Is it reliable & accurate?
2. Pilot test your questions

3. Apply:

1. Send to EAST for evaluation
2. Critical appraisal – how the research committee of EAST will evaluate your questionnaire

Definitions: What is the Difference Between a Survey and a Questionnaire?

- “Survey” is a **research method, as in survey methodology** while a “questionnaire” is the type of data collection tool.
- **Survey methodology** studies the sampling of individual units from a population and the associated survey data collection techniques, such as questionnaire construction and methods for improving the number and accuracy of responses to surveys.

Objectives

- Develop a set of objectives
- List out the information that you are trying to capture
- Keep it short & simple
- Develop questions based on objectives
- Remove questions that are unnecessary
- Test questions & solicit feedback
 - Do they support your objectives?
 - Are they clear and concise?

What to Know Before Starting

- Does a validated survey already exist?
- What gap in the data are you hoping to fill?
- Who is your audience?
 - Is this survey best answered by all EAST members?
 - Residents? International surgeons? Multidisciplinary members?
- Do you know what all the questions are?
- Is survey methodology the correct methodology to use?
 - Can important quantitative, factual information come from databases instead?
 - Can qualitative, opinion-based information come from individual or focus group interviews instead?

Broad area of research	Example of research questions	Why is a questionnaire NOT the most appropriate method?	What method(s) should be used instead?
Burden of disease	What is the prevalence of asthma in schoolchildren?	A child may have asthma but the parent does not know it; a parent may think incorrectly that their child has asthma; or they may withhold information that is perceived as stigmatizing.	Cross-sectional survey using standardised diagnostic criteria and/or systematic analysis of medical records.
Professional behaviour	How do general practitioners manage low back pain?	What doctors say they do is not the same as what they actually do, especially when they think their practice is being judged by others. ^{w13}	Direct observation or video recording of consultations; use of simulated patients; systematic analysis of medical records
Health-related lifestyle	What proportion of people in smoking cessation studies quit successfully?	The proportion of true quitters is less than the proportion who say they have quit. ^{w15} A similar pattern is seen in studies of dietary choices, exercise, and other lifestyle factors. ^{w16}	'Gold standard' diagnostic test (in this example, urinary cotinence).
Needs assessment in 'special needs' groups	What are the unmet needs of refugees and asylum seekers for health and social care services?	A questionnaire is likely to reflect the preconceptions of researchers (e.g. it may take existing services and/or the needs of more 'visible' groups as its starting point), and fail to tap into important areas of need.	Range of exploratory qualitative methods designed to build up a 'rich picture' of the problem – e.g. semi-structured interviews of users, health professionals and the voluntary sector; focus groups; and in-depth studies of critical events.

Question Structure

- The structure of the question should be simple and easy for respondents to comprehend.
- Questions should have only a single subject and verb, and should not combine two questions into one.
- Questions can become “double-barreled” when the word “or” is used and also when two different types of response options are tucked into a single question.
 - For example, “How satisfied are attendings and residents with the new surgical curriculum?”

Question Design

- Questions can be:
 - Structured (fixed response)
 - Structured questions are best suited in the following situations:
 - When you have a thorough understanding of the responses so that you can appropriately develop the answer choices
 - When you are *not* trying to capture new ideas or thoughts from the respondent.
 - Ranking or rating scale (i.e. Likert scale)
 - Partially structured (the answer is a phrase)
 - Non-structured (open ended)
- Keep answer choices *consistent*
 - Same units, no overlap or gaps in possible answers
- Always provide an ‘out’
 - Yes vs. No vs. ‘Prefer not to answer’

Question Wording – What to Avoid

- Complex words, technical terms, jargon and phrases that are difficult to understand

Use . . .

- Work
- Tired
- About
- People who live here
- Your answers
- Job concerns
- Providing health care

Instead of ...

- Employment
- Exhausted
- Regarding
- Occupants of this household
- Your responses to this questionnaire
- Work-related employment issues
- Health care provision

Question Wording – What to Avoid

- Shorthand (contractions, abbreviations, symbols, slashes, parentheses, brackets)
- Framing questions in the negative - *how frequently do you not attend classes?*
- Using double negatives - *do you agree or disagree that students should never not go to class?*
- Passive voice – *how often were grade reductions made by your teachers for absences?*
- Words or phrases with a strong point of view

Methodology: Reliability

- Reliability is the extent to which repeatedly measuring the same property produces the same result.
 - A reliable scale will repeatedly measure the same weight of an object: the same apple will weigh 100 g if measured repeatedly
- Ideally, each survey question will mean the same thing to everyone, every time, including those administering the survey.
 - if different people measure the same apple, they will also agree that the apple weighs 100 g today and a week from now
 - Test-retest reliability
 - They all agree that the weight is 100 g
 - Inter-rater reliability

This takes careful design and refinement.

Methodology: Validity

- Validity is the extent to which a survey question measures the property it is supposed to measure.
 - That same scale may be reliable by measuring the apple at 100 g each time, but it is not valid if the weight of the apple, using a gold standard, is actually 90 g.
 - Systematic error
- Ideally, your survey questions should be subjectively viewed to measure what it is supposed to measure by respondents and experts in the field
 - Using, say, a digital scale to measure your apple
 - Face validity
 - Or, that a certain type of digital scale is most commonly used by investigators who routinely weigh apples
 - Content validity

Reliability & Validity

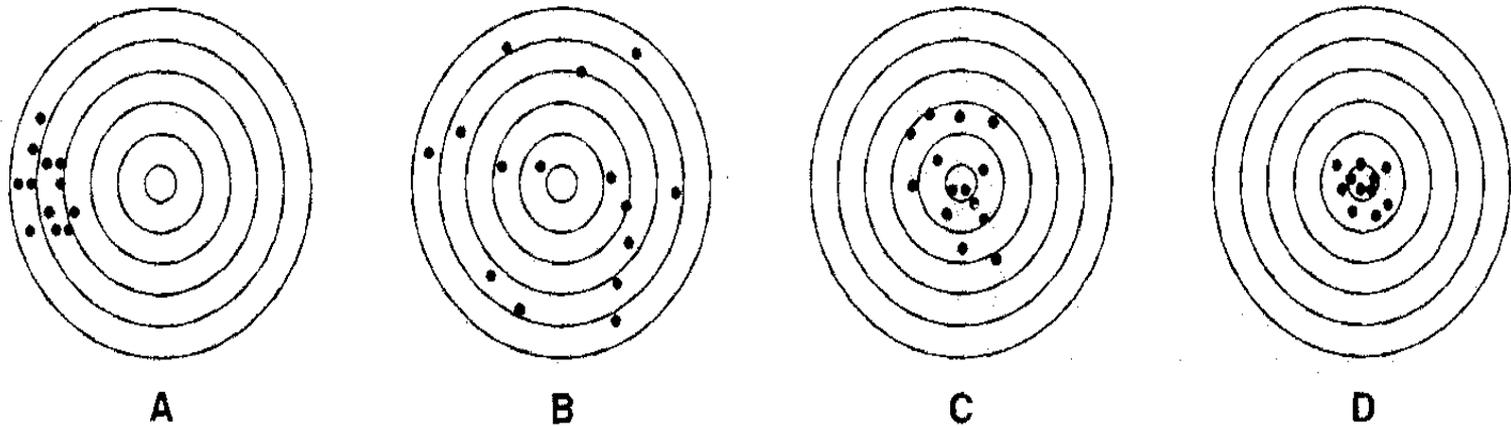


FIGURE 6.1 Representation of targets to illustrate the relationship between reliability and validity. (A) Scores are highly reliable, but not valid, demonstrating systematic error. (B) Scores are neither reliable nor valid, demonstrating random error. (C) Reliability has improved but is still low; scores are somewhat valid. (D) Scores are both reliable and valid.

An Example of How to Create a Valid and Reliable Questionnaire

Cleo wants to measure nurses' awareness of the risk factors for falls in older people. She completes a thorough review of existing measures, but cannot find one to suit her needs. After running two focus groups with nurses of varying levels of awareness, Cleo creates a list of ten key questions, and scores the instrument so that those with good falls-awareness should know all the answers while those with (say) good awareness of health issues in general will not. She then pilots the questionnaire on a sample of nurses to assess its legibility and comprehensibility. Two questions are consistently misunderstood so she alters their wording. Cleo then asks a second sample of 200 nurses to complete the questionnaire on two occasions a week apart, and compares their answers. This exercise in test-retest-reliability shows that participants respond to the questionnaire in a consistent manner. She standardises her instrument by paying meticulous attention to layout and inserting clear instructions for participants.

Pilot Test Your Questions

- Choose a small, representative sample of individuals similar to your participants
- Do respondents understand the purpose of your survey?
- Do they feel compelled to participate due to the knowledge gap this is addressing?
- Is the survey brief and for the correct audience?
- Are the questions understandable?
- Have you checked for reliability & validity?
- Are they being answered in a similar fashion to what is expected?
- Will the answers be very similar if the same group of pilot-respondents answer the same survey in one week's time?
- Once complete, send us your survey!
 - www.EAST.org , EAST Research-Scholarship Committee
(managementoffice@east.org)

Critical Appraisal Checklist for your Questionnaire

- The following slides demonstrate how we will assess the readiness for distribution of your questionnaire
- While we do not play a formal role in the coding and analysis of your data, we have included these slides to guide you once your questionnaires are completed
- This follows the British Medical Journal's critical appraisal guide

<http://www.bmj.com/content/suppl/2004/05/27/328.7451.1312.DC1#e>

Research Question and Study Design

- What information did the researchers seek to obtain?
- Was a questionnaire the most appropriate method and if not, what design might have been more appropriate?
- Were there any existing measures (questionnaires) that the researchers could have used? If so, why was a new one developed and was this justified?
- Were the views of consumers sought about the design, distribution, and administration of the questionnaire?

Validity and Reliability

- What claims for validity have been made, and are they justified? (In other words, what evidence is there that the instrument measures what it sets out to measure?)
- What claims for reliability have been made, and are they justified? (In other words, what evidence is there that the instrument provides stable responses over time and between researchers?)

Format

- Was the title of the questionnaire appropriate and if not, what were its limitations?
- What format did the questionnaire take, and were open and closed questions used appropriately?
- Were easy, non-threatening questions placed at the beginning of the measure and sensitive ones near the end?
- Was the questionnaire kept as brief as the study allowed?
- Did the questions make sense, and could the participants in the sample understand them? Were any questions ambiguous or overly complicated?

Instructions

- Did the questionnaire contain adequate instructions for completion—eg example answers, or an explanation of whether a ticked or written response was required?
- Were participants told how to return the questionnaire once completed?
- Did the questionnaire contain an explanation of the research, a summary of what would happen to the data, and a thank you message?

Piloting

- Was the questionnaire adequately piloted in terms of the method and means of administration, on people who were representative of the study population?
- How was the piloting exercise undertaken—what details are given?
- In what ways was the definitive instrument changed as a result of piloting?

Sampling

- What was the sampling frame for the definitive study and was it sufficiently large and representative?
- Was the instrument suitable for all participants and potential participants? In particular, did it take account of the likely range of physical/mental/cognitive abilities, language/literacy, understanding of numbers/scaling, and perceived threat of questions or questioner?

Distribution, Administration and Response

- How was the questionnaire distributed?
- How was the questionnaire administered?
- Were the response rates reported fully, including details of participants who were unsuitable for the research or refused to take part?
- Have any potential response biases been discussed?

Coding and Analysis

- What sort of analysis was carried out and was this appropriate? (i.e. correct statistical tests for quantitative answers, qualitative analysis for open ended questions)
- What measures were in place to maintain the accuracy of the data, and were these adequate?
- Is there any evidence of data dredging—that is, analyses that were not hypothesis driven?

Results

- What were the results and were all relevant data reported?
- Are quantitative results definitive (significant), and are relevant non-significant results also reported?
- Have qualitative results been adequately interpreted (e.g. using an explicit theoretical framework), and have any quotes been properly justified and contextualized?

Conclusions and Discussion

- What do the results mean and have the researchers drawn an appropriate link between the data and their conclusions?
- Have the findings been placed within the wider body of knowledge in the field (eg via a comprehensive literature review), and are any recommendations justified?

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On behalf of the EAST Research-Scholarship
Committee:

Good luck to all!

If you have any questions, please do not hesitate to
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