

ALTERNATIVE QUESTIONING PROCEDURES FOR
ATTITUDE MEASUREMENT IN TELEPHONE SURVEYS¹

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INTRODUCTION

The use of the telephone to collect survey data has increased dramatically over the past several years. Since over 90 percent of households in the United States now have telephones, adequate population coverage is becoming feasible in telephone surveys (Klecka and Tuchfarber, 1978; Groves and Kahn, 1979). Compared with the organizational costs of developing or maintaining a national field interviewing staff, it is relatively easy and comparatively inexpensive to establish a facility and to staff it with interviewers who can make telephone calls throughout the United States.

The motives for turning to telephone interviews have been primarily to avoid the increasingly high costs and organizational complexities of face-to-face interview surveys, rather than to exploit a new and promising method of data collection. Consequently, the telephone interview has tended to be perceived simply as a less desirable alternative to the personal interview, or, a personal interview conducted at a distance.

Despite the increased use of telephone interviews, there is a lack of complete consensus on the quality of the responses obtained by telephone compared to the more conventional personal interviews. Researchers hold varying opinions on the potentialities and limitations of the telephone interview, and often what they believe about the possibilities of telephone interviews is based on folklore rather than documented evidence.

A common source of disagreement among survey researchers lies in the relative efficacy of employing various types of survey measures, developed for use in personal interviews, in interviews conducted by telephone. The experiences of individual survey practitioners do not inform us well regarding the wisdom of using various questioning methods in telephone interviews. For example, while some would argue that one cannot ask telephone respondents to cope with more than three or four scale-points in a question, others indicate that they obtain "good results" when using questions with many more points in the response format. Further, some research results suggest that respondents are more willing to self-disclose in telephone interviews, ostensibly because they are more "anonymous," but other studies argue that telephone respondents are generally less involved in the interview and their responses, consequently, are less veridical (see Sudman and Bradburn, 1974; Sudman, Bradburn, *et al.*, 1979; Groves and Kahn, 1979).

One of the difficulties with the use of questions developed for personal interview situations in telephone interviews involves the presentation of response alternatives to respondents. For many types of questions in survey research, the possible response alternatives (e.g., income categories or responses to an attitude scale) are presented to the respondent in a single step, and in personal interviews the response categories are frequently shown to the respondent using show-cards. In telephone interviews there are a variety of ways in which response alternatives may be presented to respondents, but the absence

of visual aids makes the presentation more difficult, especially when the number of response categories is large. It has been observed that when income-scale categories are presented in telephone interviews and respondents are asked if they earn "more/less than" each figure, the early categories are disproportionately chosen by respondents regardless of whether the categories are ordered low to high or high to low. This choice pattern presumably results because respondents want to "get the question out of the way" (Locander and Burton, 1976).

The "unfolding" technique has been researched in telephone surveys as an adaptation of the more conventional single-step approach used in personal interviews (see Locander and Burton, 1976; Groves, 1979; Groves and Kahn, 1979). In the unfolding form, response options are presented in two or more steps to the respondent. The respondent is first asked to choose among major divisions (usually two) along the response scale, and on the basis of that choice is then asked to make more specific choices among response alternatives.

This paper examines the effect of presenting response options in "single-step" and "unfolding" forms of questions concerning health satisfaction. Locander and Burton's (1976) work suggests that the unfolding version helps to reduce response error in income reporting. Groves and Kahn's (1979) research, which manipulated these question forms in a split-ballot experiment concerning life satisfaction, produced equivocal results because differences between the question forms (unfolding and "single-step") in the study were confounded with differences in question wording. The single-step version asked respondents to voice their satisfactions with various domains of life, while the unfolding version had respondents pick among verbally - labeled categories ranging from "delighted" to "terrible" in order to express their evaluation of different aspects of life. The purpose of this study was to continue the research into the effects of these question forms by examining response differences associated with them in questions using the same wording in a study of health satisfaction.

The measurement of life satisfaction has received some considerable research attention (*viz.*, Campbell, Converse and Rodgers, 1976). Nevertheless, it is clear that health tends to be a more salient domain for those who experience chronic illness, for example, the elderly. In this study, we employed measures of health similar to those used by Campbell, *et al.* for measuring perceived life satisfaction since their measures are frequently used by researchers in the area. The scale consists of seven points, ranging from "completely satisfied" to "completely dissatisfied." We examine differences between responses to this scale, randomly administered in single-step and unfolding versions to two groups of respondents who participated in a national telephone health survey.

Research Design

The data presented here were collected as part

of a larger study which tested the feasibility of conducting the Health Interview Survey by telephone. Interviews were taken with some 4300 families in each of which a family respondent was designated to answer for him or herself and for other adult members of the family.² At the end of the interview, the family respondent was asked a set of five questions about his or her own health and life satisfaction. The respondents were randomly assigned to receive either the single-step seven-point scale version of these questions, or the 2-step unfolding version. The questions asked respondents in succession to rate their satisfaction with their health and physical condition in general, their physical ability to perform desired activities, their energy or "pep," their resistance to illness, and their life as a whole. Examples of the two question forms are displayed in Exhibit 1. Note that the single-step version asks respondents to pick a number between one and seven, and attaches verbal labels only to the endpoints and midpoint of the scale. By contrast, the unfolding version presents only verbal categories for selection, in addition to splitting the response decision into two stages. (Response differences to the two forms may be attributable to one or more of these form differences.) Thus, the single-step scale resembles "semantic differential" items in format (although the numbering is different from the original semantic differential--see Osgood, Suci, and Tannenbaum, 1957). This scale has the apparent advantage of being quicker to administer, but the requirement for numerical judgment required may be seen as a disadvantage (Andrews and Withey, 1976). The unfolding version takes longer to administer, but its hierarchical structure and verbal labels for the scale points may be seen as advantages. The unfolding form, after all, was developed in part to simplify the task of answering questions with many scale points. Respondents may need the assistance especially in telephone inter-

EXHIBIT 1
EXAMPLES OF ONE- AND TWO-STEP QUESTION FORMATS

ONE-STEP: Now, I'll ask you to give me a number between one and seven that describes how you feel about your health... "One" stands for completely dissatisfied, and "seven" stands for completely satisfied. If you are right in the middle, answer "four." So, the low numbers indicate that you are dissatisfied; the high numbers that you are satisfied.

First, what number comes closest to how satisfied or dissatisfied you are with your health and physical condition in general?

Number 8. Never thought; No feelings

TWO-STEP: Now, thinking about your health and physical condition in general, would you say you are satisfied, dissatisfied, or somewhere in the middle?

7. Satisfied

1. Dissatisfied

How satisfied are you with your health and physical condition--completely satisfied, most, or somewhat?

7. Completely

1. Completely

6. Mostly

2. Mostly

5. Somewhat

3. Somewhat

4. In the middle

If you had to choose, would you say you are closer to being satisfied or dissatisfied with your health and physical condition, or are you right in the middle?

5. Satisfied

3. Dissatisfied

4. In the middle

TABLE 1. UNIVARIATE FREQUENCY DISTRIBUTIONS FOR FIVE HEALTH-SATISFACTION QUESTIONS by QUESTION FORM

	Scale	Completely Dissatisfied				Completely Satisfied				DK/NA	Total	Mean	S.D.
		1	2	3	4	5	6	7					
Gen. health & Phys. cond.	1-Step	37 (1.7)	36 (1.7)	100 (4.6)	354 (16.3)	475 (21.9)	667 (30.7)	504 (23.2)	49	2221	5.39	1.35	
	2-Step	25 (1.2)	45 (2.2)	160 (8.0)	214 (10.7)	400 (20.0)	685 (34.2)	476 (23.7)	80	2084	5.43	1.39	
Physical ability	1-Step	50 (2.3)	35 (1.6)	83 (3.8)	299 (15.7)	339 (15.7)	615 (28.5)	737 (34.2)	64	2221	5.61	1.44	
	2-Step	38 (1.9)	36 (1.8)	124 (6.2)	193 (9.7)	244 (12.2)	626 (31.3)	736 (36.9)	90	2086	5.70	1.45	
Energy or Pep	1-Step	64 (3.0)	52 (2.4)	150 (6.9)	422 (19.5)	482 (22.2)	570 (26.3)	427 (19.7)	54	2220	5.13	1.48	
	2-Step	48 (2.4)	78 (3.9)	190 (9.5)	359 (18.0)	262 (13.2)	492 (24.7)	563 (28.3)	91	2082	5.23	1.62	
Resistance to illness	1-Step	42 (2.0)	28 (1.3)	58 (2.7)	241 (11.2)	312 (14.6)	674 (31.5)	788 (36.8)	79	2221	5.77	1.36	
	2-Step	24 (1.2)	28 (1.4)	64 (3.2)	181 (9.2)	188 (9.5)	583 (29.5)	907 (45.9)	91	2076	5.97	1.32	
Whole life	1-Step	24 (1.1)	22 (1.0)	54 (2.5)	257 (12.0)	443 (20.7)	721 (33.8)	615 (28.8)	86	2221	5.67	1.24	
	2-Step	9 (0.5)	27 (1.4)	73 (3.7)	285 (14.3)	284 (14.3)	633 (31.8)	681 (34.2)	92	2083	5.73	1.28	

views in which visual aids cannot be employed. The single-step version is widely used, however, and is often employed with more than seven scale-points in telephone interviews. The question for research is whether the different question forms affect distributions on the satisfaction items, or affect their relationships to one another.

In this analysis, we will examine the univariate distributions and intercorrelations of the satisfaction items by question form. Next, we will examine specifications of question-form effects by respondent characteristics. A general proposition of question form research is that form effects are more pronounced for respondents who have less psychological investment in the topic of the questions, or who are less familiar with survey response tasks. Respondents' education is often used to specify question form effects, according to this reasoning (see Schuman and Presser, 1977). In this paper, we will examine question form effects by respondents' "objective" health status--the number of chronic conditions they report--and by a measure of the subjective importance they place upon their health (the amount they think about the topic). Following past research, we would expect greater question form differences for people who are relatively healthy and for those who have less subjective investment in their health.

Analysis

Descriptive statistics for the five satisfaction measures by question form are displayed in Table 1. Overall, the distributions for the measures appear little affected by the scale format. There is a slight tendency for the 2-step version to produce higher mean scores across the five variables although the means are significantly different only in the case of the fourth item, "resistance to illness." Higher proportions of respondents receiving that form reported that they were "completely satisfied" with the different aspects of

their health and life. It is not clear why this is the case. It may be, however, that since the "completely satisfied" category was presented first in the list in the second stage of the unfolding version, respondents were more likely to choose it (Exhibit 1).³ This hypothesis follows the rationale of Locander and Burton (1976) who argued from income-reporting data that telephone respondents may tend to choose categories presented early in a scale list in order to finish responding quickly. On the other hand, this idea may not hold because Locander and Burton's question format required interviewees to respond "yes" or "no" to each scale category, rather than choosing among several categories all of which are presented at one time, as was the case in the unfolding format in this study. For several of the satisfaction questions, those receiving the one-step version more frequently reported that they were ambivalent or "right in the middle." This might be expected, since those receiving the other, two-step version were probed in the second step to see if they were leaning toward satisfaction or dissatisfaction when they reported being ambivalent in the first question of the pair (see Exhibit 1). Finally, there was a tendency for those queried with the one-step version to choose the number 5 category proportionately more often than did those who received the unfolding form. This tendency was balanced by the relatively greater frequency with which those responding to the unfolding version chose the number 3 category. None of these differences are large however.

Table 2 displays mean scores and standard deviations for the five questions by question form and perceived salience of health. We wish to see whether the question-form effects are specified by respondents' level of subjective involvement with the topic. Respondents were asked to estimate how much they pay attention to their health status by reporting on a five-point scale how often they think about their health.

TABLE 2. MEAN HEALTH-SATISFACTION SCORES
by QUESTION FORM AND PERCEIVED SALIENCE OF HEALTH

	1-Step Scale			2-Step Scale		
	Mean	S.D.	N	Mean	S.D.	N
<u>Think about health "very often"</u> of "often"						
General health	5.16	1.49	1018	5.14	1.51	910
Physical ability	5.46	1.58	1015	5.53	1.59	902
Energy	5.03	1.57	1017	5.04	1.73	908
Resistance to illness	5.59	1.48	1011	5.82	1.44	894
Whole life	5.59	1.28	1006	5.56	1.37	903
<u>Think about health "now and then"</u>						
General health	5.48	1.16	747	5.54	1.23	718
Physical ability	4.64	1.27	745	5.79	1.27	711
Energy	5.07	1.35	745	5.26	1.49	711
Resistance to illness	5.83	1.20	735	6.02	1.19	711
Whole life	4.63	1.15	737	5.79	1.16	709
<u>Think about health "rarely" or</u> <u>"never"</u>						
General health	5.89	1.21	335	5.97	1.16	327
Physical ability	5.99	1.27	335	5.99	1.31	330
Energy	5.46	1.42	336	5.67	1.49	326
Resistance to illness	6.10	1.24	335	6.28	1.14	323
Whole life	5.94	1.22	328	5.98	1.24	327

As one can observe in Table 2, there is no interaction between question form and health salience. The mean scores for the five items are slightly higher for the two-step version across all three levels of salience. In both versions, the mean scores are higher for respondents who said they pay relatively little attention to their health. As one might expect, if one is relatively healthy, concern about health on the subjective level is low. This pattern is not affected by the form of the question which elicits the satisfaction rating.

A similar finding is displayed in Table 3. The analysis here focuses on the effects of question form for respondents who reported experiencing at least one chronic condition and for those who reported no recurring illness. Following previous research on question form, we would expect greater differences between versions for those who have less experience with the topic, or less psychological investment in it. As was the case with

the measure of subjective health salience, the chronic conditions measure does not appear to specify the question-form effect. For both versions those with some chronic illness report being substantially less satisfied with their health than do those who reported no lingering physical complaints.

The effects of question form on relationships among the satisfaction items is examined in Tables 4-6. In all three displays, we find that the intercorrelations among the items average 5 to 7 points lower for the unfolding version of the questions. The variance-covariance matrices for the items measured by the two question forms were submitted to a confirmatory factor analysis program (COFAMM) and the similarity of components of the matrices were tested in an attempt to discover the reason for the lower correlations in the 2-step version. The hypothesis of equal covariances in the two matrices could not be rejected (χ^2

TABLE 3. MEAN HEALTH-SATISFACTION SCORES
by QUESTION FORM AND CHRONIC CONDITIONS

	1-Step Scale			2-Step Scale		
	Mean	S.D.	N	Mean	S.D.	N
<u>Respondents reporting one or more chronic conditions</u>						
General health	4.77	1.56	705	4.85	1.56	704
Physical ability	4.86	1.72	699	4.94	1.72	709
Energy	4.52	1.63	701	4.73	1.76	705
Resistance to illness	5.28	1.61	691	5.52	1.54	700
Whole life	5.51	1.40	684	5.59	1.34	707
<u>Respondents reporting no chronic conditions</u>						
General health	5.69	1.14	1468	5.75	1.18	1301
Physical ability	5.97	1.13	1459	6.12	1.08	1288
Energy	5.42	1.30	1466	5.49	1.47	1287
Resistance to illness	5.99	1.16	1452	6.21	1.11	1275
Whole life	5.74	1.15	1452	5.79	1.24	1285

TABLE 4. PEARSON PRODUCT-MOMENT CORRELATIONS FOR
FIVE HEALTH-SATISFACTION QUESTIONS by QUESTION FORM

	1-Step Scale (N = 2222)				
	1	2	3	4	5
General health	1				
Physical ability	.64	1			
Energy	.58	.62	1		
Resistance to illness	.51	.47	.45	1	
Whole life	.40	.33	.36	.30	1
	2-Step Scale (N = 2085)				
	1	2	3	4	5
General health	1				
Physical ability	.58	1			
Energy	.50	.54	1		
Resistance to illness	.43	.45	.41	1	
Whole life	.32	.26	.33	.26	1

with 15 d.f. = 14.564, $p < .15$), but the hypothesis of equal matrices overall was rejected (χ^2 with 15 d.f. = 99.236, $p < .001$). These findings suggest that the lower correlations found for the two-step scales are largely attributable to the larger variances in those items (since the correlations are equal to the covariances divided by the product of the variances). The larger variances for

the two-step form appear to result from the greater tendency by some respondents receiving that form to pick the "completely satisfied" category, and others to choose the "somewhat dissatisfied" option (3). (The latter finding appears to result from the fact that the two-step form probed the "middle" category to see if respondents were leaning toward satisfaction rather than dissatisfaction.) Those

receiving the one-step form cluster more heavily in the upper three categories of the seven-point scale. The only exception to these patterns is the case of the "resistance to illness" item, which shows a lower variance for the unfolding form. The difference in the average is not significantly affected by either subjective health salience or by the number of chronic conditions reported (Tables 5-6). There is a slight tendency for lower correlations among the items for those experiencing no chronic illness. This finding is similar to results reported by Converse (1964) in the area of political attitudes. He found that those who have less experience with politics possess little or not "overriding framework" for organizing political beliefs. Here we find that people who experience no health problems of a recurring nature tend not to tie evaluations of different aspects of their health as tightly together as do those with more health trouble. This finding is not nearly so strong as the ones reported by Converse, however.

Discussion and Conclusion

The differences in response distributions uncovered in this analysis are clearly small, as are the effects of question form on correlations among the items. These findings suggest that, while estimates of mean values for the health-satisfaction scales are little affected by question form, the relationships among the items are affected to a greater degree. It is not clear that one question form is "better" than the other on the basis of these results, however. The findings described here must be scrutinized more carefully, and replication of the results is necessary. Investigations such as this need to be undertaken because much of what we believe about the utility of various questioning strategies is based on anecdotes and "common wisdom." We need to supplant this folklore with data which can more rationally guide survey practice.

TABLE 5. PEARSON PRODUCT-MOMENT CORRELATIONS FOR FIVE HEALTH-SATISFACTION QUESTIONS by QUESTION FORM AND PERCEIVED HEALTH SALIENCE

	1-Step Scale					2-Step Scale				
	1	2	3	4	5	1	2	3	4	5
Think about health "very often" of "often"	(N = 1037)					(N = 939)				
General health	1					1				
Physical ability	.66	1				.58	1			
Energy	.62	.66	1			.50	.57	1		
Resistance to illness	.50	.45	.45	1		.44	.47	.45	1	
Whole life	.41	.36	.38	.26	1	.31	.22	.33	.27	1
Think about health "now and then"	(N = 754)					(N = 733)				
General health	1					1				
Physical ability	.58	1				.55	1			
Energy	.50	.56	1			.44	.46	1		
Resistance to illness	.50	.45	.40	1		.37	.39	.32	1	
Whole life	.38	.29	.34	.33	1	.27	.27	.29	.29	1
Think about health "rarely" or "never"	(N = 345)					(N = 343)				
General health	1					1				
Physical ability	.61	1				.48	1			
Energy	.57	.56	1			.54	.55	1		
Resistance to illness	.58	.52	.52	1		.52	.43	.37	1	
Whole life	.37	.18	.26	.30	1	.38	.34	.33	.20	1

TABLE 6. PEARSON PRODUCT-MOMENT CORRELATIONS FOR HEALTH-SATISFACTION QUESTIONS by QUESTION FORM AND CHRONIC CONDITIONS

	1-Step Scale					2-Step Scale				
	1	2	3	4	5	1	2	3	4	5
Respondents reporting one or more chronic conditions	(N = 705)					(N = 709)				
General health	1					1				
Physical ability	.60	1				.58	1			
Energy	.56	.62	1			.52	.54	1		
Resistance to illness	.51	.44	.46	1		.43	.43	.42	1	
Whole life	.40	.31	.34	.27	1	.32	.27	.28	.26	1
Respondents reporting no chronic conditions	(N = 1468)					(N = 1301)				
General health	1					1				
Physical ability	.59	1				.47	1			
Energy	.52	.54	1			.42	.47	1		
Resistance to illness	.45	.40	.37	1		.34	.35	.35	1	
Whole life	.39	.33	.36	.30	1	.31	.25	.35	.24	1

FOOTNOTES

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²See Groves, Cannell, and Miller (1981) for a more complete description of the study design.

³I am indebted to William Nichols for suggesting this possible explanation.

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