A Review of CAPI-Effects on the 2002 General Social Survey

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Introduction

The 2002 General Social Survey (GSS) was conducted using computer assisted personal interviewing (CAPI) instead of the paper and pencil interviews (PAPI) used on the 1972-2000 GSSs (Davis, Smith, and Marsden, 2003). Every effort was made to make the CAPI and PAPI versions equivalent. Question wordings were unchanged, printed show cards were used with CAPI as with PAPI, and certain sections were done by self-completion under both modes (either with self-completion questionnaires on PAPI or by having respondent type responses into the laptops on CAPI).

Consistent with past research the comparison of the CAPI 2002 figures to past PAPI GSSs found highly comparable results (Banks and Laurie, 2000; Couper and Rowe, 1996; Couper and Burt, 1994; Hippler, Schwarz, and Meier, 1990; Lepkowski, Sadosky, and Weiss, 1998; Lyberg and Kasprzyk, 1991; Thornberry, Rowe, and Biggar, 1991; Tourangeau and Smith, 1996 & 1998; Wright, Aquilino, and Supple, 1998). Of the over one thousand items on the GSS, only seven notable differences were detected. These involve: 1) DK and no answer codes, 2) the enumeration of household members, 3) the ages of household members, 4) ethnicity, 5) date of interview, 6) adult sexual partners, and 7) relationship to sexual partners. The nature and cause of these differences are discussed below as well as measures to deal with the mode differences.

DKs and No Answers

Missing values are handled differently on CAPI than on PAPI. First, skipping is handled automatically on CAPI. For example, in CAPI a married person is asked the follow-up item on marital happiness and unmarried people are automatically skipped to the next applicable item. In PAPI interviewers must keep in mind or recheck marital status when they come to the marital happiness item and correctly ask or skip it. Since skips may depend on several previous questions and the screening questions were often asked long before the follow-up items, this process is prone to error. As established in earlier studies, CAPI proved to be much more accurate in administering skip questions than PAPI was. As the figures below show, no answers to screened question resulting from wrong skips and other reasons were much more common on PAPI than CAPI:

GSS ITEMS[1]	Average Number of No Answers	
	1998-2000	2002
DIVORCE	22.5	0
WIDOWED	127.5	0
HAPMAR	8.5	0
WEEKSWRK	23.5	3

[1]These are GSS mnemonics. See Davis, Smith, and Marsden, 2003.

PARTFULL	59.5	6
WKSUB	30.0	2
PISTOL	11.5	0
ROWNGUN	8.0	0
AGEKDBRN	30.0	9
PRES96	35.0	19
DENOM	31.0	17
DENOM16	36.5	20

Second, Don't Knows and No Answers were captured differently on CAPI and PAPI. On CAPI there are two reserved function keys for these codes (F8 for Don't Know and F9 for Missing). On PAPI Don't Know is a precoded, but unread, response option that appears as an "8" in the list of response options (or 98, 998, etc. for multi-column variables). Missing or No Answer is not used by PAPI interviewers, but is assigned by data entry coders when no response is recorded, the recorded answer is unreadable, or otherwise no codeable response is discernable.

These differences led to fewer DKs being given on CAPI than PAPI. In 48 of 49 variables examined the DK levels in 2002 were lower than the average levels in 1998-2000. The means were 2.6% in 2002 vs. 4.4% in 1998/2000.

It is likely that interviewers find the integrated, DK responses on PAPI more cognitively accessible because it is explicitly offered and perhaps more acceptable as a legitimate response since it is physically located along with the other response options. While the F8 response is just as accessible (single key stroke or mark needed in either case), CAPI interviewers may be less inclined to use it.

This impact can be demonstrated by looking at 10 GSS items in 2002 which did have a precode "DK" response (actually "no opinion," "not sure," or "undecided"). In 8 cases 2002 DK levels were above the 1998/2000 figures (on average 6.1% in 2002 vs. 4.9% in 1998/2000) and about 92% of the DKs in 2002 came from the pre-coded response category vs. only 8% from the F8 key. These results strongly suggest that it was the physical presence of the Don't Know response that made difference in Don't Know levels.

Finally, a special DK issue arose for the two items on who one would have voted for president in 1996 and 2000 among non-voters (i.e. "Who would you have voted for, for President, if you had voted?"). In the PAPI version the response options besides the main candidates were "Other" and "DON'T KNOW/CAN'T REMEMBER"). In CAPI "Other" appeared as before and Don't Know was handled by the standard F8 key. CAPI got more mentions of "Other" and fewer mentions of Don't Know than had been typical under PAPI. In 1998 and 2000 there was an average of 49.5 "Other" and 178.5 Don't Know on the 1996 voting item, while in 2002 there were 127 "Other" and 73 Don't Know. The 2000 voting item was asked for the first time in 2002, but its levels of "Other" (124) and Don't Knows (42) differed from other first time readings for the 1992 or 1996 elections in earlier GSSs in a similar manner. The reason is probably that under PAPI "Can't Remember" was explicitly included with "Don't Know",

but under CAPI there was no mention of such responses. It appears that many of the "Can't Remember" were coded under "Other" rather than Don't Know.

While it would be possible to code DKs as a precoded, but unread, response on CAPI, as they are in PAPI, this would be counter to NORC general protocol for handling DKs in CAPI surveys.

Enumeration of Household Members

The 2002 GSS found fewer household members than expected. The average for 1998 and 2000 combined (2.5) was higher than in 2002 (2.3)(prob.=.000). However, there was no statistically significant difference in number of adults (1.82 in 1998-2000 vs. 1.79 in 2002; prob.=.133). The shortfall was among teens, 13-17 (0.19 in 1998-2000 vs. 0.14 in 2002, prob.=.000), preteens, 6-12 (0.28 vs. 0.21, prob.=.000), and babies, 0-5 (0.21 vs. 0.18, prob.=.000). Another way of looking at this is that household size in 2002 was 92.8% of the expected level, adult population was 98.5% of expected, babies were 84.5%, preteens, 73.5%, and teens 71.6%. The shortfall of children can also be confirmed by an analysis using the number of children ever born variable (CHILDS). In 1998/2000 and 2002 the reported number of children was exactly the same (1.81). However, if we look at the number present in the household (from the HEF) controlling for the number of children even born and respondent's age, this shows a shortfall in 2002 in number of enumerated children in the household:

Respondent's Age	Mean # of Children Ever Born	Mean # in Household less than 18	Less than 18/ Children Born
1998-2000			
20-29	0.674	0.677	1.00
30-39	1.563	1.259	0.81
40-49	1.864	0.964	0.52
2002			
20-29	0.748	0.622	0.83
30-39	1.426	0.945	0.66
40-49	1.888	0.806	0.43

For example, in 1998/2000 essentially all of the reported births among those 20-29 are accounted for in the HEF counts, but in 2002 only 83% are. Similarly, the number of people less than 18 among respondents 30-39 and 40-49 is lower in 2002 than one would predict based on the 1998/2000 figures.

Household size is determined from a household enumeration form (HEF) which lists all members of the household. Since the HEF is

often filled out while interviewers are standing at the door, it was not desirable to have a CAPI only version of the HEF. A hard copy version would facilitate such data collection. However, it was desired to use a CAPI HEF to both help select the respondent and allow for the capture of the HEF data. These two goals were handled by having a simplified version of the HEF appear in a hardcopy, Short Screener Questionnaire (SSQ) and a full version of the HEF appear in CAPI. Interviewers used the SSQ to ascertain who lived in the household and make an initial determination of who the respondent was. Who the random respondent was was then confirmed by the CAPI program once the full HEF was data entered.

While the instructions for listing household members indicate that all people of all ages are to be enumerated and these instructions were the same in PAPI and CAPI, the 2002 SSQ in other ways placed more emphasis on determining who the respondent was than the earlier PAPI HEF. First, it did this by only asking for the names and ages of household members and whether they are temporarily away. The full HEF also asks about each person's relationship to householder, relationship to spouse of householder (if any), gender, and marital status. This probably helps to convey the impression that the real interest is in figuring out who the respondent is.

Second, the additional questions asked on the PAPI HEF version (relationship, gender, marital status) may have led to more careful and complete enumeration. As one described initially enumerated household members in greater detail, this may have triggered the recall of missed persons.

Third, the PAPI HEF's instructions for enumerating additional people are stronger than the SSQ's. The PAPI HEF includes the following items:

> 5C. Now, who else lives here? _____
>
> 6. Have we forgotten anyone such as babies or small children, roomers, people who usually live here, but are away temporarily - on business trips, vacations, at school, temporarily in a hospital, and so on?
>
> Yes....(LIST ADDITIONAL PEOPLE ON ROWS C-J BELOW...1
> No.....(Go to Q. 7).....2

The SSQ under Q. 5 has the following:

> PROMPT: Now, who else lives here?
>
> PROMPT: Have we forgotten anyone? Such as babies or small children, roomers, people who usually live here, but are away temporarily - on business trips, vacations, at school, temporarily in a hospital, and so on?

While covering the same ground, prompts are easier to miss or ignore than questions are. Asking questions is mandatory and

includes yes/no responses to indicate that they were asked.

Finally, the emphasis on respondent selection is re-enforced by instructions. The instructions for the SSQ note that the HEF is "the document that determines who is living in the housing unit (HU), and of those people, who your respondent will be." The Field Interviewer Training Manual states, "The overall purpose of the Household Enumeration Form (HEF), is to select your respondent!"

The change in format and instructions probably reduced the diligence of interviewers in fully enumerating the household and the undercounting of children (who are not potential respondents). While this was a change occurring because of the switch to CAPI, it did not directly involve the laptop or the CAPI program since the shortfall of children occurred on the hardcopy SSQ and was merely retained and captured by the later CAPI data entry.

Training material and instructions on the SSQ will be modified to emphasize that the full and accurate listing of all household members is a crucial purpose of the HEF.

Age of Household Members

The GSS selects respondents using a Kish table. The procedure is first to list the names, ages, and certain other information for all household members in the HEF and then to relist those members 18+ in a summary box from oldest to youngest adult in descending order. On the PAPI GSS the HEF and Kish tables are on succeeding pages of the questionnaire and selection of the eligible respondent is determined by the interviewer following the instructions in the case-specific label that is manually pasted by the interviewer in the Kish Sample Table besides the summary box. That label indicates who should be the respondent. For example, it says "If 2 persons listed in summary box choose person on line no. [1/2]." For half the labels "1" is inserted and for half the labels "2" is indicated. Similar instructions exist for households with more than 2 adults.

On the CAPI the HEF and summary box information are collected on a separate hardcopy form (the SSQ) and then this information is entered into the CAPI program to automatically select the respondent in a manner analogous to the procedure described above. Since the CAPI program could not deal with missing, ambiguous, or qualitative age information, the following, new instructions were given to interviewers:

> IF INFORMANT WILL NOT GIVE ACTUAL AGE, GET RELATIVE AGE. ASK, "WHO IS YOUNGEST?" YOUNGEST IS "200", NEXT YOUNGEST IS "201", NEXT YOUNGEST IS "202", ETC. (**IMPORTANT**: USE REAL AGES OR THE 200 SERIES **NOT BOTH**.)

A more extended set of similar instructions appeared in the Field Interview Training Manual (See Appendix 1).

While facilitating the computerized selection of respondents, these instructions deemphasized the recording of exact age resulting in more item non-response on age. In 2002 the 200 series

was used for the ages of 3% of people enumerated in the HEF. After cleaning using the SSQ and respondent's age, the missing data on age was reduced by 50% to 1.5%.[2] This was still higher than the final missing data under PAPI. For the first three listed individuals in the HEF, missing data in 1998-2000 (averaged) and in 2002 were 16.5 to 46, 26 to 30, and 26 to 37.

The 200 series approach will be changed in 2004 so that interviewers will put estimated age for all persons in the household.

Ethnicity

The 2002 GSS recorded significantly more ethnic mentions than previously. As Table 1 shows, those mentioning only one ethnicity had been rising from 48% to 53% in 1996-2000, but fell to 39% in 2002. The increase in ethnic mentions was particularly large among those naming 2+ ethnicities and able to select a main ethnicity (from 28% in 1998-2000 to 39% in 2002) and smaller for those mentioning two+ ethnicities and unable to select a main ethnicity (11% in 1998-2000 to 14% in 2002).

As Figure 1 shows, the standard ethnicity question consists of a two-part question. The first asks "From what country or part of the world did your ancestors come?" It allows for up to three mentions. There are four spaces to record answers, one space for single mentions and three more spaces labeled first, second, and third mentions. If two or more ethnicities are mentioned, then respondents are asked "Which one of these countries do you feel closer to?" In response to that, either a primary ethnicity is recorded or if respondents can not choose between their backgrounds, a "can't decide" code is entered.

The CAPI version asks the same questions, but implements the data capture in a slightly different manner. After asking the "from what country" question and recording an initial mention, the screen refreshes, relisting the question and the national codes to record a possible second mention. If a second mention is given, the screen refreshes a second time. If a third mention is given, the program moves on to the "closer to" question. Besides the national codes on the refreshed screens, there is also the option "99 NO MORE COUNTRIES" appearing on the top left of the first column of national codes. While there is no explicit prompt for more responses, the repetition of the initial question and the national codes in effect acts as a prompt.

Since the 2002 GSS with CAPI got significantly more mentions of ethnicity than the PAPI versions in 1998-2000, it appears that the CAPI format using refreshing screens creates more of a demand

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[2]Reduction could have been even greater, but many SSQs were not available. While interviewers were instructed to retain and mail in their SSQs, this task was neither emphasized nor monitored. As a result, less than half of the SSQs were obtained from the field.

for mentions of additional ethnicities than the static page format of PAPI which allows for multiple mentions, but does not implicitly probe for additional ethnicities. CAPI may do so by encouraging interviewers to reask the initial question or otherwise probe for more mentions even though they are not instructed to do so.

This lability in ethnic reports comes from the fact that a) many Americans have complex, ethnic heritages and b) many respondents may only tend to mention their main ethnicity or ethnicities in response to the "from what countries" question. But with a little probing they can report additional ethnicities (Smith, 1984; 1985).

An experiment is being considered under which half of the cases would use the 2002 CAPI procedure and half would use a new CAPI procedure designed to more closely duplicate PAPI results.

Date of Interview

Traditionally date of interview was entered by interviewers in the interviewer remarks section at the end of the interview. When missing it was usually obtainable from the record of calls which is supposed to record among other things the dates of all contacts, including the final interview date. Interviewers however sometimes fail to enter the date in both the end section and in the record of calls. In 1998-2000 there were an average of 12.5 missing cases. On CAPI date was automatically assigned by the computer. But due to crashes it was lost for about 20 cases. As noted above, the separate, hardcopy HEF and record of call questionnaire was unavailable for many cases and 18 cases remained missing even after the available record of calls were consulted. Overall, the missing value levels are small and similar for PAPI and CAPI, but the causes (interviewer error vs. computer failures) are different. As noted above, extra effort will be made in the future to get the HEF/record of calls questionnaires back from interviewers to serve as a backup for the computer generated dating.

Adult Sexual Partners

It appears that a number of verbatim codes used by respondents instead of reporting a number for number of male and female sexual partners since ones 18th birthday were used less frequently under CAPI than PAPI:

Response	1998-2000 Average	2002
Male Partners:		
Dash or slash	2.5	0
"x"	3.0	0
Garbled text	0.0	0
Several	0.5	0
"Many," "lots"	4.0	2
"N.A."	5.5	0

Refused	18.5	2
Female Partners:		
Dash or slash	1.5	0
"x"	2.0	0
Garbled text	0.0	0
Several	1.0	0
"Many," "lots"	4.0	1
"N.A."	8.5	0
Refused	16.5	0

This in part was compensated for by an increase in DK codes from an average of 13 for male partners and 24.5 for female partners in 1998-2000 to respectively 31 and 49 in 2002.

While CAPI-SAQ respondents could enter any keystrokes they wished in the response fields including words (e.g. "refused" or "lots"), dashes, X's, and so forth, they were less likely to do so than PAPI-SAQ respondents were to write in such responses. While PAPI SAQ respondents know they can write in any response they want in the answer space or margins, CAPI SAQ respondents are probably less aware that they have this option. It appears that instead CAPI respondents who wanted to avoid numerical responses did so by using the DK function key.

While it should be possible to increase non-numerical verbatim responses by instructing respondents that they could enter such answers and thus make CAPI-SAQ more like PAPI-SAQ, this might encourage more non-numerical responses and this would not be desirable.

Relationship to Sex Partners

As part of the HIV risk behavior SAQ, respondents with one or more sexual partners in the last year are asked "Was one of the partners your husband or wife or regular sexual partner?" Then those with no other sexual partners besides their spouse or regular sexual partner, skipped the next series which asked the following:

If you had other partners, please indicate all categories that apply to them:

CIRCLE <u>ALL THE ANSWERS</u> THAT APPLY.

Close personal friend.....1
Neighbor, co-worker, or long-term acquaintance....2
Casual date or pick-up.....3
Person you paid or paid you for sex.....4
Other (PLEASE SPECIFY):_____5

Under CAPI people were given the same list but with Yes and No as responses for each category. The cursor automatically rested on Yes for Close personal friend and hitting the Enter key recorded a Yes

response and moved the cursor down to the next Yes response. In the raw data many more Yes responses were recorded than had ever appeared before and for many people they reported more relationships than the number of reported sex partners. It appears that many hit Enter to move through the question and did not realize that this recorded a Yes response to all items. While it was possible to clean up most of these inadvertent Yes responses, these variables still remain inconsistent with PAPI survey data and probably less reliable overall. For example, CAPI in 2002 had 294 mentioning of a Close personal friend compared to an average of 166.6 in 1998 and 2002.

On the 2004 GSS CAPI will be reprogrammed so there will be no default answer and so a separate keystroke will be needed to record a Yes or a No response.

Summary and Conclusion

For the vast majority of variables the introduction of CAPI in 2002 had no apparent effect on measurement. Even for those variables affected, the impact was often localized. For example, while the number of ethnicities mentioned increased significantly, there was no impact on the distribution of specific ethnicities. Similarly, while the specific, non-numerical responses to the number of adult male and female sex partners changed, the distribution of numerical responses showed no variation. In some of those cases where differences did occur, changes can be made in the CAPI procedures to reduce error and/or increase similarity in results to those produced by PAPI procedures.

Table 1

Ethnic Mentions

	1996	1998	2000	2002
Names 1	47.9	51.0	52.7	38.7
Chose 1 of 2+	30.2	28.3	27.7	39.2
Can't Chose	9.8	10.6	10.8	14.4
Can't Name Any	12.4	10.1	8.9	7.7
	2879	2820	2808	2758

Figure 1: Ethnicity

23. From what countries or part of the world did your ancestors come?

IF SINGLE COUNTRY IS NAMED, REFER TO NATIONAL CODES BELOW AND ENTER CODE NUMBER BELOW.

_____

IF MORE THAN ONE COUNTRY IS NAMED, REFER TO NATIONAL CODES BELOW, CODE UP TO 3 RESPONSES AND THEN ASK A . . .

FIRST MENTION _____

SECOND MENTION _____

THIRD MENTION _____

A. **IF MORE THAN ONE COUNTRY NAMED:** Which one of these countries do you feel closer to?

IF ONE COUNTRY NAMED, REFER TO CODES BELOW AND ENTER CODE NUMBER ON LINE BELOW. IF CAN'T DECIDE ON ONE COUNTRY, ENTER CODE 88.

_____

NATIONAL CODES

Africa	1	Mexico	17
American Indian	30	Netherlands (Dutch/Holland)	18
Austria	2	Norway	19
Belgium	36	Philippines	20
Canada (French)	3	Poland	21
Canada (Other)	4	Portugal	32
China	5	Puerto Rico	22
Czechoslovakia	6	Rumania	35
Denmark	7	Russia (USSR)	23
England and Wales	8	Scotland	24
Finland	9	Spain	25
France	10	Sweden	26
Germany	11	Switzerland	27
Greece	12	Yugoslavia	34
Hungary	13	Other (SPECIFY) _____	29
India	31		
Ireland	14		
Italy	15	MORE THAN ONE COUNTRY/CAN'T	
Japan	16	DECIDE ON ONE	88
Lithuania	33	DON'T KNOW	98

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Appendix: 1

HEF Instructions in Field Interview Training Manual

Now, go back over the list of names and find out each person's age. If your contact person will not give you ages, ask for relative ages. When using relative ages, make the youngest person "200", the next youngest "201", the next youngest "202", and so on.

If your informant will give you some ages and not others, be sure to use the "200" series ages for EVERYONE. For example, the informant tells you that there are 4 people in the HU, a husband (Thomas Smith), wife (Julie Smith), son (Josh Smith) and daughter (Zoe Smith). The contact tells you that the husband is older than the wife, the wife is 35, and that children are minors with the boy being older than the girl. Record the ages as follows:

Thomas Smith	236
Julie Smith	235
Josh Smith	201
Zoe Smith	200

This way, you preserve the information you have, that is that the wife is 35, and keep the relative ages in order so when the computer evaluates this data it will understand what you know - that is the relative ages (or the correct way to sort) all the HU members!