

# 9.63 Laboratory in Cognitive Science

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Lecture 12

Survey Methods

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## Survey Research

- Very common method of data-gathering.
- Scarcely a day goes by when we are not told the results of one poll or another (TV, web, newspapers)
- Survey depends on getting the right sample of the population (depending on the question)
- Surveys depend on questionnaires. Well-designed questionnaires must:
  - Have well-worded questions
    - Open- or closed-ended questions?
  - Place questions in the appropriate order

## What Is a Survey?

- All surveys do have certain characteristics in common.
- Unlike a census, where all members of the population are studied, surveys gather information from only a portion of a population of interest -- the size of the sample depending on the purpose of the study.
- Information is collected by means of standardized procedures so that every individual is asked the same questions in more or less the same way.
- All of the survey's results should be presented in completely anonymous summaries

## Survey design research for ..

The researchers are not interested in establishing cause and effect conclusion

- Sociologists gather information from a representative sample of males member of the US labor force to study their training.
- Public opinions polling organizations conduct studies of the popularity of various presidential candidates among potential voters
- Market research organizations conduct studies of consumers to find out what kinds of soft drinks they prefer
- Medical researchers survey the nation's population to determine the incidence of disease related factors
- A national broadcast rating organization uses electronic recordings devices to measure the distribution of television watching each week

# Writing Survey Questions

- Make the questions clear and concise (check grammar and spelling)
- Make sure the question is directly relevant to the hypothesis

National crime victim survey questionnaire

I'm going to read some examples that will give you an idea of the kinds of crimes this study covers.

As I go through them, tell me if any of these happened to you in the last 6 months, that is since \_\_\_\_\_, 19 \_\_\_\_.

Was something belonging to YOU stolen, such as —

- (a) Things that you carry, like luggage, a wallet, purse, briefcase, book —
- (b) Clothing, jewelry, or calculator —
- (c) Bicycle or sports equipment —
- (d) Things in your home — like a TV, stereo, or tools -
- (e) Things from a vehicle, such as a package, groceries, camera, or cassette tapes —

OR

- (f) Did anyone ATTEMPT to steal anything belonging to you?

Briefly describe incident(s)

- Hypothesis: Women are more likely to get out of a traffic stop by a police officer than men.
- Question: Have you ever been not issued a traffic violation when wrong after being stopped by a police officer? (never through more than 3 times)
- “I predict that women are more likely to be let off due to their persuasiveness and lenience of officers to women.”
- Re-state into a series of questions:
  - How many times have you been stopped for traffic violations when you thought you had actually broken a law?
  - In how many of the above traffic stops were you issued a ticket?

## Survey Question: Wording to Avoid

- Double-barreled questions:
  - “Do you agree with the statement that the Soviet Union is definitely ahead of the United States in the arms race and that the United States should increase defense spending?”
    - How does a person who believes the Soviets are superior in military capacity but who does not want an increase in defense spending answer this question?
    - Researcher does not know whether the respondent meant for his answer to apply to both components or whether one component was given precedence over another.

## Survey Question: Wording to Avoid

- Ambiguous Question:
  - “What is your income?”
    - Why is this ambiguous?
  - “Do you prefer Brand A or Brand B”
    - Why is this one ambiguous?

## Survey Question: Wording to Avoid

- Leading Question:
  - “Don't you think that global warming is a serious environmental problem?”
    - Encourages a particular response because the question indicates that the researcher expects it.
- Choice of words may also lead respondents.
  - Research has shown that people are more willing to help the “needy” than those “on welfare.”
- Linking personalities or institutions to issues can affect responses
- What is wrong with the following wording:
  - “It is generally better to have a man at the head of a department composed of both men and women employees.”

## Survey Question: Wording to Avoid

- Avoid technical words, slang, and unusual vocabulary.
- Questions including words with several meanings will result in ambiguous answers:
  - “How much bread do you have?”
    - Answer depends on the measure one uses.
- Be aware of cross-cultural differences.
- Should look at wording of questions in existing, reputable surveys.

## Survey Question: No double negatives

It is not the case that I have never cheated on my tax returns.

Never should one not help others.

The likelihood of depression recurring after the discontinuation of psychotropic drug treatment is greater than if drug treatment is never used as part of therapy.

## Survey Question: No vagueness

Do not use poorly defined terms  
Ensure consistent meaning for all respondents

How many times in the past year have you talked with a doctor about your health?

Is health care easily accessible for your family?

Studying accounts for a majority of activities I do at college.

Tests are stressful.

I relax by using drugs.

## Survey Question

### No Objectionable\Irrelevant questions

How old are you?

What is your income?

Have you answered each question truthfully?

How many years of education were you able to complete?

## Survey Question

### No double-barrel questions

Is your doctor friendly and reasonably priced?

Were your caregivers courteous and friendly?

I am often fidgeting and on edge.

I find that I am more attentive and remember more if I have eaten before a study session.

## Survey Question Balanced questions\responses

How was the service at this hospital?  
\_\_\_\_\_ Excellent \_\_\_\_\_ Very Good \_\_\_\_\_ Great

Are you depressed frequently?  
Sad is the best descriptor of me right now.  
My depressed mood keeps me from doing fun things.

## Open-ended questions

Open-ended Questions - permits subject freedom to answer question in own words (without pre-specified alternatives)

Open-ended questions do not provide respondents with any answers from which to choose

- Is there anything in particular about Mr. Kerry that might make you want to vote for him?

## Open-ended questions

- Open-ended questions: advantages and disadvantages
  - Advantages:
    - Not forced to choose between categories
    - May better reflect respondents' thoughts/beliefs
    - Appropriate when list of possible answers is excessive
    - Lets respondent have the say, let him tell the researcher what he means, and not vice-versa (obtain unanticipated answers)
  - Disadvantages:
    - Respondent may say too much or too little
    - Provide incomplete or unintelligible answers
    - Flexibility in responses difficult to code and analyze
      - Interpretations of answers may vary
      - Too much variance in response
      - Expensive and time-consuming

## Closed-ended questions

- Closed-ended questions provide respondents with a list of responses from which to choose.
  - Alternatively, closed-ended questions can provide multiple choices for the respondent to accept or reject.

## Types of closed-ended questions

1. Checklists - respondent selects certain number of pre-specified categories (nominal data)

Types of Exercises:

- Aerobics
- Basketball
- Swimming
- Weightlifting

## Types of closed-ended questions

2. Two-way (Forced Choice) - respondent must select between two alternatives (crude ordinal\ nominal)

Do you always wake up before 8:00am?

Yes  No

## Types of closed-ended questions

3. Ranked - respondent must place items in order of importance or value (ordinal)

Rank in order of importance:

_____	Coursework
_____	Part-time employment
_____	Party hardy
_____	Close relationship

## Types of closed-ended questions

4. Multiple-Choice (Likert) - respondent selects between range of alternatives along pre-specified continuum (ordinal\interval)

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

## Closed-ended questions

- Closed-ended questions: advantages and disadvantages:
  - Advantages:
    - Easy to answer and takes little time
    - Answers can be precoded (assigned a number) and easily transferred to a computer
    - Answers are easy to compare
    - Easier to elicit responses to sensitive questions
    - Answers are more reliable
    - Meaning of responses more meaningful to researcher
  - Disadvantages:
    - may not be accurate--forces people to accept categories, or puts too many people into "other" category
    - Answers relative to response scale provided
    - Respondent's choice not among listed alternatives
    - Choices listed communicate kind of response wanted
    - Wording of response choices may influence responses
    - Single-sided vs. two-sided questions

### The choices on a frequency scale can influence which answers are chosen

Q: How much TV do you watch per day?

- a) Up to .5 hours
  - b) .5 - 1 hour
  - c) 1-2 hours
  - d) 2-2.5 hours
  - e) 2.5 + hours
- 16% say 2.5 + hours**

Q: How much TV do you watch per day?

- a) Up to 2.5 hours
  - b) 2.5 - 3 hour
  - c) 3-4 hours
  - d) 4-4.5 hours
  - e) 4.5 + hours
- 38% say 2.5 + hours**

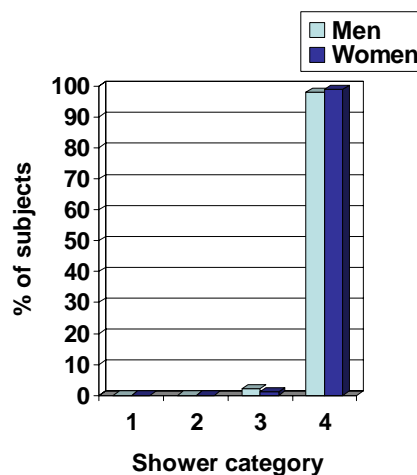
(From Schwarz et al., 1985)

## Estimating Behavioral Frequencies/Durations

- Unless events are rare enough to count, subjects use estimation strategies that may be affected by response alternatives given in the survey
- “To avoid these systematic influences of response alternatives, it is advisable to ask frequency questions in an open-response format, such as: “How many hours a day do you watch TV?” (Schwarz, 1999)

## Response Scale Sensitivity

- Insensitive response scales may produce ceiling or floor effects
- E.g., Say testing hypothesis that women take more showers than men
- Insensitive scale: 1 = once a year or less, 2 = more than once a year but < once a month, 3 = between once a month and once a week, 4 = at least once a week



## Question Order

- First questions should “break the ice”
- General to specific order of questions
- Questions on personal or sensitive topics left towards the end
- Avoid a series of questions that are likely to elicit the same response (bias)
- One question can affect another
  - If you ask about crime early on, and then ask about problems in their community, likely to get crime as an answer (priming effect)
  - Question 1: How satisfied are you with your Maths 7 grade?  
Question 2: How satisfied are you with your life overall?

## Constructing Attitude Judgments

- Evidence suggests that people report their feelings about target items based on whatever information currently “accessible”
- Strack et al. (1985): Subjects asked to list 3 positive life events that recently happened to them or 3 negative events
  - Subjects who listed positive events then reported higher current happiness and life satisfaction
  - Assimilation Effect: When positive information currently in mind produces more positive evaluation of a target
- Other subjects asked to list 3 positive or negative life events that occurred 5 years ago
  - Subjects who listed positive events reported lower current happiness and life satisfaction
  - Contrast Effect: When positive information currently in mind serves as a standard of comparison and produces more negative evaluation of a target

1. How good a president was Abe Lincoln?
2. How trustworthy are U. S. presidents?

- Mean trustworthiness rating = 7 (out of 10)
- Trustworthiness of George Bush, Mean = 3 (out of 10)

1. How good a president was Richard Nixon
2. How trustworthy are U. S. presidents?

- Mean trustworthiness rating = 3 (out of 10)
- Trustworthiness of George Bush, Mean = 7 (out of 10)

## Constructing Attitudes

Graph removed due to copyright reasons.

Schwarz and Clore (1983)

## Survey Ploys

1. Did you kill your wife: \_\_\_\_\_ YES \_\_\_\_\_ NO
2. What percent of men kill their wives?  
\_\_\_\_\_ 10% \_\_\_\_\_ 30% \_\_\_\_\_ 60% \_\_\_\_\_ 90%
3. Lots of men are killing their wives these days. Did you by any chance kill yours? \_\_\_\_\_ YES \_\_\_\_\_ NO
4. Complete the following sentence:  
•“Killing my wife \_\_\_\_\_.”
5. Tell me a story about this picture:

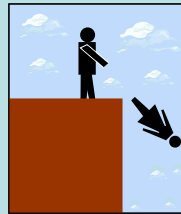


Image by MIT OCW.

## facts about surveys

- **33 per cent of all surveys flawed, survey reports**
- **Other two-thirds misleading, expert claims**
- *by Kieren McCarthy*
- Thirty-three per cent of all surveys are flawed, a new survey by the University of Westthentforshire has confirmed.
- Instead, swayed by the interests of the group that commissioned the survey, many companies appear to manufacture desired results from the data they possess, it is claimed.
- The most common error in 67 per cent of cases was the use of too small a test group, providing results that purport to be accurate but are wildly misleading. "In around a third of the surveys we surveyed," Professor John Strom told us. "We found that the test group was far too small to give accurate results."
- Just over 65 per cent of surveys were also guilty of repeating the same points but in a different manner in order to make the results appear more valid in two-thirds of surveys.
- However, there was no evidence of purely manufactured results, with all of the surveys making a credible attempt at providing information on a given topic. Although just under 34 per cent of surveys were guilty of twisting statistics to give a more positive slant on the information.

## Flawed survey on liberal professors *Washington times*

- Research claims that faculty and students at research institutions are more liberal than those at primarily teaching institutions
- a conclusion reached by comparing data from faculty surveys taken in 1984 and 1999.
- Two of the articles repeat the claim that the study demonstrates a profound "ideological shift to the left among college faculty" and a pervasive anti-conservative bias in hiring and tenure decisions.

## Flawed survey on liberal professors *Washington times*

- The study's comparison of the 1984 and 1999 surveys violates a fundamental principle of survey research.
- As decades of research have shown, altering questions in even subtle ways can produce dramatically different results.
- Rothman, Lichter, and Nevitte base their conclusion that "a sharp shift to the left has taken place among college faculty in recent years" on questions asked in two entirely different ways in the two studies, one asking respondents to place themselves on a ten-point scale, and one asking them to select from a list of descriptions.
- Furthermore, the study does not even show, much less "prove," that conservatives have been discriminated against in hiring and promotion.

## Flawed survey, flawed conclusions

- September 27, 2001
- "A front-page article in Wednesday's Daily Times newspaper reported the results of a faulty traffic survey conducted by the Wis. Dept. of Transportation. The headline read, "**Survey results indicate west bypass is best route,**"
- but what the article failed to report was that the Origination-Destination Study was conducted while passage in and out of the city on highway 16 and Watertown's main street, Summit Avenue, was closed for repair.
- In fact these roadways were closed as early as March 19, practically two months prior to the survey and were not reopened until recently, after the survey was conducted April 30 and May 1. This effectively altered the normal flow of traffic; diverting traffic that would normally have entered Watertown from the east using Highway 16 instead to I-94 and then to South Highway 26."

## Scientific misconduct: ORI survey is flawed (Nature)

- The survey's vague questions, such as asking respondents how many times they have observed colleagues "failing to cite references that contradict their current research" or "refusing to give peers reasonable access to unique research materials", will give a misleading impression of how research is done. Although it is easy to circle a number, there may be wide variation in the ethical status of the examples being reported by individuals.