How much TV do you watch per week?

- a) as much as I can
- b) a lot
- c) some
- d) a little
- e) not at all

How much is "some" in hours per week?

Compared to all other people living in Germany, how would you rate your health?

- a) good
- b) fair
- c) poor

Compared to all other people living in Germany, how would you rate your health?

- a) excellent
- b) very good
- c) good
- d) fair
- e) poor

Eating 4 servings of vegetables per day is a good idea

5 4 3 2 1
Strongly Agree Strongly Disagree

I eat 4 servings of vegetables per day



I consider myself to be more outgoing than my fellow students

7 6 5 4 3 2 1
Strongly Agree Strongly Disagree

Biases in Questionnaires

Sophie Jost

How Do I Lie with Statistics

Supervisor: Prof. Dr. Ullrich Köthe

14.11.2019

Outline

- Introduction
- Biases in Question Design
- Biases in Questionnaire Design
- Biases in Questionnaire Administration

Introduction

- why questionnaires?
 - cheap
 - quick
 - efficient for large amounts of information
 - measuring beliefs, behavior, attitudes, intentions, preferences...
- types of questions
 - open questions => qualitative data
 - closed questions => quantitative data

Biases in Question Design

How much TV do you watch per week?

- a) as much as I can
- b) a lot
- c) some
- d) a little
- e) not at all

| Häufigkeit von Nebenwirkungen | | |
|-------------------------------|----------------------------------|-------------|
| Häufigkeits- angabe | Zahl der betroffenen Anwender | in Prozent |
| sehr häufig | mehr als 1 von 10 | über 10% |
| häufig | 1-10 von 100 | 1%-10% |
| gelegentlich | 1-10 von 1.000 | 0,1%-1% |
| selten | 1-10 von 10.000 | 0,01%-0,1% |
| sehr selten | weniger als 1 von 10.000 | unter 0,01% |

https://gutepillen-schlechtepillen.de/beipackzettel-hilfe-oder-notwendiges-uebel/?doing_wp_cron=1573676595.2645270824432373046875

How much is "some" in hours per week? What counts as "watching TV"?

Biases in Question Design – Problems with Wording

- "vague words in vague questions encourage vague answers"
- watch out for technical terms...

 Do you think priming had an impact on your answers?
- ...and uncommon words
- complex, lengthy and double-barrelled questions

Has it happened to you that over a long period of time, when you neither called your parents nor your brother or sister, you got homesick or you impulsively bought a train ticket home for the upcoming weekend?

Biases in Question Design

Eating 4 servings of vegetables per day is a good idea

5 4 3 2 1
Strongly Agree Strongly Disagree

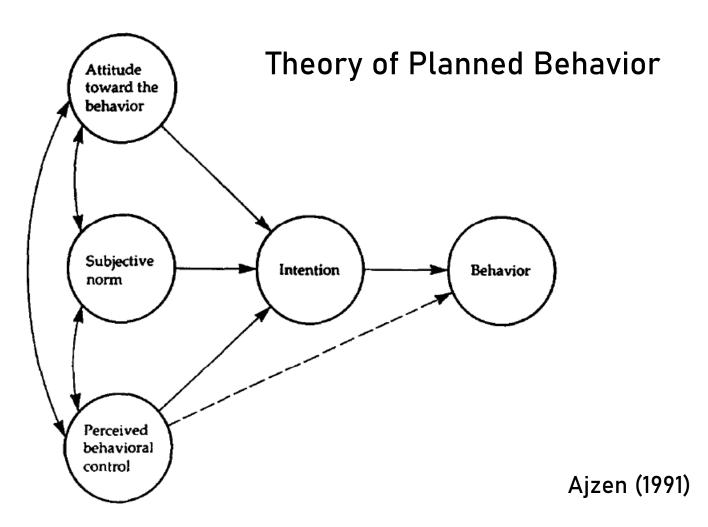
I eat 4 servings of vegetables per day

5 4 3 2 1
Strongly Agree Strongly Disagree

Biases in Question Design – Adequate Data for Intended Purpose?

- belief vs. behavior
 - hypothetical and personalized questions
 - belief ≠ behavior

Biases in Question Design – Adequate Data for Intended Purpose?



Biases in Question Design – Adequate Data for Intended Purpose?

- belief vs. behavior
 - hypthetical and personalized questions
 - belief ≠ behavior
- time frame

Did you have a picnic at the Neckar last month?

insensitive, degraded measures

Is health important to you? - Yes/No How important is health to you? (important) 1-2-3-4-5-6-7 (not important)

Biases in Question Design - Inconsistency

- "More and more nitrate in groundwater"
- "From 2013 to 2017 the average nitrate concentration in the top 15 polluted regions has increased by 40mg/l"
- same with ICD (international classification of diseases) codes
 - prevalence of diseases

Biases in Question Design - Inconsistency

Compared to all other people living in Germany, how would you rate your health?

- Extra Special Employ -

- LUKS SPECIAL ENGINES -



The Original Edition



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"Name That Course V. Rust Vot."

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GENERAL HEALT IMPROVES!

"The Future Holds Unlimited Possibilities For Us All"

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The two proves we possit male not talk in its proper perspective



Biases in Question Design - Inconsistency

 How many of you rated their health excellent or very good?

- a) good
- b) fair
- c) poor

- a) excellent
- b) very good
- c) good
- d) fair
- e) poor
- 1985 NCHS-NHIS (National Center for Health Statistics National Health interview survey) vs. 1995 NCHS-NHIS
- same for change of wording

Biases in Questionnaire Design

response format

```
Your health is:

Excellent ... [] Good ... [] Fair ... [] Poor ... []

Your health is:

Excellent .... []

Good ..... []
```

left vs. right alignment

better for telefon/faceto-face interviews

> better for selfadministered questionnaires

Biases in Questionnaire Design

- yes-/no-saying => answer all questions with yes/no
- response fatigue => too many questions
 - personal interviews 50-90 minutes
 - telephone interviews 30-60 minutes
 - self-administered questionnaires 10-20 minutes

- Interviewer
- Rosenthal-Effect
 - self fulfilling prophecy
 - expectations influence study outcomes
 - => double-blind study design

I consider myself to be more outgoing than my fellow students

7 6 5 4 3 2 1
Strongly Agree Strongly Disagree

- Respondent Subconscious
- avoid ends of scales

I consider myself to be more outgoing than my fellow students
7 6 5 4 3 2 1

Strongly Agree Strongly Disagree

positive answers on items about satisfaction

Are you satisfied with your family? Are you satisfied with your career?

- Respondent Conscious
- social desirability
 - alter responses in the desired direction
 - social desirability scale

My table manners at home are as good as when I eat out in a restaurant.

No matter who I'm talking to, I'm always a good listener.

- unacceptability
 - diseases, drug abuse, invading privacy

- Respondent Conscious
- Hypothesis guessing
 - "help the researcher"
 - "being a good participant"

Did you sleep well last night?

How many hours of sleep did you get last night?

Did you wake up with a headache this morning?

Did you wake up with a sore throat this morning?

- Inaccurate Recall
- primacy and recency effect
 - choose the first options on a list in mail surveys
 - choose later categories in telephone/interview surveys
- answering for others
 - actor-observer bias vs. egocentric bias

- Inaccurate Recall
- memories are reconstructed
 - study "Lost in the Mall"
 - produce wrong memories

surroundings

- atmosphere => increase in life satisfaction
 when participants are in a comfortable room
- weather => positive effects of solar exposure on subjective well-being measurements

- cultural differences
 What is your monthly income?
 What is your annual income?
 - culture fair intelligence tests

How to influence question outcomes – 2 examples

Do you think smoking is fine although other people could be bothered?

Do you think smoking is fine although it drastically increases the risk for lung cancer?

7 6 5 4 3 2 1
Strongly Agree Strongly Disagree

How to influence question outcomes – 2 examples

Are you going to wear a helmet for cycling in the future?

In 2018 90.000 bicycle riders died on german streets. Are you going to wear a helmet for cycling in the future?

7 6 5 4 3 2 1

Very Likely Very Unlikely

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