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Questionnaire development

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A Practical Guide to Questionnaire Development in the Centre

1. Deciding whether you need to do a survey? Check that the information you want is not already available from another source - either a survey or public access databases, such as Health Insurance Commission. Send an email around the centre asking if anyone knows of any possible sources for the information you are seeking.

2. Deciding whether you need to develop new questions. Why work if you don't have to? Wherever possible, use questions which have already been tested for reliability and validity, remembering that if you modify such questions, you can't assume the same level of reliability and validity. Again, email represents the best way to access the collective knowledge of the Centre. Find out if anyone knows of or has designed a survey in the area of interest. Talk to them about the best way to ask the question and about likely pitfalls. Get copies of as many relevant surveys as you can. Don't limit your search for questions to the Centre. Many other groups have a wide range of questions which have been tested. These include:

a. Australian Bureau of Statistics (all of their surveys and publications are available from the Government Publications section in the Auchmuty Library. A catalogue of their publications is available in the Resource Centre).

b. National Heart Foundation

c. Hunter Statistics Research Group - MONICA, etc

You may want to compare your findings to those of previous studies - if so, it is important to use identical questions.

3. Deciding the best medium for your survey. You need to decide which survey method (ie: mailout, telephone or doorknock) you will use BEFORE you draft your survey - as the method you use will affect how you word individual questions and how you structure the survey as a whole. See the attached table showing the advantages and disadvantages of these three survey methods. If you choose to conduct your survey by phone, you may want to consider having your survey developed into a computer programme so that interviewers can enter the responses directly into the computer. This saves time and reduces the opportunities for errors in the data. A table providing a summary of the advantages and disadvantages of each survey method is included at the end of this document. Some things to consider when making this decision include:

a. cost - with phone surveys, the main cost is interviewers' wages. These can be estimated by allowing double the interview length for the interviewer to get and do 1 interview. For example, if you have 100, 10 minute interviews to do, you would estimate that it would take:

$$\begin{aligned} & 2 * 100 \text{ (number of interviews)} * 10 \text{ (length of survey) minutes} \\ & = 2,000 \text{ minutes} \\ & = 33.3 \text{ hours of interviewer time.} \end{aligned}$$

The other main cost associated with phone surveys is the cost of the phone calls, particularly where many STD phone calls are involved. Data entry and printing costs can usually be avoided by direct computer entry of responses by the interviewer. With self-completion hard copy surveys, the main costs to consider are printing, mailout preparation, mailout charges, return mail charges, coding, data entry, data cleaning and the costs of additional prompts to increase the response rate.

b.time - as most self-completion surveys are in a mailout form, time must be allowed for people to return the surveys, for up to 2 reminders to be sent out and for people to return the survey, for coding, data entry, etc. With phone surveys, the data is there immediately. In addition, if a computer is used, there is also no need to wait for coding, data entry or cleaning.

c.your target group - depending on the group you are trying to reach, you will need to think of different access points. For example, the electoral register includes people's ages and, therefore, can be used to access limited age-groups with minimal wastage.

d.data quality - this refers to the amount of times people miss questions they should have answered. This is most likely to be a problem in self-completion surveys, less likely to be a problem with an interviewer-administered survey and least likely to be a problem in computer-based surveys, where all the appropriate skips are programmed into the computer.

e.sensitive nature of the questions - more sensitive, or threatening questions may be more prone to social desirability responses, whereby the respondent may knowingly give untruthful answers in order to appear in a more favourable light. Computer surveys have been shown to lead to a higher number of socially undesirable responses than more traditional survey methods. Of the traditional methods, face-to-face interview would probably lead to the highest social desirability response, mailout to the least, with telephone somewhere inbetween.

4.Drafting the survey.

a.Follow the guidelines for survey design.

i.Hard Copy Surveys

When drafting your survey refer to the "Administrative Services Manual" (copies are located in all work and admin stations and it is also available on the network) for the guidelines about the appropriate layout for questionnaires or, better still, place the job with an admin. assistant.

ii.Computerised Surveys

If you decide to put your survey into a computer programmer, there is another set procedure to be followed. The exact procedure is still being finalised, so for further information, please see Chris Paul or Julie Kalupacovski.

b.Get advice from a statistician. ALWAYS show your draft survey to a statistician and/or Peggy - and listen to their comments. They have a lot of experience at detecting problems with surveys. It will save you (and the statisticians!!) much heartache down the track when you come to try and analyse the data. To minimise the number of problems encountered during and after data collection, the Statistics Group have developed a document entitled "How to interact effectively with the Statistics Group". It provides suggestions about the best ways to ensure everything goes smoothly before, during and after data collection. Copies are available from Peggy's office (Room 31) and this document should be read before you go any further.

c.Use the automatic question numbering facility. By using this feature, the questions in your survey are automatically numbered in order. This is really useful when you want to move questions around or add or delete items altogether. Instructions on how to use this facility are shown on the "Macro Library" document which can be found in any work or admin station.

d. Use the questionnaire macros. Many standard demographic questions and commonly-used response options (eg: strongly agree, agree, disagree, strongly disagree) have been converted into macros. The macros available and instructions on how to retrieve them are shown in the "Administrative Services Manual". In order to improve understanding of the differing health status and needs of NESB people, you should also note that it is Centre policy to include questions about language spoken at home (macro Q18) and country of birth (macro Q22) in **ALL** community surveys.

e. Pay attention to the order of questions.

- i. Start with easy, impersonal, non-threatening questions, leaving more difficult, personal or threatening questions to the end of the survey.
- ii. Since demographic questions can be perceived as personal, it is best to leave them until the end of the survey, unless they are required for screening purposes, such as to assess respondents' suitability for inclusion in the survey.
- iii. Where you have both general open-ended and pre-coded closed questions about the same topic, put the open-ended questions before the closed questions. This is especially the case with questions assessing respondents' knowledge of or attitudes towards a certain issue - it prevents information contained in the closed questions from contaminating the respondent's open-ended answer.
- iv. In surveys which deal with more than one topic, try to ask all the questions about a single topic before moving on to the next topic.
- v. In surveys which deal with more than one topic, provide short introductions to each new topic. This ensures that the respondent always knows what to expect and helps to minimise any confusion.
- vi. Arrange types of questions to increase variety and decrease response set (ie: the tendency to respond in a certain way without really considering the question).
- vii. In surveys where not all respondents have to answer all the questions, arrange the skips to require the minimum of flicking backwards and forwards or recall of responses to earlier questions. (This is much less important for computer-based interviewing).
- viii. Always include a statement at the end of the survey thanking the respondent for their time.

f. Designing cover sheets. Cover sheets are only important for self-completion surveys. These are important as they are people's first point of contact with the survey. They should include the appropriate letterhead, room for the ID code, a brief description of the survey and why it is important, why the respondent is important to the success of the study, examples of how to complete all the types of questions included in the survey, assurances of confidentiality and a thank you to the respondent. They should look interesting and professional. Cover sheets can be printed on any colour paper - it's often good to use different colours to distinguish different groups of subjects. However, **NEVER** use brightly coloured paper for the actual survey - they make it much more of a strain for the person entering the data. Coloured paper is OK as long as it's a pastel colour.

g. Make the most of your ID code. ID codes can be used to tell you much more than just the number of the respondent. Don't be afraid of long ID codes - you can incorporate codes which tell you the respondent's sex, town, age, experimental condition, etc.

5. Checking the readability of your survey. It is important to ensure that your survey will be understood by your target audience. There are a number of ways to assess the proportion of a population who could read a document:

a. calculate the Flesch formula by hand. This calculates the proportion of the population who could read the tested document, based on the number of syllables per 100 words and the average sentence length.

b. borrow the Grammatik programme (part of WordPerfect for Windows 6.0) on Rod Wetzel's machine (at a time which is convenient to him). This calculates the Flesch formula for you and can also be used to check your spelling and grammar of the document, as well as providing more detailed feedback generally. If you wish to use this programme, you can access it by the following steps:

i. Turn on machine and get into Windows.

ii. Open WordPerfect 6.0.

iii. Select "FILE" from the menu bar at the top of the screen by highlighting it with the cursor and clicking the left mouse button once.

iv. Select "OPEN" by highlighting and clicking the cursor as above.

v. Select the drive where the file you wish to assess is (either a:, b: or the network. All the files in that drive should now be listed in the left-hand box. Select the file you wish to assess.

vi. Select "TOOLS" from the menu bar at the top of the screen.

vii. Select "GRAMMATIK" from the menu that appears.

viii. Select "OPTIONS" from the menu bar in the Grammatik box.

ix. Select "STATISTICS" from the menu that appears.

x. Select "START" from the menu.

This will provide you with the basic Flesch statistics for that document. More detailed analysis can be obtained by selecting "SPELL, GRAMMAR & MECHANICS" (or something like that) from the "OPTIONS" menu within Grammatik.

xi. To exit the programme, either doubleclick the left mouse button on the top left hand corner of each box in turn or click on the "CLOSE" options.

c. calculate the SMOG formula - as described in Penny Hawe's book "Evaluating Health Promotion" (multiple copies are available in the resource centre). This calculates the approximate reading grade required for someone to read and understand a document. The grades relate to the US population but Penny has applied them to a variety of Australian publications.

6. Refining the survey.

a. Show the draft to some friendly colleagues. This is useful for detecting fairly obvious problems, such as ambiguously-worded questions.

b. Pilot the survey. The revised draft, incorporating your colleagues' comments, should then be tested on a small sample of respondents (N=20-50) with similar characteristics to the intended target audience but who you do not wish to include in your main survey. This should involve administering the survey as you would in the main study and then asking the respondents additional questions to determine their understanding of and attitudes towards the survey instrument, as well as any other suggestions they may have. Ideally, the process of piloting should be repeated until no problems are being encountered.

7. Checking your final draft for comparability with other sources. Surveys tend to go through a number of changes during their development. Even though you may start with comparable question items, it is easy for them to become different. A quick check when you have your final draft ensures that you will be able to compare your data with that from other sources. This is useful when checking the representativeness of your sample and for assessing the concurrent validity of similar questions. The question macros have all been checked for comparability with ABS and other major surveys.

Resource List

All the references below can be found in the Resource Centre in the box entitled "Research Methodology".

Bowman J & Sanson-Fisher RW. Constructing and using self-administered questionnaires. Centre publication, 1989.

Flesch formula reference.

Foddy W. Constructing Questions for Interviews and Questionnaires. Cambridge University Press, 1993, Cambridge.

Hawe P, Degeling D & Hall J. Evaluating Health Promotion: A Health Worker's Guide, MacLennan & Petty, 1992, Sydney.

Simpson MA. How to design and use a questionnaire in evaluation and educational research. Medical Teacher 1984; 6(4): 122-127.

Sudman S & Bradburn NM. Asking Questions: A Practical Guide to Questionnaire Design. Jossey-Bass Publishers, 1983, USA.

Worseley A. Questionnaires. Transactions of the Menzies Foundation 1984; 7: 33-44.

Advantages and Disadvantages of Face-to-face, Mailout and Telephone Survey Methods

Method	Advantages	Disadvantages
Face-to-face	<ul style="list-style-type: none"> *Only way to access ALL the population. *Can record reasons & characteristics of non-responders. *Allow flexibility in length of survey and style of questions. *Can access general population and any desired sub-groups. *Minimises missing data. *Allows physical measurements & direct observations. 	<ul style="list-style-type: none"> *Increased likelihood of socially desirable responses. *Can be hard to prevent consultation with/interference by others. *Very expensive, especially if respondents are spread out. *Relatively time-consuming. *Requires intensive interviewer training and monitoring throughout.
Mailout	<ul style="list-style-type: none"> *Minimises social desirability biases. *Widely dispersed populations can be surveyed as cheaply and easily as denser populations. *Costs much less than face-to-face & comparable to telephone. *No interviewer training required. 	<ul style="list-style-type: none"> *No database contains a full list of the population. *Only suitable for fairly short, straightforward surveys. *No control over the order in which questions are answered. *Best to use pre-coded questions. *Usually quite a bit of missing data. *No information on non-consenters. *Time-consuming. *Relatively low return rates. *Reminders required to increase return rates. *ID codes can be removed or interfered with.
Telephone	<ul style="list-style-type: none"> *93% of households now have telephones. *Can access general population and most desired sub-groups. *Minimises missing data. *Can use more open-ended questions & complex interviewing schedules, especially with computerised surveys. *Can record reasons & characteristics of non-consenters. *Quickest method of data collection. *Costs much less than face-to-face & comparable to mailout. *Improves data quality by allowing direct entry onto computer. *Interviewer training is less demanding. 	<ul style="list-style-type: none"> *Access only to people with phones. *Representativeness may still be low in more rural areas. *Can be hard to prevent consultation with/interference by others. *Need to keep questions fairly short and only a limited number of response options per question. *Can't ask questions requiring visual cues. *Requires interviewer training and monitoring throughout. *Computerised surveys require access to good hardware, programming and support.