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Developing a survey instrument

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“The great popularity with questionnaires is they provide a ‘quick fix’ for research methodology. No single method has been so abused.”

Gillham B. Developing a questionnaire (real world research). London: Continuum, 2000



Learning objectives



Describe elements of survey design



Identify common pitfalls in survey development



Know where to look for already existing measures



Where to begin?

- First, clearly define your research question(s)
- Every question should have a purpose—either to answer a research question or provide background to contextualize findings

Example outline for a survey on patient experiences

Research question	Constructs	Possible items
1. How do patients experience the care we provide in this family planning clinic?	1a. Patient perception of quality 1b. Patient agency in decision-making	1a. Patient-centered contraceptive care (PCCC) measure 1b. Contraceptive agency scale
2. What level of knowledge do our patients already have about preventing pregnancy?	2a. Knowledge about reproductive system 2b. Knowledge about contraceptives	2a. No validated scale; create own items with stakeholder input 2b. Contraceptive knowledge assessment (CKA) measure

Steps in drafting a survey

1. Consider **length** – how long will respondents have to answer?
2. Consider the **audience**
 - a) Literacy, positionality, geography, etc.
 - b) Pilot to get feedback on whether items are confusing or inconsistently interpreted
 - c) Language—accommodate multiple where possible, and ensure high quality of translation
3. Consider **ordering and design** to ensure user friendliness
4. For new measures, consider **response scale**
 - a) Yes/no, continuum, Likert scale, rank ordering



Item formats

Format	How it looks on a questionnaire	Uses and advantages
Statements with tick box categories	Please tick the box that best matches your answer Yes ☐ No ☐ Don't know ☐	General attitude measurement. Easily understood and quick to complete. Generates data suitable for non-parametric statistical analysis
Rating scales (see Sapsford³ or Oppenheim² for details of different formats)	Please indicate how you feel about our new surgery opening hours by circling the number that best matches your opinion Find them convenient Find them inconvenient 1 2 3 4 5	Quantifies attitudes on 5 or 7 point scale and differentiates between positive and negative. Good for participants who can conceptualise linear scales and numerical values. Generates data suitable for non-parametric statistical analysis
Visual analogue scales	On the line below please draw a cross to indicate how you've reacted to your new medication Reacted badly Reacted well _____X_____	Precise quantification of attitudes. Good for participants who can conceptualise linear scales and have good visual skills. Data must be transformed for statistical analysis
Symbols	The nurse has just given you a lesson in healthy eating. Look at the faces below and circle the one that best shows how you feel about the advice you have been given     	Similar to numerical rating scale and can be analysed using similar tests but easier to complete for children or those with visual or literacy problems
Open ended items	Do you think exercise and health are linked, and if so, how? Please write your response in the box below	Allows creative expression but may not suit less forthcoming participants. Must be formally analysed with qualitative methods

Boynton PM,
Greenhalgh T.
BMJ. 2004

Common pitfalls

1. Avoid double-barreled questions
 - a) E.g., “Did you feel intimidated or judged by the provider?”
 - b) E.g., “How effective are condoms at preventing pregnancy and STIs?”
2. Limit open-ended questions; more appropriate for qualitative research
3. When measuring change over time, be sure to use the same questions
4. Be realistic about length!

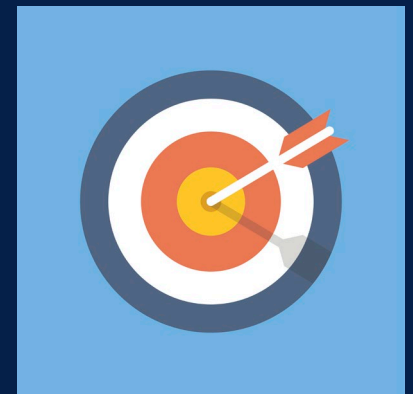


Where can I find existing measures?

- Sources of Measures for Use in Health Disparities Research
Prepared by the Analysis Core, Center for Aging in Diverse Communities University of California San Francisco
 - <https://cadc.ucsf.edu/sites/g/files/tkssra881/f/Sources%20of%20Measures%20January%202020.pdf>
- American Psychological Association—measures for social and behavioral science research
 - <https://www.apa.org/pubs/databases/psyc-tests>
- CMS measures inventory tool
 - <https://cmit.cms.gov/cmit/#/>
- Validated Measures for Research with Vulnerable & Special Populations
 - <https://consult.ucsf.edu/guidance/special-populations-measures>

What does it mean that a measure is “validated”?

- Validity=your questions are measuring what you think they are measuring in your specific population
- Reliability=your questions are consistently understood by your respondents and would produce similar findings in other samples
- Because validated measures have been used in other studies, your findings can be compared with other researchers' findings



Review: A checklist for ensuring good survey questions

- ☐ Is every item serving a purpose in my analysis plan?
- ☐ Are all items as short as possible, and easy to interpret among all potential participants?
- ☐ Have I checked for double-barreled items?
- ☐ Do all items have a clear response scale, with as few response options as needed?
- ☐ Have I searched for already existing measures to use or adapt?
- ☐ Have I kept my questions as similar as possible to prior versions of the survey, to facilitate comparability over time?



Study design 101 for surveys

Having a good instrument is only part of the story...

- Sample size:
 - Is the study exploratory (sample size less important) or are you aiming for statistical significance (and need a power calculation)?
- Sample selection:
 - Whose voices are priority?
 - Is a random sample possible to increase generalizability?
- Survey administration:
 - How will data be collected (paper? tablet? phone?)
 - Will participants fill it out themselves? Will they receive any incentive?

Summary

- Survey design: close attention to length, audience, and question wording is critical to ensure high quality data and reduce respondent burden!
 - Highlight: Every question should have a purpose and be carefully written/tested
- Study design: Sample size, recruitment approach, and how the survey is administered are all key considerations
 - Highlight: Be sure to think through how many people, and whom, you need to talk to in order to answer your research question(s)!





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