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Discussion Of Papers At ASA Memorial Session For Seymour Sudman

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Introduction

Seymour and I had many common interests in survey methods research particularly in multidisciplinary research topics, like the cognitive aspects of survey methods and network sampling, that are at intersections of statistics, and the behavioral and social sciences. I am pleased to participate in this ASA memorial session.

Discussion of paper by Graham Kalton

In his fine, succinct overview of "Sampling Methods For Rare and Elusive Populations," Graham Kalton noted several of Seymour's contributions to sampling rare populations. Attributes that make populations rare, sometimes are sensitive conditions or behaviors that make populations hard to enumerate as well as hard to find. Seymour and I independently investigated network sampling procedures to estimate the size of rare populations that are hard to enumerate because the rare attribute represents a sensitive behavior. Compared to conventional sampling, network sampling has the potential of decreasing sampling errors by making persons with the sensitive behaviors enumerable at multiple selection units, and improving the likelihood of truthful response by providing persons with sensitive behaviors anonymity of response.

For example, in one paper (Sudman et al, 1977) Seymour compares network sampling and conventional sampling procedures to estimate the number of marijuana smokers. In the network sampling procedure, marijuana users are reported by friends and in the conventional sampling procedure, marijuana use is self reported.

This is the way the friends question was asked in the NORC survey cited in this paper:

"Think of your three closest friends. (Don't mention their names).

As far as you know, how many of them smoked marijuana during the past year?"

Compared to self reports, the marijuana use estimate based on best friends reports is one third higher, and sampling errors are about one fourth less..

Also, this paper compares the NORC survey estimates of marijuana use with those I reported for a Michigan State drug use survey (Sirken, 1975). This is version of the friends question that was asked in the Michigan State survey.

"What fraction of your close friends smoked marijuana during the past year?"

Compared to self reports, the marijuana use estimate based on friends reports is two-fifths higher and sampling errors are substantially smaller..

Though estimates of marijuana use are higher for friends than self reports in both NORC and Michigan surveys and thus more in line with expectations of drug-use experts, limitations of the data make it advisable to interpret the findings with caution. For example, the friends estimate is a biased estimate of marijuana use unless "marijuana users and their friends are the friends and the only friends of each other." It would be interesting to determine how closely network configurations of friends of marijuana users conform to the unbiasedness conditions, and how and sensitive the friends estimator is to deviations from the unbiasedness conditions.

Discussion of paper by Norbert Schwarz

Earlier research on the cognitive aspects of survey methods revealed that working memory plays a vital role in producing context effects (Sudman, Bradburn, & Schwarz, 1996). Based on those research findings, Norbert Schwarz and his associates reasoned that reductions in working memory capacities often experienced by older persons would result in young persons and older persons experiencing different context response distortions. The evidence that Norbert reported here today supports their hunch. Compared to younger persons, responses of older

persons are less prone to response distortion due to question order, and more prone to response distortion due to the order of response categories. Furthermore, Norbert shows that differences in age sensitive context effects can be substantial, and can seriously compromise age differences in reported opinions of young and older persons. This kind research that investigates survey response phenomena on the basis of how respondents' minds and brains work, and that provides feedback for improving survey data collection and analysis is precisely the kind of research on the cognitive aspects of survey methods (CASM) that the CASM Seminars I and II sought to foster (Jabine et al, 1986; Sirken et al, 1999).

Because working memory capacities of people vary at all ages, respondent's age is not the only, nor necessarily the most important, survey variable that can be seriously compromised in variable related analysis by correlations between context effects (and possibly other survey response heuristics), and working memory capacity. Since passage of the Americans with Disabilities Act, for example, disability is fast becoming an important variable in Federal surveys. Virtually all Federal health surveys count people with disabilities (Hendershot, in preparation), and work is underway to collect and publish disability labor force statistics in the Current Population Survey (Hale, in preparation), and disability crime statistics, specifically intellectual disability crime statistics, in the National Crime Victimization Survey (Rand, in preparation). Respondent differences in the use of contextual information (and other survey information) due to differences in working memory capacity could result in misleading conclusions about differences in reports of disabled and non disabled persons.

Especially because Norbert's findings have implications for disability-related analysis, I regret that the reading span procedure administered to older adults in his laboratory experiment to assess working memory capacity (Knauper, Schwartz, Fritsch, unpublished) had also been administered to young adults. If that had been done, and if reading span scores had varied among the young adults recruited for the experiment, context effects associated with the reading span capacities of respondents could have been assessed at all ages.

Discussion of the paper by Roger Tourangeau

Roger Tourangeau presents selected findings from the survey literature on the quality of response to sensitive questions.. Perhaps, a better title than "Asking Nosey Questions" would have been " Answering Nosey Questions" because his presentation relates more to

the likelihood of truthful response (LTR) to nose questions than to ways of asking nose questions. Roger's paper compares the LTRs to nose questions by mode of data collection and by sensitivity of nose questions. Generally, the LTRs are inverse to the sensitivity of questions and commensurate with privacy afforded by the data collection mode. I'll refer to this generalization as the behavioral theory of survey response to sensitive questions.

About a decade ago, Gordon Willis, Gad Nathan and I (Willis et al, 1994) conducted a series of laboratory experiments to investigate the cognitive aspects of answering sensitive survey questions. Our cognitive theory of response to sensitive questions - an adaptation of classical utility theory - loosely stated is: " The LTRs to sensitive questions are inverse to respondents' perceptions of the risks of truthful response disclosure and of the losses due to truthful disclosure". The basic difference between behavioral and cognitive theories of answering sensitive questions is that the task is viewed from decision-making perspectives of survey takers and respondents respectively by the former and the latter.

Here is the gist of the protocol of our laboratory experiment (Sirken et al, 1991) to compare the predictability of the LTR based on the behavioral and cognitive theories of survey response to sensitive questions. Four survey vignettes, two data collection modes (anonymous / confidential) and two drug use question (cocaine / marijuana), were independently administered to each of forty six laboratory subjects. Imagining themselves to be vignette respondents, laboratory subjects provided three judgements for each survey vignette:

- 1) the LTR (i.e. likelihood that vignette respondent truthfully answers the drug-use question),
- 2) the vignette respondent's perceptions of disclosure risks in truthfully answering the drug-use question,
- 3) the vignette respondent's perceptions of the disclosure consequences (good and bad) in truthfully answering the drug-use question.

To assess the behavioral theory, LTRs were averaged separately for the four types of survey vignettes with the results shown below.

Data collection mode	Type of drug use	
	Cocaine	Marijuana
Anonymous	56%	67%
Confidential	31%	46%

As expected, the average LTR is highest, 67%, when marijuana use is reported anonymously, and the average LTR is lowest, 31%, when cocaine use is

reported confidentially. The correlation coefficient is $r^2 = .174$. To assess the LTR predictability of the cognitive theory, a least square linear multiple regression equation was constructed based on the respondents' perceptions of disclosure risks and consequences as reported by laboratory subjects. The correlation coefficient is $r^2 = .190$.

Though LTR predictability is virtually the same for the behavioral and cognitive theories, and unfortunately low for both, I'm not discouraged. To quote the last sentence in Seymour's POQ article that was cited earlier: "Although the data are limited, the results are encouraging enough to make further testing desirable".

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