

Single Method Surveys and the Ridiculously High Cost of Mixed Designs

EDP 618 Week 4

Dr. Abhik Roy

Part I: Survey Design and Crafting Items



The Tailored Design Method (TDM)



- Premised on social exchange perspective on human behavior - *You do something for me, and I do something for you*
- Assumes that the likelihood of responding is greater when the expected rewards outweigh the anticipated costs - *Increased benefits with decreased costs*

Approaches to Increasing Benefits



- Provide information about the survey
- Ask for help or advice
- Show positive regard
- Say thank you!
- Support group values
- Give tangible rewards
- Make the questionnaire interesting
- Provide social validation
- Inform people that opportunities to respond are limited

Approaches to Decreasing Costs



- Avoid subordinating language
- Emphasize similarity to other requests or tasks to which a person has already responded
- Make it convenient to respond
- Make the questionnaire short and easy to complete
- Minimize requests for personal or sensitive information

Establishing Trust

- Provide information about the survey
- Ask for help or advise
- Show positive regard
- Say thank you!





Choosing Words and Forming Question

- Ask one question at a time
- Be sure the question specifies the response task
- Make sure the question applies to the respondent
- Make sure the question is technically accurate
- Make sure *yes* means **yes** and *no* means **no**
- Use complete sentences with simple sentence structures
- Use as few words as possible to pose the question
- Use specific and concrete words to specify the concepts clearly
- Use simple and familiar words

Visual Presentation of Survey Questions (1/2)



- Choose line spacing, font, and text size to ensure the legibility of the text
- Integrate special instructions into the question where they will be used rather than including them as freestanding entities
- Make sure words and visual elements that make up the question send consistent messages
- Organize each question in a way that minimizes the need to reread portions in order to comprehend the response task
- Separate optional or occasionally needed instructions from the question stem by font or symbol variation

Visual Presentation of Survey Questions (2/2)



- Use darker and/or larger print for the question and lighter and/or smaller print for answer choices and answer spaces
- Use spacing to create subgrouping within a question
- Use visual design properties to emphasize elements that are important to the respondent and to de-emphasize those that are not
- Visually standardize all answer spaces or response options

First Things First: Avoid Double-Barreled Questions!



Did you find the classes during your first semester of college to be more demanding and interesting than your high school classes?

- Yes
- No

How satisfied are you with the check in and check out process?

- Very dissatisfied
- Somewhat dissatisfied
- Neutral
- Somewhat satisfied
- Very satisfied

Double-Barreled Questions – What's the problem?



Did you love the burger and fries?
No Yes

Respondents don't know what you are asking for

If the answer is **Yes**, then are the respondents saying it for the burger, fries, or both?

This can lead to massive bias, unreliable or unusable results

Structures



The following slides consist of examples of common structures of survey items.

This is by no means comprehensive!

Nominal Type Questions



Select the choice that best describes your attitude toward your advising experience:

- I find that advising sessions keep me on academic track.
- I find that the advising sessions are not the adequate length of time.
- I can find all advising information on my own.
- I find my advisor my very knowledgeable.

More about nominal variables

Dichotomous Nominal Type Questions



Based on your earned credits, which category do you fall in?

- Freshman
- Not a freshman

Ordinal Type Questions



	Strongly agree	Agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Disagree	Strongly disagree
The Democratic Party has the country's best interest in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Republican Party has the country's best interest in mind.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider myself a Democrat.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider myself a Republican.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I consider myself an Independent.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

More about ordinal variables

Ordinal or Nominal?



For each statement, circle the number that indicates the degree of favorableness of the statement toward the attitude object.

Extremely unfavorable			Neutral					Extremely favorable		
1	2	3	4	5	6	7	8	9	10	11
1	2	3	4	5	6	7	8	9	10	11

A. Abortion weakens the moral fiber of our society.

B. Adoption is a good alternative to abortion.

For each statement, circle the letter that indicates the degree of favorableness of the statement toward the attitude object.

Extremely unfavorable			Neutral					Extremely favorable		
A	B	C	D	E	F	G	H	I	J	K
A	B	C	D	E	F	G	H	I	J	K

A. Abortion weakens the moral fiber of our society.

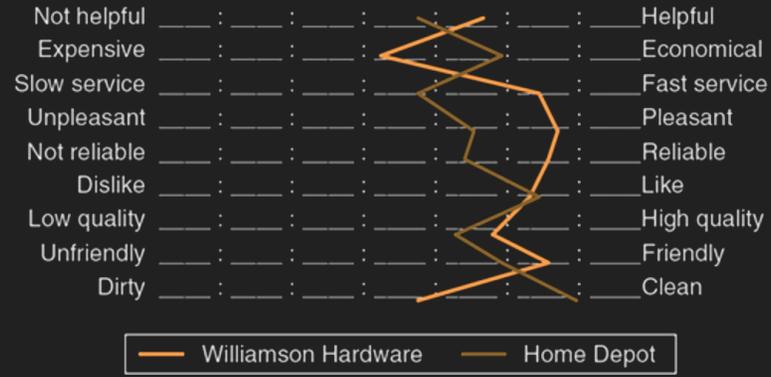
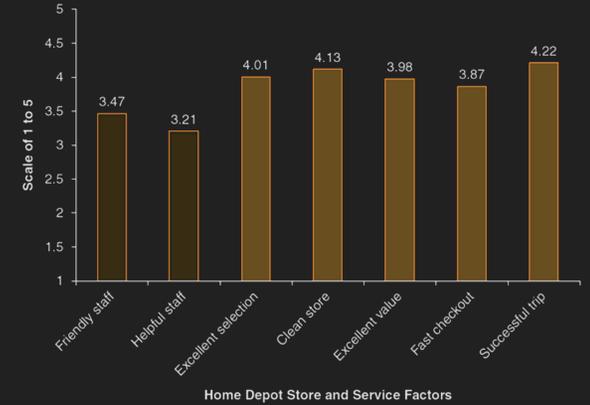
B. Adoption is a good alternative to abortion.

Semantic Differentials



Please evaluate the last purchase you made at Home Depot and the experience you had at the retail store.

Unfriendly staff	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Friendly staff
Staff not very helpful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Staff very helpful
Poor selection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Excellent selection
Store unclean	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Store clean
Poor value	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Excellent value
Slow checkout	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Fast checkout
Unsuccessful trip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Successful trip



Visual Analogs



How severe is your pain today

Please place a vertical mark on the line below to indicate your current level of pain.

No pain |-----| Severe pain

For each statement, place a checkmark on the adjacent line indicating the degree of favorableness of the statement toward the attitude object.

Extremely unfavorable	Neutral	Extremely favorable
-----	-----	-----
-----	-----	-----

A. Abortion weakens the moral fiber of our society.

B. Adoption is a good alternative to abortion.

Guttman Scaling



- Star Wars* is the greatest movie ever made (most extreme)
- Star Wars* is one of the top 5 movies of all time
- Star Wars* is an exceptional film, one of the best
- Star Wars* is a great film, well above average
- Star Wars* is a good movie (least extreme)

Filters/Skip Patterns



Comes in many names:

Skip logic

Conditional Branching

Conditional Logic

Do you intend to stay with your assigned advisor?

Yes

No

Which advisor would you like to meet with?

Peter

Lois

Meg

Chris

Stewart

Brian

Closed Ended



General Structural Guidelines



- State both positive and negative sides in the question stem when asking either/or types of questions
- Develop lists of answer categories that include all reasonable possible answers
- Develop lists of answer categories that are mutually exclusive
- Maintain spacing between answer categories that is consistent with measurement intent



Positive and Negative Sides in Question Stem

Poor Design

Do you favor congressional term limits of four years?

- Favor
- Oppose

Improved design

Do you favor or oppose congressional term limits of four years?

- Favor
- Oppose

Poor Design

To what extent do you agree with this statement: "It is easier for people to find work in this community than it was about one year ago."

- Strongly agree
- Somewhat agree
- Somewhat disagree
- Strongly disagree

Improved design

To what extent do you agree with this statement: "It is easier for people to find work in this community than it was about one year ago."

- Strongly agree
- Somewhat agree
- Somewhat disagree
- Strongly disagree

How do you think that the task of finding work in this community has changed since about one year ago?

- It is easier
- It is about the same
- It is more difficult

Exhaustive and Mutually Exclusive Questions



How would you like to be contacted (select all that apply)?

Snail mail
E-mail
On your phone

How would you like to be contacted (select all that apply)?

Snail mail
E-mail
Phone call
Text message
Facebook Messenger
Other (please specify):

Spacing Response Options Evenly



Uneven spacing of answer choices in an ordinal question

Compared to other veterinary serviced you have recieved, how would you rate the pricing at Pet Vet?

Very overpriced Somewhat overpriced Slightly overpriced Average Slightly underpriced Somewhat underpriced Very underpriced

Even spacing of answer choices in an ordinal question

Compared to other veterinary serviced you have recieved, how would you rate the pricing at Pet Vet?

Very overpriced Somewhat overpriced Slightly overpriced Average Slightly underpriced Somewhat underpriced Very underpriced



Closed-Ended Questions: Nominal Scales

- Ask respondents to rank only a few items at once rather than a long list
- Avoid bias from unequal comparisons
- Randomize response options if there is concern about order effects
- Use forced-choice questions rather than check-all-that-apply questions
- Consider using differently shaped answer spaces (circles and squares if possible) to help respondents distinguish between single- and multiple-answer questions

Unordered



Most simple form: Two categories

While growing up did you live mostly on a farm or mostly elsewhere?

- Farm
- Elsewhere

A more difficult form: Multiple complex categories

If the highway bypass were to be built on one of these routes, which would you most prefer?

- A north route that starts west of the city at Exit 21 (Johnson Road) off Highway 30, crosses Division at North 59th Street, and reconnects to Highway 30 three miles east of the city at River Road.
- A modified north route that starts further west of the city at Exit 19, crosses Division at 70th Street, and reconnects to Highway 30 three miles east of the city at River Road.
- A south route that begins west of the city at Exit 19, crosses Division at South 24th Street, and reconnects to Highway 30 east of the city at River Road.

Unordered



Another difficult form: The ranking question

Which of these do you believe are the largest and smallest problems facing residents of the Kalamazoo area? Use “1” for the largest problem, “2” for the second largest problem, and so forth until you have completed all eight.

- Lack of community involvement
- Taxes are too high
- Lack of affordable health care
- Lack of money for local schools
- Lack of affordable housing
- Lack of good jobs
- Too much crime overall
- Too much drug use

Comparisons (1/2)



Unequal comparison

Which of the following do you feel is most responsible for recent outbreaks of violence in America's schools?

- Irresponsible parents
- School policies
- Television programs

A revision with more neutral response options

Which of the following do you feel is most responsible for recent outbreaks of violence in America's schools?

- The way children are raised by parents
- School policies
- Television programs

Comparisons (2/2)



A simplified revision

Which of the following do you feel is most responsible for recent outbreaks of violence in America's schools?

- Parents
- Schools
- Television

A revision retaining more complex descriptions

To what extent do you feel that the way children are raised by parents is responsible for recent outbreaks of violence in America's schools?

- Completely responsible
- Mostly responsible
- Somewhat responsible
- Not at all responsible

Check-all-that-Apply versus Forced-Choice



Check-all-that-apply formatted question

Which of the following varsity sport would you consider yourself to be a fan of? Check all that apply.

- Men's baseball
- Men's basketball
- Women's basketball
- Women's cross-country
- Men's gold
- Women's golf

A revision converting to the forced-choice format

Do you consider yourself to be a fan of each of the following varsity sports?

- | Yes | No | |
|--------------------------|--------------------------|-----------------------|
| <input type="checkbox"/> | <input type="checkbox"/> | Men's baseball |
| <input type="checkbox"/> | <input type="checkbox"/> | Men's basketball |
| <input type="checkbox"/> | <input type="checkbox"/> | Women's basketball |
| <input type="checkbox"/> | <input type="checkbox"/> | Women's cross-country |
| <input type="checkbox"/> | <input type="checkbox"/> | Men's gold |
| <input type="checkbox"/> | <input type="checkbox"/> | Women's golf |

Distinguishing Between Single- and Multiple-Answer Questions



Little distinction between single- and multiple-answer questions

Of the following considerations, which is the most important to you when purchasing a new car?

- Price
- Color
- Exterior condition
- Interior condition
- Amenities

Of the following considerations, which three are most important to you when purchasing a new car?

- Price
- Color
- Exterior condition
- Interior condition
- Amenities

Answer space designed to help differentiate between single- and multiple-answer questions

Of the following considerations, which is the most important to you when purchasing a new car?

- Price
- Color
- Exterior condition
- Interior condition
- Amenities

Of the following considerations, which three are most important to you when purchasing a new car?

- Price
- Color
- Exterior condition
- Interior condition
- Amenities



Closed-Ended Questions: Ordinal Scales

- Align response options vertically in one column or horizontally in one row and strive for equal distance between categories
- Carefully evaluate the use of numeric labels and their impact on measurement
- Choose an appropriate scale length—in general, limit scales to four or five categories
- Choose direct or construct-specific labels to improve cognition
- Consider how verbally labeling and visually displaying all response categories may influence answers
- Place non-substantive options at the end of the scale and separate them from substantive options
- Provide scales that approximate the actual distribution of the characteristic in the population
- Provide balanced scales where categories are relatively equal distances apart conceptually

Scalar Questions (1/2)



Question with multiple constructs

To what extent do you agree or disagree that your instructors are available outside of class?

- Strongly agree
- Agree
- Neutral
- Disagree
- Strongly disagree

Construct-specific questions

How accessible or inaccessible are your instructors outside of class

- Very accessible
- Somewhat accessible
- Neutral
- Somewhat inaccessible
- Very inaccessible

How often did you attend religious services during the past year?

- Never
- Rarely
- Occasionally
- Regularly

How often did you attend religious services during the past year?

- Not at all
- A few times during the year
- About once a month
- Two to three times a month
- About once a week
- More than once a week

Scalar Questions (2/2)



Unbalanced scale with uneven distance between categories

To what extent do you favor or oppose the death penalty?

- Strongly favor
- Slightly favor
- Neither favor nor oppose
- Slightly oppose
- Mostly oppose
- Entirely oppose

Balanced scale with more even distance between categories

To what extent do you favor or oppose the death penalty?

- Strongly favor
- Somewhat favor
- Neither favor nor oppose
- Somewhat oppose
- Strongly oppose

Note: Here we're referring to balanced scales as having choices that are equidistant from each other

Aligning the Conceptual and Visual Midpoints

This is by far one of the most important criteria to check off when considering survey aesthetics!





Conceptual and visual midpoints are properly aligned

To what extent do you approve or disapprove of the way Democrats in Congress are handling their jobs?

- Very much approve
 - Somewhat approve
 - Neither approve nor disapprove Conceptual midpoint
 - Somewhat disapprove
 - Very much disapprove
- Visual midpoint →

Adding a "Don't know" category misaligns the conceptual and visual midpoints

To what extent do you approve or disapprove of the way Democrats in Congress are handling their jobs?

- Very much approve
 - Somewhat approve
 - Neither approve nor disapprove Conceptual midpoint
 - Somewhat disapprove
 - Very much disapprove
 - Don't know
 - No opinion
- Visual midpoint →

Visually separating the "Don't know" category realigns the conceptual and visual midpoints

To what extent do you approve or disapprove of the way Democrats in Congress are handling their jobs?

- Very much approve
 - Somewhat approve
 - Neither approve nor disapprove Conceptual midpoint
 - Somewhat disapprove
 - Very much disapprove

 - Don't know
 - No opinion
- Visual midpoint →

Open Ended



Open-Ended Numerical

- Ask for the specific unit desired in the question stem
- Provide answer spaces that are sized appropriately for the response task
- Provide units labels with the answer spaces



Numeric



A poorly constructed question

In an average week, how often do you cook dinner at home?

A revision with unit in question stem

In an average week, how many days do you cook dinner at home?

A revision with appropriate answer space

In an average week, how often do you cook dinner at home?

A revision with unit labels in answer space

In an average week, how many days do you cook dinner at home?

 days per week (0-7)

Open-Ended Lists

- Design the answer spaces to support the number and type of responses desired
- Provide labels with answer spaces to reinforce the type of response requested
- Specify the number and type of responses desired in the question



Lists



A commonly used list-style question

What are your "Plan B" majors?



A list-style question variant with multiple text boxes

What are your "Plan B" majors?



A list-style question variant with multiple labeled text boxes

What are your "Plan B" majors?

First choice

Second choice

Third choice

Open-Ended Explanatory



- Consider programming probes to open-ended responses in internet surveys
- Provide adequate space for respondents to completely answer the question
- Provide extra motivation to respond
- Use scrollable boxes on internet surveys

Explanatory



A poorly constructed descriptive open-ended question

What do you foresee yourself doing after you graduate?

A motivational and specific adjustment

Your answer to this question is very important for understanding how we can better help you achieve your academic goals. What do you foresee doing directly after graduation?

Partially Closed



Partially Closed Nominal



Which of the following food types do you like?

- Chinese
- French
- Greek
- Italian
- Indian
- Japanese
- Mediterranean
- Thai
- Other (please specify)

Part II: The Difficulty in Designing Mixed Methods Surveys



Notes



Beneficial for resource constraint studies

Extremely difficult to construct yielding a high cost-high reward scenario

Multiple threats to internal validity exist including attrition, maturation, and selection

There is a split view on the existence of *true* mixed surveys

Remember Its Methods not Methodology



Methods

specific tools and procedures used to collect and analyze data

Methodology

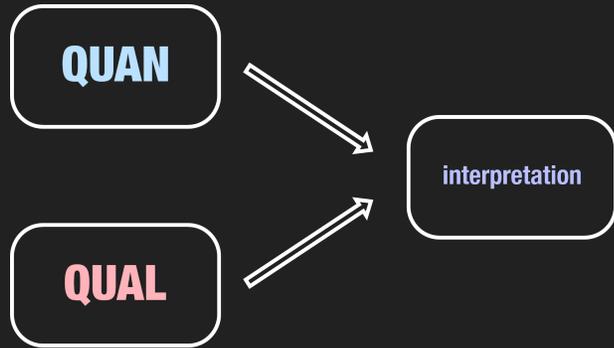
the overarching strategy and rationale of an evaluation or research project

Typically



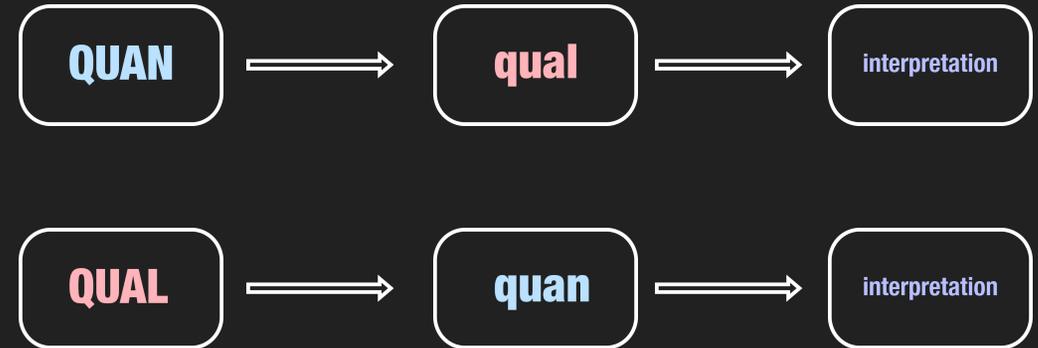
Easier:

Triangulation

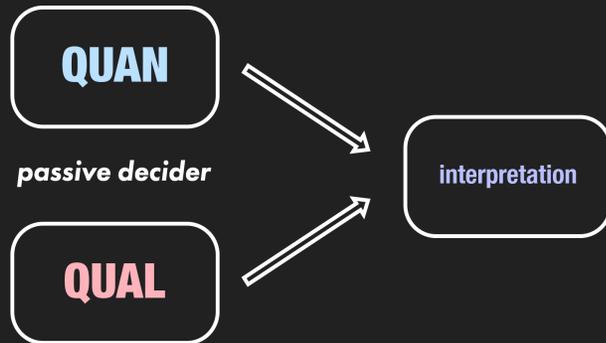


Harder:

Sequential



Triangulation Mixed Surveys



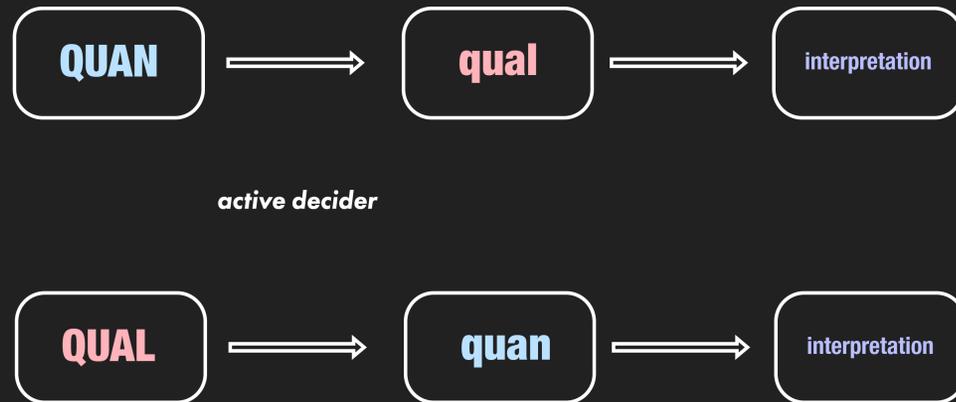
Factors

passive deciders. filter elements such as skip > logic, condition branching, etc.

internal validity. prone to attrition and maturation threats

psychological effects. subject to primary and recency effects due to same respondents

Sequential Mixed Surveys



Factors

active deciders: filter elements such as the application of machine learning models, real-time evaluations

internal validity: prone to selection threats

psychological effects: subject to carry-over effects when using same respondents

In a Nutshell



Only do this in a worst case scenario!

That's It!



Any questions?



This work is licensed under a
Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License