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Formatting a Paper-based Survey Questionnaire: Best Practices

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This paper summarizes best practices with regard to paper-based survey questionnaire design. Initial design considerations, the cover and cover page, directions, ordering of questions, navigational path (branching), and page design are discussed.

Most likely, you will create a survey questionnaire to collect measurable data from a specific group of people. The success of your survey will be the response rate, or how many people actually respond to your survey.

This paper outlines how to use what we know, based in large part on the research of social scientist Don Dillman, regarded as a leader in establishing a scientific basis for survey research methodology, to design and create a paper-based survey questionnaire that will improve its response rate and accuracy. While discussion focuses on best practices for formatting paper-based surveys, and several points apply to online surveys as well.

Specific topics addressed include:

- Initial Design Considerations
- The Cover and Cover Page
- Directions
- Ordering of Questions
- Navigational Path (Branching)
- Page Design

Many of these topics warrant discussion in considerably more detail; however, the purpose of this paper is simply to provide guidelines for making decisions about your questionnaire's organization and format in order to bolster its effectiveness.

What's So Important About Formatting?

To begin with, let's take a look at what we mean by "formatting". Specifically, formatting refers to how the questionnaire survey is laid out, how its information is organized and presented, and even the size, color, and shape of the very paper it is printed on.

Why is the formatting of a survey important? The format of a survey serves your survey on several levels. For one, a well-formatted survey makes it easier for the respondent to read and complete it – which after all, is one of your key goals in using a survey (Bradburn, N., Sudman, S., & Wansink, B., 2004). If the respondent finds your survey easy to read and follow, your response rate will improve. In addition, a well-formatted survey

will reduce your measurement error, as respondents will be more likely to follow the flow of the survey, and less likely to misread or overlook questions (Dillman, 2000). When you design your questionnaire survey, your respondents' needs should be your guiding priority (Bradburn, N., Sudman, S., & Wansink, B., 2004).

To increase response rates, a survey needs to take advantage of why a person would respond to a survey – their motivation. Dillman asserts that people's motivation to respond to surveys is vested in the Social Exchange Theory, that by responding to the survey, respondents will be compensated in return in a way that meets some of their needs (Dillman 2000). Perhaps the survey provides respondents with an opportunity to voice their concerns and incept change, or the survey is a means of validating their participation or association with a group or endeavor (Ekeh, 1974).

Thoughtful formatting addresses respondent motivation in part by reducing the respondent's apprehension in their involvement in and performance on the survey and increasing their trust in the purpose of the survey (Dillman, 2000). For instance, the appropriate placement of instructions reduces the user's apprehension about what they're supposed to do, and allows them to focus on providing the information needed by the survey (Babbie, 1973). Similarly, elements of graphic design and layout, things that the user responds to but most likely is not aware of, establish an order of user progress through the instrument (Dillman 2000).

Initial Design Considerations

How do you format a survey? How you address each of the following issues will govern the format of your survey (Dillman 2000):

1. Start with a specific goal for your survey – what is its purpose?

2. Define your topics – what are the high level topics in your survey? What are the secondary and tertiary topics?

3. Define your concepts – what do you want people to do in your survey? What kinds of information do you want them to provide?

4. Determine your content – what is the scope of what you want to cover? How does your content relate to your topics?

5. Consider your question wording and order – how you ask your questions and the order in which they appear is important. Later, we discuss in more detail how to work with wording and detail to maximize your respondents' motivation and your survey's response rate

6. Determine your survey's length and format – how long should people take to complete your survey? How much time should you ask of your target audience? What type of formatting will they be more responsive to?

7. Response categories – what types of responses do you want to include on your survey? Multiple choice? Likert scale? You will want to group these categories together.

8. Within your response categories, make them consistent. For instance, how many points do you want to include on your Likert scales? You'll want to keep the layout and amount of these options consistent. Note that the optimal number of response options for a Likert scale remains a topic for debate, but several key studies offer evidence of the superiority of keeping the to number seven, plus or minus two, based on how we chunk memory (Miller, 1956).

9. Consider your question wording to avoid sensitivity or bias – How do you ask your questions in a way that your respondents will trust you with their answers?

10. Minimize apprehension – What can you do to support respondents in following through and completing the survey without concern that they might be making a mistake? How do you assure them that their

responses are both valuable and confidential?

Overall Design

The design of your survey will be driven by the following factors:

- The goal of each question
- The respondent's visual perception of concepts
- The respondent's comprehension (Dillman 2000)

The visual perception of concepts pertains to how the respondent processes what they see, based on the following (Dillman 2000):

- Pattern recognition
- Graphic layout
- Figure-group format
- Bottom-up processing (data driven, lower to higher perceptual)
- Top-down processing (concept driven, interface requiring previous knowledge

You probably already have a sense of how a respondent's visual perception of concepts contributes to their response to your survey, based on the earlier discussion on question groupings.

Comprehension follows perception. In this case, your respondents' visual comprehension of your survey is supported by the following factors (Dillman 2000):

- The law of proximity – smaller figures located together are perceived to belong to the same group
- The law of Similarity – similar shapes are seen as belonging together
- Simplicity
- Regularity
- Symmetry

In particular, simple, symmetrical figures used consistently and with regularity are easier to recognize and recall.

Components of Your Survey's Format

While the body of your survey is key to eliciting the information you need from your respondents, the following elements of your survey are important in facilitating their response (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004):

- Cover page
- Directions
- Page design
- Ordering of questions
- Grouping of questions
- Order effects
- Navigational path
- Survey length

Let's take a look at the role of each of these parts of your survey in more detail, starting with the cover page or front cover, if your survey is bound.

The Cover

The purpose of the cover of your survey is to attract and motivate your respondent, make them eager to participate. Use this opportunity to engender the respondent's trust and create a feeling of connectedness and importance, but at the same time, keep it simple and official looking. Here are some tips (Dillman, 2000):

- Include a short, simple title
- Provide salience
- Provide sponsor's name and address
- Provide initial directions

You will also want the information you provide on the cover to relate to the first question set in the body of your survey – especially the *very first question*. However, *do not* include detailed directions! Put specific instructions on how to complete the survey in the context of the survey so that the respondent doesn't feel like they need to turn back to the cover each time they are unclear on how to respond to a question (Dillman, 2000).

And what about the back cover? Keep it simple and don't let it distract from front cover. While you should never include survey questions on the back cover, it does provide the perfect opportunity for thanking the respondent for their participation and providing a space for them to write in additional comments, if they'd like (Figure 1).

Figure 1

For the appearance of your cover, use a simple, neutral design. If you want to use colors, keep in mind that colored covers have proven to increase response rate 2-4%. High contrast colors, using a dark background and light graphic seem to work best (Dillman, 2000).

Directions

The purpose of the directions in your survey is to clarify what the respondent needs to do at each point in your survey, starting with when you need it completed by, and ending with what the respondent should do with the survey, once they are finished. You may also want to include information on what the respondent should do if they have further questions or concerns about how to complete the survey, how it will be used, or how issues of confidentiality will be handled (Dillman, 2000).

Be sure to position your directions where they are needed so that the respondent can focus on responding to the survey rather than trying to follow it (Dillman, 2000; Babbie, 1973). For instance, information about a deadline should be provided at the beginning, while instructions on what to do after completing the survey should probably go at the end, on the back cover. In addition, your directions should be specific to the part of the survey the respondent is working in. Put special instructions within question numbers rather than as freestanding entities (Dillman, 2000; Babbie, 1973; Bradburn, N., Sudman, S., & Wansink, B., 2004). For instance, when explaining how

respondents should answer a set of questions using a Likert scale, you would provide the directions within that question set. You will want to handle non-applicable items similarly.

Finally, determine the appropriate language level you should use in your instructions, based on your target audience. Keep in mind too that it is better to be clear and over-instruct than leave the respondents confused, and possibly not responding to the extent that they should be able to.

The Questions

Ordering of Questions

The way in which you order the questions of your survey is important. Why? As we discussed earlier, you will want to group your topics. Your question order establishes both the survey's logic and flow (Dillman, 2000; Babbie, 1973; Bradburn, N., Sudman, S., & Wansink, B., 2004).

The First Question

Your first question set should be general but pertain to the purpose of the survey – as it is stated on the cover. If not, you risk losing your respondents' trust and focus (Dillman, 2000). Pay special attention to your first question, as it will be key in engaging your respondents to go through and complete the remainder of the survey. Your first question should (Dillman, 2000):

- Apply to all respondents
- Be easy to complete within a few seconds
- Be easy to read, understand, and respond to (closed response, not open questions) (Babbie, 1973)
- Interesting
- Connect with the purpose of the survey presented in the cover letter

Dangerous questions can offend your respondents and ruin response rate. Questions to avoid, especially at first include (Dillman, 2000):

- Personal questions – Why? Because you are still in the process of building the respondents' trust in your survey and motivation in completing it. A personal question could quickly dampen their enthusiasm in continuing.
- Confidential information – for the same reasons that you would avoid personal questions.
- Demographics – because they are uninteresting, may have little to do with the stated purpose of the survey, and again, because they are personal.

Question Groupings

Assuming that you are following best practices and grouping your survey questions by order and type, you will want to consider the order of questions within these grouping. The way in which respondents then answer questions is affected by cognitive and normative influences. Cognitive influences pertain to how a respondent rationalizes their responses. Specific cognitive influences include the following normative effects (Dillman, 2000):

- An anchoring effect in which a respondent's answer to the preceding question works to establish direction for the questions that follow
- Addition effect – a respondent's answer to the next question is influenced by the response for the first one
- Subtraction effect – a respondent may try to balance their responses by following a very negative response to a question with a highly positive question response
- A "norm of evenhandedness" in which a respondent tries to be fair in how they answer the next question, based on their answer to the preceding question (Dillman, 2000).

What follows are guidelines on how to group your survey questions in a way that is logical to the flow of your survey (Dillman, 2000)

- Group your questions in a way that conveys respect to the respondents for participating by supporting ease of answering. Less methodical grouping may discourage and confuse them (Dillman, 2000, Knowles, 1975)

- Group by content – so that the user can focus, organize thoughts and reactions, respond. Note too that as a respondent answers a series of questions related to the same underlying construct, the respondent comes to a better understanding of that construct. (Knowles, 1975)
- Group by type – to familiarize user with new directions, keep focus
- Keep a logical ordering – to "ease the cognitive burden" (Dillman, 2000)
- Manipulate your design to increase the probability of respondents understanding questions and processing them in the same sequence as it if were an interview (Dillman, 2000)
- Use color to establish groupings, as well as spacing (Dillman, 2000)
- Pay attention to section breaks – to a respondent, section breaks imply "groupings" of questions by content and type (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004)
- Put objectionable questions at the end – otherwise you will lower your survey's response rate (Dillman, 2000)

Question Layouts

The way in which your questions are presented in your survey needs not only to be clear and logical, but consistent (Figure 2).

To ensure that your questions are consistent in appearance, including font, font size, and indentation, for instance, as well as in use of language and reading levels, use a style sheet.

Print example

3. How often do you use a computer outside of work?
Check one:
○ Less than one hour a day
○ More than one hour a day
○ 2-3 hours a day
○ More than 3 hours a day
○ I don't use a computer outside of work → (Skip to Question 7)

Online example

3. How often do you use a computer outside of work?
Check one:
○ Less than one hour a day
○ More than one hour a day
○ 2-3 hours a day
○ More than 3 hours a day
○ I don't use a computer outside of work → (Go to Page 3)

Figure 2

Issues to consider in creating your style sheet include the following:

- Addressing literacy issues. This includes keeping your diction easy-to-follow to

increase the probability of the respondents responding (Belson, 1981)

- Being consistent in your constructs (Knowles, 1973; Dillman, 2000)
- Making questionnaires appear short and easy to answer (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004)
- Creating shorter questions. Respondents read shorter lines more accurately, and skip fewer words
- Allowing more blank space between questions than components within questions (Bradburn, N., Sudman, S., & Wansink, B., 2004)
- Using dark print for questions, light print for answer options (Dillman, 2000)
- Putting special instructions inside of question numbers rather than as free standing entities (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004)
- Placing answer spaces consistently on the same part of the page, like the right or left (Dillman, 2000)
- Keeping answer options vertically inclined – and stay away from multiple columns of answer options! (Dillman, 2000)
- If possible, allowing the option for putting x's in boxes, which has proven to be most preferable for respondents (Dillman, 2000).
- Avoiding multiple question-questions ("double barrel" questions that actually address multiple issues and require more than one answer) (Babbie, 1973).
- If using scales, keeping them consistent visually and keep negative and positive orientations the same (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004)
- In most cases, using summary questions after a list of specific questions to ensure that people respond to them. The specific questions tend to get respondents thinking about the subject matter and prepare them better for summary questions that follow rather than precede them (Dillman, 2000)
- Using multiple visual elements together to improve skip pattern compliance (Dillman, 2000)
- Spelling out abbreviations
- Considering how cultures read (left to right, top to bottom)

The Navigational Path

The navigational path in a survey describes how your survey branches, the path your respondents should take, based on the way in which they answer certain questions. To communicate this, the following four languages used in self-directional surveys (Redline and Dillman, 2002)

- Verbal
- Numerical
- Symbolic (arrows, for instance)
- Graphical

Navigational Path example

7. Do you use a Mac computer at work?
Check one:
○ Yes → Skip to 9
○ No

8. (If No) Are you familiar with how to use a Mac computer?
○ Yes
○ No

Figure 3

Note that visual information is processed and understood more efficiently, establishing a stronger, more accurate navigational path that reduces respondent errors (Figure 3).

To create a navigational path (Redline and Dillman 2002):

1. Define the desired path (order for respondent, obvious correct method
2. Create visual navigational guides and use them consistently
3. Develop additional visual guides to interrupt prior established navigational behavior (when questions are not applicable to all respondents)

Use numbering to make your navigational path clear, and to let a respondent know if they have skipped a question. Note too that a short number of questions will appear more appealing and "doable" to a respondent than a survey with question numbers that are relatively high (Bradburn, N., Sudman, S., & Wansink, B., 2004).

To find out if your navigational path is clear, conduct a usability study by creating drafts of your survey using two different approaches. Ask users who represent your target audience to "test" the survey versions by describing what they are doing in each part of the survey, and the reasoning behind their choices. Information from this usability study will help you to determine how to establish your navigational paths and if necessary, clarify what you would like your respondents to do (Babbie, 1973).

Survey length

How long can you make your survey? What's too long or too short?

When determining how long your survey should be, consider your respondents' level of (Dillman, 2000):

- Responsibility
- Commitment
- Interest

In addition, pay attention to your target audience's stamina. If your survey is too long, the respondents may begin to choose from only the first answer choices out of fatigue (Dillman, 2000). While shorter surveys can improve response rates, there is a limit to this effect, and at this point, information on the maximum returns for survey length is inconclusive. However, note that tricks like decreasing the font size and spaces between lines to shorten a survey do not, in effect shorten the duration of your survey and may detract from its readability and ultimately, your survey's response rate (Dillman, 2000).

Page Design

What about practical considerations? What materials should you use for your survey? A booklet format is generally recommended for paper-based questionnaires not only because they are professional looking and easy to follow, but also because with a booklet format, the pages will more likely stay together and in order (Bradburn, N., Sudman, S., & Wansink, B., 2004).

Dillman (2000) recommends a specific booklet format with the following:

- 6x8 inches
- 8 ½ x 14 inches folded into a booklet
- 11 x 17 inches folded into a booklet
- Stapled on the spine
- No questions on the front or back cover
- White or off-white paper
- Anything that makes it look official to increase the response rate
- Letterhead
- Postmarks and return addresses to notable cities

For a non-booklet format, Dillman recommends (Dillman, 2000):

- One-sided 8 ½ x 11 pages
- Stapled in the upper left corner

Avoid…

- Printing on both sides of the sheet (Dillman, 2000)
- Horizontal orientation or landscape; vertical is more readable and effective (Bradburn, N., Sudman, S., & Wansink, B., 2004)
- Unusual folds, like an accordion (Dillman, 2000)
- Unusual shapes (Dillman, 2000)
- Matrices, which are difficult for respondents to follow (Figure 4) (Dillman, 2000)
- Asymmetry (Dillman, 2000)
- Reverse print, which is best used only for section headings or question numbers (Dillman, 2000)

Page 4 ***PLEASE ALSO ANSWER EMPLOYMENT HISTORY QUESTIONS ON PAGE 5***

	Job 1	Job 2
Please fill out the column for each job listed in Question 2 on page 2. →	Position	Position
	Supervisor	Supervisor
How many years did you work at	Answer the following questions If the position at Job 2 is at the same place of employment as Job 1. →	I was promoted to Job 2 after ○ Less than 1 year ○ After 1 year ○ After 2 years
		○ I was not promoted. ○ This job is not related to Job 1.

Figure 4 Matrices are difficult for respondents to follow.

Survey Color

What colors should I go with? What colors will my respondents like?

The following are determinations based on research in the use of color in a survey (Dillman, 2000):

- Blue and yellow improve response rate over black and white
- Contrast seems to be more important than the colors

While paper color does not affect response rates significantly, it can facilitate your respondents' experience. For instance, using lightly shaded colors as background fields for questions serve both as a navigational guide and increase the response rate (Figure 5) (Dillman, 2000). When using this technique, leave all answer spaces in white to reduce non-response (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004).

Figure 5

Final Thoughts

Surveys are written in two languages: words and graphic symbols. Both work in concert, stimulate, and emulate the flow of an interview.

Make your survey questionnaire interesting by improving its layout, design, ordering questions so that the more interesting ones are at the beginning (Dillman, 2000). While perhaps it is safe to say that there are no universal truths in survey design, the design choices you do make should be determined by your questionnaire's purpose and population. Your goal is for your respondents to read and respond to it with the same understanding of the questions so that you get a more consistent response quality. All of your design decisions need to fit together in a meaningful way to meet the goals of your survey and increase your response rate.

How do you know if you have a design that will serve both the needs of your respondents and your response and error rates? Pretest your survey before you send it out to identify potential problems in intent, clarity, and navigation, for instance (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004). As was discussed earlier, when conducting a usability test, create two or more similar alternatives of your survey in how you handle questions, format, or design issues (Dillman, 2000; Bradburn, N., Sudman, S., & Wansink, B., 2004). Have respondents verbally describe what they are doing and why they are making their choices so that you have insight into how best to meet both their needs and the goals of your survey.

Finally, to further bolster your response rate (Dillman, 2000):

- Establish trust with your respondents
- Make the task appear important to them
- Provide relevance as well
- Take measures to address the importance of neatness
- Include an envelope for your respondents' convenience

GUIDELINES: FORMATTING YOUR SURVEY

Page Design Booklet Format	✓6x8 inches ✓8 ½ x 14 inches folded into a booklet ✓11 x 17 inches folded into a booklet ✓Stapled on the spine ✓No questions on the front or back cover ✓White or off-white paper ✓Anything that makes it look official to increase the response rate - Letterhead - Postmarks and return addresses to notable cities
Page Design Non-booklet format	✓One-sided 8 ½ x 11-inch pages - Stapled in the upper left corner

Front Cover	Back Cover
- Provide salience - Generate motivation - Relates to the first question set - Include a short, simple title - Provide sponsor's name and address - Provide initial directions - Use a simple, neutral design - Colored covers increase response rate 2-4% - Use high contrast colors - Dark background/light graphic seems to work best - Don't include detailed directions!	- Keep it simple - Don't let it distract from front cover - Do not include survey questions here! - Include a thank you - Provide a space for additional comments

Directions	Specify… - How the answer sheet should be completed - Deadline - What to do when the respondent is finished ✓ Minimize apprehension ✓ Generate a feeling of connectedness and importance ✓ Explain how to handle non-applicable items ✓ Place where needed ✓ Put special instructions within question numbers rather than as free-standing entities
The First Question	Avoid… Personal questions (Save for later) Demographic questions (Uninteresting) ✓ Should connect with the purpose of the survey as stated on the cover (or in cover letter) ✓ Should apply to all respondents
Question Groupings	✓ By Content ✓ By Type ✓ By Logical Order - Pay attention to section breaks and where they fall on the page of your survey - Use color to establish groupings - Use space to establish groupings as well - Put summary questions after a list of specific questions Save objectionable questions for the end
Question Layouts	✓ Use dark print for questions, light print for answers ✓ People prefer putting X's in boxes ✓ Place answer spaces consistently on the same part of the page - Right or left side, for instance - Vertically inclined - One column for answers
Branching	1. Define the desired path 2. Create visual navigation guides for branching - Use them consistently 3. Develop additional visual guides to indicate changes in how the user should respond

Make The Questionnaire Interesting	By improving the… ✓ Layout ✓ Design ✓ Ordering of questions (put the more interesting ones first)
Color	✓ Blue and yellow improve response rate (opposed to black and white) ✓ Contrast has proven more effective than color ✓ Paper color does not affect response rates Use lightly shaded colors as background fields for questions to… ✓ Serve both as a navigational guide ✓ Help to reduce non response rate
Length	✓ Consider level of your respondent's responsibility, commitment, and interest ✓ Shorter surveys can improve response rates – but with diminishing returns - Using a smaller font to decrease the number of pages does not improve response rates

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