

Book and Software Reviews

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| Design, Evaluation, and Analysis of Questionnaires for Survey Research | |
| <i>Rob Burnside</i> | 489 |
| Envisioning the Survey Interview of the Future | |
| <i>Charlotte Steeh</i> | 492 |

Willem E. Saris and Irmtraud N. Gallhofer. *Design, Evaluation, and Analysis of Questionnaires for Survey Research*. Hoboken, New Jersey: Wiley Series in Survey Methodology, John Wiley and Sons Inc., (2007). ISBN 0470114959, 347 pp, \$85.

Saris and Gallhofer cover a wide and ambitious scope with detailed discussion of the theory and application of many factors contributing to question and survey quality measurement and methods. Many of these factors have been incorporated into a piece of software to assess quality to support question and survey design decisions. A beta version of this program, the Survey Quality Predictor programme (SQP), is available online (www.sqp.nl.) The use and interpretation of the results from this software are also described in detail.

The overall appeal of the book is the emphasis on the idea that question and questionnaire design can be approached systematically, based on sound underlying theory and models, and that assessment can become more scientific and assessment results reproducible – i.e., the authors aim to present methods and procedures that make survey design more of a science and less subjective or dependent on the designer’s preferences, knowledge or experience.

Working on enterprise surveys I sometimes heave a sigh of relief because historically many variables of interest have been what the authors describe as ‘concepts-by-intuition’ (i.e., intuitively ‘obvious’ in some sense, immediately perceived, and so directly recoverable and measurable) rather than ‘concepts-by-postulation’ that are initially undefined or are defined in terms of other concepts already understood. However enterprise surveys are increasingly collecting environmental and other more qualitative data and are using techniques from social survey development (such as variants of cognitive interviewing), and so in many respects are coming more to resemble social surveys – and of course they are also answered by individuals who have to retrieve information and make judgements about appropriate responses.

For me the first value of the book lies in the first two parts and their detailed discussion of many aspects of questionnaire design and design approaches to the problems presented. These parts make an extremely useful guide for survey designers in themselves. The third

and fourth parts focus on more mathematical models of error and their application in the software program. Many practical survey designers and researchers have more familiarity with (or loyalty to!) a subset of development or evaluation techniques, so the second value of the book lies in the likelihood that readers will be introduced to ideas and methods that they may not have encountered or considered in any detail.

The introduction starts with an update of Presser's 1984 analysis of papers published in the fields of economics, sociology, political science, social psychology, and public opinion research in 1949–50, 1964–65, and 1979–80. In this he coded the data collection procedure to investigate to what extent the papers were based on data collected in surveys. Presser included studies performed by official statistical bureaus as "surveys," not taking account of the fact that some of their data were from other sources such as administration.

Saris and Gallhofer update Presser's analysis for the period 1994–95 and add a useful refinement by also coding (for 1994–95 only) the percentage of surveys based on samples, so reducing studies classified to "surveys" using Presser's original method. They conclude that the proportion of surveys as a data collection method is still rising overall (using Presser's original method) or has fallen slightly (when adjusted for statistical bureau methods). The introduction to the book then goes on to briefly outline the key decisions in the design of a survey and introduces some key ideas which are later developed in depth.

Part One covers 'designing requests for an answer,' requests for answers being the description preferred for what are often loosely referred to as questions. Accepting that surveys are 'requesting answers' rather than 'asking questions' facilitates a detailed discussion of the various linguistic and structural forms such requests can take. Like the rest of the book this introduces theoretical concepts and models which are illustrated with detailed examples supported by discussion and analysis.

Part Two recognises that a survey is more than the sum of the concepts of interest described by individual requests and discusses the choices involved in questionnaire design. The decomposition of a "survey item" (defined as a larger textual unit than a request for an answer that may include up to seven additional elements such as an introduction, motivation, and response scale) is a particularly useful idea.

Part Two also includes discussion of different ways to formulate requests for answers, balanced versus unbalanced requests, the use of introductory stimuli as part of requests, and a section on the vexed issue of categories and scales. It has a full chapter on "battery" (matrix) questions, and concludes with one on "mode and other choices," with useful if short (compared to the depth of treatment of other topics in the book) sections on collection mode, position of questions and layout of visual questionnaires.

I was disappointed with the relatively little emphasis given to the visual design of self-completed instruments and the statement (p. 167) that "Unfortunately very little is known about the optimum rules for designing questionnaires". Dillman is cited and it seems to me that the detailed visual design rules and principles he and other researchers have developed lend themselves well to the kind of scientific assessment and quality scoring the authors espouse.

Part Three covers the effects of survey characteristics on data quality, with chapters on criteria for quality measures, estimating reliability, validity and method effects, and discusses the impact of different methods of assessing quality and estimating the effect of

measurement characteristics. It also contains a useful section on split-ballot multitrait-multimethod designs.

Part Four has perhaps the widest scope, introducing and describing the use of the Survey Quality Predictor (SQP) computer program (developed by Saris, Gallhofer, and Van der Veld). The SQP software is freely downloadable and has an English language version, though I was unable to use it to do a full test evaluation of a survey in the time available for this review.

The core is the implementation of a coding procedure which processes characteristics of a survey to produce estimates of the expected reliability and validity of individual requests for answers and total survey quality as predicted by a linear equation, which was discussed earlier in the book – though my mathematical skills do not qualify me to judge the suitability or robustness of it. A semi-automatic version allows the researcher to code survey characteristics by entering information about them.

It is effectively an expert system that brings together and consistently applies knowledge on measuring the quality of survey items and presents the results by providing diagnostics of the contribution of each component of the survey as well as the mode of administration and therefore allows the designer to review and improve areas contributing to lower than acceptable scores.

Though I am instinctively nervous about ‘correcting’ survey results, the suggestions in Part Four for using SQP to correct for measurement error, to support corrections between cross-cultural comparisons, and for using estimates of quality of requests for answers that measure concepts by intuition to estimate the quality of concepts by postulation give much food for thought.

Overall, “Design, Evaluation, and Analysis of Questionnaires for Survey Research” has much useful material in it for survey researchers and designers with widely varying interests and experience. It forms a useful reference for many basic design issues and the SQP program is certainly worth investigating in detail.

Reference

Presser, S. (1985). The Use of Survey Data in Basic Research in the Social Sciences. In C.F. Turner and E. Martin (eds), *Surveying Subjective Phenomena*, Volume 2, pp. 93–114. NY: Sage Foundation.

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Frederick G. Conrad and Michael F. Schober (eds). *Envisioning the Survey Interview of the Future*. Wiley Series in Survey Methodology, John Wiley and Sons, Inc., Hoboken, New Jersey, 2008 ISBN 0471786276, 298 pp, \$95USD.

If even some of the possibilities advanced in the chapters of this book were realized, the survey interview of the future would be very different from the genial, mutually enjoyable interactions of the early 1970s described by Converse and Schuman (1974) as conversations. In the future, it appears, human interviewers will be replaced by various technologies. At the extreme, the interview may seem like an experiment. Isolated in a separate room containing only a computer, seated on a “wobble” cushion, scanned by video cameras, and exposed to posture and eye movement sensors, the subject/respondent would answer a battery of questions posed by an embodied conversational agent (Chapter 13 gives another extreme example). This is only one of the scenarios that emerge from this provocative book. Long on vision and short on empirical results derived from surveys, the articles highlight the benefits that communication technologies may offer in the pursuit of data quality – primarily the opportunity to go beyond the literal meaning of survey answers to measure the underlying motivations, hidden doubts, and deliberate deceptions of respondents.

The fourteen chapters, written by recognized experts in their fields, take the long view, and the authors confess that many of their proposals cannot yet be implemented. In Chapter 1, the editors plead for the cross-fertilization of survey research and communication technology, insisting that survey methodology must adjust to and benefit from technological innovations. The chapter closes with a list of points that survey researchers should consider before adopting a new technology. The floodgates then open to the ten chapters that consider specific cutting edge technologies that are or may be useful in the survey interview.

Chapters 2 and 3 discuss important issues in the field of survey interviewing. In Chapter 2, Schaeffer and Maynard summarize the differences between standardized and conversational interviewing. Although both of these methods can lead to measurement error, the conversational approach at least provides clues to the ways in which respondents construct answers and reveals conceptual misunderstandings that standardized methods gloss over. Schaeffer and Maynard recommend ethnomethodology and conversation analysis as “tools for understanding human-machine interaction” (p. 50). Couper’s useful Chapter 3 describes two trends that may revolutionize our conception of the survey interview – self-administration and the utilization of technology. Couper traces the implications of these trends for three key components of data collection procedures – customization, control, and social presence. In the end, his concern, like Schaeffer’s and Maynard’s, is with improving the quality of survey measures, and he recommends using that standard to decide whether or not a new, exciting technology should be adopted.

The technologies central to Chapters 4–6 are already familiar to most survey practitioners. The first is the mobile web. As envisioned by Fuchs in Chapter 4, a mobile web survey surpasses the standard internet survey because it can be based on a probability sample of telephone numbers. Despite limited acceptance of the mobile internet to date and its extra cost to mobile owners, Fuchs is confident that the mobile web will become widespread enough to make this type of data collection possible even for general population surveys. In Chapter 5 Anderson explores video conferencing as a tool for conducting interviews. Although she does not explicitly mention the expense of video conferencing,

it is undoubtedly cheaper than administering surveys face-to-face. Thus the technology offers a way to preserve some of the known benefits of the face-to-face interview without incurring its exorbitant costs. However, there are pitfalls as well as possible advantages to using video conferencing in surveys, and Anderson's discussion of these is insightful. In Chapter 6 Bloom advocates using speech recognition software to bring greater social presence to the touchtone IVR systems used in the United States while at the same time maintaining the privacy necessary for accurate reporting. Like the mobile web, speech IVR is not yet ready for immediate use, but Bloom, like Fuchs, forecasts rapid development.

The next five chapters (Chapters 7–11) are the speculative chapters that focus on the fascinating cutting edge technologies that have so far been largely untested in methodological work. These chapters describe the application of one technology to a research problem in another field and then suggest how it might be applied to survey interviews. Multimodal interfaces that allow respondents to enter data in several different ways within the same interview – for example, through speech, handwriting, and touch – are the concern of Johnston in Chapter 7. These interfaces go beyond voice recognition software to encompass technologies such as “gesture and handwriting recognition, natural language understanding, dialogue, multimodal generation and presentation planning, and speech synthesis” (p. 150). Chapter 8 introduces the embodied conversational agent (ECA) that may be able to objectify the survey process. Cassell and Miller review the sources of interviewer effects, describe current ECA projects outside the survey field, and assess the likelihood that such agents will resolve the tension that exists between rapport and objectivity in the conventional face-to-face interview. Drawing on the results of research in interpersonal communication in Chapter 9, Hancock enumerates factors beyond the strictly methodological that may influence deception in the survey interview and gives specific advice on how to promote honesty and full disclosure during an interview. Despite the caveats expressed in Chapter 8 by Cassell and Miller about the use of embodied agents in survey interviews, Person, D’Mello, and Olney press on to propose in Chapter 10 a system based on artificial intelligence. In this system the conversational agent becomes very lifelike and is able to recognize various affective states of respondents and then alter their comments and behaviors appropriately. Chapter 11 by Fussell, Zhang, Conrad, Schober, and Setlock has as its primary concern the interaction of culture with computer-mediated communication (CMC). Cultural background affects respondents’ reactions to new technologies, and CMC principles suggest that researchers might want to manipulate cultural factors to avoid response biases, such as race or interviewer effects.

Chapters 12 and 13 turn to ethnical issues. Konstan, Rosser, Horvath, Gurak, and Edwards detail the strict security measures they developed for an online survey in a very sensitive area of research – risks for HIV; and Marx in Chapter 13 asks the survey profession to contemplate whether or not many of these new technologies breach the informed consent principle on which the survey method is founded. Marx points out that automated technologies work invisibly, involuntarily, and passively and thus rob respondents of their ability to manage how they present themselves to interviewers. There is a point, he suggests, beyond which continued striving for data quality may violate respondents’ rights as individuals. The concluding Chapter 14 does what concluding chapters are supposed to do – summarize the existing state of research and suggest avenues for future research. Graesser, Jeon, and McDaniel use a matrix, which they call

the technology-characteristic landscape, to determine what topics need research and to help practitioners decide which technologies or combination of technologies best fit their study goals. They also bring the discussion back to the evaluation of conversational versus standardized interviewing begun by Schaeffer and Maynard in Chapter 2.

Based on the discussions in this book, it appears that the interview of the future will be either totally self-administered or carried out by conversational agents rather than human beings. However, the book does not present robust counter-arguments to this vision. Except for a few pages in the final chapter, there is no discussion of what effect the widespread use of conversational agents will have on other aspects of the survey process, nonresponse in particular. Only Fuchs recognizes the impact of mobility on the character of the interview. Several contributors occasionally worry that very humanlike avatars will perpetuate the kinds of response effects they were intended to prevent, but these are the major caveats. Furthermore, the interview methods reported here do not cover all of the possible alternatives. For example, no one recognizes the power of text-messaging by which researchers could send a single question to millions of cell owners and receive almost instantaneous replies.

Because so many of the chapters look at technologies that have not yet been adapted for surveys, researchers will not find many ideas applicable to their immediate survey projects. When we remember how difficult it has been to devise acceptable methods for using conventional cellular phones in surveys – a rather low-level technology by this book's standards – we know that acceptance of most of the proposals will be slow and influenced by how the contest between standardized and conversational interviewing is decided. The emphasis on animated conversational agents makes many of the contributions seem as fantastical as recent suggestions, outside the survey field, that implanting micro chips in human brains will improve memory or that the spread of cell phones may end world poverty (Corbett 2008). Despite its shortcomings, this book will appeal to a wide audience of survey methodologists, students of sociology or communication, and knowledgeable readers. The chapters are clearly written and accessible and should inspire a valuable dialogue about the nature of the survey interview.

Reference

- Converse, J.M. and Schuman, H. (1974). *Conversations at Random: Survey Research as Interviewers See It*. Hoboken, NJ: John Wiley and Sons.
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