

Survey Design & Implementation: A Few Tips

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Questions



Outline

- Preliminaries
- UW Survey Center (UWSC)
- How survey researchers think about data quality
- Some recommendations for collecting data
- Few general guidelines for writing questions
- Clarifying the target object
- Recommendations for questions about evaluations and judgments
- Concluding notes

Preliminaries



Resources on questionnaire design and administration

- My webpage
 - <https://sociology.wisc.edu/staff/dykema-jen/>
- Courses
 - **Sociology 752 “Measurement and Questionnaires for Survey Research (Questionnaire Design)” (Spring 2024)**
 - **Sociology 751 “Survey Methods for Social Research”**
- Sources
 - Writing questions for standardized measurement
 - **Schaeffer, Nora Cate Schaeffer and Jennifer Dykema. 2020. “Advances in the Science of Asking Questions.” *Annual Review of Sociology* 46. <https://doi.org/10.1146/annurev-soc-121919-054544>**
 - Dykema, Jennifer, Nora Cate Schaeffer, Dana Garbarski, and Michael Hout. 2020. “The Role of Question Characteristics in Designing and Evaluating Survey Questions.” Pp. 119-152 in *Advances in Questionnaire Design, Development, Evaluation, and Testing*, edited by P. Beatty, D. Collins, L. Kaye, J. Padilla, G.B. Willis, and A. Wilmot. Hoboken, NJ: Wiley.
 - Schaeffer, Nora Cate, and Jennifer Dykema. 2015. “Surveys: Question Wording and Response Categories.” Pp. 764-770 in *International Encyclopedia of Social and Behavioral Sciences, 2nd Edition. Volume 23*, edited by James D. Wright. Oxford, England: Elsevier.
 - Schaeffer, Nora Cate and Jennifer Dykema. 2011. “Questions for Surveys: Current Trends and Future Directions.” *Public Opinion Quarterly* 75:909-961.
 - Krosnick, Jon A. and Stanley Presser. 2010. “Question and Questionnaire Design.” Pp. 263-313 in *Handbook of Survey Research, Second Edition*, edited by P. V. Marsden and J. D. Wright. Bingley, UK: Emerald Group Publishing Limited.
 - Survey administration
 - **Dillman, Don A., Jolene D. Smyth, and Leah Melani Christian. 2014. *Internet, Phone, Mail, and Mixed Mode Surveys: The Tailored Design Method*. 4th ed. New York: John Wiley & Sons.**

UW Survey Center (UWSC):
Who We Are and What We Do

(Short Version)



When clients come to UWSC, they are thinking about ...

Their amazing research question!

Getting data!

Analyzing the data!

Disseminating their findings in reports and papers!

Solving the problems of the world!

And then reality sets in as they start asking themselves ...

What do I need to know to answer this question?

Where can I find people?

How can I get them to answer my questions?

How many people do I need to survey?

Are my questions any good?

How much is this going to cost?

... Can't I just do a web survey?!?

These are things we are always thinking about!

- There is literally *nothing* we think about and study more than how to improve survey data quality
 - How to increase response rates
 - How to ask the right questions
 - How to achieve these goals as cost-effectively as possible
- When it comes to quality – and what that means in a survey context -- there is no magic bullet
 - Many pros and cons
 - Survey costs and survey errors; “fit for purpose”
- Providing a few “tips” (but survey research is an entire field of study)

UWSC

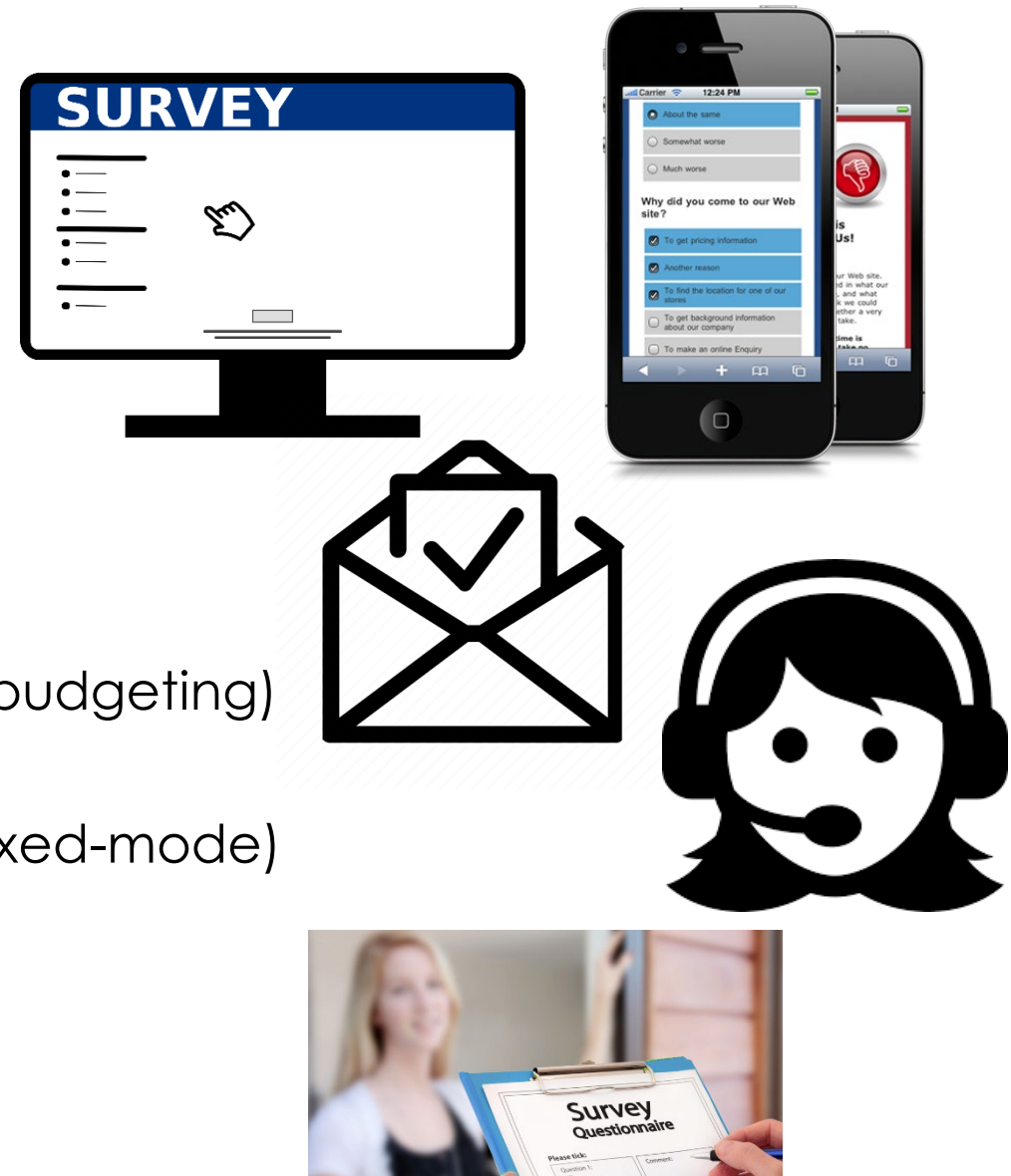
UNIVERSITY of WISCONSIN
SURVEY CENTER



- ❑ Housed in L&S – serving all of campus & more
- ❑ Service Center since 1987
- ❑ Part of UW's Research Cores

UWSC staff & services

- Professional Staff
 - Faculty Director: Jennifer Dykema
 - Associate Director: Kelly Elver
 - Project Managers: Karen Zoladz & staff of 14
 - Programmers: Eric White & staff of 6
 - Field: Steve Coombs & staff of 100-200
- Research Services
 - Proposal development (study design, sampling, budgeting)
 - Questionnaire design
 - Data collection (web, mail, phone, in-person, mixed-mode)
 - Tracking & Locating
 - Coding
 - Qualitative research
 - Methodological research



Experimentation and evaluation: increasing response rates and improving questionnaire design

Effects of E-Mailed Versus Mailed Invitations and Incentives on Response Rates, Data Quality, and Costs in a Web Survey of University Faculty

Jennifer Dykema¹, John Stevenson¹, Lisa Klein², Yujin Kim³, and Brendan Day¹

EFFECTS OF SEQUENTIAL PREPAID INCENTIVES AND ENVELOPE MESSAGING IN MAIL SURVEYS

JENNIFER DYKEMA*
KAREN JAQUES
KRISTEN CYFFKA
NADIA ASSAD
RAE GANCI HAMMERS
KELLY ELVER
KRISTEN C. MALECKI
JOHN STEVENSON

Surveying Clinicians by Web: Current Issues in Design and Administration

Jennifer Dykema¹, Nathan R. Jones¹, Tara Piché¹, and John Stevenson¹

Straightlining: Overview of Measurement, Comparison of Indicators, and Effects in Mail-Web Mixed-Mode Surveys

Yujin Kim¹, Jennifer Dykema¹, John Stevenson¹, and D. Paul Moberg³

The Role of Question Characteristics in Designing and Evaluating Survey Questions

Jennifer Dykema¹, Nora Cate Schaeffer^{1,2}, Dana Garbarski³, and Michael Hout⁴

Measuring Trust in Medical Researchers: Adding Insights from Cognitive Interviews to Examine Agree-Disagree and Construct-Specific Survey Questions

Jennifer Dykema¹, Dana Garbarski², Ian F. Wall³, and Dorothy Farrar Edwards⁴

Guaranteed Incentives and Prize Drawings: Effects on Participation, Data Quality, and Costs in a Web Survey of College Students on Sensitive Topics

Jennifer Dykema^{1,2}, John Stevenson¹, Cameron P. Jones^{1,3}, and Brendan Day¹

Annual Review of Sociology

Advances in the Science of Asking Questions

Nora Cate Schaeffer and Jennifer Dykema

Exploring the Relationship between Medical Research Literacy and Respondents' Expressed Likelihood to Participate in a Clinical Trial

Jennifer Dykema^{1,2}, Cameron P. Jones^{2,3}, Dana Garbarski⁴, Mia Farias² and Dorothy Farrar Edwards^{5,*}

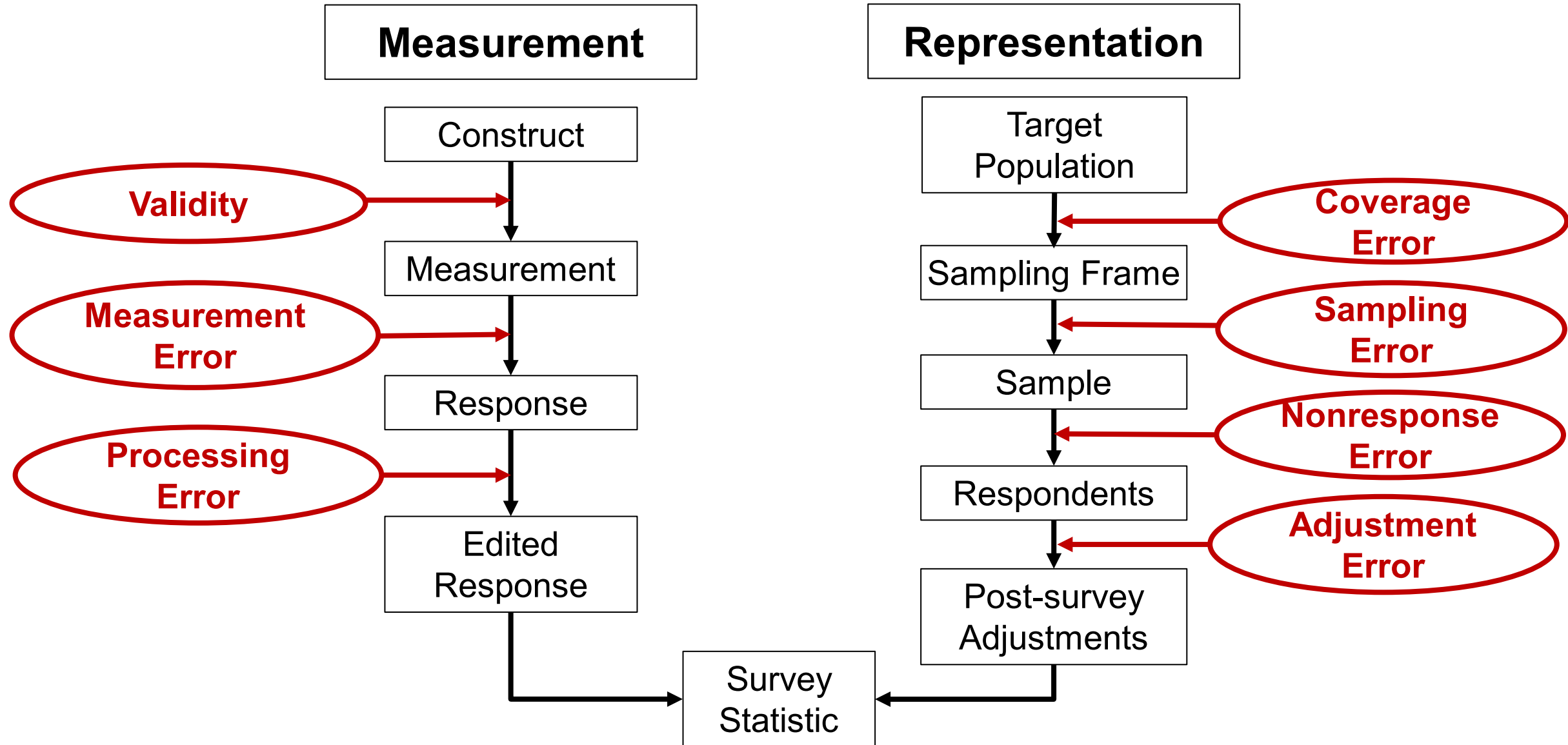
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How Survey Researchers Think About Data Quality ... “Errors” Are Everywhere!

Total Survey Error Framework



Total Survey Error Framework (Groves et al. 2009)



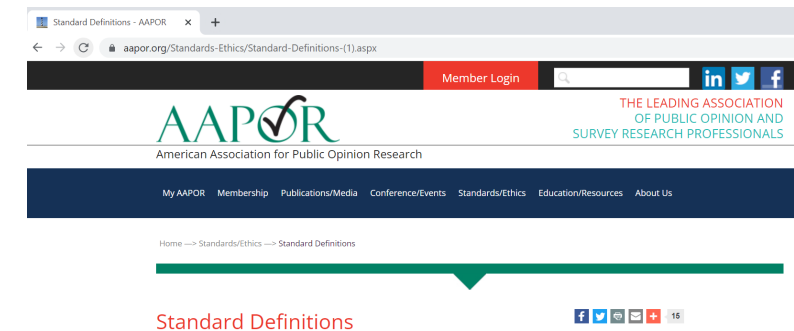
Errors Arising During Representation:

Some Recommendations for Collecting Data



Data collection: Issues

- Critical steps in the design process
 - What is your budget and what resources are available?
 - Who is your target population?
 - What is your sampling frame and what kinds of contact information does it contain?
 - What mode or modes will you use to contact and interview sample members?
 - How will you design to maximize response?
 - Number and types of contacts?
 - Include incentives?
- Correctly calculate and report your response rate!
 - [https://www.aapor.org/Standards-Ethics/Standard-Definitions-\(1\).aspx](https://www.aapor.org/Standards-Ethics/Standard-Definitions-(1).aspx)



Main study design factors associated with response rates and costs

- Mode
 - Face to face
 - Mail
 - Web
 - Phone?
 - Mail versus web
 - 2008 vs 2019 meta-analyses
- Number of contacts
- Incentives

“Web” surveys – questionnaire completed online

- Many different types of designs depending on
 - Type of contact information available: email, mailing addresses
 - Budget
- Lowest cost version: 4-contact email
 - Initial recruitment email
 - 1st reminder email (5-8 days later)
 - 2nd reminder email (5-8 days later)
 - 3rd reminder email (5-8 days later)
- Ways to increase response rates – and costs
 - Include push-to-web contact
 - Include incentive
 - Include paper version of the questionnaire in a final, postal mailing

Experimental results from Dykema, Stevenson, Klein, Kim, Day 2012

Cumulative response rates by experimental group

Experimental Group	<i>N</i>		Response Rates (%)		
	Fielded Surveys	Completed Surveys	Contact Attempt		
			After initial invitation	After 1 st e-mail reminder	After 2 nd e-mail reminder
Overall	280	82	11.4	22.1	29.3
E-mailed invitation	93	18	8.6	11.8	19.4 ^b
Mailed invitation letter only	93	28	12.9	26.9	30.1 ^a
Mailed invitation letter and incentive	94	36	12.8	27.7	38.3 ^a

Survey design: Increasing participation – incentives

- Noncontingent (prepaid) incentives are (usually) much more effective than contingent (promised)
- Mode creates opportunities and constraints
 - Easy to administer with a paper contact, harder to administer for an all-email web survey
- Any guaranteed incentive is almost better than none
 - Lotteries and prize drawings are not very effective (and VERY often not effective)
- “Cash is king” – but can be hard to administer
- Excellent overview – Singer and Ye (2013)



WisconSays – A new resource for surveying Wisconsinites!

- UWSC has developed a representative, probability-based online panel of Wisconsin residents for recurring surveys
 - *WisconSays is an online panel of adults from all over the state of Wisconsin who were scientifically selected to answer questions about their attitudes, behaviors, experiences, and thoughts about important issues facing Wisconsin and the United States. Members participate in WisconSays by completing surveys 1-2 times a month. Members accumulate points that they can redeem for rewards for participating.*
 - <https://wisconsays.uwsc.wisc.edu/> (check out our website!)
 - Recruited around 3,500 people from across Wisconsin to be a part of WisconSays
- Researchers at UW-Madison can field their research questions using WisconSays
 - Introductory costs between \$1,000 - \$1,500 per question unit
 - Pricing includes standard demographic questions (e.g., age, gender, race, education, income)
 - Ability to quickly collect high-quality data in a cost-efficient manner



Errors Arising During Measurement:

Ten General Guidelines for Writing Questions



HELLO, DO YOU HAVE ANY
OPINIONS THAT FIT INTO
OUR PRECONCEIVED
QUESTIONS?

YES AND NO...

THANK
YOU!

WWW.DOUBT.IT



Warnings!

- Examples show problematic questions and suggested revisions
 - Responses only address problem under one condition
 - Responses still have “problematic” questions
- Guidelines
 - C
 - Refer to all modes except
- Guidelines change
 - UWSC docs are living documents

Warnings!

- Examples show problematic questions and suggested revisions
 - Revisions only address problem under consideration
 - Revisions may still have “problematic” features
- Guidelines
 - Come from many sources
 - Refer to all modes except where noted
- Guidelines change as new research becomes available
 - UWSC docs are living documents

Guideline #1: Use simplified wording

Problematic question

How much personal reflection have you done on your racial identity and how it impacts your relationships at work/school?

Revision

How much have you thought about how your racial identity influences your relationships at work?

Guideline #2: Avoid analytic vocabulary

Analytic vocabulary: language used by the analyst such as construct labels, technical terms, and jargon

Native vocabulary: language used by respondents

Analytic Vocabulary:

occupants of this household
your responses to this questionnaire
work-related employment issues

Revision:

people who live here
your answers
job concerns

Guideline #3: Avoid words or phrases with a point of view

Leading or emotionally loaded words or phrases provide a positive or negative point of view or orientation toward an object

Problematic questions

Do you favor or oppose President Biden's humanitarian policy in Somalia?

Do you favor or oppose President Biden's bankrupt policy in Somalia?

Revision

Do you favor or oppose President Biden's policy in Somalia?

Guideline #4: Avoid multiple subjects or objects

Avoid multiple subjects or objects, usually joined by “or” or “and”

Problematic question

In the last 12 months, did you ever cut the size of your meals or skip meals because there wasn't enough money for food?

Revision

In the last 12 months, did you ever cut the size of your meals because there wasn't enough money for food?

In the last 12 months, did you ever skip meals because there wasn't enough money for food?

Guideline #5: Use parallel wording and question structures

- When items are repeated in lists, keep them in the same order and use the same wording

Problematic questions

How old were you when you were told that you had diabetes?

At what age did you start taking insulin?

When did you stop taking it?

Revisions

How old were you when you were told that you had diabetes?

How old were you when you started taking insulin?

How old were you when you stopped taking insulin?

Guideline #6: Turn hidden questions into filter questions

Problematic questions

Learning about hypertension in rheumatology patients through power point training presentations with Dr. Bartels and UW trainers was helpful to me.	1 (disagree strongly)	2	3	4	5	6 (agree strongly)	7	<input type="checkbox"/> I did not receive training
Checking my BP skills in the training session was helpful for me to follow the new BP protocols.	1 (disagree strongly)	2	3	4	5	6 (agree strongly)	7	<input type="checkbox"/> I did not receive training
Hands-on training on using new tools in the <u>Healthlink</u> Playground with Dr. Bartels and staff was adequate for me to follow the new BP protocols.	1 (disagree strongly)	2	3	4	5	6 (agree strongly)	7	<input type="checkbox"/> I did not receive training
Time to practice in the EHR " <u>Healthlink</u> playground" helped me to follow the new BP protocols.	1 (disagree strongly)	2	3	4	5	6 (agree strongly)	7	<input type="checkbox"/> I did not receive training

Turn hidden questions into filter questions

Revisions

#. Did you receive training to use the Blood Pressure Protocol?					
<input type="radio"/> Yes					
<input type="radio"/> No → Go to question ##					

#. The next questions ask about specific parts of the Blood Pressure Protocol training.					
	Not at all	A little	Somewhat	Very	Extremely
a. How helpful were the <u>PowerPoint presentations</u> by Dr. Bartels and the UW Trainers in learning about hypertension in rheumatology patients?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. How helpful was <u>checking your Blood Pressure skills</u> during the training session in following the new Blood Pressure Protocol?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. How helpful was the <u>hands-on training using the tools in Healthlink Playground</u> in following the new Blood Pressure Protocol?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. How helpful was <u>practicing in the EHR Healthlink Playground</u> in following the new Blood Pressure Protocol?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Guideline #7: Make response categories in selection questions exhaustive and mutually exclusive

- Exhaustive categories allow all respondents to be classified
- Mutually exclusive categories do not overlap so each respondent can be classified in only one category

Problematic question (adapted from Dillman 2007)

From which source did you first learn about the tornado in Derby:

Radio

Television

Someone at work

While at home

While traveling to work

Make response categories in selection questions exhaustive and mutually exclusive

Revisions

From which one of these sources did you first learn about the tornado in Derby:

Radio

Television

Or another person

OTHER (SPECIFY) _____

Where were you when you first learned about it:

At work

At home

Traveling to work

OTHER (SPECIFY) _____

Guideline #8: Write question to project answer in the format you want

Problematic question

Where do you live?

CITY _____ STATE _____

Revision

In which city and state do you live?

CITY _____ STATE _____

Guideline #9: Match response format projected by question with response format in the response categories

Problematic question

Do you have difficulty hearing even when using your hearing aid? Would you say no difficulty, some difficulty, a lot of difficulty, or are you unable to do this?

Revision

How much difficulty do you have hearing when using your hearing aid: no difficulty, some difficulty, a lot of difficulty, or are you unable to do this?

Guideline #10: Place definitions before the question

Problematic question

How much did you pay, or will you have to pay, out of pocket, for your most recent visit? Do not include what insurance has paid for or will pay for. If you don't know the exact amount, please give me your best estimate.

Revision

The next question is about how much it cost you or your family for your most recent visit to a medical doctor. Not including what insurance pays, about how much did you pay or will you pay for the visit?

Errors Arising During Measurement:

Clarifying the Target Object



Clarifying the target object: “Places People Get Groceries”

1. Which of the following best describes where you usually get groceries: gas station; drugstore such as Walgreen's or CVS; convenience store or corner store; farmer's market; food co-op; dollar store; food bank, pantry, church, or social services; full-service grocery store such as Woodman's, Pick 'n' Save, Aldi, and Piggly Wiggly; or some other source?

☐ GAS STATION

☐ DRUGSTORE SUCH AS WALGREEN'S OR CVS

☐ CONVENIENCE STORE OR CORNER STORE

☐ FARMER'S MARKET

☐ FOOD CO-OP

☐ DOLLAR STORE

☐ FOOD BANK, PANTRY, CHURCH, OR SOCIAL SERVICES

☐ FULL-SERVICE GROCERY STORE SUCH AS WOODMAN'S, PICK 'N' SAVE, ALDI, AND PIGGLY WIGGLY

☐ OTHER SOURCE → What is it?

Clarifying the target object: “Places People Get Groceries”

Cognitive Interviewing (Beatty and Willis 2007)

- Administer draft survey questions
- Ask follow-up questions *about* the survey response process
- Evaluate quality of the response

1. Which of the following best describes where you usually get groceries: gas station; drugstore such as Walgreen's or CVS; convenience store or corner store; farmer's market; food co-op; dollar store; food bank, pantry, church, or social services; full-service grocery store such as Woodman's, Pick 'n' Save, Aldi, and Piggly Wiggly; or some other source?

☐ GAS STATION

☐ DRUGSTORE SUCH AS WALGREEN'S OR CVS

☐ CONVENIENCE STORE OR CORNER STORE

☐ FARMER'S MARKET

☐ FOOD CO-OP

☐ DOLLAR STORE

☐ FOOD BANK, PANTRY, CHURCH, OR SOCIAL SERVICES

☐ FULL-SERVICE GROCERY STORE SUCH AS WOODMAN'S, PICK 'N' SAVE, ALDI, AND PIGGLY WIGGLY

☐ OTHER SOURCE → What is it?

Follow-up questions

- Can you tell me more about why you answered [ANSWER] for this question?
- In your own words, what did the phrase “where you usually get groceries” mean to you?

Clarifying the target object: “Places People Get Groceries”

1. Which of the following best describes where you usually get groceries: gas station; drugstore such as Walgreen's or CVS; convenience store or corner store; farmer's market; food co-op; dollar store; food bank, pantry, church, or social services; full-service grocery store such as Woodman's, Pick 'n' Save, Aldi, and Piggly Wiggly; big-box or superstore like Walmart or Target; or some other source?

☐ GAS STATION

☐ DRUGSTORE SUCH AS WALGREEN'S OR CVS

☐ CONVENIENCE STORE OR CORNER STORE

☐ FARMER'S MARKET

☐ FOOD CO-OP

☐ DOLLAR STORE

☐ FOOD BANK, PANTRY, CHURCH, OR SOCIAL SERVICES

☐ FULL-SERVICE GROCERY STORE SUCH AS WOODMAN'S, PICK 'N' SAVE, ALDI, AND PIGGLY WIGGLY

☐ BIG-BOX OR SUPERSTORE LIKE WALMART OR TARGET

☐ OTHER SOURCE → What is it?

Errors Arising During Measurement:

Recommendations for Questions about Evaluation and Judgments



Some decisions for evaluations (Schaeffer & Dykema 2011, 2015, 2020)

- Example of an “evaluation or judgment” question
 - *Taken all together, how would you say things are these days -- would you say that you are very happy, pretty happy, or not too happy?*
- Number of categories
- Category labels
- Agree-disagree (AD) versus item-specific (IS) response dimensions

Number of response categories: Some issues

- Rs have to engage in a matching/mapping process
 - Too few or too many categories, respondent cannot discriminate
- Points on scale
 - Be ordinal
 - Need to cover range of possibilities
 - Respondents must have precise and stable understanding
 - Across Rs must agree on interpretation

Response categories: Use 5 fully labeled categories for unipolar, 5 or 7 with bipolar

Problematic Unipolar Question

If 1 stands for not at all satisfied and 5 stands for extremely satisfied, what number from 1 to 5 stands for how satisfied you are with your job?

Revision

How satisfied are you with your job: not at all satisfied, a little satisfied, somewhat satisfied, very satisfied, or extremely satisfied?

Recommended response category labels for commonly used unipolar response dimension (Schaeffer and Dykema 2020)

Intensity

- *Not at all*
 - *A little/Slightly*
 - *Somewhat/Moderately*
 - *Very*
 - *Extremely*
- Examples: importance, satisfaction, confidence

Quantity (“How much”)

- *None/Not at all*
 - *A little/A little bit*
 - *Some/Somewhat*
 - *Quite a bit*
 - *A great deal*
- More direct: How much help did you receive ...
 - Less direct: How much did setting goals help you ...

Relative frequency

- *Never*
 - *Rarely*
 - *Sometimes*
 - *Very often*
 - *Extremely often/Always*
- Always when 100% of the time is relevant

Note: Slash indicates choice between labels with similar scale values, not that label should include both words or a slash

Agree-disagree (AD) items



“Next question: I believe that life is a constant striving for balance, requiring frequent tradeoffs between morality and necessity, within a cyclic pattern of joy and sadness forging a trail of bittersweet memories until one slips, inevitably, into the jaws of death. Agree or disagree?”

AD questions: Use, problems, and alternatives

- Why are AD questions ubiquitous?
 - Easy to write
 - Use same response categories for all questions
 - Efficient to administer
 - Can format questions economically in grids
- Why are AD questions problematic?
 - Increased cognitive burden for respondents
 - Reduced data quality
- What is the alternative?
 - Item-specific (IS) questions that directly ask about a question's **response dimension** with **tailored response categories**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Today's topic was relevant to the overall course.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
The instructor explained the topic clearly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
I feel confident that I can complete the	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

Example of an agree-disagree (AD) question

Question About “How Hard Medical Researchers Work” (Dykema et al. 2019)

Agree-disagree (AD) question

Medical researchers work extremely hard to make sure they keep information from participants private and secure. Do you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree?

AD response dimensions: Offered versus underlying

Question About “How Hard Medical Researchers Work”

Agree-disagree (AD) question

Medical researchers work extremely hard to make sure they keep information from participants private and secure. Do you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree?

Underlying Response Dimension:
intensity of working hard

Offered Response Dimension:
intensity of agreement

Agree-disagree (AD) versus item-specific (IS) questions

Question About “How Hard Medical Researchers Work” (Dykema et al. 2019)

Agree-disagree (AD) question

Medical researchers work extremely hard to make sure they keep information from participants private and secure. Do you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree?

Item-specific (IS) question

How hard do medical researchers work to make sure they keep information from participants private and secure: not at all hard, a little hard, somewhat hard, very hard, or extremely hard?

Recommend using IS questions instead of AD questions for most purposes

- IS questions less cognitively burdensome
- IS questions less likely to be associated with negative response effects
- IS questions more likely to be associated with higher data quality
- See Dykema, Schaeffer, Garbarski, Assasd, and Blixt (2022)

Concluding notes



Concluding comments

- In writing and rewriting questions may have to decide among competing goals
 - optimal question wording versus replication
 - comparison to other surveys
 - maintaining trends
- Many “validated” instruments contain questions that fall short of evidenced-based standards for question writing
 - Technically not current
 - Dated vocabulary (e.g., smoking)
 - “Validated” on other populations
- Writing “good” questions can be complicated, difficult, and expensive

UWSC questionnaire design services

Request a (free) one-hour pro bono consultation

Recommendations for:

Best practices in questionnaire design and administration

Methods and incentives

Request an estimate for a technical questionnaire review and/or layout

Kelly Elver kelder@ssc.wisc.edu

Note: If you are hiring UWSC to do your data collection, questionnaire review and layout is part of the project

Summary: Places where UWSC can help

- Methodological advice and expertise
 - Improve survey instruments
 - Wording of questions
 - Design of questionnaires
 - Best survey practices and methods
 - Effective use of Incentives
- Infrastructure
- Data collection
- Strengthen your proposals

Thank You!

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Ask me about **WisconSays!**

UWSC’s representative web panel of Wisconsinites

<https://wisconsays.uwsc.wisc.edu/>



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