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1.1 Goals and Learning Objectives

Goals and Learning Objectives

- Goals of this chapter:
  - Be aware of potential sources for bias in survey research
  - Identify survey questions & variables needed to answer a research question.
  - Identify pros and cons of open ended and fixed-alternative questions.
  - Be able to phrase questions to limit respondent bias.
  - Be able to order questions to limit respondent bias.
- Learning objectives:
  - LO2: Recognize and use the appropriate techniques to collect or use survey data to address a research problem.
  - LO2.C: Identify sources of respondent and administrative error and develop the ability to construct and administer a survey instrument that minimizes these errors.

1.2 Basic Principles

Basic Principles

1. Criteria for good measurement
2. Strategies to avoid bias
3. Types of questions
4. Phrasing of questions
5. Sequencing of questions

1.3 Criteria for Good Measurement

Criteria for Good Measurement

- Reliability: Measurement can be reproduced with repetition
- Validity: On average, measurement corresponds to true attitudes, behaviors, or quantities
- Sensitivity: Measurement is able to identify small differences between responses
  - Measurement with sensitivity has a lot of options or large scale.

1.4 Examples

Example 1

Survey question to **high school students** similar to that asked by La Crosse County Health Department:

> How many times in the last month did you engage in binge drinking (five or more drinks in one sitting)?

- What criteria may be lacking?
- What criteria may be strong?

Example 2

Popular marketing survey question on age:

> What is your age?
>
> - 18-24
> - 25-39
> - 40-54
> - 55+

- What criteria may be lacking?
- What criteria may be strong?

Example 3

Grocery shopping

> How much money did you spend on food in the last month? Enter dollar amount:

- What criteria may be lacking?
- What criteria may be strong?

Trade-offs in Good Measurement

- A measure may be *reliable*, *but not valid*
- A measure may be *valid*, *but not reliable*
- Trade-off between reliability and sensitivity:
  - Grocery shopping spending: Offer categories of responses

2 Errors in Survey Research

2.1 Biased versus Unbiased Estimators

Random Sampling

Simple random sample: when all members of the population have an equal probability of being selected for the sample.

- Selection of one observation is independent of another being selected (no point-of-contact, cluster sampling, etc).
- This *does not* mean taking a representative sample - though you should still expect your example to be representative of the population.
- Most important: selection is independent from the outcome/dependent variable.

Unbiased versus Biased Estimators

- **Unbiased estimator:** when a sample estimate (statistic) of a population parameter on average returns the true population parameter.
- **Bias:** when a sample estimate on average returns a value different than the population parameter.
- **Random sampling error:** statistical fluctuations determined by chance due to random sampling.
  - Unbiased error.
  - Easy to estimate the size of the sampling error (you used this estimate for H-tests, confidence intervals).

Systematic Error

- **Systematic error:** some imperfect aspect of your research design causes additional error.
- It is typically impossible to measure systematic error.
- Systematic error causes **sample bias**, the persistent tendency of the results to be biased due to a problem in the sampling procedure.

2.2 Nonresponse Error

Nonresponse Error

- **Nonresponse error:** systematic error that occurs when individuals surveyed choose not to participate in the research, *and the choice to not participate may be related to the outcome variable.*

- **Self-selection bias:** bias that results from nonresponse error.
- Examples:
  - Viterbo awareness survey: individuals less knowledgeable and/or less interested in Viterbo University were less likely to respond to the survey.
  - Customer satisfaction survey: individuals who are satisfied, but by no means excited, about product or service are less likely to respond to a customer satisfaction survey.

2.3 Response Bias

Response Bias

- **Response bias:** a bias that exists when respondents either consciously or unconsciously give answers to questions that misrepresent the truth.
- Appear intelligent: respondents deliberately falsify the answer to hide the fact they don't know or didn't keep track of this information.
  - Respondents might guess what answer is expected from them, give answers that would please the interviewer or researcher.
  - Example: Price paid for grocery items, respondents might guess instead of honestly answering they don't remember.
- Average person effect: respondents try to appear average, often happens with questions related to income or spending.

Unconscious Response Bias

- **Unconscious response bias:** well meaning respondents unconsciously give answers that misrepresent the truth.
- Situation might dictate response. Example: preference for aircraft given on the plane.
- Unexpected question: respondents have thought little about the question, give best initial answer they can.
- Example: intentions of buying a product, consumers may not accurately predict their own future buying behavior.
- Time lapse: respondents may under-report activities that occurred long ago which are difficult to remember in detail.

Types of Response Bias

- **Acquiescence bias:** when respondents tend to agree or disagree with every statement.
  - Can happen with surveys concerning new products.
- **Extremity bias:** when respondents choose to use extreme responses on a scale; some respondents have the opposite problem and almost always refuse to pick extreme responses.
- **Social desirability bias:** either consciously or unconsciously, respondents give answers to appear prestigious, socially conscious or avoid appearing socially unattractive.
  - Did you vote in the last election?
  - Do you have termites in your home?
  - Questions regarding sensitive issues, such as sexual activity.

2.4 Structuring Surveys to Limit Error

Structuring Surveys to Limit Error

- Structured questions: give respondents a limited categories to choose answer from.
  - Might not be necessary for age, unless you feel respondents are sensitive about this.
  - Might help with details that are difficult to remember, such as number of hours spent studying, price paid for a product.
  - Allow a "I don't remember" or similar response.
- Disguised questions: questions do not reveal purpose of the research project, which might cause extremity bias, acquiescence bias, or nonresponse bias.
  - Example: Satisfaction with Economics Ph.D. program.
  - Ask several different types of questions.
- Avoid questions concerning subconscious behavior.

3 What should be asked?

3.1 Variables

What should be asked?

- Get data on relevant outcome variables.

- Get data on background variables and other explanatory variables.
- Example: Living on campus and academic performance
  - Outcome variables: semester GPA, cumulative GPA, frequency using campus resources, extra curricular activities.
  - Relevant explanatory variables: high school GPA, parents' income, year in school.
- Be careful not to ask too many questions! This can decrease response rate.

3.2 Open-ended Questions

Open-ended Questions

- **Open-ended questions** can serve uses that fixed alternative questions cannot:
  - How can service be improved?
  - Viterbo might want to ask: What Viterbo community events are you aware of?
- Can get deeper answers, reasoning behind answers.
- Useful for exploratory research, though not exclusively.
- Responses can be grouped together into categories after data has been collected.
- Might be useful to even count number of responses to a particular question.

Problems with Open-Ended Questions

- Greater chance for respondent biases.
  - *Average person effect:* individual may not want to give a response he or she may expect is unusual.
  - *Social desirability effect:* individual may give untrue responses to demonstrate he or she cares about an issue.
  - *Acquiescence bias:* individual may give a response to placate the interviewer.
- Questions and/or expectations for answers may be unclear.
- Less anonymity: face-to-face, hand writing, or even choice of words or reasoning can expose respondents.

3.3 Fixed Alternative Questions

Fixed Alternative Questions

- **Fixed-alternative questions:** questions where the interviewer provides only a limited number of answers to choose from.
- Simple dichotomous questions: respondent must pick one and only one of two possible alternatives.
  - Have you attended any UW-L varsity athletic sporting events in the last year? **Yes** □ **No** □
- Determinant-choice questions: respondent chooses one and only one choice from 3 or more options.
- What is your current academic status?

  □ Freshman (undergraduate degree seeking / less than 30 credits accumulated) □ Sophomore (undergraduate degree seeking / 30 or more credits and less than 60 credits accumulated) □ Junior (undergraduate degree seeking / 60 or more credits and less than 90 credits accumulated) □ Senior (undergraduate degree seeking / 90 or more credits accumulated) □ Undergraduate Non-degree seeking. □ Other

Avoid Problems with Determinant Choice Questions

- Don't force invalid responses: make sure your choices are **totally exhaustive**.
- Make sure the correct choice is clear:
  - Make sure wording is sufficient and appropriate (notice definitions about college year)
  - Make sure choices are **mutually exclusive**.
- Impossible for respondents to explain, clarify, or qualify an answer:
  - Do you think women should be able to legally get an abortion? Yes / No.

Frequency Determination Questions

- **Frequency determination questions:** Questions which ask for how often some occurrence generally happens.
- How often do you study for your classes, besides completing homework assignments?

  □ One or more times every day. □ 4-6 times per week □ 2-3 times per week □ Once per week □ One or two times per month. □ Less than one time per month.
- Look out for:
  - Should you expect frequency to be constant, or does it change by season, semester, etc?
  - Is it reasonable to suppose respondent can accurately recall frequency, according to your scale?
  - Make sure scale is totally exhaustive and mutually exclusive.

Checklist Questions

- **Checklist question:** fixed-alternative question that allows respondent to provide multiple answers to a question.
- Please check which of the following sources of media you use at least twice per week, if any: □ Facebook. □ Network television. □ Cable television. □ *La Crosse Tribune*.
- Offers more flexibility than other fixed-alternative questions.

Questionnaire Accuracy

- Write questions that generate accurate answers.
- Questions should have answers that are easy to recall.
- Be careful with questions regarding quantity or frequencies: make sure it is reasonable for respondents to accurately report these.
- Do the following questions have accuracy problems? How would you fix it?
  - How many hours per week do you usually study?
  - How many hours do you spend each week on Facebook?
  - How many hours per week do you skip classes?
  - How many credits are you taking at UW-L during Fall 2013?

Ordinal Scales

- **Ordinal scales:** Responses to a question that have a natural order/ranking.
- Common attitude scales:
  - Strongly agree, Agree, Disagree, Strongly disagree.
  - Very satisfied, somewhat satisfied, somewhat dissatisfied, very dissatisfied.
- Common quality scale:
  - Excellent, Very Good, Fair, Poor
- Avoid ambiguous frequency scales:
  - Always, Often, Occasionally, Rarely, Never

Using Ordinal Scales

- Avoid neutral responses (neutral response bias).
- Use no-answer responses if appropriate: no opinion / don't know.
- Limit number of choices to ensure an accurate response.
- Use words, not only meaningless numbers (1-10 scales).

4 Phrasing Questions

4.1 Loaded and Leading Questions

Phrasing questions

- Avoid **leading questions:** questions that lead the respondent to a particular conclusion.
- Avoid **loaded questions:** questions that suggest a socially desirable answer, or questions or answers that are emotionally charged.
- Examples:
  - Should foreign-born terrorists caught and held in United States detainment facilities be given the same legal rights as U.S. citizens?
  - Do you believe it is acceptable for the United States to detain potentially innocent battlefield detainees without legal representation and interrogate them by means that violate the Geneva Convention against torture?
  - Do you believe the presumption of innocence should apply to suspected enemy combatants.

4.2 Ambiguous Phrasing

Avoid Ambiguity

- How often do you read your local newspaper or popular national newspapers such as the *Wall Street Journal* or the *New York Times*? □ Frequently □ Occasionally □ Hardly Ever □ Never
  - Where is the line between frequently and occasionally?
  - Does the *New York Post* count as a "popular national newspaper?"
- How many car repairs did you do in the last year?
  - Do yourself or take to a mechanic?
  - Per-car, or for all the cars you owned?
  - Repairs you made for other people?
- How would you rate your experience at UW-L?
  - What about the experience? Quality of education? Friendliness of faculty and staff? Extra-curricular experience?
  - For an "overall" question, ask something more specific and meaningful, "Would you recommend UW-L to a friend or family member?"

4.3 Explicit and Implicit Assumptions

Explicit and Implicit Assumptions

- Avoid questions that make assumptions:
  - Should General Electric continue to pay its stockholders its outstanding quarterly dividends? Yes/No
  - Implied assumption for the respondent that he/she might not believe.
- Avoid questions that assume the respondents have thought about an issue, or have knowledge of an issue:
  - Should Wimberly Hall change its name? Yes / No
  - Many respondents will answer, even though they have no prior opinion and no prior knowledge of the topic.

5 Question/Answer Sequencing

5.1 Examples

Question/Answer Sequence

- Sometimes the ordering of alternatives can influence which outcome people pick:
- Which mayoral candidate are you most likely going to vote for? □Tim Kabat, □Douglas Farmer
- Often times the ordering of questions can influence the response to the questions that follow:
- How satisfied are you with the outside availability of your instructors at UW-L?
- How satisfied are you with the knowledge/expertise of your instructors at UW-L?
- **How satisfied are you with the quality of your instructors at UW-L?**
- How satisfied are you with the quality of academic technology at UW-L?
- How satisfied are you with the quality of academic resources at UW-L?
- **How satisfied are you with the quality of your education at UW-L?**

5.2 Sequencing Strategies

Sequencing Strategies

- **Funnel technique:** strategy of asking general questions before specific questions in order to limit question-sequence bias.

- **Filter question:** To eliminate bias caused by lack of knowledge or prior opinion, first ask questions that reveal the respondent's background on the topic, then proceed only if there is sufficient background.
  - Do you plan to vote in the upcoming Democratic primary election for the Wisconsin 95th Assembly seat?
  - Are you aware of existing arguments for and/or against changing the name of Wimberly Hall?
- **Sequence to maintain interest:**
  - Ask questions most related to purpose first
  - Ask demographic characteristics last