Journal of Official Statistics, Vol. 27, No. 2, 2011, pp. 379–392

Toward a Benefit-Cost Theory of Survey Participation: Evidence, Further Tests, and Implications

Eleanor Singer[1]

This article uses survey respondents' own reasons for participating or not participating in surveys, as well as experiments carried out over many years, to propose a benefit-cost theory of survey participation. The argument is that people choose to act, in surveys as in life, when, in their subjective calculus, the benefits of doing so outweigh the costs. The process of reaching a decision may be carefully reasoned or it may proceed almost instantaneously, with the aid of heuristics. But regardless of the process, the outcome depends on a judgment that the benefits of acting outweigh the costs of doing so – even if, objectively speaking, the actors are badly informed and their decision leads to an undesirable outcome. The article reviews research on confidentiality assurances and risk perceptions with reference to a benefit-cost theory of behavior, and concludes by suggesting research to test the theory's predictions and by drawing testable implications for survey practice.

Key words: Nonresponse; risks; cost; benefit; decision-making; open-ended questions.

1. Introduction

Although various theories of survey participation exist, we know very little about how people explain, in their own words, why they are or are not willing to participate. To remedy this lack, interviewers in a national monthly RDD survey primarily devoted to economic expectations were instructed to ask respondents how willing they would be to participate in a hypothetical survey, and then to follow up with a simple open-ended question: "Why would (or Why wouldn't) you be willing to participate in the survey described?"[2] The present article uses the responses, along with responses to the same question asked in other surveys, as well as the results of a series of experiments, to propose a theory of survey participation.

Respondents were quite willing to tell interviewers the reasons for their decision. Those who had said they would be willing to participate cited things like wanting their opinions to be heard or wanting to contribute to the research goals, or their interest in the topic of

[1] University of Michigan, Survey Research Center, Institute for Social Research, P.O. Box 1248, Ann Arbor, MI, U.S.A. Email: esinger@isr.umich.edu

[2] The survey is described, and major results reported, in Singer (2003), but analysis of responses to the open-ended questions was not included in the published version.

Acknowledgments: Special thanks to Mick Couper and Stanley Presser for their indispensable help and support, and to Roger Tourangeau for sharing his vision of a golden age of survey research. The comments of anonymous reviewers and the editors on an earlier draft are much appreciated.
This article was first presented as the 2010 Joint Program in Survey Methodology Distinguished Lecture. I am grateful to the JPSM Committee for their invitation.

the survey or the incentive associated with participation. We classified these reasons into three broad categories – altruistic, egoistic, and characteristics of the survey – and these categories, as well as the proportions of people choosing them, turned out to be very similar to the responses in an earlier German study by Porst and von Briel (1995). Although the boundaries of the last category – survey characteristics – may appear to overlap with the first and second, they can be distinguished on the basis of the respondent's emphasis. For example, if a respondent said, "I want to help the government," it was classified as an altruistic response; whereas if she said, "Because it's a government survey," it was classified as a (positive) response to a survey characteristic, namely, its sponsor.

The reasons given for *not* wanting to participate in the survey could also be classified into a small number of broader categories. There were the usual general reasons – Not interested, too long, too little time – as well as a large group of responses that were classified as privacy-related (e.g., don't like intrusions; don't like to give financial information). Since the two survey topics in the vignettes – financial assets and sexual behaviors – were fairly sensitive, this was not surprising. There was also a large number of responses pertaining to survey characteristics, as well as a smaller number indicating that the survey did not offer enough benefits to make participation worthwhile.

Since then, this open-ended question has been repeated several times, in different surveys using different modes; and with the addition of specific codes, the same broad categories of benefits and costs have proved useful in these surveys as well (Couper et al. 2008; Couper et al. 2010).

More recently, Zikmund-Fisher et al. (2010) examined medical decision-making in three broad categories – the decision to start three different medications, to be screened for three kinds of cancer, and to undergo three kinds of elective surgery. People were defined as having made a decision if they had taken action or discussed doing so with a healthcare provider within the last two years. Among other things, respondents to this national survey of people over 40 were asked how important certain factors had been in their decision – things like feeling better and being able to do more things, or detecting cancer early, or controlling their blood pressure or cholesterol, all of which could be construed as benefits of taking action; and things like monetary outlay, complications, discomfort, and side effects, which could be construed as costs. While there was little consistency in the specific factors that were significant from one decision to another, the *mean difference between benefits and costs* consistently predicted action across all three decision types. That is, the more the importance respondents attached to benefits outweighed the importance they attached to costs, the more likely they were to take action, and the more likely they were to have confidence in whatever action they had decided to take (Singer et al. 2010).

Together, the findings discussed so far have led me to propose a general theory of survey participation, whose central theorem is that people participate in a survey when, in their judgment, the benefits of doing so outweigh the costs. Benefit-cost theory resembles many other theories of action, including the theory of reasoned action and its offshoots in psychology (e.g., Fishbein and Ajzen 1975; Ajzen and Fishbein 1980; and for a specific application to survey participation, Hox et al. 1995), leverage-salience theory in survey methodology (Groves et al. 2000), and various benefit-cost perspectives in economics (e.g., Dunn and Gordon 2005) in assuming that actors will behave in accordance with the

importance of the perceived benefits and costs of a decision to them. Schnell (1997, Chapter 4) argues that theories based on rational choice (i.e., cost-benefit) models are the only ones capable of explaining survey participation, and traces the use of cost-benefit explanations for survey response to the late fifties (*ibid*. p. 157). His chapter is an exhaustive examination of the survey research literature through 1996 from a rational choice perspective, and thus anticipates the much more cursory discussion in the present article.[3]

The argument of the present article is precisely that advanced by Schnell, namely that people choose to act – whether in the context of deciding to participate in a survey, or in the context of embarking on a course of medical treatment, or indeed in any situation where a decision is required – when, in their *subjective* calculus, the benefits of doing so outweigh the costs. Sometimes the process of reaching a decision is painfully reasoned, and sometimes it proceeds almost instantaneously, with the help of heuristics (e.g., Gigerenzer 2008). But regardless of the process, the outcome depends on a judgment that the benefits of acting outweigh the costs – even if, in the eyes of an observer, the actor is badly informed and her valuations wrong-headed.

The next two sections examine research on two topics – confidentiality assurances and perceptions of risk – from the perspective of a theory of survey participation based on respondents' calculation of both benefits and costs. It uses research findings in these two areas to illustrate the role these calculations play in respondents' decision to acquiesce (or not) in the survey request.

2. Confidentiality Assurances: Benefit or Cost?

Many researchers think of an assurance of confidentiality as a benefit that potentially motivates respondents to participate in a survey. The question raised in this section is whether such assurances are construed by respondents as a benefit or as a cost.

The first study that looked at the effect of confidentiality assurances on survey response rates and response quality (Singer 1978) was conceived and carried out in the heat of social scientists' debates about the possible harmful effects of the newly proposed Regulations for the Protection of Human Subjects of Research (Department of Health and Human Services 2009 (1974)). It was designed to investigate experimentally the effect of three elements of informed consent – information about content and confidentiality, and a requirement for a signature to document consent – on people's willingness to participate in research. The study, carried out by the National Opinion Research Center, was designed as a face-to-face national study employing a factorial design, with each interviewer administering all conditions.

The findings, while hardly testing all possible variations in consent forms, were largely reassuring for social scientists. Although the request for a signature had a substantial negative effect, reducing response rates by some 7 percentage points, neither the

[3] I am grateful to the editors for calling Schnell's book to my attention. Unfortunately, in the U.S. it appears to be available only online, and requires considerable facility with German. Rational choice theory has long been the dominant paradigm in economics, but in recent decades has begun to be used by other social sciences as a way of accounting for volitional human behavior. See also Hox et al. (1995).

information about sensitive content nor the qualifications to the confidentiality assurance significantly affected the response rate to the survey. There were, however, suggestions that giving respondents an absolute assurance of confidentiality reduced item nonresponse to the most sensitive questions on the survey. Another study, commissioned by the National Research Council on behalf of the U.S. Census Bureau and published in 1979, found a statistically significant, though tiny, increase in refusals with decreasing assurances of confidentiality, again suggesting that reducing the confidentiality accorded to personal information was construed by respondents as a cost (National Research Council 1979).

In the years following these studies, a number of articles were published investigating the effect of confidentiality assurances. Some of these failed to find a positive effect on response rates, and in fact suggested that confidentiality assurances might have increased respondent anxiety (Reamer 1979) or item nonresponse (Frey 1986). Singer et al. (1992) designed and carried out three experiments – two of them with students, and the third with a general population sample – to look at this issue more closely. The central hypothesis of these experiments was that giving potential respondents an elaborate assurance of confidentiality in conjunction with a nonsensitive survey topic would increase respondents' concerns and the likelihood of their refusal.

The experiments paired an innocuous topic – "Survey of Student Life" in the case of the students, and "Citizens' Survey" in the case of the general population – with one of either two or three kinds of confidentiality assurances: No mention, a one-sentence assurance, and an elaborate assurance of confidentiality together with a copy of the German Data Protection Law. The dependent variable, in each case, was expressed willingness to participate in the survey.

The results are shown in Figure 1. As predicted, in both the student surveys and the general population survey, those who got no confidentiality assurance, or a very brief one, were significantly more likely to say they would respond.

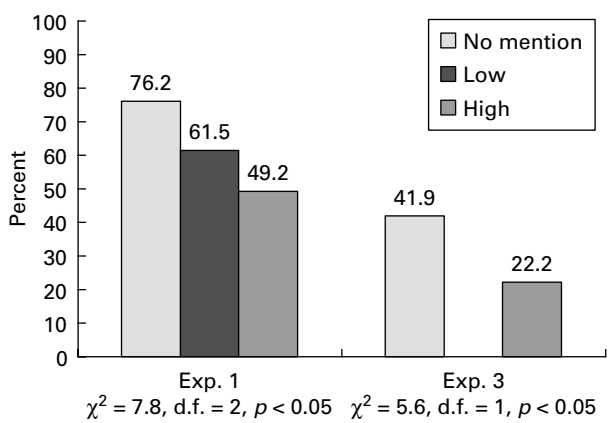

Fig. 1. Willingness to participate by confidentiality assurance (%) (adapted from Singer et al. 1992, Tables 1, 2, and 3)

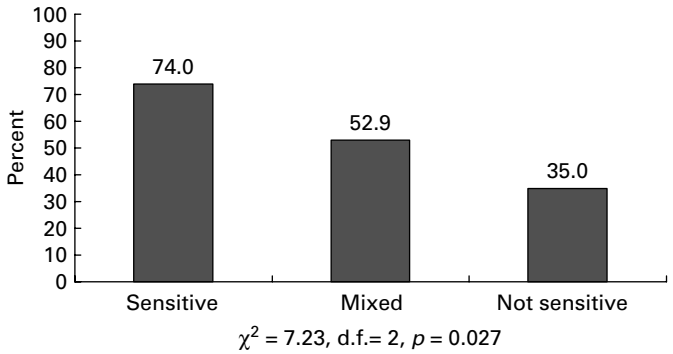

Fig. 2. Percent of tests supporting hypothesis that confidentiality assurance improves response, by data sensitivity (adapted from Singer et al. 1995, Table 1)

In one of the experiments students were asked, in addition to whether or not they would participate, what kinds of expectations they had about the survey questions (they were not shown the actual questions, nor did they have to answer them). As predicted, when they were given an elaborate assurance of confidentiality in conjunction with content that was not sensitive, they were more likely to expect threatening questions, personal questions, and questions they would not like to answer, and more likely to expect their answers to fall into the wrong hands.

These experiments suggested that, at least for nonsensitive topics, an elaborate assurance of confidentiality, far from being a benefit, represented a "cost" to respondents: they expected greater risks and worse outcomes, in terms of confidentiality protection, and they were less willing to respond than when confidentiality was not mentioned, or mentioned, as it were, only in passing.

The question that remained was whether the same would be true for sensitive, rather than nonsensitive, content. Singer et al. (1995) addressed this question by means of a meta analysis of some 64 experiments contained in 30 separate reports.

The experiments were classified according to whether they requested sensitive, nonsensitive, or "mixed" data, whether respondents were given a strong or weak assurance of confidentiality or none at all, and whether the experiment supported or failed to support the hypothesis that a strong assurance of confidentiality would produce higher response rates or better response quality with sensitive data than with mixed or nonsensitive data.

As can be seen in Figure 2, the hypothesis received support from the meta analysis. In more than 70% of experiments involving sensitive data, but only 34% of those involving nonsensitive data, a strong confidentiality assurance improved response, suggesting that confidentiality assurances may function as a benefit or a cost depending on the sensitivity of the survey topic. An additional question – whether such assurances ever function to motivate response, or whether they merely remove a barrier to participation – remains unanswered by these experiments. I return to this question in Section 5.

3. Objective Risk, Perceived Risk and Benefits, and Survey Participation

Experiments carried out between 2001 and 2003 attempted to test the role of costs and benefits in survey participation more directly. Respondents to the April 2003 Survey of

Consumers, a monthly RDD survey carried out at the University of Michigan, were read a couple of introductions to actual surveys and asked whether or not they would be willing to participate in them. (They were told that they would not actually have to take part in the surveys.) One of the introductions described the Health and Retirement Study, and the other the National Survey of Family Growth. The survey descriptions and follow-up questions were inserted near the end of the regular questionnaire, which focused primarily on economic expectations, and thus respondents were people already inclined to agree to a survey request. The sample size for the April survey was 519 and the response rate at that time averaged around 60% (Curtin et al. 2007).

The purpose of the vignette study was to explore respondents' understanding of the confidentiality assurance in the introductions to the two surveys and their perceptions of the risks, or costs, and benefits of participating in each of them. Each of the introductions talked about the purposes and usefulness of the study, and also gave respondents an idea of the questions that would be asked. Each assured them of the confidentiality of their answers. At the end of the introduction, read by an interviewer, respondents were asked how likely they would be to participate in the study described. Following their answer about willingness to participate, they were asked a series of questions designed to get at their perceptions of the risks and benefits the study involved.

Perceived risk was measured by questions asking how likely respondents thought it was that family, friends, businesses trying to sell them something, and law enforcement agencies were to find out their answers along with their name and address. Perception of harm was measured by asking how much they would mind if each of these groups obtained their answers, along with their name and address. Perception of social benefits was measured by asking how useful respondents thought each of four different groups – other researchers, the funding agency, businesses, and law enforcement agencies – would find the survey. Perceived personal benefit was measured by a single question ("Would you, yourself, get anything good out of the survey?"), as was the perceived ratio of risk to benefit ("Taking it altogether, do you think the risks of this research outweigh the benefits, or do you think the benefits outweigh the risks?"). For the full text of questions, see Singer (2003).

As can be seen in Table 1, both benefits and risks were significantly related to willingness to participate, in the expected direction. Perceived risks were significantly related to a reduced likelihood of participation, whereas perceived benefits were significantly related to increased participation. Also worth noting is the fact that despite a fairly strong assurance of confidentiality, respondents tended to perceive some likelihood of risk that their answers would be disclosed.

In the years since the publication of that study, the risk of statistical disclosure has received a good deal of attention, both from statisticians who have attempted to estimate and reduce the likelihood of disclosure (e.g., Abowd 2007; Woodcock and Benedetto 2009) and from survey methodologists who have attempted to measure its effect on survey participation. "Disclosure risk" refers to the likelihood that a respondent's answers to a survey can be linked to his or her name and address, even though direct identifiers have been removed from the data file. Couper et al. (2008; 2010) carried out a series of studies in order to understand how variations in disclosure risk affect willingness to participate in a survey. From the perspective of the benefit-cost theory proposed in this article, these

Table 1. The relationship of perceived risks and benefits to willingness to participate

Variable	Parameter Estimate	Std. Error	Sig.
Intercept	5.837	1.011	$<.001$
Risk	−0.099	0.047	$<.05$
Risk/benefit	−1.843	0.259	$<.001$
Harm	−0.176	0.044	$<.001$
Social benefit	0.164	0.055	$<.01$
Personal benefit	1.465	0.262	$<.001$
Age	−0.007	0.008	ns
Education	−0.054	0.061	ns
Female	−0.325	0.251	ns
Observations		993	
Replicates		519	
Model R^2		0.18	

experiments are designed to see how variations in the cost of participation influence willingness to participate.

The general experimental set-up of the web surveys is as follows (see Couper et al. 2008):

1. Members of an online panel are sent an invitation by Market Strategies to participate in a survey.
2. They are presented with a set of eight vignettes that vary the sensitivity of the topic (sexual behavior, money, work, or leisure activities), the description of disclosure risk (no mention, no risk, one in a million, or one in ten) and whether or not the respondent receives a confidentiality assurance. The vignettes keep constant sponsor, survey length, and monetary incentive. Thus, there are 32 vignettes altogether; respondents are shown eight of them, with each set containing the four risk manipulations for both a sensitive and a nonsensitive topic and the same confidentiality assurance for all eight.
3. After each vignette, respondents are asked to indicate, on a scale from 0 to 10, how likely they would be to participate in the survey described; and after either the first or the eighth vignette they are asked why they would or would not participate.
4. They are then asked about their perceptions of risk, harm, personal benefit, social benefit, and the risk-benefit ratio, using the questions described for the 2003 study.
5. Finally, they are asked some more general questions about their privacy and confidentiality concerns, their attitudes toward surveys, and their trust in people and institutions. They are also asked a short series of demographic questions.

An example vignette appears below:

> "Imagine that in about a week a professional survey interviewer visits your home and asks you to take part in a survey on sexual behavior and sexually transmitted diseases, sponsored by the National Institutes of Health. The information you provide will help shape government policy on sexually transmitted diseases.

The information you provide is confidential. Based on experience, we think there is a one in ten chance that someone will connect your name with your answers. The interview will take 20 minutes, and you will receive $10 as a token of the researcher's appreciation."

The findings are consistent across both web surveys. (1) The survey topic significantly influences the likelihood of willingness to participate: Respondents are much more willing to participate in surveys about work and leisure time than in surveys about sex or money. That is, sensitive topics appear to be perceived as a cost, reducing survey response. (2) Under conditions resembling those of real-life surveys, information about disclosure risk has no significant effect on people's willingness to participate in the survey described. Such information about objective risk reaches significance in only two circumstances: If the respondent is exposed to multiple vignettes, which provide a reference for comparison; or if the probability of disclosure is coupled with a description of the harm that might result from disclosure – e.g., a statement that the IRS finds out that the respondent has cheated on his or her income tax, and imposes a fine. Under these conditions, an increased likelihood of disclosure also appears to function as a cost, reducing willingness to respond. (3) Subjective perceptions of disclosure risk, in contrast with descriptions of objective risk, significantly reduce willingness to participate. (4) *However, by far the largest share of variation in such willingness is explained by perceived benefits to self or others, not by perceptions of risk or harm. Thus, it appears to be the perception of benefits, rather than the perception of risk or harm, that is most significant in determining survey participation.* This suggests that simply reducing the costs of responding is unlikely to induce respondents to participate.

The major conclusions from the web experiments were replicated in a self-administered survey mailed to a national probability sample (Couper et al. 2010). This replication of the earlier findings supports the robustness of the vignette technique for these kinds of research questions. It is, of course, possible that the results might change if a significantly higher return rate was achieved or if features of the experiment that were held constant here – such as sponsor and incentive – were varied.

Couper et al. (2010) also analyzed responses to the open-ended questions in the first web survey about why respondents were, or were not, willing to participate in the survey described.

As in earlier surveys where these questions have been asked, the reasons given for participation appear to focus on perceived personal or social benefits, whereas the reasons for nonparticipation appear to focus on perceived costs or risks (or, in a small number of cases, the inadequacy of rewards or benefits). It should be noted, however, that what is seen as a benefit or cost can vary from one individual to another.

4. Other Illustrative Experiments

Experimental results that are interpretable in terms of a benefit-cost theory of action have also been reported in other disciplines. Dunn and Gordon (2005), for example, reviewed research bearing on the decision to participate in research, arguing that perceived benefits relative to costs – including especially monetary benefits – are crucial to such decisions. Verheggen et al. (1998) examined patients' willingness to participate in a clinical trial.

They found that those who agreed to participate were much more likely to perceive the benefits of participation as outweighing the risks, whereas the reverse was true for those who declined to participate. The authors note that many of the latter also declined to answer the follow-up questions, and they speculate that this is likely to bias the findings against the hypothesis. Halpern and his colleagues (2004) carried out a vignette study with students to ascertain the role of objectively varied risks (increased likelihood of side effects or increased likelihood of being assigned to the placebo condition) and benefits (varying amounts of monetary incentives) on willingness to participate in a clinical trial. As predicted, they found that willingness decreased with increased risks and increased with increased incentives, though they found no interaction between the two. These findings have been replicated by Singer and Couper (2008) in a social science context. Many other experiments could be interpreted within this theoretical framework. The specific factors for or against a decision (i.e., the specific perceived benefits and costs) will, of course, vary between decision contexts.

5. Why People Participate in Surveys

This article began by asking why respondents participate in surveys. Although the evidence is not conclusive, it appears that they do *not* participate because disclosure risk has been reduced or because they have been given a credible confidentiality assurance. Such measures may reduce the cost of participating and thus increase response rates somewhat, but they do not supply the primary motive for taking part in a survey.

In the Couper et al. (2008) web study, only three people (less than 1% of the sample) mentioned a confidentiality assurance or the survey's anonymity as a reason for their willingness to participate. In the Singer 2003 study, using different vignettes and a stronger confidentiality assurance, a somewhat larger percentage – 2.4% – gave this response. However, many more people mentioned concern about confidentiality or privacy as a reason for nonparticipation. In other words, concern about privacy and confidentiality may deter participation, and assuaging such concern may persuade people who previously refused, or who perhaps would have refused, to participate (cf. Bates et al. 2008), but such assurances, in themselves, do not increase motivation to respond.

Why, then, do they respond?

It seems clear that the reasons have something to do with the benefits respondents perceive they get from the survey, either for themselves or for society as a whole or perhaps for a group to which they belong. Those benefits may include aspects of the survey itself – its topic, talking with someone, the organization sponsoring it – but, as we have seen, all of these survey-related factors can also cut both ways, being perceived as benefits by some and as costs by others.

However, the decision to participate represents an estimation of costs as well as benefits, because participation in a survey is never without costs. At the least, it represents some commitment of time and perhaps an intrusion into privacy and other activities, but it may actually entail a significantly greater cost in terms of effort, possible emotional distress, and potential risk of harm from breaches of confidentiality. So agreeing to participate probably represents a decision that whatever rises to the top of what comes or is brought to mind – by the cover letter, the interviewer, or the introduction to the survey on the

web – is worth those costs. There need not be an objective net benefit, so long as the benefits are perceived by the respondent as outweighing the costs. Nor need the calculation be carefully reasoned, but may be reached on the basis of heuristics. For example, it may be that 40 or 50 years ago, the default response to a request for an interview was affirmative, whereas for some time now the default response appears to have been a refusal. The problem for survey researchers may be changing the default (cf. Thaler and Sunstein 2008).

6. Comparisons with Other Theories of Survey Participation

How does benefit-cost theory differ from other theories of survey participation? It resembles leverage-salience theory, which also emphasizes the multiplicity of factors that may influence survey response, as well as the importance of the weights and valence attached to the various factors by individuals. But leverage-salience theory emphasizes the role of the interviewer in making some of these factors salient to respondents, and efforts to reduce nonresponse based on leverage-salience theory have largely focused on overcoming respondent objections – that is, reducing or compensating for perceived costs (e.g., Groves and McGonagle 2001; Bates et al. 2008). When interviewers attempt to convert a refusal, they are in fact trying to change the respondent's perception of the benefits and costs of the decision – sometimes by offering or sending a monetary incentive before the next contact attempt. Benefit-cost theory, in contrast, emphasizes the role of benefits in the decision-making process and the need for making these benefits salient to the respondent and achieving a favorable ratio of benefits to costs. By implication, it also calls attention to the need to broaden researchers' understanding of the intrinsic motives for taking part in surveys.[4]

Benefit-cost theory also resembles social exchange theory, which posits that the respondent must perceive some personal benefit in order to give something back to the researcher (e.g., Dillman 1978). But unlike benefit-cost theory, social exchange theory tends to downplay or overlook the inevitable costs that survey participation entails for the respondent. Thus, the benefit-cost theory of survey participation can be seen as a synthesis of principles derived from these other theories.

7. Further Research

There is as yet no experimental evidence for the claim that in order to participate in a survey, perceptions of benefits must outweigh perceived costs. To produce such evidence requires further research.

Another question that should be posed by further research is whether it matters if cooperation is increased by reducing costs or increasing benefits. It may be impossible to answer this question in the abstract. For example, someone who is concerned about potential breaches of confidentiality is unlikely to be persuaded to participate by an

[4] The definition of what is an intrinsic motive for a particular action is debatable. Here, I adopt a rather broad view of intrinsic motivation for survey participation, which includes formal properties of surveys – such as the appearance of a questionnaire – as well as modes of administration – such as pleasure in talking with an interviewer.

increased incentive. Halpern et al. (2004) and Singer and Couper (2008) both show that although monetary incentives increase participation and risks of harm reduce it, there is no interaction between the two; respondents do not, within the limits tested in these experiments, trade money for risk of harm. On the other hand, someone whose reason for nonparticipation is primarily a lack of perceived benefit (e.g., not interested) might very well be persuaded by such an offer. Experiments could be carried out to see whether responding appropriately to respondents' concerns increases the likelihood of overcoming their refusal. Work by Groves and McGonagle (2001) suggests that this might indeed be the case.

Many predictions can be made on the basis of benefit-cost theory and research relevant to it. For example, one hypothesis is that perceived benefits are a more important determinant of participation than perceived costs. This hypothesis suggests the need to measure separately the effects of benefits and costs on participation under different conditions, rather than simply the difference between benefits and costs. Another hypothesis is that perceived social benefits are more important motivators of participation than perceived personal benefits, suggesting a need to measure these, too, separately. Still a third hypothesis is that confidentiality concerns will be a more important reason for nonparticipation if the survey topic is sensitive than if it is not sensitive. These hypotheses are all empirically testable, and are offered simply as illustrations of possible predictions based on the theory.

8. Implications for Survey Practice

In the meantime, regardless of whether the motive for survey participation is the perception of benefits alone, or the net advantage of perceived benefits over perceived costs, we can draw some implications for survey practice. To increase the perception of benefits, we should improve the survey experience for respondents. One possible way of doing so, whose effectiveness in increasing response as well as respondents' satisfaction could readily be tested, would be to substitute live interviewers for Interactive Voice Response (IVR) or computerized voices, at least for recruitment (e.g., Couper et al. 2004). It is also possible that better qualified and trained interviewers, who would also of course have to be paid more, might achieve better results than interviewers with fewer qualifications, primarily by increasing respondents' satisfaction with the interview experience. This prediction, too, is empirically testable. Designing more user-friendly questionnaires and asking questions that the intended respondents are able to answer (cf. Dillman 1978) is still another way of improving the survey experience whose effects on response and satisfaction are experimentally testable.

Besides improving the survey experience, researchers need to emphasize the importance and benefits of a particular survey to society as a whole or particular subgroups. They should also try to explain how the survey will benefit the respondent. Again, the consequences of these attempts can be assessed experimentally.

So far the suggestions for further research have focused on benefits. But it is also possible to experiment with attempts to reduce the costs of participation. For example, the burden of responding can be reduced by not asking for more detail than most respondents can provide, and by avoiding intrusive questions where possible or justifying those that

must be asked. Sometimes alternative ways of getting answers to burdensome questions (e.g., about financial or medical records) can be used, or respondents can be paid a fair rate for taking time to consult records and provide accurate information. The effects of such changes on respondent cooperation (item response) and satisfaction can be assessed experimentally.

More generally, benefit-cost theory argues that researchers need to think in terms of benefit-cost balances rather than of costs or benefits alone. For example, administrative record use potentially reduces respondent burden and improves accuracy, but it may increase privacy concerns. Is it possible to create a favorable perceived benefit-cost ratio for respondents, or for a particular respondent? Researchers may make assumptions about what benefits and costs are important to a particular target group; instead, these should be validated by means of exploratory research.

One last hypothesis may help explain the decline in survey participation over time: More surveys may make for fewer respondents. Presser and McCulloch (2010), in an as yet unpublished paper, find that the number of respondents to government surveys alone increased from about 2.6 million in 1984 to 10.2 million in 2004. The increase correlates with a drop in response rates. And perhaps overtime, reducing the number and burden of general population surveys – for example by obtaining the information in other ways, or by using designated panels of respondents – would, together with increasing emphasis on surveys' social and personal benefits, stem or perhaps reverse the secular decline in response rates that has been observed over the last three decades.

9. References

Abowd J.M. (2007) Assessing Disclosure Risk and Analytical Validity for the SIPP-SSA-IRS Public Use File Beta Version 4.1. Presented to the CNSTAT Panel on the U.S. Census Bureau's Dynamics of Economic Well-Being System, Washington, DC. January 26.

Ajzen, I. and Fishbein, M. (1980). Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, NJ: Prentice-Hall.

Bates, N., Dahlhamer, J., and Singer, E. (2008). Privacy Concerns, Too Busy, or Just Not Interested: Using Doorstep Concerns to Predict Survey Nonresponse. Journal of Official Statistics, 24, 591–612.

Couper, M.P., Singer, E., Conrad, F.G., and Groves, R.M. (2008). Risk of Disclosure, Perceptions of Risk, and Concerns about Privacy and Confidentiality as Factors in Survey Participation. Journal of Official Statistics, 24, 255–275.

Couper, M.P., Singer, E., Conrad, F.G., and Groves, R.M. (2010). Experimental Studies of Disclosure Risk, Disclosure Harm, Topic Sensitivity, and Survey Participation. Journal of Official Statistics, 26, 287–300.

Couper, M.P., Singer, E., and Tourangeau, R. (2004). Does Voice Matter? An Interactive Voice Response Experiment. Journal of Official Statistics, 20, 551–570.

Curtin, R., Singer, E., and Presser, S. (2007). Incentives in Random Digit Dial Surveys: A Replication and Extension. Journal of Official Statistics, 23, 91–105.

Dillman, D.A. (1978). Mail and Telephone Surveys: The Total Design Method. New York: John Wiley and Sons.

Dunn, L.B. and Gordon, N.E. (2005). Improving Informed Consent and Enhancing Recruitment for Research by Understanding Economic Behavior. Journal of the American Medical Association, 293, 609–612.

Fishbein, M. and Ajzen, I. (1975). Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research. Reading, MA: Addison-Wesley.

Frey, J.H. (1986). An Experiment with a Confidentiality Reminder in a Telephone Survey. Public Opinion Quarterly, 50, 267–269.

Gigerenzer, G. (2008). Why Heuristics Work. Perspectives on Psychological Science, 3, 20–29.

Groves, R.M. and McGonagle, K.A. (2001). A Theory-Guided Interviewer Training Protocol Regarding Survey Participation. Journal of Official Statistics, 17, 249–266.

Groves, R.M., Singer, E., and Corning, A.D. (2000). A Leverage-Saliency Theory of Survey Participation: Description and Illustration. Public Opinion Quarterly, 64, 299–308.

Halpern, S.D., Karlawish, J.H., Casarett, D., Berlin, J.A., and Asch, D.A. (2004). Empirical Assessment of Whether Moderate Payments Are Undue or Unjust Inducements for Participation in Clinical Trials. Archives of Internal Medicine, 164, 801–803.

Hox, J.J., deLeeuw, E.D., and Vorst, H. (1995). Survey Participation as Reasoned Action: A Behavioral Paradigm for Survey Nonresponse? Bulletin de Methodologie Sociologique, 48, 52–67.

National Research Council (1979). Privacy and Confidentiality as Factors in Survey Response. Washington DC: National Academy of Sciences.

Porst, R. and von Briel, C. (1995). Wären Sie vielleicht bereit, sich gegebenenfalls noch einmal befragen zu lassen? Oder: Gründe für die Teilnahme an Panelbefragungen. ZUMA-Arbeitsbericht, Nr. 95/04, Mannheim, Germany. [In German].

Presser, S. and McCulloch, S. (2010). The Growth of Survey Research in the United States: Government-Sponsored Surveys, 1984 to 2004. Unpublished manuscript, Department of Sociology, University of Maryland.

Reamer, F.C. (1979). Protecting Research Subjects and Unintended Consequences: The Effect of Guarantees of Confidentiality. Public Opinion Quarterly, 43, 497–506.

Schnell, R. (1997). Nonresponse in Bevölkerungsumfragen: Ausmass, Entwicklung und Ursachen. Leske + Budrich, Opladen. Available at http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-19933/Schnell1997Nonresponse.pdf [In German]

Singer, E. (2003). Exploring the Meaning of Consent: Participation in Research and Beliefs about Risks and Benefits. Journal of Official Statistics, 19, 273–285.

Singer, E. (1978). Informed Consent: Consequences for Response Rate and Response Quality in Social Surveys. American Sociological Review, 43, 144–162.

Singer, E. and Couper, M.P. (2008). Do Incentives Exert Undue Influence on Survey Participation? Experimental Evidence. Journal of Empirical Research on Human Research Ethics, 3, 49–56.

Singer, E., Couper, M.P., Zikmund-Fisher, B.J., Levin, C.A., Fowler F.J. Jr., and Fagerlin, A. (2010). The Role of Perceived Benefits and Costs in Patients' Medical Decisions.

Unpublished paper, Survey Methodology Program, Survey Research Center, University of Michigan.

Singer, E., Hippler, H.-J., and Schwarz, N. (1992). Confidentiality Assurances in Surveys: Reassurance or Threat? International Journal of Public Opinion Research, 4, 256–268.

Singer, E., von Thurn, D.R., and Miller, E.R. (1995). Confidentiality Assurances and Survey Response: A Review of the Experimental Literature. Public Opinion Quarterly, 59, 266–277.

Thaler, R.H. and Sunstein, C.R. (2008). Nudge. Yale University Press: New Haven and London.

Verheggen, F., Nieman, F., and Jonkers, R. (1998). Determinants of Patient Participation in Clinical Studies Requiring Informed Consent: Why Patients Enter a Clinical Trial. Patient Education and Counseling, 35, 111–125.

Woodcock, S.D. and Benedetto, G. (2009). Distribution-preserving Statistical Disclosure Limitation. Computational Statistics and Data Analysis, 53, 4228–4242.

Zikmund-Fisher, B.J., Couper, M.P., Singer, E., Levin, C.A., Fowler, Jr, F.J., Ziniel, S., Ubel, P.A., and Fagerlin, A. (2010). The DECISIONS Study: A Nationwide Survey of United States Adults Regarding 9 Common Medical Decisions. Journal of Medical Decision Making, 30 (Supplement 1), 20S–34S.

Received May 2010
Revised February 2011