

AN EXPERIMENT WITH SKIP INSTRUCTIONS: DECREASING ITEM NONRESPONSE IN A SELF-ADMINISTERED SURVEY OF MEDICAID BENEFICIARIES

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One problematic aspect of self-administered questionnaires is providing clear instructions when items should be skipped based on the answers to screening questions. There are two types of errors that could occur in these situations: 1) Respondents may answer questions they should skip (errors of commission) and 2) Respondents may skip questions they should answer (errors of omission). The latter error, of course, is more problematic because it means desired data are missing.

The self-administered versions of the Consumer Assessment of Health Plans Survey (CAHPS[®]) include numerous skip instructions. Item non-response due to errors of omission was particularly high in previous CAHPS[®] surveys of Medicaid samples. To address this problem, the wording of the instructions was changed in an attempt to make skip instructions easier to follow.

This new format was tested in the mail phase of the 1998-99 MassHealth member survey on a sample of 5000 adults. Half of the group was sent an instrument with the standard CAHPS[®] format; the other half was sent an instrument with the experimental format. Both versions were printed in both English and Spanish.

In addition to the central hypothesis that the modified skip instruction would reduce item non-response, further analyses of the data allow us to address several research questions: Are errors of omission consistent across both English and Spanish respondents? Are the modified skip instructions equally effective in both languages? Parallel questions could be addressed with respect to respondents' level of education: Was failure to follow skip instructions associated with education, and, if so, did the improved instructions benefit those with high and low levels of education?

METHODS

Sample

The sampling frame was provided by the Division of Medical Assistance (DMA), which oversees the administration of Medicaid in Massachusetts through the MassHealth program. People who are eligible to receive MassHealth benefits have the option of enrolling in one of several plans. The Primary Care Clinician (PCC) Plan is a primary care case management model that assigns each member to a specific primary care doctor, who then

serves as the member's gatekeeper for all medical services. Additionally, at the time this sample was drawn, MassHealth beneficiaries were enrolled in eight different capitated managed care plans that were contracted by the state. For this study, 600 adult members (aged 18 or older) were sampled from the PCC Plan and six of the managed care plans. Four hundred adults were selected from the other two plans, which were being discontinued by MassHealth.

Half of the sample (n=2500) was randomly assigned to the control group and was sent an instrument with the standard CAHPS[®] format. The other half was sent an instrument with the experimental format.

Data Collection

A standard mailing protocol was used for this study. Sampled adults were sent a questionnaire and fact sheet that answered some commonly asked questions about the instrument. Reminder postcards were sent to everyone one week later, and a second mailing was sent to nonrespondents about two weeks after that. In accordance with the CAHPS[®] data collection protocol, we then attempted to interview nonrespondents by telephone. This paper is based solely on data collected from adults who completed the self-administered questionnaire.

Survey Instruments

The standard CAHPS[®] format for skip instructions consists of an arrow to the right of the response choice triggering the skip, followed by the instructions "Go to Question X". A possible source of error is that it may not be clear to some respondents that the instruction to skip applies only to one response, not to both. The experimental format included the same arrow followed by the instructions "If [response choice], Go to Question X" (see Figure 1).

In addition, because a large segment of those receiving MassHealth benefits speak Spanish as their primary language, both versions of the self-administered questionnaire were printed in English on one side and Spanish on the other.

RESULTS

Response Rates

Results from the mail data collection efforts are presented in Table 1. Overall response rates, as well as the proportion of Spanish to English returns, were similar across both questionnaire versions. It should be noted that there were only 105 and 116 Spanish completions for

the standard and experimental formats respectively. And, as shown in Table 1a, a total of only 384 respondents to the English versions did not graduate from high school.

Respondent Characteristics

Table 2 presents the breakdown of several self-reported demographic variables for each questionnaire version. In terms of language of the completed instrument, education, age, and gender, respondents to each version were nearly identical. There is a difference, however, in terms of race. Significantly more whites completed the instrument with the standard skip instructions. The reasons for this difference are unclear.

Baseline Error Rates

The survey instruments included a total of 28 items that could have been skipped based on the answers to 16 screening questions. In order to ascertain the rate at which errors of omission occurred, we looked at the number of items that were incorrectly skipped in the standard version of the instrument. Comparing the data from the English respondents with the Spanish respondents, it can be seen that those who completed the survey in Spanish made significantly more errors of omission in 9 of the 28 items (Table 3). In no instance did English respondents make significantly more errors.

Dividing the English respondents into subgroups based on their level of education yields a smaller discrepancy. Those who did not graduate from high school incorrectly skipped 3 items at a significantly higher rate than those who graduated from high school or completed some higher level of education; the reverse was true for a single item.

Efficacy of the Experimental Format

Overall. The data in Table 4 compare the percentages of all respondents in the standard and experimental groups who incorrectly skipped questions. The results are unambiguous. In 17 out of 28 skip opportunities, there was a significant difference in the rate of skip errors between the experimental format and the standard format. In all 17 comparisons, those who had the experimental format made fewer errors.

English vs. Spanish Speakers. As seen in Table 5, the efficacy of the experimental format for English speakers closely mirrors the overall results. Seventeen of the 28 comparisons yielded a significant difference between the skip instruction formats. In only 1 of these 17 items did the group who received the standard format make fewer errors than their counterparts. This is an item (regarding how much of a problem the respondent had getting family planning services) for which the screener is the last question on a page. Therefore, the first question at the top of the next page should be skipped -- a particularly confusing layout. Aside from this single item, the results clearly show that the experimental format was effective in reducing errors of omission.

The results are slightly more mixed but striking nonetheless for those who completed the Spanish version of the instrument (Table 5). Due in part to the low number of respondents in most comparisons, only 3 items yielded a statistically significant difference. Two of these indicate that the experimental format was more successful in decreasing item nonresponse.

Because the level of statistical power is problematic, the remaining comparisons should be viewed as general indicators of direction. Again, far more errors were made by respondents to the standard version. The experimental format is clearly successful, but not as consistently as it was in the overall sample. Of the 25 nonsignificant comparisons, the standard format yielded more incorrect skips for 17 items as opposed to 7 for the experimental format.

English Respondents Who Did Not Graduate from High School vs. Those Who Did. Respondents to the English questionnaire who did not graduate from high school appear to have been helped quite a bit by the experimental skip instruction format (Table 5). Only 2 of the 28 comparisons resulted in a statistically significant difference; in both cases, those who received the experimental format made fewer incorrect skips. Again, by looking at those cases that were not significantly different, it can be seen that the experimental format was more successful in 19 out of 26 instances.

English respondents who reported completing high school or some higher level of education performed significantly better with the experimental format in 12 out of 28 items; they also made fewer errors in 13 of the 15 nonsignificant comparisons.

CONCLUSION

Adding "If [response choice]," to the standard CAHPS* skip instruction is a simple change that yielded remarkably positive results in this study of Medicaid beneficiaries. Adults who completed this version of the self-administered questionnaire made significantly fewer errors of omission overall. The resulting decrease in error increased the number of valid responses in over half of the items that follow screening questions. Furthermore, the experimental format clearly benefitted respondents regardless of their level of education and the language in which they completed the questionnaire. While the results are slightly more mixed for those who had less than a high school education or who completed the instrument in Spanish, the experimental format apparently had a positive effect in reducing errors of omission. Perhaps future study in this area will help eliminate even these biases and lead to an approach that is equally beneficial to a broader segment of the population.

Figure 1.
Standard and Experimental Skip Instruction Formats

Standard Format:

8. Do you have one person you think of as your personal doctor or nurse?

Yes

No → Go to Question 10

Experimental Format:

8. Do you have one person you think of as your personal doctor or nurse?

Yes

No → If No, Go to Question 10

Table 1.
Results of Mail Data Collection by Skip Instruction Format

	Original Sample	Ineligible	Eligible Sample	Refusals	Bad Address	Completed in English	Completed in Spanish	Response Rate
Standard	2500	7	2493	7	243	757	105	35%
Experimental	2500	6	2494	4	263	807	116	37%
Total	5000	13	4987	11	506	1564	221	36%

Table 1a.
Self-Reported Education Level* by Language of Completed Surveys and Skip Instruction Format

	Did Not Graduate from High School	High School Graduate or Higher
English		
Standard	181	556
Experimental	203	588
Spanish		
Standard	54	44
Experimental	56	54
Total	494	1242

*Education data was not obtained from 49 respondents.

Table 2.
Demographic Characteristics of Respondents by Skip Instruction Format

	<u>Standard</u>	<u>Experimental</u>
Questionnaire Language		
English	88%	87%
Spanish	12%	13%
Education		
Did not graduate from high school	28%	29%
High school graduate or higher	72%	71%
Age		
18 to 34	41%	41%
35 or older	59%	59%
Gender		
Male	27%	26%
Female	73%	74%
Race*		
White	63%	56%
Black	16%	18%
Hispanic	14%	18%
Other	6%	8%

* Significantly different at the $p < .05$ level

Table 3.
Number of Comparisons Yielding Significantly More Errors in the Standard Format Between Language and Education Groups

	<u>Number of Items Skipped Incorrectly ($p < .05$)</u>
Language of Survey	
English	--
Spanish	9
Education (English Only)	
Did not graduate from high school	3
High school graduate or higher	1

Table 4.
Percentage of Respondents Who Incorrectly Skipped Questions by Skip Instruction Format

Screening Question	Questions that Should Have Been Answered	Standard		Experimental		p
		%	n	%	n	
Get a new personal doctor or nurse	Problem getting personal doctor or nurse	15	373	8	382	.002
Have a personal doctor or nurse	Overall rating of personal doctor or nurse	9	663	5	700	.006
Need to see specialist	Problem getting referral to specialist	8	378	3	390	.003
See specialist	Overall rating of specialist	5	350	2	361	.044
	Specialist same as personal doctor	5	350	3	361	--
Call for help during office hours	Get help by phone during office hours	4	518	1	557	.008
Make any appointments	Get appointments as soon as wanted	7	609	4	655	.033
Need care for illness or injury	Get care for illness or injury as soon as wanted	5	371	1	402	.007
One or more visits to doctor's office or clinic	Problem getting necessary care	3	664	2	698	--
	Problem with delays in care while waiting for plan approval	3	664	2	698	.037
	Wait more than 15 minutes past appointment time	3	664	1	698	.029
	Treated with courtesy by office staff	3	664	1	698	.002
	Office staff helpful	3	664	1	698	.002
	Providers listen carefully	3	664	1	698	.009
	Difficulty communicating with providers because of language	3	664	1	698	.028
	Providers explain things	3	664	1	698	.007
	Providers show respect for what respondent has to say	3	664	1	698	--
	Providers spend enough time	3	664	1	698	--
	Overall rating of health care	3	664	2	698	--
Need treatment or counseling	Problem getting treatment or counseling	5	193	4	210	--
Get treatment or counseling	Overall rating of treatment or counseling	6	179	2	193	--
Need family planning services	Problem getting family planning services	3	153	7	125	--
Get family planning services	Where family planning services were received	11	140	8	118	--
Look for plan information in written materials	Problem finding plan information in written materials	5	209	2	229	.043
Call health plan's customer service	Problem getting help from plan's customer service	4	275	1	288	.034
Have paperwork for plan	Problem with paperwork for plan	3	244	3	238	--
Have physical or medical condition for 3 months	See doctor more than twice for condition	3	408	1	414	.006
	Take prescription medicine for condition	3	408	2	414	--

Table 5.
Number of Comparisons Yielding More Errors for Language and Education Groups
by Skip Instruction Format

	More Errors (Not Significant)		Significantly More Errors ($p < .05$)	
	Standard	Experimental	Standard	Experimental
Language				
English	10	--	16	1
Spanish	17	7	2	1
Education (English Only)				
Did not graduate from high school	19	6	2	--
High school graduate or higher	13	2	12	1