

Design of Questionnaire

With thanks to Dr. Sarah Dennis, UNSW School of Public Health and Community Medicine

Consider this story ...

Two priests, a Dominican and a Jesuit, are discussing whether it is a sin to smoke and pray at the same time. After failing to reach a conclusion, each goes off to consult his respective superior. The next week, they meet again.

The Dominican says “Well, what did your superior say?”

The Jesuit responds, “He said it was all right.”

“That is funny,” the Dominican replies. “My superior said it was a sin.”

The Jesuit says, “What did you ask him?”

The Dominican replies, “**I asked him if it was all right to smoke while praying.**”

“Oh” say the Jesuit. “**I asked my superior if it was all right to pray while smoking**”.

What we will learn?

- **What is a questionnaire and purposes**
- **Types of survey questionnaires**
- **Rules of questionnaire design**

What is a questionnaire

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

Why use a questionnaire

- **A well designed questionnaire:**
 - Give *accurate* and *relevant* information for research
 - Minimizes potential sources of bias
 - Will more likely be completed

As simple and focussed as possible

Use of questionnaire

Ideal use of questionnaire:

- There is a large sample
- You want fairly straightforward information
- You want standardised data from identical questions
- You are more interested in what occurs rather than why or how

Limitation of questionnaires

- **Can be superficial - difficult to capture the richness of meaning**
- **Cannot deal with context - information is collected in isolation of environment**
- **Information is not causal - cannot attribute cause-effect relationships**
- **Information is self-report - which does not necessarily reflect actual behaviour**

Types of surveys

- **Mail**
 - *cheapest, wide coverage, standardised, low response rate (?)*
- **Telephone**
 - *medium cost, wide coverage, medium response rate, standardisation depends on interviewer*
- **Face to face interview**
 - *most expensive, coverage depends on personal contact, highest response rate*

Designing a questionnaire

- **Is a questionnaire appropriate?**
- **Identify the resources that are available**
- **Decide what information you need**
- **Select items for inclusion**
- **Design the individual questions**

Developing questions

- **Search the literature**
 - *Bibliographic databases (eg: Medline; Cinahl; Psycinfo)*
 - *Citation searches of key articles*
- **Preliminary research**
 - *Focus groups*
 - *Key informants interviews*

Types of information

- *Knowledge* - what people know
- *Opinions, attitudes, beliefs, values* - what people think about an issue
- *Behavior* - what people do
- **Attributes** – what are people’s characteristics
- **Remember** – based on self-report

Knowledge

What is the recommended interval between eye checks for patients with uncomplicated diabetes?

- 6 months**
- 1 year**
- 2 years**
- Not sure**

Opinions

What do you think are the major issues affecting education standard in Vietnam at the moment?

Behavior

Have you developed a care plan for any of your patients?

Yes

No

Attributes

When did you graduate from university?

Types of questions

Open-ended questions

- *What? Why? How?*
- *No predetermined responses given*
- *Able to answer in own words*
- *Useful exploratory research and to generate ideas*
- *Flexible*
- *Requires skill in asking questions and interpreting results*
- *Answers can lack uniformity and be difficult to analyse*

Open-ended questions

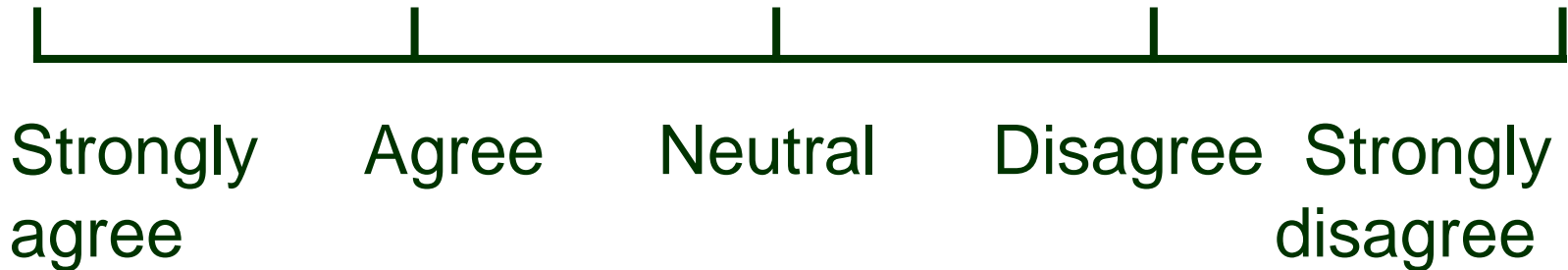
What do you think about the quality of discharge summaries from the ED at hospital X?

Close-ended questions

- **Designed to obtain predetermined responses (Yes/No; True/False; strongly agree-strongly disagree, etc..)**
- **Easy to count and analyse**
- **Easy to interpret**
- **May not have catered for all possible answers**
- **Questions may not be relevant or important**

Close ended questions

The discharge summaries from hospital X allow me to provide adequate care to my patients:



Close ended questions

Please rate the quality of the discharge summaries from hospital X:

- Poor
- Fair
- Good

Filter questions

- **Filter questions useful to ensure respondents only answer relevant parts of questions**

Filter questions

- **Unfiltered**
 - If you use a medical software program, which one do you use?
- **Filtered**
 - Do you use a medical software program?
 - No - jump to next question
 - Yes - which one?

Filter questions

- **Skip in questionnaires more easily managed if these are computer-assisted**
- **Consider including ‘not applicable’ category:**
 - **In the past week, how often have you used MEDLINE:**
 - Not at all**
 - At least once**
 - More than once**
 - I do not have access to Medline**

Getting the question right

- **Question wording**
 - *Questions need to be clear, simple and precise*
 - *Poorly written questions lead to ambiguity and misunderstandings and can be wasteful*
- **Response**
 - *open, closed, what type of response set will you use?*

Common problems with wording

Leading questions:

Do you prefer being examined by a doctor of your own sex?

Common problems with wording

Leading questions:

Do you prefer being examined by a doctor of your own sex?

Would you rather be examined by a:

Male doctor

Female doctor

Either/doesn't matter

Common problems with wording

Vague questions:

Taken altogether, how happy are you with your stay in hospital?

Have you seen a doctor during the past year?

Common problems with wording

Vague questions:

Taken altogether, how happy are you with your stay in hospital?

Overall, how would you describe the care you received in hospital?

Common problems with wording

Have you seen a doctor during the past year?

In the last 12 months, have you visited a general practitioner?

How long has it been since you last visited a general practitioner? (within the last month, between 1 and 12 months ago, more than 12 months ago)

Common problems with wording

Biased or value-laden questions:

Do you think evidence-based medicine is a waste of time?

Do you think fizzy drinks are bad for teeth?

Common problems with wording

Biased or value-laden questions:

Do you think evidence-based medicine is a waste of time?

What do you think of evidence-based medicine?

Common problems with wording

Threatening questions

How often do you smack your child?

Do you know enough about treating patients at risk of stroke?

Common problems with wording

Threatening questions

How often do you smack your child?

How often do you use each of the following to discipline your child?

Do you know enough about treating patients at risk of stroke?

How would you rate your knowledge of X for treating patients at risk of stroke

Common problems with wording

Double-barrelled questions

- two concepts in one question

Have you had a neck ache or a back ache since your last visit?

Common problems with wording

Double-barrelled questions

Have you had a neck ache or a back ache since your last visit?

Since your last visit, have you had any of the following symptoms (tick as many that apply):

- Neckache
- Backache
- Headache

Common problems with wording

Negative questions

- avoid using negative wording ‘not’, ‘rarely’, ‘never’, or words with negative prefixes ‘in-’, ‘im-’, ‘un-’.

Doctors should not be required to see patients outside surgery hours: agree / disagree

Common problems with wording

Negative questions

Doctors should not be required to see patients outside surgery hours: agree / disagree

Doctors should be required to see patients outside regular hours:

Agree/Disagree

Common problems with wording

Complex questions

On a scale of 1 to 10, please rate for each of the 12 categories listed below, your level of knowledge, confidence and experience.

Common problems with wording

Complex questions

On a scale of 1 to 10, please rate for each of the 12 categories listed below, your level of knowledge, confidence and experience.

Please complete the table below about your level of knowledge, confidence and experience in each of the following areas.

Please complete the table below about your level of knowledge, in each of the following areas.

Sphere

We would like to know about your general health.
For ALL questions, please fill in the appropriate response circle. Please fill in the circles like this: ●

For example:

never or
some of
the time a good
part of
the time most
of the
time

Are you troubled by nightmares? ○ ● ○

Over the past few weeks have you been troubled by:

	never or some of the time	a good part of the time	most of the time		never or some of the time	a good part of the time	most of the time
1. Headaches?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	18. Sore throat?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Feeling irritable or cranky?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	19. Numb or tingling sensations?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Poor memory?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	*20. Feeling constantly under strain?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Pains in your arms or legs?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	21. Joint pain?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Responses

- **Close ended questions are usually followed by a set of responses**
- **Choose type of scale:**
 - *nominal*
 - *ordinal*
 - *continuous (summed items with ordinal response scale)*

Responses

- **Nominal**

Are you

Man **Women**

What is your current marital status

Single

Married

Widowed

Divorced

Separated

Other

Responses

- Limited choices of responses, lack of consistency in what a yes/no, agree/disagree response means

Do you have trouble climbing stairs?

- Attitudes and behaviours lie on a continuum

To what extent do you experience difficulty when climbing stairs in your house?

- *None*
 - *A little*
 - *Quite a bit*
 - *A lot*
 - *I do not have stairs in my house*

Responses

- **Ordinal**

Cancer stage:

- Localised**
- Regional**
- Metastatic**

Responses

- **Ordinal**

What is the highest level of education you have reached:

- Did not complete primary school**
- Completed primary school**
- Up to, but not including year 10**
- Completed year 10 or equivalent HSC or equivalent**
- TAFE education**
- University**

Responses

- Types of ordinal/continuous response scales
- Visual analogue scales (VAS)

Overall, how much pain have you experienced in the previous hour?

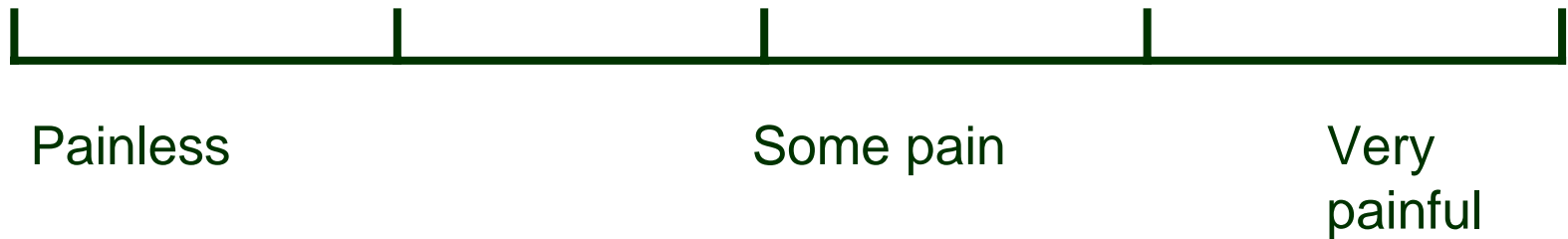
No
pain



A lot of
pain

Responses

- Provide adjectives for points along the line (adjectival scales)



Responses

- **Semantic differential scales (bipolar scales)**

My illness is:

Painful _____ Painless

Serious _____ Mild

Responses

- **Likert scale: rate agreement with a series of statements.**

To what extent do you agree or disagree with each of the following statements:

- Strongly Agree**
- Agree**
- Neither**
- Disagree**
- Strongly disagree**

Responses

- **How many steps/boxes should there be?**
 - *five to seven response categories ideal*
- **People averse to extreme ends of a scale**
 - *avoid absolutes eg; almost always vs always, almost never vs never*
 - *add throw away categories at either end*

Responses

- **Should there be an even or odd number of categories**
 - *not an issue if your scale goes from ‘not at all’ to ‘very much’ (unipolar scales)*
 - *If your scale is bipolar (eg: strongly agree to strongly disagree), decide whether you want a ‘neutral’ point*

Problems with responses

- Effort required to answer questions
 - *Eg: During your last consultation with your doctor, did the doctor discuss medications to help lower your blood pressure?*
 - *What is meant by discuss?; relies on recall of discussion*
 - *Many respondents will tick a response that is 'satisfactory'; that is, to just 'tick a box'.*

Problems with responses

- **Fatigue/boredom/disinterest**
 - *agree with everything*
 - *just say 'don't know'*
 - *always choose first response*
 - *'randomly' respond without considering the question*
- **Social desirability**
- **Aversion to extreme ends of the scale**

Problems with responses

Minimising fatigue/boredom

- Keep task simple
 - *Eg easier to recall more recent events*
- Keep words short and easy to understand
- Maintain motivation of participants
 - *ensure task is relevant*
- Ask people to justify their responses

Problems with responses

Minimising social desirability

- *is difficult*
- *instruct that it is ok not to know something*

Problems with responses

Aversion to extreme ends of scale

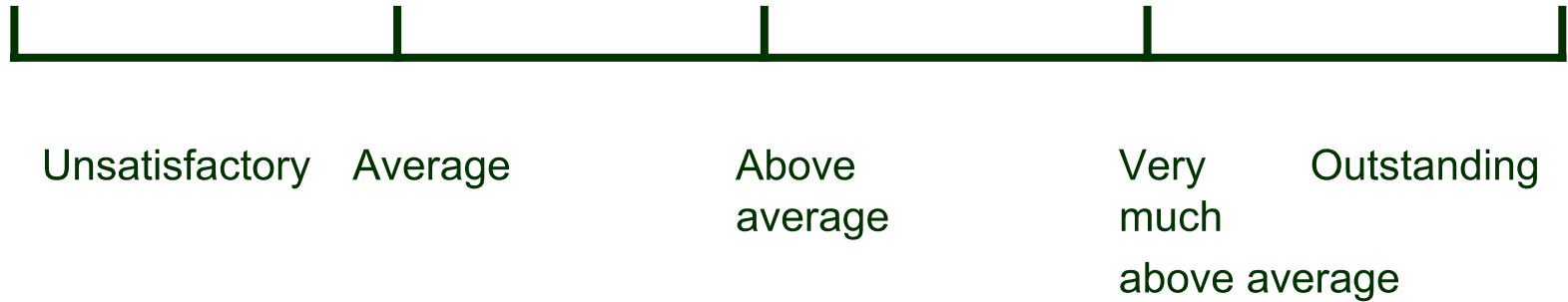
- Avoid absolutes 'never', 'always'
- Expand number of categories by including throw away categories at the end:
 - *never, almost never, infrequently, sometimes, usually, almost always, always*

Problems with responses

Minimizing ceiling effects

- Average response doesn't have to be middle

r(



Problems with responses

Halo effects

- often occur when evaluating individuals
- judgements made on aspects of a person's performance influenced by overall impression of the person
- a global summary just as informative

Problems with responses

Framing effects

Scenario 1:

With treatment, your chance of dying from cancer of the big toe is reduced by about 34%.

Problems with responses

Framing effects

Scenario 2:

- *Without treatment, your chance of dying from cancer of the big toe is 6 out of 1000.*
- *With treatment, your chance of dying from cancer of the big toe is 4 out of 1000.*

Problems with responses

Framing effects

Scenario 3:

- ***With this this treatment, 500 adults would need to be treated to prevent one death from cancer of the big toe.***

Problems with responses

- Framing outcomes in terms of ‘survival’ or ‘dying’ will also influence responses
- Be careful how you ‘frame’ your questions; aim for neutral terms
- If unavoidable, present all relevant information

Problems with responses

Order effects

- **May be more likely to endorse first or last response**
- **Preceding questions may influence responses to questions that follow**

Problems with responses

- **Randomize order of response sets between individuals**
- **Randomize order of items within questions**
- **May be possible to randomise order of questions**
- **Don't always present 'positive' or 'negative' sounding response first**
- **Easier to randomise in computer-assisted interviews than paper & pen questionnaires**

Ordering questions

- Sequence should be logical to the respondents and flow smoothly from one question to the next
- Questions tend to flow from:
 - *general to specific*
 - *impersonal to personal*
 - *easy to difficult*

Validity and reliability

- **Validity:**
 - question measure what you claim it measures
 - problem with self-report
- **Reliability:**
 - results are reproducible or consistent with similar groups of respondents, over time and when other people administer the questionnaire

A pointless question ...

Have you ever been or are you now involved in espionage or sabotage, or in terrorist activities or genocide or between 1933 and 1945 were you involved, in any way, in persecutions associated with Nazi Germany or its allies?

Yes **No**

From I-94 form US Citizenship and Immigration Services

Summary

DO

- **Use simple wording**
- **Be brief**
- **Be specific**

Summary

DO NOT

- Be vague
- Talk down to respondent
- Use abbreviation
- Use objectionable questions
- Be redundant

**Keep your questionnaire SHORT and the
questions SIMPLE, FOCUSSED and
APPROPRIATE**

References

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