Designing Effective Surveys and Questionnaires

24th Annual Primary Care Research Methods and Statistics Conference
December 2011
San Antonio, Texas

Cindy Passmore, MA
Seminar Agenda

1. Introduction and Overview
2. Role and Usefulness of Survey Instruments in Research
3. Item Format and Construction
4. Item Writing Exercise
5. Implications for web-based surveys
Why survey?

- Want to measure something
- What is measurement?
- What is a construct?

Cindy Passmore, MA
Role of Survey Instruments in Research Methodology

Suitable for collecting data on subjects’:

- Demographics
- Personal histories
- Knowledge
- Behaviors
- Attitudes
IRB?

Survey research may require IRB approval

IRB decision charts:

http://www.hhs.gov/ohrp/humansubjects/guidance/decisioncharts.htm

Cindy Passmore, MA
Articulating an Answerable Research Question

- Clear
- Simple
- Important
- Interesting
- Answerable
- Applicable
- Reproducible

Characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>114</td>
<td>53.5</td>
</tr>
<tr>
<td>Female</td>
<td>99</td>
<td>46.5</td>
</tr>
<tr>
<td>Years in Practice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 5</td>
<td>59</td>
<td>27.6</td>
</tr>
<tr>
<td>6 – 10</td>
<td>47</td>
<td>22.0</td>
</tr>
<tr>
<td>11 – 20</td>
<td>61</td>
<td>28.5</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>47</td>
<td>22.0</td>
</tr>
<tr>
<td># patients / week</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 – 30</td>
<td>31</td>
<td>14.5</td>
</tr>
<tr>
<td>31 – 50</td>
<td>32</td>
<td>15.0</td>
</tr>
<tr>
<td>51 – 75</td>
<td>32</td>
<td>15.0</td>
</tr>
<tr>
<td>75 – 100</td>
<td>59</td>
<td>27.6</td>
</tr>
<tr>
<td>100 – 125</td>
<td>37</td>
<td>17.3</td>
</tr>
<tr>
<td>&gt; 125</td>
<td>23</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Cindy Passmore, MA
Basic Principles

- Clear question
- What are you measuring?
- Interview, telephone, or written
- Response rate
VERY general steps

1. Generate a pool of items
2. Expert/colleague rate/edit items
3. Pilot test - statistical tests for item analysis can be used in conjunction with pilot - along with feedback from test takers

Cindy Passmore, MA
Questionnaire and Survey Construction

Writing the items:

- Choosing a scale
- Number of categories
- Wording is important
Item Format and Construction

- Your questionnaire will measure one or more underlying constructs.
- You might use expert panels, focus groups, etc. to help determine what the components of the construct should be.

Cindy Passmore, MA
Pictoral Scale
Likert Scales

SD          D        N       A        SA

Strongly Disagree    Disagree    Neutral    Agree    Strongly Agree
Semantic Differential

A word or statement followed by a pair of “opposite” adjectives

unsure__________sure

afraid__________safe
Rating Scales

Any declarative statement followed by a scale

1          2              3           4
Least anchor                 Most anchor
Visual Analog Scale (VAS)

Least __________________________ Most

Ask respondent to make a horizontal mark on a (100 mm) line.
Magnitude is measurement from left end of scale (1 – 100).
Ranking Items

Please indicate your favorite choice by ranking the following items 1 (most favorite) to 5 (least favorite):

___ Choice A
___ Choice B
___ Choice C
___ Choice D
___ Choice E
Other types

- Multiple choice
- Dichotomous / binary
- Q-sort
- Multiple stage (Delphi)
Number of Categories

- Too many
- Too few
- False precision
- Odd
- Even
Guidelines for Likert and Agree/Disagree formats:

1. Use present tense.
2. One interpretation items.
3. Avoid “almost everyone” / “no one”.
4. Short statements (20 words). Use simple sentences.
5. Use proper grammar.

Cindy Passmore, MA
Guidelines for Likert and Agree/Disagree formats:

6. Avoid universals - “all”, “none”, “never”.
7. Avoid indefinite qualifiers - “only”, “just”, “merely”, “many”, “few”.
8. Avoid negatives in item writing.
9. Use easily understandable vocabulary.
Active versus Passive Voice

John was hit by Rhonda.

*Who* got hit???

Who *did* the hitting???

Rhonda hit *John*!!
Item Writing Exercise

- Select an attribute, knowledge, behavior or skill that your group would like to measure.

- Explicitly define your construct.
Item Writing Exercise

- Write examples of items that will measure your chosen construct.
- Write at least one item using each of the suggested formats.
- For rating scales, decide on a response format and be prepared to discuss your justification for the format.

Cindy Passmore, MA
These questions only allow a respondent to choose one answer from the answer choices.

Do you like peanut butter?

- Yes
- No
These questions allow respondents to choose as many answers as they want from the answer choices. Perfect for those "Choose all that apply" questions.

What type(s) of peanut butter do you like? (Please choose all that apply.)

- Crunchy
- Smooth
- Other (please specify)
These questions allow a respondent to choose one answer from the answer choices for each row of the question.

| Multiple Choice (Only One Answer) | Multiple Choice (Multiple Answers) | Matrix of Choices (Only One Answer Per Row) | Matrix of Choices (Multiple Answers Per Row) | Matrix of Drop-down Menus | Rating Scale | Single Textbox | Multiple Textboxes | Comment/Essay Box | Numerical Textboxes | Demographic Information (US) | Demographic Information (International) | Date and/or Time | Image | Descriptive Text |

---

**How often do you eat the following types of peanut butter?**

<table>
<thead>
<tr>
<th></th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Yearly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crunchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cindy Passmore, MA
These questions allow respondents to choose as many answers as they want from the answer choices for each row.

**Matrix of Choices (Multiple Answers Per Row)**
- Multiple Choice (Only One Answer)
- Multiple Choice (Multiple Answers)
- Matrix of Choices (Only One Answer Per Row)
- Matrix of Drop-down Menus
- Rating Scale
- Single Textbox
- Multiple Textboxes
- Comment/Essay Box
- Numerical Textboxes
- Demographic Information (US)
- Demographic Information (International)
- Date and/or Time
- Image
- Descriptive Text

---

**My family likes the following type(s) of peanut butter.**

<table>
<thead>
<tr>
<th></th>
<th>Crunchy</th>
<th>Smooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Me</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>My Spouse</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
<tr>
<td>My Children</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>

Cindy Passmore, MA
This Question allows you to rate an items over different scales.

Matrix of Drop-down Menus
Rating Scale
Single Textbox
Multiple Textboxes
Comment/Essay Box
Numerical Textboxes
Demographic Information (US)

Please rate both the Texture and Taste of the following Brands of Peanut Butter.

<table>
<thead>
<tr>
<th></th>
<th>Texture</th>
<th></th>
<th>Taste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skippy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jif</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peter Pan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adams</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cindy Passmore, MA
These questions allow respondents to rate items based on some rating criteria.

- Multiple Choice (Only One Answer)
- Multiple Choice (Multiple Answers)
- Matrix of Choices (Only One Answer Per Row)
- Matrix of Choices (Multiple Answers Per Row)
- Matrix of Drop-down Menus

Please rate the following qualities of peanut butter.

<table>
<thead>
<tr>
<th>Quality</th>
<th>Extremely Important</th>
<th>Important</th>
<th>Doesn't Matter Much</th>
<th>Deal Breaker</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crunchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smooth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brown</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nutty</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cindy Passmore, MA
This question allows the respondent to type in their own answer.

**What is the first word that comes to mind when you think about Peanut Butter?**
This question allows the respondent to type in their own answer over several fields.

Please list your top three favorite brands of Peanut Butter.

One

Two

Three
This question allows the respondent to type in a large amount of text for their response.

Please describe your first experience with Peanut Butter.

Cindy Passmore, MA
How many pounds of Peanut Butter do you buy each year?

- Jif
- Peter Pan
- Skippy
- Adams

Cindy Passmore, MA
This question-type allows respondents to provide information about themselves.

Please tell us about where you live.

Name: 
Company: 
Address: 
Address 2: 
City/Town: 
State:  
ZIP: 

Cindy Passmore, MA
This question-type allows respondents to provide information about themselves.

Please tell us about where you live.

Name: ____________________________
Company: __________________________
Address: __________________________
Address 2: __________________________
City/Town: __________________________
State/Province: ______________________
ZIP/Postal Code: ____________________
Country: ____________________________

Cindy Passmore, MA
This question-type allows you to collect date and time information from your respondents.

When was the first time you ever ate:

- Smooth Peanut Butter
  - MM / DD / YYYY : HH : MM AM/PM
- Chunky Peanut Butter
  - MM / DD / YYYY : HH : MM AM/PM

Cindy Passmore, MA
This question-type allows you to display an image on your survey.

<table>
<thead>
<tr>
<th>Matrix of Drop-down Menus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rating Scale</td>
</tr>
<tr>
<td>Single Textbox</td>
</tr>
<tr>
<td>Multiple Textboxes</td>
</tr>
<tr>
<td>Comment/Essay Box</td>
</tr>
<tr>
<td>Numerical Textboxes</td>
</tr>
<tr>
<td>Demographic Information (US)</td>
</tr>
<tr>
<td>Demographic Information (International)</td>
</tr>
<tr>
<td>Date and/or Time</td>
</tr>
<tr>
<td><strong>Image</strong></td>
</tr>
<tr>
<td>Descriptive Text</td>
</tr>
</tbody>
</table>

This is an image of a jar of peanut butter!
Summary

- Survey research can be very useful
- When used carefully
- Thoughtful design is the key
- Questions or other comments?

cpassmorefdc@gmail.com

Cindy Passmore, MA