



Questionnaire Design and Survey Research

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What frustrates you when you are completing a questionnaire?

Workshop Outline

1. Introductions and orientation
2. Overview of survey process
3. Exercise 1
4. Practical steps in questionnaire design and construction
5. Constructing the questionnaire: Writing items and response options
6. Exercise 2
7. Design, Implementation and Review



Introductions and Orientation



Workshop Objectives:

At the end of this workshop participants will be able to:

1. Walk through a set of conceptual and practical issues in questionnaire design and survey administration
2. Outline the steps to take in developing and implementing a questionnaire/survey
3. Write questionnaire items and match them to appropriate response options
4. Reference resources upon which they can draw for subsequent help in specific applications



Overview of survey process



Terminology

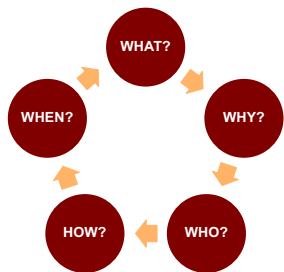
Survey (*v*)- the process of designing the questionnaire or interview, selecting the sample, administering the questionnaire, collecting and analyzing data

Questionnaire (*n*) – a set of questions designed for a survey to collect facts or opinions

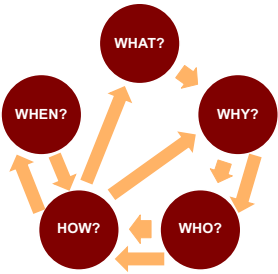
Instrument (*n*) – a set of related items that measure a single construct (for which you will do math)



Survey Process: Meta to Micro



Survey Process: Meta to Micro



WHAT are you planning to do?

- You need a reason
 - Clarity
 - Specific aims
- Questionnaire blueprint
- Aims/proposal



WHY create this survey?

- Surely you have a reason

WHY answer this survey?

- Relevance of topic to respondents
- Clarity of instructions
- Length
- Cosmetics
- Quality of items



WHO will receive this questionnaire?

- Sampling
- Ideal ↔ reality
- Access
- Response rate/know your denominator

WHO will do the work involved?

- You
- Staff/RA assistance
- Contract out



HOW to collect the data?

Options

- In person
- Mail/email
- Internet/web based
- Phone

Things to think about

- cost
- response rate
- control over access
- complexity (skip patterns)
- anonymity vs confidentiality



WHEN will all of this work be possible?

- Cost/budget
- Incentives
- Timeline/calendar
- What other resources need to be garnered?



Exercise 1

On your sheet you have three potential survey topics. Pick one and answer:

- What
- Why
- Who
- How
- When

Discuss and compare



Practical steps in questionnaire design and construction



Don't Reinvent the Wheel

Literature review

- If you identify a relevant instrument, contact author

Sources for instruments/scales

- Mental Measurement Yearbook (MMY)
- HAPI (Health and Psychosocial Instruments)
- Med Ed Portal
- What else do people recommend?



Steps in Survey Design

1. Design a blueprint
2. Develop the Introduction/invitation/instructions
3. Write the items
4. Select the response format
5. Plan design
6. Pilot implementation
7. Review and present data



1. Blueprint



Design a Blueprint

- List objectives
 - What are you trying to capture?
 - What are your research questions?
 - What would you like to report?



2. Introductions/Instructions



Introduction/Explanation

- Explain the purpose of the project/questionnaire
- Tell why respondent was selected (relevance)
- Explain anonymity/confidentiality of responses
- Provide IRB information
- Estimate time to complete/process for return of survey
- Give deadline and thank respondent



Instructions

- Assume almost nothing is "self-explanatory"
- Place instructions where needed
- Specify things like
 - What to do when respondent doesn't know
 - How to indicate response (circle, check, underline responses)
- How to respond (do/do not make multiple responses)
- How to handle branched questions ("If yes, go to..")



3. Items



Write the items

- Link every item to blueprint objectives
- Follow a logical pattern
- Group similar items together
- Select type of items (i.e., open-open vs. close-ended)
- Start with general questions



Writing the Items

Revisit your objectives

What do you want to learn?

What can your respondents tell you?



Writing the Items: Sources

- Literature
- Theory
- Previous surveys
- Focus groups
- Experts (content area and item writing)
- Develop your own



Writing the Items: Guidelines

- Keep items brief
- Write complete sentences
- Present a single idea/construct in an item
- Use neutral wording
- Avoid ambiguity/jargon
- Use language understood by respondent
- Make items applicable to all or use 'skip patterns'



Writing the Items: Common Problems

- Asking questions respondent can't answer
- Double-barreled questions
- Unclear references
- Excessive jargon
- Leading questions
- Implicit negative
- Double negatives



**Problem:
Questions they can't answer**

How much will funding for your residency program change in the next three years?

How many physicians attending your CME activities had to reduce office hours in order to attend?



**Problem:
Double-barreled questions**

Should third and fourth year medical students have more options for electives?

How often do your students arrive late or not attend mandatory course sessions?



**Problem:
Unclear references**

Do you believe that our graduating medical students are better prepared for their specialty training?

Has attendance at noon report changed in the past year?

Do you believe that new GME models can be built around prevailing theories of adult learning?



**Problem:
Excessive Jargon**

Did you use EPAs in designing the assessments for your CBME?

Does your program fully utilize CAI, VPs and HPS?

Are you currently working with your institutional CQI office to develop training modules in ACGME core competencies?



**Problem:
Leading Questions**

Do you believe that professionalism training would be worthwhile for all medical students?

Do you support the extensive efforts of the AMA to limit inappropriate gifts to physicians from pharmaceutical companies?



Problem: Implicit negatives

Do you support further reductions in working hours for residents?

Do you believe that CME providers should have more restrictions placed on commercial support for educational programming?



Problem: Double negatives

People who do not pay taxes should not be able to vote.

Students who do not receive honors should not apply to orthopedic surgery residencies.



4. Response formats



Select the Response Format

- Open-ended v. closed-ended
- Some common closed ended options
 - Likert scale
 - Semantic differential
 - Visual analog
 - Ranking



Response Format: Open- v. Closed-ended

Open-ended

1. longer to complete
2. often left blank
3. limited control of content
4. (more) time/difficulty of analysis
5. Well suited for "why" questions

Closed-ended

1. faster to complete
2. higher response rates
3. total control of content
4. (less) time/difficulty of analysis
5. doesn't allow explanation of responses



Common Response Formats

Likert scale

Strongly Disagree 1 Disagree 2 Neutral 3 Agree 4 Strongly Agree 5

Semantic differential

Effective 1 2 3 4 5 6 7 Ineffective



Common Response Formats

Visual analog

How would you describe your residency?



Ranking

Rank order your instructional preference
(1 = most preferred, 6 = least preferred)

___ TBL ___ PBL ___ Lecture
___ Small Grp ___ Cases ___ Flipped Class



Response Format: Scale points

How many scale points should I include?

Should I include a midpoint?

How should I label scale points?



Match response option to stem

Make sure all answers are interpretable

How strongly do you agree with each of the following:

Strongly disagree, disagree, neutral, agree, strongly agree

This elective has educational value

This school is a good fit for me

I drink coffee

I drink coffee often

I drink coffee too often

The food in the cafeteria is always good



Match response option to stem

Make sure all answers are interpretable

How often do each of the following apply to you: *Never, once a day, a few times a week, once a week or more*

This elective has educational value

This school is a good fit for me

I drink coffee

I drink coffee often

I drink coffee too often

The food in the cafeteria is always good



Exercise 2

Pick a research topic

Draft:

- Introduction/invitation
- Draft 3-5 items
- Construct matching response choices
- Draft 3-5 socio-demographics

Discuss



5. Design



Which is Better? Why?

Indicate your career goal(s)

- ☐ a. Clinical practice
- ☐ b. Teach
- ☐ c. Research
- ☐ d. Administration

Indicate your career goal(s)

- | | <u>Yes</u> | <u>No</u> |
|----------------------|-----------------------|-----------------------|
| a. Clinical Practice | <input type="radio"/> | <input type="radio"/> |
| b. Teach | <input type="radio"/> | <input type="radio"/> |
| c. Research | <input type="radio"/> | <input type="radio"/> |
| d. Administration | <input type="radio"/> | <input type="radio"/> |



Which is Better? Why?

How old are you (to the nearest year)? ____

Or

Check the appropriate age group:

<18 years

18-25 years

>25 years

Or

Please provide your date of birth: __/__/__



An Example

Instructions: All of the questions below are about what you actually do. If you "Always" do what the statement says, circle the 1 for A. If you "Often" do what the statement says, circle the 2 for O. If you "Seldom" do what the statement says, circle the 3 for S. If you "Never" do what the statement says, circle the 4 for N.

1. I think about what I will do when I finish medical school. 1. A 2. O 3. S 4. N
2. I think about what specialty I will practice in someday. 1. A 2. O 3. S 4. N
3. I talk to physicians about my careers choice. 1. A 2. O 3. S 4. N



An Example

Instructions: All of the questions below are about what you actually do. Please select the one answer that best describes how often you do each of the following activities below by completely filling in the circle.

Item	Always	Often	Seldom	Never
I think about what I will do when I finish medical school.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think about what specialty I will practice in someday.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I talk to physicians about my career choice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



An Example

Instructions: All of the questions below are about what you actually do. Please select the one answer that best describes how often you do each of the following activities below by completely filling in the circle.

Item	Always	Often	Seldom	Never
I think about what I will do when I finish medical school.	<input type="radio"/> (1)	<input type="radio"/> (2)	<input type="radio"/> (3)	<input type="radio"/> (4)
I think about what specialty I will practice in someday.	<input type="radio"/> (1)	<input type="radio"/> (2)	<input type="radio"/> (3)	<input type="radio"/> (4)
I talk to physicians about my career choice.	<input type="radio"/> (1)	<input type="radio"/> (2)	<input type="radio"/> (3)	<input type="radio"/> (4)



5. Implementation



Implementation: Review/Pilot

- Conduct several reviews
 - Subject matter expert
 - Survey methodologist
- Conduct a pilot
 - Similar respondents
 - Similar context



Implementation: Sample

- Response rate is important
- Better to have a smaller sample from which you receive an adequate response
- Be able to describe non-respondents
- Number of responses needed / Power analysis
- Know your denominator!



How high should the response rate be?

As high as possible

80%	Excellent
70%	Very Good
60%	Good
50%	Adequate



REVIEW



What's wrong here?

How often do your students arrive late or leave early from your UME activities?

Double-barreled questions



What's wrong here?

Are you currently working with your DIO and PDs to develop training modules in ACGME milestones?

Excessive jargon



What's wrong here?

Do you support the misguided efforts of the ACGME to further limit working hours and opportunities for learning clinical skills?

Leading questions



What's wrong here?

How many students take certain electives to help them get into top residencies?

Asking questions they can't answer



What's wrong here?

The court should not have upheld the vote that denied benefits to Veterans who did not quit smoking.

Double negatives



What's wrong here?

Are the new regional campuses better?

Unclear references



What's wrong here?

Do you believe that clerkships directors should fail students who cheat?

Implicit negatives



Take Home Points

1. Start with your research question and make a plan
2. Adapt a questionnaire or develop you own
 - Match the responses to the stems
 - Pilot and revise as needed
3. Know your respondents
 - what is important to them
 - exactly who and how many are there
4. Don't underestimate your resources and timeline



Resources

Existing instruments

Buros Center for Testing
<http://www.unl.edu/buros/>

Health and Psychosocial Instruments
<http://nihlibrary.nih.gov/>



Resources

For developing surveys

<http://www.statpac.com/surveys/>

Dillman DA, Smyth D, Christian LM. Internet, Mail and Mixed-mode Surveys (3rd edition). New York: John Wiley & Sons; 2008.

Streiner D, Norman G. Health Measurement Scales (HMS): A Practical Guide to the Development and Use (5th edition). New York: Oxford University Press, 2015.

Schuman H, Presser S. Questions and answers in attitude surveys: Experiments on question form, wording, and context. Thousand Oaks, CA: Sage; 1996.

Fowler FJ, Jr. Improving survey questions: Design and evaluation. Vol 38. Newbury Park, CA: Sage; 1995.



MERC Evaluation Link

Please go to the link below and complete the evaluation:

<http://goo.gl/km4DzH>