

## THE EFFECT OF LEVEL OF PARTICIPATION IN PROXY REPORTING

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### Introduction

The use of proxy reporters is very common for a wide range of surveys conducted by government agencies, universities and the private sector. As examples, the Current Population Survey has a single household member report about labor force participation of all household members; in the Health Interview Survey and the National Crime Survey, proxy respondents are permitted to report about other household members if they are not available. In consumer research, information about multiple family members' expenditures is often obtained using proxies. The major benefit from using proxies is the reduced cost of data collection.

The use of proxy reporters raises important issues of data quality. Earlier work has usually found that proxy reports are less complete than self reports, although in many cases the differences are small and in a few cases proxy reporting is actually better. (Moore, 1988) Many of the comparisons reported in the literature, however, are difficult to interpret because proxies have been used only when the respondent is unavailable. Thus, reporting and sample biases are intermixed. In addition, the earlier studies have simply compared self and proxy reporting and have not provided information on how the cognitive processes used for self and proxy reporting might differ.

Our study, supported by funds from NSF, addresses these limitations by interviewing pairs of respondents in a household and asking them to report both about themselves and the other household partner. We use a range of research strategies including thinkaloud interviews in a cognitive laboratory setting, telephone interviews and laboratory experiments. The questionnaire was designed to cover a broad range of topics including behavior, attitudes and demographic information.

The study focuses on several

major issues related to proxy reporting. In earlier papers (Bickart, et al., 1989, Menon, et al., 1990) we explored the different cognitive processes used by self and proxy respondents to answer behavioral frequency and attitude questions with specific attention to anchoring and adjustment strategies.

The current paper discusses the convergence between self and proxy reports over the entire range of behavior and attitude questions in our study and looks at three possible explanatory factors derived from our theoretical perspective: the level of direct participation or discussion between self and proxy, the importance of the topic and the confidence of respondents in their answers.

We first present a brief theoretical overview of on how people respond to survey questions and why proxy processes might differ. This is followed by a description of our methodology. The main part of the paper gives the results and we conclude with a discussion of their meaning and plans for future research.

### Theoretical Overview

Most researchers who use cognitive methods to explain survey responses have adopted a general model of the process that involves interpreting the question, retrieving appropriate information or a prior judgment, making the judgment and reporting the response. (Strack and Martin, 1987; Tourangeau, 1987). Self and proxy processes would not differ in terms of understanding the question, but could on the other dimensions. In this paper, we concentrate on retrieval processes.

The ability of proxy and self respondents to retrieve information from memory differs along four dimensions:

- 1) whether the information is available in memory
- 2) the context in which the information is stored
- 3) the accessibility of the in-

formation

4) the extent to which information has been integrated into summary judgments

Information needed to answer questions about one's own behavior and attitudes should be available in memory; information needed to answer questions about others may not be available. Information about others will only be available if the target person's behavior has been observed or if it is learned through discussion or observing the consequences of the behavior. The amount of information available should be related to the amount of time the partners spend talking about the topic or the degree to which they participate together in the behavior as well as the importance of the topic or behavior to respondents. This suggests the hypotheses for this paper:

H1: The correlation between self and proxy reports should increase as the level of participation or discussion increases.

H2: The correlation between self and proxy reports should increase as the topic is perceived as being more important.

H3: The correlation between self and proxy reports should increase with increased respondent confidence in their answers.

#### Methods

The results in this paper are based on interviews with 200 pairs of partners in the same household in Champaign County Illinois. In addition to the substantive questions that are given in the tables, respondents were asked:

How often do you and your partner...together?

"How often do you and your partner discuss....

"How important is ...to you? (Behavioral items) or

"How much do you care about the following issues? (attitudinal items.)

"How confident are you that your answers about partner's ... were accurate?

Based on answers, respondents were dichotomized into higher or lower participation, more or less discussion, higher or lower importance and more or less confidence.

The telephone study obtained

direct measures of joint participation of partners for three behaviors, television viewing, alcohol consumption and visits to the doctor. The number of joint doctor visits was too small to allow for splitting the sample. In addition, it is possible to observe partners' behavior better in the home for activities such as reading books for pleasure, while activities such as reading books for work or school are conducted outside the home and are less easy to observe. Activities that occur in the home should generally lead to higher convergence in self and proxy reports.

For continuous variables, the measure of convergence is simply the correlation between self and proxy reports on the same question. For non-continuous items, the percent agreement is taken as the measure of accuracy. In this paper, we do not concern ourselves with directions of inaccuracy that result in bias, nor do we address, except in passing, the possibility that proxy reporters may be better than self reporters for threatening questions.

#### Results

Participation-Table 1 presents the correlations between self and proxy for the sample split by partners who participate together at higher and lower levels. On five of seven comparisons, the correlations are higher for partners who participate more. The two reversals are for questions asking for number of bottles of beer or number of drinks of liquor drunk for each drinking episode. A post facto explanation is that this is related to the threat of these questions. Note that the correlation is lowest on the most sensitive question in the study, the number of times the person was drunk in the past year.

It may be seen that, in general, the hypothesis that greater participation leads to greater convergence is confirmed. The effects are consistent, but not earthshaking. Additional support for the participation hypothesis comes from Table 2 where the overall correlation between self and proxy is .74 for books read for fun (presumably at home) and .09 for books read for work or school and mainly away from home.

Discussion-Table 2 compares the cor-

relations on behavior and attitude variables for partners who report more or less discussion. On 7 of 8 behavior comparisons and 14 of 20 attitude comparisons with one tie, correlations are higher for partners who discuss more.

For non-continuous items, given in Table 3, partners who discuss more are more accurate in 10 of 12 comparisons. On average, partners who discuss more are right 85 percent of the time compared to 82 percent of the time for partners who discuss less. Although individual items do not differ significantly because of the small sample sizes, the pattern of responses is clearly significant using a binomial signs test.

These are real differences and not artifacts, but one might wonder why they are not larger. Two reasons suggest themselves. First, it must be recognized that the questions dealing with participation and discussion between partners are themselves subject to the same cognitive processes as the substantive questions. Measurement error in these variables would reduce the estimated effects.

Second, the level of agreement on the non-continuous items, at least for this sample and these questions, is very high so that there is little variability to explain. Note, however that differences between the behavioral and attitudinal variables are similar between those who participate and discuss more and less although, as has been observed in other settings, proxies are slightly better reporters about behavior than about attitudes.

Importance-Tables 4 and 5 compare correlations and level of agreement between self and proxy by perceived level of importance of the topic. Remember again that perceived importance is a subjective measure subject to the same cognitive issues described earlier. For behavioral items, the results do not support the hypothesis. In 7 of 10 comparisons, correlations or the levels of agreement are higher where the topic is thought to be less important. This is a reminder of an earlier finding that self-presentation issues arise because important topics may also be threatening.

The hypothesis that more important topics are better reported is upheld in 17 of 20 attitude comparisons. The average correlation for respondents who think the topic is more important is .45 as compared to .32 for those who think it is less important. Here there are no clear right or wrong answers and so self-presentation does not intrude.

Again, the binomial signs test of all comparisons is statistically significant although individual items are not.

Confidence-Confidence in answers is also a subjective variable which should reflect respondents' evaluations of how much they know about their partners. Since reports of confidence present issues of self-presentation and may be a function of overall self-confidence, we had no strong advance hypotheses about how well this variable would work as a predictor of convergence. The results in Tables 6 and 7 suggest that confidence in the answer is correlated with higher levels of agreement. In 9 of 12 comparisons between self and proxy on behavioral items, correlations were higher for those with higher confidence. The average correlation for those with higher confidence was .50 compared to .34 for those with lower confidence.

On attitudinal variables, correlations between self and proxy were higher for those with higher confidence in 12 of 19 comparisons with one tie. On the agreement items, 8 of 12 comparisons indicated higher levels of agreement for those with more confidence in their answers. Those with higher confidence averaged 87 percent agreement as compared to 80 percent for those with less confidence. The binomial signs test again indicates that these are not chance results.

#### Discussion

The hypotheses related to participation and discussion improving the convergence of self and proxy reports were confirmed. The hypothesis that importance of the topic would also increase convergence was confirmed for attitudinal, but disconfirmed for behavioral items. Obviously, something else is at work on, at least, these behavioral items.

Confidence in answers appeared to predict convergence as well or better than any of the other variables and might well be considered as a single question to be used either to determine whether to use a proxy respondent at all or to evaluate proxy reports. It seems likely that confidence is highly related to level of participation or discussion and that a question or questions on level of participation might replace or supplement a confidence question before deciding whether or not to accept a proxy report.

The size of the effects we found is moderate. Obviously the variables we look at are related to proxy reporting, but they clearly are not the only ones. We need to do more work to control for other factors, especially, it would appear, self-presentation. If we know that there are significant response errors in self-reports of threat

ening behavior, it is not obvious that high convergence between self and proxy would be possible or even indicate valid information.

We recognize that our current methodology limits the reliability and validity of reports of participation and discussion. One way to remedy this is to conduct laboratory experiments where the level of participation and discussion are controlled and then to conduct surveys asking about the process that occurred. We are planning such experiments with pairs of roommates.

As a final remark, we have learned that by trying to understand differences between self and proxy reporting we now have a little better idea of how people report about themselves. Our analyses are still very much in progress and we look forward to sharing them with you as they become available.

TABLE 1

CORRELATIONS BETWEEN SELF AND PROXY  
REPORTS BY LEVEL OF PARTICIPATION

Behavior	Total	Higher Participation	Lower Participation
Hrs. of TV watched weekdays	.44	.52	.42
Hrs. of TV watched weekends	.53	.66	.46
Times drunk beer in month	.62	.72	.58
Bottles of beer/time	.53	.48	.61
Times drunk liquor in month	.88	.93	.69
Number of drinks/time	.76	.62	.76
Times drunk	.18	.28	.24
Average		.60	.54

TABLE 2

CORRELATIONS BETWEEN SELF AND PROXY  
REPORTS BY LEVEL OF DISCUSSION

Variable Behavior	Total	More Discussion	Less Discussion
Number of newspapers read	.56	.36	.68
Number of books read for work or school	.09	.17	.08
Number of books read for fun	.74	.54	.42
Health rating	.56	.61	.44
Days missed of work/school in past year	.47	.48	.40
Number times seen doctor	.41	.50	.30
Seriousness of condition	.28	.39	.20
Income	.82	.88	.79
Average		.49	.41
Favorability - KKK	.15	.26	.06
Labor Unions	.58	.76	.44
NRA	.68	.84	.58
Women's groups	.40	.48	.28
Environmental groups	.32	.12	.31
Job President is Doing-Inflation	.45	.57	.33
Unemployment	.49	.58	.38
Trade deficit	.36	.48	.24
Economy	.44	.54	.32
Foreign competition	.38	.50	.28
Honesty of-Politician	.38	.28	.46
President	.50	.51	.50
Senator Simon	.46	.50	.41
Gov. Thompson	.39	.40	.36
Senator Helms	.40	.39	.40
Gov. Dukakis	.32	.33	.30
Senator Kennedy	.40	.40	.40
Gary Hart	.78	.76	.80
Ronald Reagan	.53	.49	.58
Effectiveness of Government Drug Abuse Program	.23	.29	.17
Average		.47	.38

TABLE 3

PERCENT AGREEMENT BETWEEN SELF AND PROXY  
REPORTS BY LEVEL OF DISCUSSION OR PARTICIPATION

Variable	Percent Agreement		
	Total	More Discussion	Less Discussion
<u>Behaviors</u>			
Main source of news	58.7	56.6	67.6
Read a book	82.5	94.3	82.9
Saw a doctor in past year	87.5	90.0	91.9
Registered voter	94.2	97.2	91.9
Voted in Presidential election	96.0	95.9	96.1
Candidate voted in election	90.5	92.4	88.6
Voted in primary	80.9	85.4	77.1
Candidate voted in primary	70.8	69.7	68.1
Employment status	92.8	92.0	100.0
<u>Attitudes</u>			
Government support for family planning	77.2	81.3	72.6
Support abortion for family planning	77.3	91.0	77.0
Abortion if birth defect	72.7	74.4	71.1
Average		85.0	81.7

TABLE 4

CORRELATIONS BETWEEN SELF AND PROXY  
REPORTS BY LEVEL OF IMPORTANCE

Variable	More Important	Less Important
<u>Behavior</u>		
Number of books read for work/school	.08	.30
Number of books read for fun	.78	.56
Number of hours watched TV-weekdays	.29	.51
Number of hours watched TV-weekends	.52	.62
Time drunk beer in month	.58	.97
Bottles of beer/time	.46	.97
Times drunk	-.09	.16
Average	.37	.58
<u>Attitudes</u>		
Favorability-KKK	.08	.19
Labor Unions	.62	.42
NRA	.80	.42
Women's groups	.47	.24
Environmental groups	.16	.10
Job President is doing-Inflation	.48	.38
Unemployment	.54	.34
Trade deficit	.42	.22
Economy	.52	.22
Foreign competition	.46	.21

TABLE 4 continued

<u>Attitudes</u>	<u>More Important</u>	<u>Less Important</u>
Honesty of politicians	.34	.41
President	.55	.36
Senator Simon	.49	.32
Gov. Thompson	.37	.42
Senator Helms	.44	.22
Gov. Dukakis	.30	.34
Senator Kennedy	.42	.34
Gary Hart	.80	.70
Ronald Reagan	.54	.48
Effectiveness of Government Drug Abuse Program	.26	.14
Average	.45	.32

TABLE 5

PERCENT AGREEMENT BETWEEN SELF AND PROXY  
REPORTS BY LEVEL OF IMPORTANCE

<u>Variable Behavior</u>	<u>Percent Agreement More Important</u>	<u>Less Important</u>
Read a book	89.2	80.5
Drank beer last month	88.6	100.0
Drank liquor last month	84.8	80.0
Average	87.5	86.8

TABLE 6

CORRELATIONS BETWEEN SELF AND PROXY  
REPORTS BY LEVEL OF CONFIDENCE

<u>Variable Behavior</u>	<u>High Confidence</u>	<u>Low Confidence</u>
Number of books read for work/school	.16	.25
Number of books read for fun	.84	.52
Number of hours watched TV-weekdays	.59	.24
Number of hours watched TV-weekends	.62	.15
Health rating	.62	.40
Days missed work/school	.49	.55
Number of times seen doctor in past year	.38	.60
Number of times been drunk in month	.77	.57
Number of bottles beer/time	.65	.58
Number of times liquor drunk in month	.92	.61
Number of drinks of liquor/time	.86	.54
Number of times drunk in year	.60	.14
Average	.50	.34

TABLE 6 continued

<u>Attitudes</u>	High Confidence	Low Confidence
Favorability to Labor Unions	.53	.59
Favorability to NRA	.72	.66
Favorability to Women's Groups	.46	.25
Favorability to Environmental Groups	.36	.06
Job President is doing-Inflation	.50	.38
Job President is doing-Unemployment	.52	.41
Job President is doing-Trade Deficit	.38	-.03
Job President is doing-Economy	.48	.10
Job President is doing-Foreign Competition	.40	.15
Honesty of Politicians	.37	.53
Honesty of President	.55	.60
Honesty of Senator Simon	.50	.46
Honesty of Governor Thompson	.38	.71
Honesty of Seantor Helms	.46	.38
Honesty of Governor Dukakis	.36	.40
Honesty of Senator Kennedy	.38	.24
Honesty of Gary Hart	.79	.79
Honesty of Ronald Reagan	.52	.72
Effectiveness of Government Drug Abuse Program	.23	.44
Average	.47	.41

TABLE 7

PERCENT AGREEMENT BETWEEN SELF AND PROXY  
REPORTS BY LEVEL OF CONFIDENCE

<u>Variable</u> <u>Behavior</u>	High Confidence	Low Confidence
Read	89.7	80.4
Saw a doctor in past year	83.9	86.7
Drank beer last month	90.3	93.3
Drank liquor last month	84.4	66.7
Registered voter	93.9	90.0
Voted in Presidential election	96.7	100.0
Candidate voted in election	92.0	81.8
Voted in primary	83.8	71.4
Candidate voted in primary	69.8	75.0
<u>Attitudes</u>		
Government support for family planning	84.0	75.0
Support abotions for family planning	91.4	73.0
Abortion if birth defect	79.1	66.7
Average	86.6	80.0