Questionnaire Design

Objectives

To understand:

- Objectives of questionnaires
- Advantages and disadvantages
- Design of questionnaires
- Type of questions used
- Common problems and pitfalls

Sources of information

- physical signals
- temperature
- atmospheric pressure
- medical records, demography, census bureau
- individual experience → QUESTIONNAIRES →

What is a questionnaire?

- An instrument (form) to
  - collect answers to questions
  - collect factual data
    - gathers information or measures
- A series of written questions/items in a fixed, rational order

Why using a questionnaire?

A well designed questionnaire:

- Gives **accurate** and **relevant** information to your research question
- Minimizes potential sources of bias
- Will more likely be completed

⇒**As simple and focused as possible**

Advantages of questionnaires

- Can reach a large number of people relatively easily and economically
- Provide quantifiable answers
- Relatively easy to analyse

Disadvantages of questionnaires

- Provides only limited insight into problem
  - Limited response allowed by questions
  - Maybe not the right questions are asked
- Varying response
  - Misunderstanding/misinterpretation
- Need to get it right first time
  - Hard to chase after missing data

Types of Questionnaire

- Face to face
- Telephone

Interviewer -administrated

- By post
- E-mail/Internet

Self-administrated

Self-administered questionnaire

- **Advantages:**
  - Cheap and easy to administer
  - Preserves confidentiality
  - Completed at respondent's convenience
  - No influence by interviewer

Strathmore Business School

Self-administered questionnaire

- **Disadvantages:**
  - Low response rate
  - Questions can be misunderstood
  - No control by interviewer
  - Time and resouces loss

Interview-administered questionnaire

- **Advantages:**
  - Participation by illiterate people
  - Clarification of ambiguity
  - Quick answers

Interview-administered questionnaire

- **Disadvantages:**
  - Interviewer bias
  - Needs more resources
  - Only short questionnaires possible
    - Especially on telephone
  - Difficult for sensitive issues

Strathmore Business School

Before starting to design a questionnaire

Write a research plan

Stages in designing a questionnaire (2)

Determine study population:

- Know the respondents
  - Occupation
  - Special sensitivities
  - Education
  - Ethnic
  - Language

⇒Questionnaire needs to be adapted to your population, not the opposite!

Stages in designing a questionnaire (3)

Design questions:

- Content of the questions
- Format of the questions
- Presentation and layout
- Coding schedule (if appropriate)

- Pilot and refine questionnaire

What makes a well designed questionnaire?

- Good appearance

  → easy on the eye
- Short and simple
- Relevant and logical

⇒ High response rate

⇒ Easy data summarisation and analysis

Basic Rules

- On first page
  - Return address
  - Study title in bold
- On all pages
  - Identifying mark/ unique identifier
  - Numbered items
  - Page numbers
- Directions in bold
- Self-addressed envelope!

A QUESTIONNAIRE
IS ONLY AS GOOD
AS THE QUESTIONS
IT ASKS

A Good Questionnaire Appears

- As easy to compose as a good poem
- But, it is usually the result of long, painstaking work

The Major Decisions in Questionnaire Design

1. What should be asked?
2. How should each question be phrased?
3. In what sequence should the questions be arranged?
4. What questionnaire layout will best serve the research objectives?
5. How should the questionnaire be pre-tested? Does the questionnaire need to be revised?

What Should Be Asked?

- Questionnaire relevance
- Questionnaire accuracy

Phrasing Questions

- Open-ended questions
- Fixed-alternative questions

Question order

- Decide on **order** of items/questions
  - Easy → difficult
  - General → particular
  - Factual → abstract

- Where to place **sensitive questions**?

  Be aware of ordering effects!

Question order (2)

- **Group questions** by topic/ response options
- Starting questions
  - Simple
  - With closed format
  - Relevant to main subject
  - Non-offending
  - Neither demographic nor personal questions
- Don’t put most important item last

Strathmore Business School

Questionnaire introduction

- **Covering letter/ interview introduction**
  - **Who** you are/ you work for
  - **Why** you are investigating
  - **Where** you obtained the respondent's name
  - **How and where** you can be contacted
  - Guarantee of confidentiality
  - Length of interview (be honest)

⇒ **Usefulness of study should be clear to all respondents**

Content of Questions

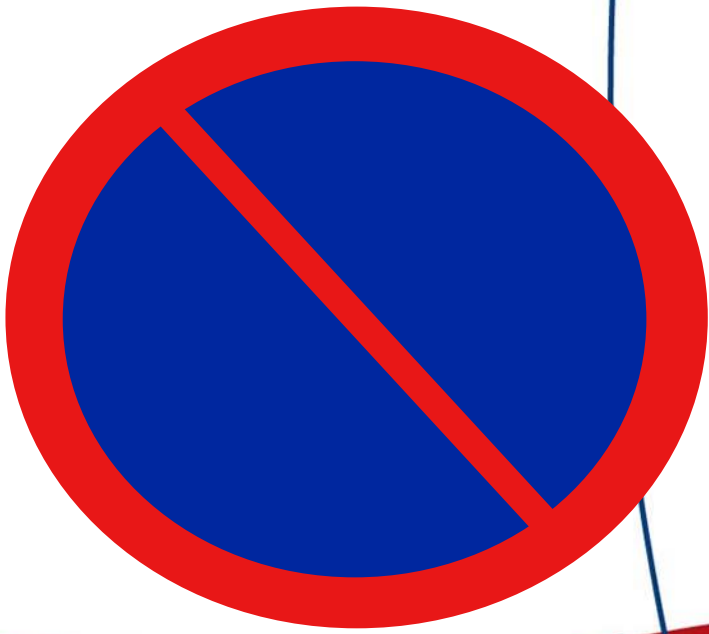
- Clear **focus on research question**
  - Avoid sidetracking
  - Avoid unnecessary information
- **Demographic** information
- **Contact information** (if not anonymous)

Strathmore Business School

Developing a Questionnaire

- No hard and fast rules
- Only guidelines

- Avoid Complexity: use simple, conversational language
- Avoid leading and loaded questions
- Avoid ambiguity: be as specific as possible
- Avoid double-barreled items
- Avoid making assumptions
- Avoid burdensome questions



1. Do you believe that private citizens have the right to own firearms to defend themselves, their families, and property from violent criminal attack?

Yes **No** **Undecided**

2. Do you believe that a ban on the private ownership of firearms would be significantly reduce the number of murders and robberies in your community?

Yes **No** **Undecided**

Dear Passenger:

Kenyan Airlines is pleased to have you on board today.

To help us provide the best service possible, we need to know more about you and your opinions of our service. If you are over 18 years old, we would appreciate if you would complete this questionnaire.

Your flight attendant will pick up your completed questionnaire shortly.

Thank you.

1. Please indicate: Flight number _____ Date_____

2a. At the city where you boarded this particular plane, did you make a connection from another flight?

Yes, from Kenya. . . . 1
Yes, from Other Airline . . 2
No 3

b. Did you board this plane at the airport from which it just took off, or were you a through passenger for which that was an intermediate stop?

Boarded here 1
Through passenger. 2

3. How would you rate the overall service from Kenya Airways for <u>this</u> flight, all things considered, from your arrival at the airport terminal until now?

	Excellent	Good	Fair	Poor
Overall Service	1	2	3	4

4. Please rate each of the following with regard to this flight, if applicable.

	Excellent	Good	Fair	Poor
	1	2	3	4
Courtesy and Treatment from the:				
Skycap at airport	☐	☐	☐	☐
Airport Ticket Counter Agent	☐	☐	☐	☐
Boarding Point (Gate) Agent	☐	☐	☐	☐
Flight Attendants	☐	☐	☐	☐
Your Meal or Snack.	☐	☐	☐	☐
Beverage Service	☐	☐	☐	☐
Seat Comfort.	☐	☐	☐	☐
Carry-On Stowage Space.	☐	☐	☐	☐
Cabin Cleanliness	☐	☐	☐	☐
Video/Stereo Entertainment	☐	☐	☐	☐
On-Time Departure	☐	☐	☐	☐

Questionnaire Design

- Question sequence
  - Order bias
  - Funnel technique
  - Filter bias
- Question layout

Attitude Measurement

Attitude: an enduring disposition to consistently respond in a given matter

35

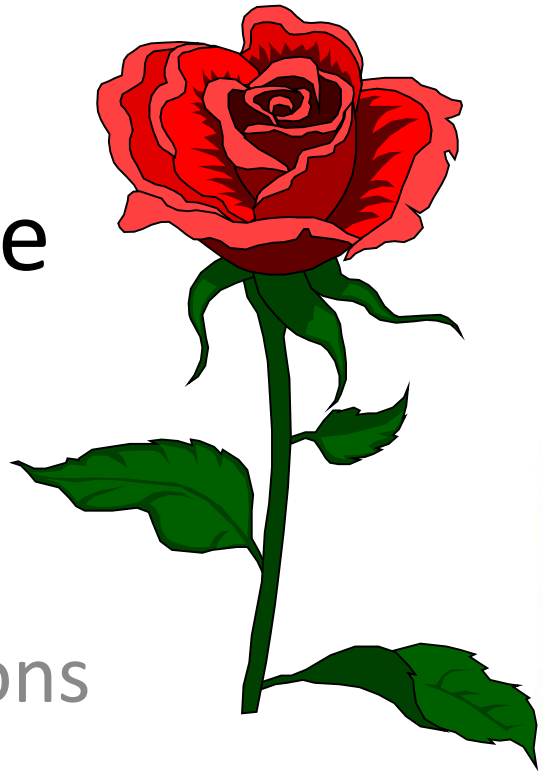
Attitudes as Hypothetical Constructs

- The term hypothetical construct is used to describe a variable that is not directly observable, but is measurable by an indirect means such as verbal expression or overt behavior - attitudes are considered to be such variables.

Three Components of an Attitude

- Affective
- Cognitive
- Behavioral

Affective

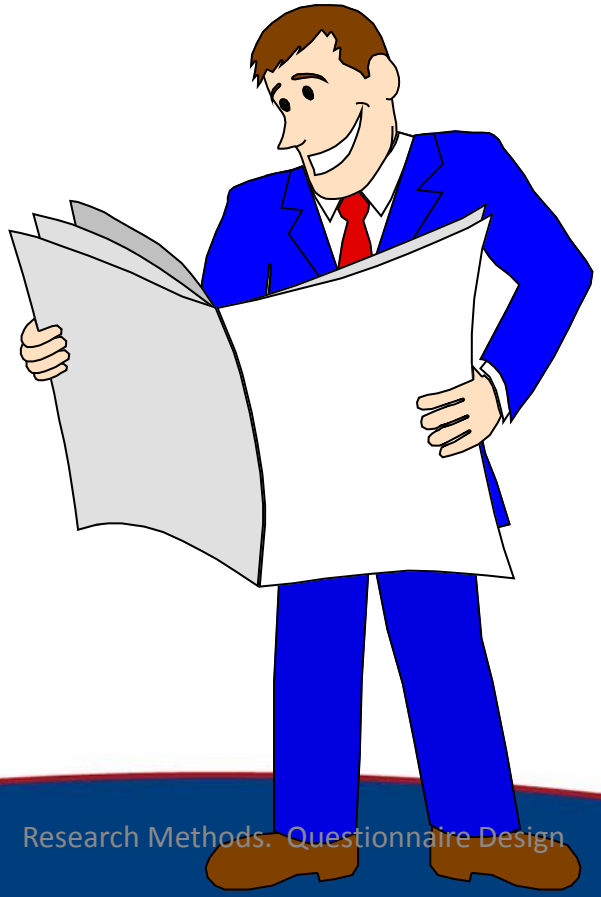


The feelings or emotions toward an object

Strathmore Business School

Cognitive

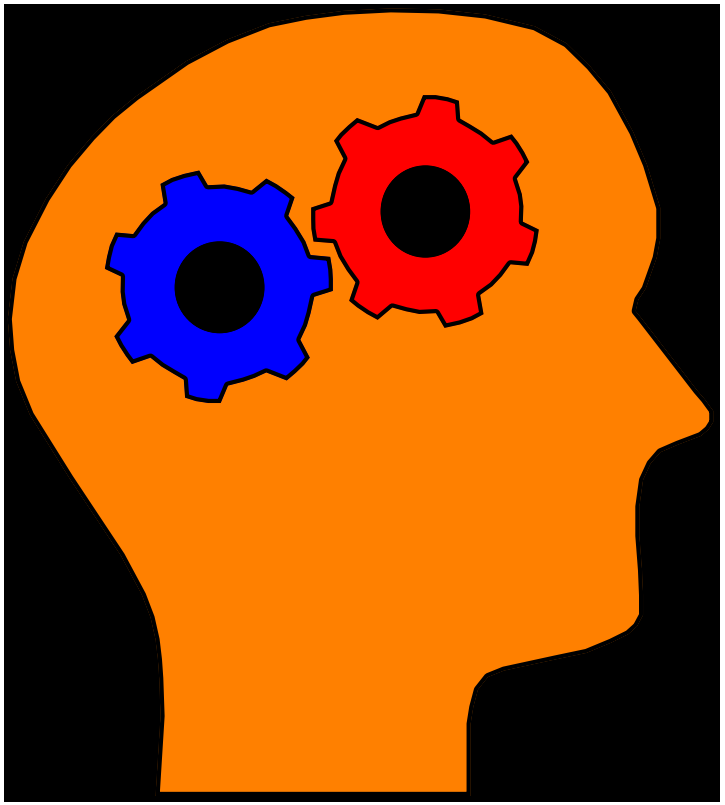
- Knowledge and beliefs



Behavioral

- Predisposition to action
- Intentions
- Behavioral expectations

Measuring Attitudes



- Ranking
- Rating
- Sorting
- Choice

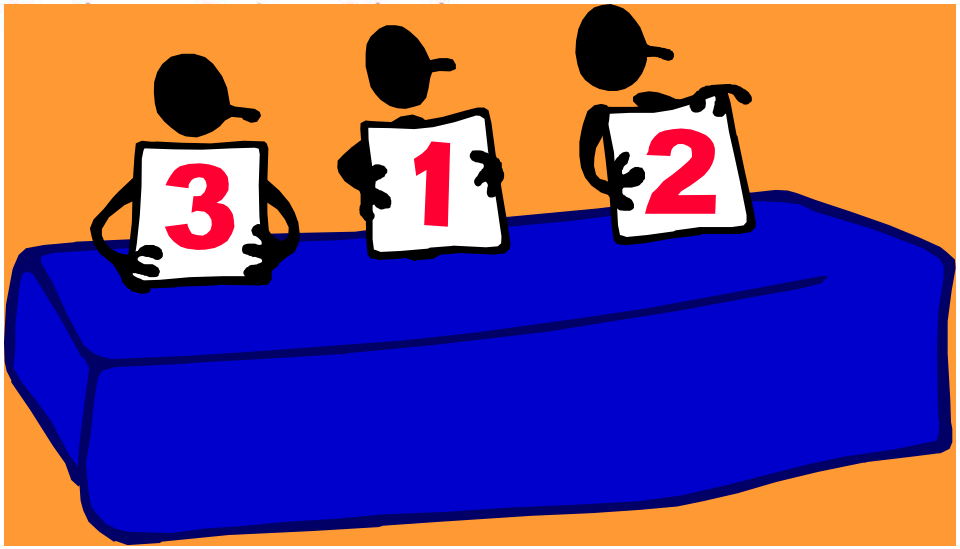
The Attitude Measuring Process

Ranking - Rank order preference

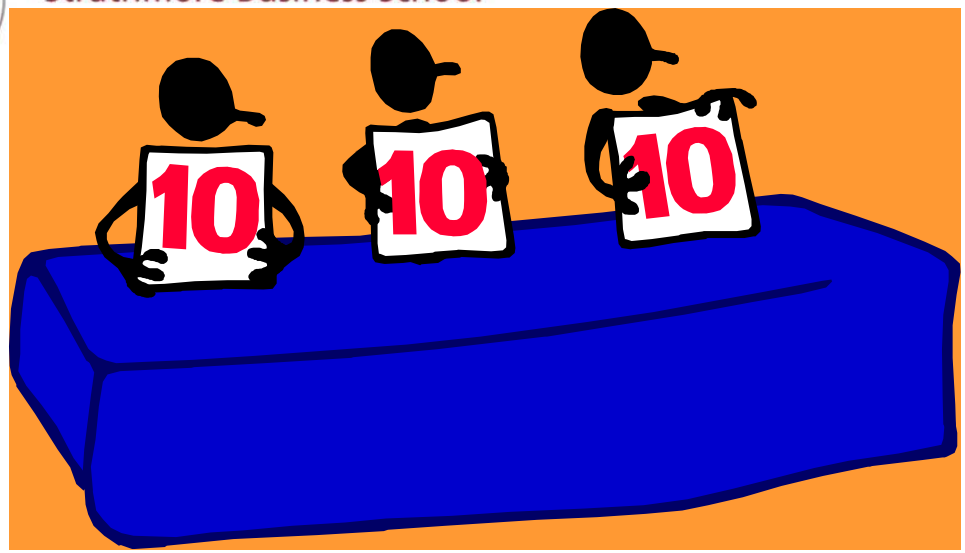
Rating - Estimates magnitude of a characteristic

Sorting - Arrange or classify concepts

Choice - Selection of preferred alternative



- Ranking tasks require that the respondent rank order a small number of objects in overall performance on the basis of some characteristic or stimulus.



- Rating asks the respondent to estimate the magnitude of a characteristic, or quality, that an object possesses. The respondent's position on a scale(s) is where he or she would rate an object.

- Sorting might present the respondent with several concepts typed on cards and require that the respondent arrange the cards into a number of piles or otherwise classify the concepts.

- Choice between two or more alternatives is another type of attitude measurement - it is assumed that the chosen object is preferred over the other.

- Physiological measures of attitudes provide a means of measuring attitudes without verbally questioning the respondent. for example, galvanic skin responses, measure blood pressure etc.

Simple Attitude Scaling

- In its most basic form, attitude scaling requires that an individual agree with a statement or respond to a single question. This type of self-rating scale merely classifies respondents into one of two categories;

Simplified Scaling Example

THE PRESIDENT SHOULD RUN FOR RE-ELECTION

_____ AGREE _____ DISAGREE

Category Scales

- A category scale is a more sensitive measure than a scale having only two response categories - it provides more information.
- Questions' wording is an extremely important factor in the usefulness of these scales.

Strathmore Business School

Example of Category Scale

How important were the following in your decision to visit San Diego (check one for each item)

	VERY IMPORTANT	**SOMEWHAT IMPORTANT**	**NOT TOO IMPORTANT**
CLIMATE	_____	_____	_____
COST OF TRAVEL	_____	_____	_____
FAMILY ORIENTED	_____	_____	_____
EDUCATIONAL/ HISTORICAL ASPECTS	_____	_____	_____
FAMILIARITY WITH AREA	_____	_____	_____

Method of Summated Ratings: The Likert Scale

- An extremely popular means for measuring attitudes. Respondents indicate their own attitudes by checking how strongly they agree or disagree with statements.
- Response alternatives: "strongly agree", "agree", "uncertain", "disagree", and "strongly disagree".

Likert Scale for Measuring Attitudes Toward Tennis

It is more fun to play a tough, competitive tennis match tan to play an easy one.

___Strongly Agree

___Agree

___Not Sure

___Disagree

___Strongly Disagree

Likert Scale for Measuring Attitudes Toward Tennis

There is really no such thing as a tennis stroke that cannot be mastered.

___Strongly Agree

___Agree

___Not Sure

___Disagree

___Strongly Disagree

Likert Scale for Measuring Attitudes Toward Tennis

Playing tennis is a great way to exercise.

___Strongly Agree

___Agree

___Not Sure

___Disagree

___Strongly Disagree

Semantic Differential

- A series of seven-point bipolar rating scales. Bipolar adjectives, such as “good” and “bad”, anchor both ends (or poles) of the scale.

Semantic Differential

- A weight is assigned to each position on the rating scale. Traditionally, scores are 7, 6, 5, 4, 3, 2, 1, or +3, +2, +1, 0, -1, -2, -3.

Semantic Differential Scales for Measuring Attitudes Toward Tennis

Exciting ___ : ___ : ___ : ___ : ___ : ___ : ___ : Calm

Interesting ___ : ___ : ___ : ___ : ___ : ___ : ___ : Dull

Simple___ : ___ : ___ : ___ : ___ : ___ : ___ Complex

Passive ___ : ___ : ___ : ___ : ___ : ___ : ___ Active

Numerical Scales

- Numerical scales have numbers as response options, rather than “semantic space” or verbal descriptions, to identify categories (response positions).

Stapel Scales

- Modern versions of the Stapel scale place a single adjective as a substitute for the semantic differential when it is difficult to create pairs of bipolar adjectives.
- The advantage and disadvantages of a Stapel scale, as well as the results, are very similar to those for a semantic differential. However, the Stapel scale tends to be easier to conduct and administer.

Strathmore Business School

A Stapel Scale for Measuring a Store's Image

Department

Store Name

+3

+2

+1

Wide Selection

-1

-2

-3

Select a plus number for words that you think describe the store accurately. the more accurately you think the work describes the store, the larger the plus number you should choose. Select a minus number for words you think do not describe the store accurately. The less accurately you think the word describes the store, the large the minus number you should choose, therefore, you can select any number from +3 for words that you think are very accurate all the way to -3 for words that you think are very inaccurate.

Behavioral Differential

The behavioral differential instrument has been developed for measuring the behavioral intentions of subjects towards any object or category of objects. A description of the object to be judged is placed on the top of a sheet, and the subjects indicate their behavioral intentions toward this object on a series of scales. For example:

A 25-year old woman sales representative

Would ___ : ___ : ___ : ___ : ___ : ___ : ___ : Would Not

Ask this person for advice.

Paired Comparisons

In paired comparisons the respondents are presented with two objects at a time and asked to pick the one they prefer. Ranking objects with respect to one attribute is not difficult if only a few products are compared, but as the number of items increases, the number of comparisons increases geometrically (n*(n -1)/2). If the number of comparisons is too great, respondents may fatigue and no longer carefully discriminate among them.

Divide 100 points among each of the following brands according to your preference for the brand:

Brand A _____

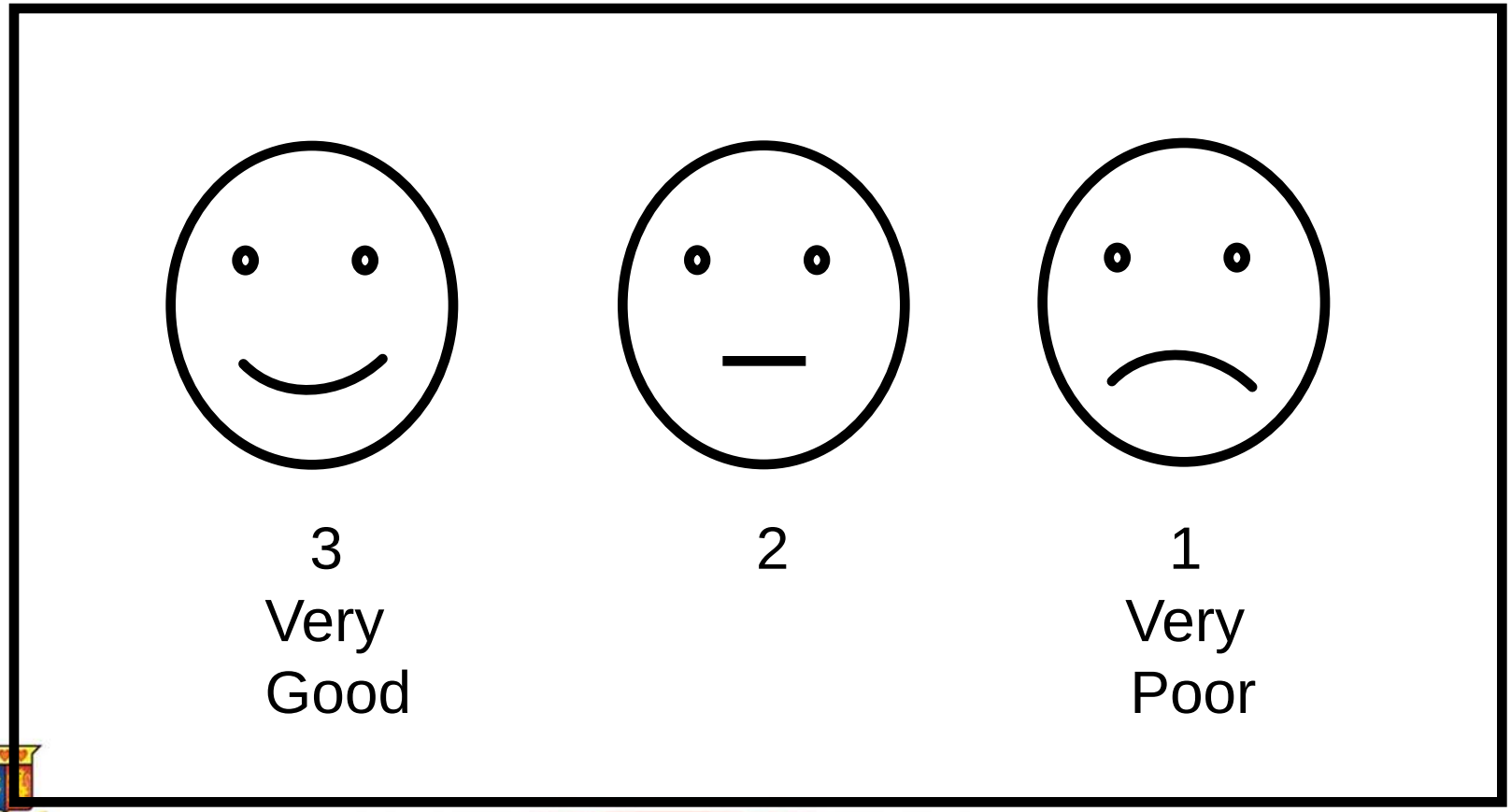
Brand B _____

Brand C _____

Graphic Rating Scales

- A graphic rating scale presents respondents with a graphic continuum.

Graphic Rating Scale Stressing Pictorial Visual Communications



Monadic Rating Scale

A **Monadic Rating Scale** asks about a single concept

Now that you've had your automobile for about 1 year, please tell us how satisfied you are with its engine power and pickup.

Completely Satisfied	**Very Satisfied**	**Fairly Well Satisfied**	**Somewhat Dissatisfied**	**Very Dissatisfied**

A Comparative Rating Scale

A **Comparative Rating Scale** asks respondents to rate a concept by comparing it with a benchmark

Please indicate how the amount of authority in your present position compares with the amount of authority that would be ideal for this position.

TOO MUCH **ABOUT RIGHT** **TOO LITTLE**

An Unbalanced Scale

An **Unbalanced Scale** has more responses distributed at one end of the scale

How satisfied are you with the bookstore in the Student Union?

Satisfied	**Neither Satisfied Nor Dissatisfied**	**Quite Satisfied**	**Very Dissatisfied**

Format of Questions

- Adjust to **responding audience**
  - Professionals vs. public
  - Middle class vs. prisoners
- Keep sentences simple and short
- Define key words (“fully vaccinated”)
- Remember option “don’t know”

Format of Questions

- **Ask for one information at a time**

  Do you own a dog or have frequent contacts with dogs?

  Yes ☐

  No ☐

- **Use mutually exclusive and exhaustive answer options**
- Vertical order of answer options

Be accurate

Do you often touch dogs?

Yes ☐

No ☐

vs.

How often did you touch a dog during the past 3 months?

Once ☐

Twice ☐

Three times or more ☐

Not at all ☐

Don´t know ☐

Be appropriate

Are you a drunk?

Yes ☐

No ☐

vs.

How often have you consumed alcoholic beverages during the past 6 months?

Daily ☐

2-6 times/week ☐

Once a week ☐

Less than once a week ☐

Don´t know ☐

Be objective

Did you drink the strange brownish drink in Prague?

Yes ☐

No ☐

vs.

Which beverage did you consume?

Water ☐

Beer ☐

Wine ☐

Karkadé ☐

None of them ☐

Don´t know ☐

Be simple

Did you smoke not less than a mean amount of 7 cigarettes/2 days from 1999 onwards?

Yes ☐

No ☐

vs.

Did you smoke an average of 2 pack of cigarettes/week for the last 5 years?

Yes ☐

No ☐

Don´t know ☐

Bias

Bias = systematic differences in the measurement of a response

Information Bias

- **Recall bias**
  - Cases more likely to remember than controls
- **Observer bias**
  - Different interviewer – different interpretations
  - Different interpretation of similar questions
  - Reduce by structured questionnaire

Non-response bias

- Those who respond are different from those who do not
  - Telephone interviews: more females, elderly
- Reduce
  - Ensure high response rate
  - Random choice of interview partners
  - Correct during analysis (eg age, sex)

Format of questions

Two main question formats

- **Closed** format → **forced choice**

Yes	☐	Always	☐
No	☐	Sometimes	☐
Don't know	☐	Never	☐

- **Open** format → **free text**

What is your most distressing symptom? Please describe:

_____

_____

Open or Closed?

Closed

- **Advantages:**
  - Simple and quick
  - Reduces discrimination against less literate
  - Easy to code, record, analyze
  - Easy to compare
  - Easy to report results

Closed questions

- **Disadvantages:**
  - Restricted number of possible answers
  - Loss of information
- **Possible compromise:**
  - Insert field “others”

Open questions

- **Advantages:**
  - Not directive
  - Allows **exploration of issues** to generate hypothesis
    - qualitative research, focus groups, trawling questionnaires
  - Used even if no comprehensive range of alternative choices
  - Good for exploring knowledge and attitudes
  - Detailed and unexpected answers possible

Open questions

- **Disadvantages:**
  - Interviewer bias
  - Time-consuming
  - Coding problems
  - Difficult to analyze
  - Difficult to compare groups

Closed Questions

1. Straightforward response

What is your age in years? ___ years

How long have you owned a dog? ___ years

What is your sex (gender)?

Male ☐

Female ☐

Did you stay in Hotel X on 7/23/05?

Yes ☐

No ☐

Don't know ☐

Closed Questions

2. Checklist

Which of the following outdoor activities did you do last week?

- **Running** ☐
- **Walking** ☐
- **Hiking** ☐
- **Cycling** ☐
- **Swimming** ☐

Closed Questions

3. Rating scale

Did you do use sunscreen during the following outdoor activities during the past six months?

	Always	Sometimes	Seldom	Never
Running	☐	☐	☐	☐
Walking	☐	☐	☐	☐
Cycling	☐	☐	☐	☐

Closed Questions

4. Rating scale

Numerical

How useful would you think that information on the risk of biting from stray dogs would be?
(please circle)

1 2 3 4 5 6 7

Not at all useful **Very useful**

Closed Questions

5. Scales for measuring attitude (Lickert)

Stray dogs carry a higher risk of rabies

- **No, I strongly disagree** ☐
- **No, I disagree quite a lot** ☐
- **No, I disagree just a little** ☐
- **I'm not sure about this** ☐
- **Yes, I agree just a little** ☐
- **Yes, I agree quite a lot** ☐
- **Yes, I strongly agree** ☐

Problems and Pitfalls

- Avoid questions that ask **two things at once** - you won't know which 'bit' people are answering:

  Have you ever had pickles and cheese?

- **Ambiguity**.....

  Do you go to the woods a lot?

Problems and Pitfalls

- Avoid **jargon/abbreviations/slang**

  How often do you get up at night to PU? (pass urine)

  Should STDs be treated in the community?

- Avoid **not mutually exclusive** options

  What age are you?

  16-20 ☐
  20-25 ☐
  25-30 ☐
  35-40 ☐

s

Problems and Pitfalls

- Avoid **leading questions**

  Do you think that the food in the hotel made you sick?

  Did the hotel staff seem unhygienic to you?

  Do you agree that the hospital staff were close to exhaustion?

- Avoid making questionnaire **too long**

- **Typographical** / spelling errors

Questionnaire Validation

- Use or adapt existing questionnaires
  - Validated
  - New questionnaires
    - Not validated
    - Need to be tested (pilot)

Piloting and Evaluation

- Pilot with a **similar group** of people to your intended subjects
- **Highlights problems** before starting
  - Effects of alternative wording
  - Overall impression on respondents and interviewers
  - Final polishing after several amendments

Presentation and layout

- **Clear** consistent **layout**
  - Adequate space to answer
  - Large font size
  - Appropriate page breaks
  - Avoid
    - experimental layouts
    - fancy logos
    - printed on recycled paper/is an equal opportunity employer etc

Presentation and layout

- Using **color** or printing questionnaire on colored paper may help
- Use **filter** questions, if necessary
- Give **clear instructions** about how to answer the questions

Coding Schedule

- Questionnaire can be **pre-coded**
- Quicker and easier data entry
- Examples:

Male	☐ 1	Ill	☐ 1
Female	☐ 2	Not ill	☐ 0
Don't know	☐ 3	Don't know	☐ 9

Single	☐ 1	Separated	☐ 3
Married	☐ 2	Divorced	☐ 4
Widowed	☐ 5	Don't know	☐ 9

Summary

A well designed questionnaire:

- Will give appropriate data which allow to **answer** your research question
- Will minimize potential sources of **bias**, thus increasing the validity of the questionnaire
- Will much more likely be **completed**

FINALLY, keep your questionnaire short and the questions simple, focused and appropriate

Question 764:
"If you meet an attractive single woman aged 25-40, would you take her to dinner?"