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KEYWORDS: Response errors, interviewer effects, cognitive aspects of survey methodology

INTRODUCTION

Important components in understanding response errors in surveys are learning how respondents comprehend questions and how interviewers handle situations where respondents' definitions do not match survey definitions. In most large surveys, survey question wording and question order are standardized and interviewers are trained to be neutral, nondirective and nonbiasing extensions of the survey instrument. The goal of this standardization is to present the same stimulus to all respondents and the underlying assumption is that as long as questions are presented in this manner they will be heard in the intended way and will stimulate valid responses.

Recent work has examined the validity of the standardization assumption by exploring the cognitive stages associated with responding to survey questions (see Martin, 1983; Tourangeau, 1984). For example, respondents must first interpret the question, then recall relevant facts, formulate an answer, and finally give a verbal response. Errors result if respondents misunderstand the question or key concepts, do not know or cannot recall the needed information, or prefer to hide or distort information.

Research on the Current Population Survey. Several Federal agencies are now applying some of the theories and techniques of cognitive psychology in research on questionnaires used in the large national surveys (e.g., Bureau of Labor Statistics, 1986; Fienberg, et al., 1985; Holt and Lessler, 1987). As part of this trend, questionnaire research using cognitive laboratory techniques is now a component of a long-term research program initiated by the Bureau of Labor Statistics (BLS) and the Bureau of the Census to redesign the Current Population Survey (CPS).

The CPS is the national survey which is used to obtain monthly statistics on employment, unemployment and related subjects on the civilian population aged 16 and over. The CPS uses a national multi-stage stratified probability sample of households. Households are interviewed on a monthly basis and one member of the household is asked to respond for all other household members.

A major objective of the CPS questionnaire research is to gain more knowledge about the measurement properties of the current questionnaire, and to use this knowledge to design an improved questionnaire. The CPS does not define labor force concepts for respondents but instead relies on their understanding of the meaning of concepts such as "work," "job," "business," and "looking for work." Although these are familiar, everyday words, it is not clear that their meanings are simple and uniformly shared across the population. Even if shared meanings exist, it is unlikely that the common usage of these terms is the same as the precise survey meanings. (See Rothgeb, 1982; Bailer and Rothwell, 1984;

BLS, 1986; Martin, 1987; Campanelli, Martin, and Creighton, 1989 for discussions of measurement problems with labor force concepts.)

The impact of respondent comprehension. Belson (1981) observed that respondents may interpret survey concepts more broadly than the researcher has intended or more narrowly. With respect to the CPS, we thought that the impact of these two classes of disagreements would be differentially felt. Cases where respondents' definitions are broader than the survey definitions, should ideally be handled by the interviewer. For example, if the respondent mentions unpaid volunteer work, which is not included under the CPS definition of work, the interviewer can probe to establish whether any paid work was done. Cases where respondents have stricter definitions than the survey definitions, however, are potentially left unchecked. For example, a mother may not report informal work her teenage son has done mowing a neighbor's lawn for pay, although this falls under the CPS definition of work. In such a case, the interviewer has no way of knowing that this activity has not been reported. The result would be underreported employment for the teenage son. Indeed, just this type of error was recognized as a possible source of bias in CPS measures of youth labor force status (see National Commission on Employment and Unemployment Statistics, 1979, pp. 143-4).

The impact of interviewer effects. When respondents have broader definitions than the survey definition, the interviewer should ideally come into play and handle the situation appropriately. This can only be done adequately if interviewers themselves understand survey concepts and apply survey definitions correctly. In recognition of the role of the interviewer in the survey process, CPS interviewers receive extensive training and supervision. In addition, interviewers are observed periodically during actual interviews and a sample of their respondents are reinterviewed.

Numerous studies have been conducted to date which examine the role played by the interviewer in the response process. These include studies on interviewer expectations and attitudes (e.g., Sudman et al., 1977), studies on interviewer characteristics (e.g., Schuman and Converse, 1971), and studies on interviewer behavior (e.g., Cannell, Miller, and Oksenberg, 1981).

Intuitively, one would expect more experienced interviewers to be better interviewers. Some research suggests that this may not always be the case. For example, Fowler and Mangione (1984) concluded that without direct supervision of the question and answer process, some interviewers' skills may deteriorate over time. Another example is a mock interviewing study using CPS interviewers conducted by Rustemeyer (1977). Her results suggest that "while the experienced interviewers made fewer errors than did new ones . . . they were much more likely to alter the scope of the question" (p. 6). Possibly,

this occurs because CPS concepts are somewhat vague and instructions do not cover all situations, hence interviewers develop their own interpretations of what is intended.

The CPS concept of work. The CPS counts all persons as employed who were working during the week of the 12th. The official definition of work includes only work for pay or profit, although this may take many forms such as payment in-kind. Volunteer work, housework, and school work are not covered under the official definition. (See Bureau of the Census, 1987, for instructions to interviewers on what activities should be counted as work.)

The determination that a person was working is based, in part, on the respondent's answer to the questions, "What was (NAME) doing most of LAST WEEK: working, keeping house, going to school, or something else?" and "Did (NAME) do any work at all LAST WEEK, not counting work around the house?"

Over the years, questions have been raised about the classification of part-time or casual work, unpaid family work, and work in the underground economy (see President's Committee to Appraise Employment and Unemployment Statistics, 1962; National Commission on Employment and Unemployment Statistics, 1979; McDonald, 1984). Irregular, illegal, or marginal types of work activities may be underreported in the CPS, in part, because people do not think of them as "work." Indeed, some classes of casual work were mentioned by CPS interviewers as sources of underreported work activities (see BLS, 1988 for a full description of an interviewer debriefing designed to investigate interviewers' perceptions of respondent comprehension and behavior.) In the study, CPS interviewers pointed out that the phrase, "not counting work around the house" in the CPS question may further discourage reporting of true work activities which occur at home, such as self-employment or preparation for setting up a business.

The CPS concepts of job and business. Persons "with a job (or business), but not at work" are counted among the employed. For the most part, whether or not a person has a job or business (from which they are temporarily absent) is based on the respondent's answer to the question, "Did (NAME) have a job or business from which he/she was temporarily absent or on layoff LAST WEEK?"

The CPS interviewer manual (Bureau of the Census, 1987) states that a job exists only "when there is a definite arrangement for regular work for pay every week or every month." Several components of this definition are vague and subjective which complicates interviewers' tasks. The current operational definition of a business states that a business exists when at least one of the following three conditions is met: 1) machinery or equipment of substantial value is used in conducting the business, 2) a place of business is maintained, 3) there is some advertisement of the business or profession. These criteria are very broadly defined. However, here again respondents are never informed as to what the official definition is and they may not share the same interpretation of the concept.

The CPS concept of looking for work. The concept of looking for work plays an important role in the classification of persons as

unemployed or as not in the labor force. Determination that a respondent is looking for work is based on two CPS items, "Has (NAME) been looking for work during the past 4 weeks?" and (IF YES) "What has (NAME) been doing in the last 4 weeks to find work?"

About one-fifth of experienced CPS interviewers (BLS, 1988) indicated that "most of the time" respondents report themselves or others to be looking for work "because they feel it is expected that certain people should either be working or looking for work." They also mentioned the fact that respondents who are truly looking for work don't mention all methods because they don't think of some as bona fide job search strategies.

METHOD

In the first phase of research on the CPS, several approaches have been used to identify conceptual ambiguity in the questionnaire. These include in-depth interviews using cognitive laboratory techniques (e.g., Palmisano, 1989) and the interviewer debriefing study cited above (BLS, 1988) which examined interviewers' perceptions of respondent comprehension and behavior.

The current paper focuses on a respondent debriefing study and an interviewer knowledge of concepts study. These two studies focus on the comprehension stage of the response process. The main purpose of the Respondent Debriefing Study was to offer comparison data to the laboratory data (Palmisano, 1989) through using actual CPS interviewers rather than researchers to gather the data, a field setting rather than a laboratory setting, and a large disbursed sample^{2/} rather than a small purposively selected sample of laboratory volunteers. The main purpose of the Interviewer Knowledge of Concepts study was to illuminate the extent of interviewers' comprehension of the intended survey definitions.

Respondent Debriefing Study. This study was conducted in July through December of 1988 at the Census Bureau's telephone interviewing facility in Hagerstown. A standardized debriefing questionnaire was administered to all CPS respondents interviewed by interviewers at the facility after they had completed the last of four monthly CPS interviews. The response rates for the CPS interview were high (greater than 97 percent), yielding 2,298 respondents eligible for the debriefing interview. Ninety-eight percent of these initially agreed to participate in the debriefing, however, only 92 percent completed the entire debriefing interview.

In one section of the debriefing questionnaire, respondents were asked to classify hypothetical situations in terms of their own understanding of the labor force concepts of "work," "job," "business," and "looking for work." All of the vignettes pertained to ambiguous or problematic classification situations. Using computer assisted telephone interviewing we tailored which subset of debriefing questions a particular respondent was asked based on answers he/she had already given in the CPS interview (see also fn. 3). For example, respondents were asked debriefing vignettes related to the concept of "looking for work," only if they had been asked the CPS "looking for work" questions either about themselves or for another household member.

Interviewer Knowledge of Concepts Study. This study was conducted in March of 1989 during CPS interviewers' biannual group training sessions. The entire CPS field interviewing staff were included. A small proportion of interviewers (4 percent), however, did not return a questionnaire. This resulted in 1,479 completed questionnaires.^{4/} Nearly half of these interviewers (47 percent) had been working on the CPS for over 5 years and more than 89 percent had some college education or had completed college.

Interviewers were instructed to complete an exercise which contained the same 15 vignettes^{5/} as were used in the Respondent Debriefing Study. For each vignette, interviewers were required to determine how the situation described should be classified according to the CPS definition (without the aid of their manuals).

RESULTS^{6/}

The vignette column of Table 1 gives the exact wording of the vignettes used to measure the concepts of "work," "job," "business," and "looking for work" in the Respondent Debriefing Study. For the work vignettes, for example, respondents were asked to "please tell me whether or not you think the person should be reported as WORKING last week." As shown in the CPS Definition column of Table 1, some of these vignettes included activities which the CPS does include in the conceptual definition and others represent activities that the CPS does not include in the concept.

Results in the respondent column of Table 1 show that, for most situations, the majority of respondents correctly classified the situation as "work" or "non-work," "job" or "non-job," etc., as defined by the CPS. Although the majority of respondents answered correctly, it is important to point out that for each vignette, large minorities of respondents gave incorrect answers in terms of the CPS definition. With respect to "work," for example, many respondents (38 percent in one case, see item A) included non-work activities and many (36 to 50 percent, see items B, C, & E) excluded bona fide work activities. For two of the examples, vignettes G (working when needed)^{7/} and L (talking with friends and relatives), the majority of respondents gave incorrect answers in terms of the CPS definition.

Generally, the interviewers did much better than the respondents, which is reassuring. However, the data in the interviewer column of Table 1 indicate certain problem areas for interviewers. It should be kept in mind, however, that interviewers were not given access to their manuals during the exercise. In real-life situations, interviewers are able to refer to their manuals for clarifications whenever ambiguous or uncommon labor force arrangements are encountered.

It appears that interviewers had a fairly good understanding of the "work" concept. Only in the case of vignette E, which describes activities to set up a business, did a large minority (34 percent) give an incorrect answer. This is compared to the situation where substantial minorities of respondents (36 to 50 percent) gave incorrect answers for four of the five "work" vignettes.

The "job" vignettes appeared problematic for interviewers. For one of the two vignettes,

they did about as poorly as respondents (see item G).^{8/} For the other "job" vignette regarding payment in kind (item F), 37 percent of interviewers incorrectly excluded this bona fide job activity.

There seems to be less interviewer confusion with the "business" vignettes. These are also situations that respondents appeared to understand well. Only one business vignette (item J) posed a problem. For this vignette, 23 percent of the interviewers (and 37 percent of respondents) incorrectly included a non-business activity as a business.

Finally, we note that the "looking for work" concept posed a problem for both interviewers and respondents. Over a third of interviewers (and of respondents) would report looking at newspaper ads as "looking for work" even though this activity is explicitly ruled out by the interviewer's manual. On the other hand, 16 percent of interviewers (and 61 percent of respondents) would not count talking with friends and relatives, even though CPS does include this as a legitimate job search method. The percentage of interviewers who failed to correctly classify this vignette is particularly troubling in that it is one of the response options written on the questionnaire.

The data in Table 1 point to both the strengths and weaknesses in the CPS labor force classification scheme. Cases in which respondents' definitions are too broad can ideally be handled by interviewers, assuming interviewers understand the survey concepts. Thus, it does not matter much that nearly 40 percent of respondents (see vignette A) would incorrectly report volunteer work as working; virtually all the interviewers know to rule out such reports. However, vignette K also presents a situation in which many respondents' definition is broader than the survey definition, but in this case, many interviewers (over third) also define "looking for work" too broadly. In this type of situation, we might expect to find many erroneous reports of "looking for work" because interviewers would not have screened out invalid reports.

A second type of situation is the case where respondents' concepts are too narrow. In this case, interviewers' knowledge of the rules may not make much difference. For instance, almost all interviewers know that casual work for pay (vignette C) should not be reported as work, but this knowledge may not help if they are unaware of the activity because respondents fail to report it. Finally, we note the most problematic situation of all, in which both interviewers and respondents define the concept too narrowly. In situations such as those illustrated in vignettes E (setting up own business) and F (pay in-kind) we would expect to find high rates of underreporting. Large minorities of respondents incorrectly say the activity should not be reported; even if a respondent did report it, the report has a good chance of being eliminated by an interviewer, many of whom also apply too stringent a rule.

Respondent characteristics and CPS concepts. Analyses suggests that respondents' definitions depend on their characteristics and experience. The major predictors of respondents'

understanding of the various labor force concepts were their age and education. In general, race and sex were not good predictors. A full discussion of these findings are available elsewhere (see Martin, Campanelli and Fay, 1989 and Campanelli, Martin, and Creighton, 1989).

Interviewer characteristics and CPS concepts. With the exception of vignette K, there was no relationship between CPS interviewers' knowledge of concepts and their level of education. As shown in the last column of Table 1, however, there was a significant positive association for 10 of the 12 vignettes between interviewers' knowledge and their years of experience as a CPS interviewer.

Interviewers' knowledge of concepts also varied by regional office. This was true for 4 of the 12 vignettes, even after controlling for the effect of years of experience. While there were wide variations in the percentage of interviewers responding correctly between regional offices (e.g., ranges of 30 percentage points), no one regional office was always better or worse than another. Some of the regional differences could be a function of particular types of work arrangements being more common in some areas of the country than others, with interviewers in those areas being more knowledgeable about the work arrangements unique to their area.

DISCUSSION

The results of the Respondent Debriefing Study indicate variability in how CPS respondents interpret the basic CPS concepts of "work," "job," "business," and "looking for work." This casts some doubt on the quality of data obtained from respondents whose definitions differ substantially from the survey definitions. Although these data suggest the potential for bias, we do not know the actual effect of these conceptual problems on CPS data and estimates.

The results of the Interviewer Knowledge of Concepts Study suggest that in some conceptual areas, interviewers do not have a thorough understanding of the CPS definitions as they apply to ambiguous, problematic situations. This has implications for the quality of the data in the CPS where interviewers may compound, rather than alleviate, respondent misunderstandings. From this study it is also evident that years of CPS experience play a large role in the increased knowledge of CPS concepts.

Our results also support critics, such as Jordan and Suchman (1987), Mishler (1986), and others, who have challenged the validity of the assumption made in surveys that standardized question presentation yield standardized question meanings. It is somewhat ironic that we criticized standardized questions by asking standardized questions. At the least, this requires us to acknowledge that our debriefing questions themselves may be subject to various unintended interpretations. However, our studies suggest that it is possible to use surveys to directly examine the meanings of survey questions, in ways that are not commonly done.

NOTES

^{1/}This paper reports the general results of research undertaken by Census Bureau staff. The views expressed are attributable to the authors and do not necessarily reflect those of the Census Bureau. The authors gratefully

acknowledge the helpful comments of Susan Lavin and reviewers, Larry Cahoon and Irwin Schreiner. Any errors are the authors'.

^{2/}The data from the Respondent Debriefing Study represent part of a probability sample. It is not the authors' intention, however, to generalize from the sample data to the U.S. population. There are several reasons why this is not directly feasible. The Respondent Debriefing Study sample consisted of all households in the CATI phase II sample (Bushery, 1986) receiving their fourth monthly interview at the Hagerstown CATI facility. The CATI phase II sample was not drawn to be "nationally representative." In addition, the data collection methodology employed a combination of CATI and field interviews. Households which were not interviewed at the Hagerstown CATI facility during their fourth month in sample (and therefore excluded from the Respondent Debriefing Study) include those which did not have a telephone and those which were judged as difficult to enumerate. The impact of these exclusions from the Respondent Debriefing Study sample is unknown.

^{3/}Due to a conceptual error in the early phases of CATI programming, approximately 100 respondents who had indicated that they were working, were erroneously excluded in the month of July from receiving the "work" vignettes.

^{4/}The data obtained through the Interviewer Knowledge of Concepts Study reflect the conceptual understanding of only the population for whom completed questionnaires were received.

^{5/}Three of the fifteen vignettes proved to be problematic and have been excluded from the analyses reported in this paper. Closer examination of the vignettes revealed that three examples may have been a little too ambiguous. Additional details should have been supplied to make it clear what the correct interpretation should have been.

^{6/}For these analyses, missing data consists of respondents who refused to participate in the debriefing, those who broke off the debriefing interview, interviewers who did not return a questionnaire, as well as, item nonresponse due to refusals or don't knows and responses of "depends." In addition, as described in fn. 3, approximately 100 cases are missing for the "work" vignettes for the respondent data.

The item nonresponse rates (including don't knows and refusals) for the Respondent Debriefing (among respondents who completed the entire interview) and for the Interviewer Knowledge of Concepts Study questions were very small, e.g., less than 3 percent on any given question.

Respondents and interviewers were also given the opportunity to answer "depends" to any of the vignettes. These figures were larger for interviewers than for respondents. From 1 to 3 percent of respondents chose the depends category on any particular vignette and from 1 to 9 and in one case 18 percent of interviewers chose "depends."

^{7/}It should be kept in mind that the "job" concept is only relevant for those individuals who were not at work last week. Having a job (from which one was absent last week) does not include "as needed" work situations.

^{8/}This may have been due, in part, to the wording of this particular vignette. A large

percentage of interviewers (18 percent) chose the depends category for this vignette. This suggests that the item may have been a little too ambiguous and that a better measurement would have been obtained if additional details had been supplied for clarification.

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TABLE 1
 Respondents' Understanding of the Labor Force Concepts

CPS Def.	Vignette	% Respondents	Interviewers	Interviewers' Knowledge by Years of CPS Experience ¹						
				<1	1-2	3-4	5-9	10-15	15+	
I asked you a question about WORKING last week. Now, I'm going to read a list of examples. After each example, please tell me whether or not you think the person should be reported as WORKING last week.										
(NON-WORK)	A. Last week, Susan only did volunteer work at a local hospital. (Do you think she should be reported as WORKING last week?)	Yes	38	4	9	7	3	1	0	1
		No	62	96	91	93	97	99	100	99
		n	1,973	1,458	314	200	230	286	232	157
(WORK)	B. Last week, Amy spent 20 hours at home doing the accounting for her husband's business. She did not receive a paycheck. (Do you think she should be reported as WORKING last week?)	Yes	50	83	67	78	86	88	94	96
		No	50	17	33	22	14	12	6	4
		n	1,977	1,324	294	190	211	256	203	132
(WORK)	C. Sam spent 2 hours last week painting a friend's house and was given 20 dollars. (Do you think he should be reported as WORKING last week?)	Yes	64	93	87	92	95	96	96	93
		No	36	7	13	8	5	4	4	7
		n	1,976	1,395	297	200	220	270	218	151
(NON-WORK)	D. Laura earned some money last week by donating blood. (Do you think she should be reported as WORKING last week?)	Yes	14	8	10	8	7	7	9	6
		No	86	92	90	92	93	93	91	94
		n	1,980	1,436	305	202	230	277	226	159
(WORK)	E. Last week, Sarah cleaned and painted the back room of her house in preparation for setting up an antique shop there. (Do you think she should be reported as WORKING last week?)	Yes	59	66	37	46	56	84	91	94
		No	41	34	63	54	44	16	9	6
		n	1,949	1,348	284	190	208	264	214	152
Here is a different list of examples. For these, please tell me whether you think each of the following people should be considered as having a JOB.										
(JOB)	F. Frank lives in a room in a church and is given free room and board in exchange for acting as the church's janitor. (Would you consider him as having a JOB?)	Yes	76	63	62	70	64	61	56	69
		No	24	37	38	30	36	39	44	31
		n	1,219	1,415	308	197	224	277	218	152
(NON-JOB)	G. Harry earns money as a repairman for a small appliance store. He only works when there are appliances to be repaired. (Would you consider him as having a JOB?)	Yes	90	74	87	84	86	77	51	40
		No	10	26	13	16	14	23	49	60
		n	1,216	1,189	269	176	190	223	175	126
For these next few examples, I'd like your opinion as to whether these people should be considered as having a BUSINESS.										
(BUSINESS)	H. Jean baby-sits local children at her home and advertises in the newspaper. (Would you consider her as having a BUSINESS?)	Yes	92	97	97	96	95	98	99	100
		No	8	3	3	4	5	2	1	0
		n	1,212	1,463	317	201	230	286	230	160
(BUSINESS)	I. Ted makes money by occasionally painting houses. He always leaves a sign in front of the house he is painting to advertise. (Would you consider him as having a BUSINESS?)	Yes	94	91	92	89	94	90	89	92
		No	6	9	8	11	6	9	11	8
		n	1,230	1,419	301	194	226	278	226	157
(NON-BUSINESS)	J. Bob earns some money after school by mowing neighbors' lawns. He uses their mowers. (Would you consider him as having a BUSINESS?)	Yes	37	23	25	28	28	23	19	15
		No	63	77	75	72	72	77	81	85
		n	1,187	1,418	305	196	227	274	227	156
Please tell me whether or not you think each of the following activities should be reported as LOOKING FOR WORK.										
(NOT LOOKING FOR WORK)	K. During the past 4 weeks, George has occasionally looked at newspaper ads. He hasn't yet found any jobs in which he's interested. (Do you think he should report that he is LOOKING FOR WORK?)	Yes	36	37	57	38	38	30	25	21
		No	64	63	43	62	62	70	75	79
		n	1,122	1,413	308	196	223	277	223	156
(LOOKING FOR WORK)	L. During the past 4 weeks, Sandy talked with friends and relatives about job openings. (Do you think she should report that she is LOOKING FOR WORK?)	Yes	39	84	80	79	81	87	90	87
		No	61	16	20	21	19	13	10	13
		n	1,113	1,384	291	192	224	271	220	155

¹ For A: $\chi^2 = 48.00$, $df = 5$, $p < .001$; For B: $\chi^2 = 99.62$, $df = 5$, $p < .001$; For C: $\chi^2 = 26.76$, $df = 5$, $p < .001$; For D: $\chi^2 = 4.59$, $df = 5$, $p = .468$; For E: $\chi^2 = 305.98$, $df = 5$, $p < .001$; For F: $\chi^2 = 11.33$, $df = 5$, $p < .05$; For G: $\chi^2 = 172.21$, $df = 5$, $p < .001$; For H: $\chi^2 = 12.88$, $df = 5$, $p < .05$; For I: $\chi^2 = 5.23$, $df = 5$, $p < .389$; For J: $\chi^2 = 12.16$, $df = 5$, $p < .05$; For K: $\chi^2 = 92.43$, $df = 5$, $p < .001$; For L: $\chi^2 = 16.99$, $df = 5$, $p = .005$