FRANK M. ANDREWS AND STEPHEN B. WITHEY

3. DEVELOPING MEASURES OF PERCEIVED LIFE QUALITY: RESULTS FROM SEVERAL NATIONAL SURVEYS*

(Received 3 May, 1973)

ABSTRACT. This report presents the current status of a series of studies oriented toward the assessment of perceived life quality. The conceptual model proposes that a person's overall sense of life quality is understandable as a combination of affective responses to life 'domains', which are of two types – role situations and values. Over 100 items used to measure a wide variety of domains and 28 items assessing perceived overall life quality are presented. Various subsets of these items were used in interviews with several representative samples of American adults. Based on these data the domain items were grouped into a smaller number of semi-independent clusters which were internally stable across 10 different subgroups of the respondents and whose interrelationships were highly replicable in independent national samples. A series of analyses, some replicated in more than one survey showed: (1) an additive combination of 12 selected domains explained 50–60 % of the variance in an index of overall life quality, (2) neither other domains nor several social characteristic variables contributed additional explanatory power, (3) this level of explanation was achieved in each of 22 subgroups of the population, and (4) additive combinations of domains worked as well as more complicated combinations.

We are embarked on a major effort to develop measures of perceived life quality. The effort is part of the larger movement within the United States and a number of other countries to develop an expanded set of social indicators which can be monitored over time. It is hoped that through the generation and analysis of data from such indicators improvements can result in our understanding of the causes and directions of social changes, and in policymaking oriented toward efforts to improve the quality of life.

Social indicators can be classified into two broad types: (1) those based on reports about experiences and characteristics of the reporter's own personal life, and (2) those based on reports of events or situations which are not part of the reporter's own life. Sometimes these two types of indicators have been referred to as 'subjective' and 'objective' respectively, though it can be argued that certain experiential measures are at least as objective as many of the so-called 'objective' measures. Examples of the first class of social indicators would include reports by respondents of their sense of safety when they go out alone at night, or their sense of satis-

Alex C. Michalos (ed.), Citation Classics from Social Indicators Research, 75–100.

faction with the amount of safety they perceive. Examples of the second class would include crime reports for a particular neighborhood or measures of street lighting and police patrols.

The social indicators movement currently includes efforts to develop and apply measures based on both the experiential and non-experiential types of reports. While our own work concentrates almost exclusively on experiential measures, there is no question about society's need for both. Only when both are concurrently measured will it be possible to know how demonstrable changes in living conditions are affecting people's sense of life quality, and – conversely – whether changes in people's sense of life quality can be attributed to changes in external conditions.[1]

I. RESEARCH GOALS

The basic orientation of our project is that of instrument development. We seek to construct a battery of items appropriate for inclusion in a survey questionnaire or interview which will be modest in number, broad in coverage, of substantial validity, and which will provide a statistically efficient means of assessing perceived life quality in the diverse domains most important for predicting people's general satisfaction with their lives. Among the specific goals are: (1) identifying and mapping relevant domains; (2) determining how (if at all) affective reactions to these domains combine to affect some more global sense of life quality; (3) assessing criteria people use in evaluating different aspects of their lives and the social contexts in which these evaluations are made; (4) linking feelings about life situations to reported behaviors, life conditions, and other attitudes; and (5) developing descriptive statements about the level of satisfaction Americans feel with respect to significant aspects of their lives. We are attempting to implement all of these goals while recognizing that people of different sub-cultures in the American population may respond differently and maintaining our concern that any measuring instrument be applicable to a wide range of such groups.

II. SCOPE OF THIS REPORT

This present report focuses mainly on the first two of the specific goals – namely, the mapping of domains and the determination of how reactions

to them may be combined to predict people's sense of overall life quality. Discussion of these matters is preceded by a short description of our conceptual model.

It should be noted that this report discusses a research effort which is currently in progress. As of this writing, data designed to test the full complexity of the conceptual model are just being collected, and some previously collected data have not yet been fully analyzed. We feel some of the results to be reported are of much interest, but recognize the incompleteness of the analysis.

III. SOURCE OF DATA

The statistical results presented in this report are based on one of three national sample surveys of American adults – one conducted in May 1972 which contacted 1297 respondents, and two others each conducted in November 1972 which contacted 1072 and 1118 respondents.[2]

Two other data sources are occasionally mentioned – another national survey of American adults conducted in April 1973, and a group of 200 heterogeneous respondents who answered a lengthy questionnaire in the summer of 1973. Conclusions from the analysis of data from these two latter sources are not included here.

IV. CONCEPTUAL MODEL

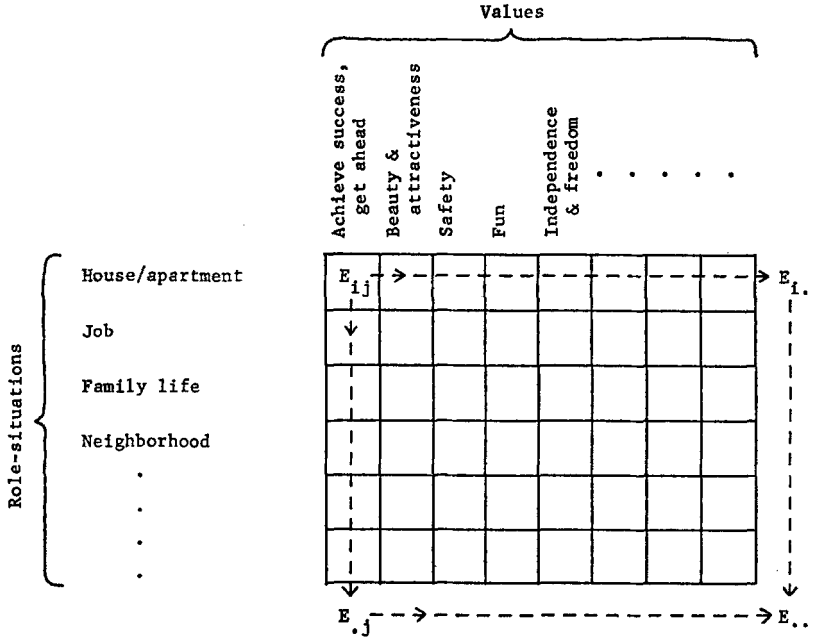
The conceptual model underlying our work is reasonably straightforward. The basic concepts include the ideas of life-as-a-whole, of specific role-related situations within that life, and of evaluative criteria which we call 'values'. Furthermore, it is assumed that people implicitly – and sometimes explicitly – engage in a process of evaluation in which events occurring in a role-specific situation are evaluated according to a set of values to produce an affective response.

In addition to evaluation, the model includes another process – that of integration: It is assumed that the affective responses resulting from evaluating a particular role-situation in the light of particular values are integrated or combined to produce a general affective evaluation for that role situation. Integration is presumed also to occur across different role-situations to produce a global affective response to life-as-a-whole, what

we will here refer to as 'perceived quality of life'. Of course, the integration may involve a differential weighting of the affective responses. At this level of elaboration, the conceptual model is basically two dimensional as shown in Exhibit 1.

Exhibit 1

Two dimensional conceptual model with examples of possible role-situations and values



E_{ij} = Affective evaluative response to particular role-situation with respect to particular value
$E_{i.}$ = General affective evaluative response to role-situation (across values)
$E_{.j}$ = General affective evaluative response to value (across role-situations)
$E_{..}$ = General affective evaluative response to life-as-a-whole – i.e., perceived quality of life

As is suggested in Exhibit 1, some possible role-situations might include matters having to do with one's house or apartment, one's job, one's family, and the like. Possible values might include achieving success, having fun, experiencing beauty, and many others. One might then attempt to ascertain a person's level of satisfaction with the extent to which

his house (say) helps him achieve success, promotes his standard of living, provides beauty, and the like. Combining across all relevant values (i.e., horizontally in Exhibit 1) would presumably produce a general affective response to the role-situation having to do with house. Similarly, combining across all relevant role-situations (i.e., vertically in Exhibit 1) would presumably produce a general affective response to a value, such as achieving success or having fun. Combining these general evaluations of either role-situations or values – the margins of the matrix shown in Exhibit 1 – produces a general evaluation of life-as-a-whole.

If one asks about the basic evaluation process by which an affective response comes to be associated with a particular role-situation in the light of a particular value, one essentially extends the model into additional dimensions to take explicit account of social contexts which are presumed to affect the evaluation process. Although we have made some initial explorations in these areas, these matters will not be treated further here.

The conceptual model just described has emerged as we have wrestled with the problems of designing instruments to assess perceived life quality and analyzed data resulting from those instruments. Our most recent instrument makes an explicit attempt to assess what are shown as E_{ij}'s in Exhibit 1, as well as the marginal $E_{i.}$'s and $E_{.j}$'s, and the E... This instrument is based on foundations laid by earlier work which focused on identifying relevant domains – role-situations and values, on assessing affective responses to them (the $E_{i.}$'s and $E_{.j}$'s), and on exploring appropriate combination systems to predict overall life satisfaction – the E... It is outcomes from this foundation building that are discussed here.

V. IDENTIFYING CONCERNS

The task of identifying appropriate domains – role-situations and values – took several forms. The starting point was an extensive list of items which, ideally, would include all the significant 'concerns' of people.

One source of such concerns was previous surveys which had included open questions about people's hopes, fears, worries, and the like. Eight different studies were examined.[3] Most were conducted on national samples of Americans (though data from 12 other countries were represented). Most were conducted within the preceding five years. All focused on substantive issues of high social, political, and/or psychological concern.

By scanning the coding categories developed for these studies a list of some 800 concerns was developed.

A second source was structured interviews, typically lasting an hour or two, with about a dozen people of heterogeneous backgrounds. These interviews, focused on the respondents' daily activities and their reactions to those activities, were conducted by project research staff (rather than field-staff interviewers), and were fully recorded on tape. These were useful in further expanding the list of concerns.

A third source, particularly useful for expanding our list of value-type domains, was previously published lists of values, including proposals by Rokeach (1973), White (1944), Allport and Vernon (1931), Morris (1955), Dodd (1951), Lepley (1957), and Kluckhohn (1953).

Finally, we checked to make sure that our domains included those receiving attention from official national and international bodies concerned with social indicators, and from certain other researchers known to be working on social indicators. Lists proposed by the U.S. Department of Health Education and Welfare, by the U.S. Office of Management and the Budget, by the organization for Economic Cooperation and Development, and by a half dozen other research groups in the United States were examined.

After some *ad hoc* clustering to combine concerns which were apparent duplicates, and after abstracting to capture what we believed was the essence of certain concerns, our list currently includes approximately 100 concerns. The 123 items we have used to assess these appear in Exhibit 2.

VI. MAPPING DOMAINS

Clearly, some of the 123 items shown in Exhibit 2 are closer (in the sense of statistical overlap) to some than to others, and a major analytic task has been to identify semi-independent subsets of these items. This is the mapping function.

One example of such a mapping is provided in Exhibit 3, which is based on a cluster analysis and on a Smallest Space Analysis (Guttman, 1968) of 62 items which were included in the May 1972 survey. Respondents indicated their affective response to each item using a seven-point scale ranging from 'Delighted' at the positive end to 'Terrible' at the negative end. Exhibit 4 shows the seven scale categories, plus three off-scale

Exhibit 2

Items used to assess affective responses to specific concerns

M = May 1972 national survey (N = 1297)
N' = November 1972 national survey Form 1 (N = 1118)
N" = November 1972 national survey Form 2 (N = 1072)
A = April 1973 national survey (N ≈ 1450)
J = July 1973 respondents (N = 200)

How do you feel about . . .

1	Your children	M		J
2	Your wife/husband	M		J
3	Your marriage	M		J
4	Your own family life--your wife/husband, your marriage, your children, if any		N"	J
5	Close adult relatives--I mean people like parents, in-laws, brothers and sisters	M		J
6	The things you and your family do together	M	N"	J
7	Your own health and physical condition	M	N"	J
8	The extent to which your physical needs are met			AJ
9	The responsibilities you have for members of your family	M		J
10	How dependable and responsible you can be			J
11	Your opportunity to change things around you that you don't like		N"	J
12	Your chance of getting a good job if you went looking for one		N"	J
13	The extent to which you are tough and can take it			AJ
14	The way you handle the problems that come up in your life	M		J
15	The extent to which you can accept life as it comes and adapt to it			J
16	The extent to which you can adjust to changes in your life			AJ
17	The extent to which you get what you are entitled to--what is rightfully yours			J
18	The extent to which you are achieving success and getting ahead			AJ
19	The extent to which you compete and win at things			J
20	What you are accomplishing in your life	MN'		J
21	Yourself--what you are accomplishing and how you handle problems		N"	J
22	Yourself	M		AJ
23	How interesting your day to day life is			AJ
24	The amount of beauty and attractiveness in your world			AJ
25	The chance you have to enjoy pleasant or beautiful things		N"	J
26	Your sex life		N"	J
27	How much fun you are having	M	N"	
28	The amount of fun and enjoyment you have			AJ
29	The amount of physical work and exercise in your life			AJ
30	The way you spend your spare time, your non-working activities	M	N"	J
31	The amount of challenge in your life			J
32	The usefulness, for you personally, of your education	M		J
33	The extent to which you are developing yourself and broadening your life			AJ
34	The variety and diversity in your life			J
35	The amount of imagination and fantasy in your life			J
36	How creative you can be		N"	J

37	The extent to which you maintain links to the past and to traditions		J
38	The amount of time you have for doing the things you want to do	M	N" J
39	The amount of pressure you are under		AJ
40	The amount of relaxation in your life		J
41	Your chances for relaxation--even for a short time		N" J
42	The sleep you get		N" J
43	The freedom you have from being bothered and annoyed		AJ
44	Your independence or freedom--the chance you have to do what you want		AJ
45	The privacy you have--being alone when you want to be		N" J
46	The amount of friendship and love in your life		J
47	How much you are accepted and included by others		J
48	How sincere and honest you are		AJ
49	How sincere and honest other people are		AJ
50	How generous and kind you are		J
51	How generous and kind others are		J
52	The way other people treat you	M	J
53	The amount of respect you get from others		AJ
54	How fairly you get treated		AJ
55	How much you are admired or respected by other people		N" J
56	The respect other people have for your rights		N" J
57	The people who live in the houses/apartments near yours	M	J
58	People who live in this community	M	J
59	The people you see socially	M	J
60	Your friends		N" J
61	The things you do and the times you have with your friends	M	J
62	The chance you have to know people with whom you can really feel comfortable	M	J
63	How you get on with other people	M	J
64	How much you are accepted and included by others		AJ
65	The reliability of the people you depend on		N" J
66	How dependable and responsible people around you are		J
67	The extent to which your world seems consistent and understandable		J
68	How much you are really contributing to other people's lives		AJ
69	Your religious faith	M	J
70	The religious fulfillment in your life		AJ
71	Things you do to help people or groups in this community	M	J
72	The organizations you belong to	M	J
73	How neat, tidy, and clean things are around you		AJ
74	Your housework--the work you need to do around your home	M	N" J
75	Your job	M	N" J
76	The people you work with--your co-workers	M	J
77	The work you do on your job--the work itself	M	J
78	The pay and fringe benefits you get, and security of your job	M	J
79	What it is like where you work--the physical surroundings, the hours, and the amount of work you are asked to do	M	J
80	What you have available for doing your job--I mean equipment, information, good supervision, and so on	M	J

81	How secure you are financially			AJ
82	How well your family agrees on how family income should be spent		N"	J
83	The income you (and your family) have	M	N"	J
84	How comfortable and well-off you are			J
85	Your standard of living--the things you have like housing, car, furniture, recreation, and the like	M	N"	J
86	Your car	M		J
87	Your house/apartment	MN'	N"	J
88	The outdoor space there is for you to use outside your home	M		J
89	This particular neighborhood as a place to live	M		J
90	This community as a place to live	M	N"	J
91	The services you can get when you have to have someone come in to fix things around your home--like painting, repairs	M		J
92	The services you get in this neighborhood--like garbage collection, street maintenance, fire and police protection	M		J
93	The way the police and courts in this area are operating	M		J
94	How safe you feel in this neighborhood	M		J
95	Your safety			AJ
96	How secure you are from people who might steal or destroy your property		N"	J
97	The way you can get around to work, schools, shopping, etc.	M		J
98	The schools in this area	M		J
99	The doctors, clinics, and hospitals you would use in this area	M		J
100	What you have to pay for basic necessities such as food, housing, and clothing	M	N"	J
101	The goods and services you can get when you buy in this area--things like food, appliances, clothes	M	N"	J
102	The taxes you pay--I mean the local, state, and national taxes all together	M		J
103	The way your local government is operating	M		
104	What your local government is doing		N"	J
105	The way our national government is operating	M		
106	What our national government is doing		N'N"	J
107	What our government is doing about the economy--jobs, prices, profits	M	N"	J
108	Our national military activities	M		J
109	The way our political leaders think and act	M	N"	J
110	The condition of the natural environment--the air, land, and water in this area	M		J
111	The weather in this part of the state	M		J
112	Outdoor places you can go in your spare time	M		J
113	Your closness to nature			J
114	Nearby places you can use for recreation or sports		N"	J
115	The sports or recreation facilities you yourself use, or would like to use--I mean things like parks, bowling alleys, beaches	M		J
116	The entertainment you get from TV, radio, movies, and local events and places	M		J
117	The information you get from newspapers, magazines, TV, and radio	M		J
118	The information and entertainment you get from TV, newspapers, radio, magazines		N"	J
119	How the United States stands in the eyes of the rest of the world	M		J
120	Life in the United States today	M		J
121	The standards and values of today's society		N"	J
122	The way people over 40 in this country are thinking and acting	M		J
123	The way young people in this country are thinking and acting	M	N"	J

Exhibit 3

Map of 62 items

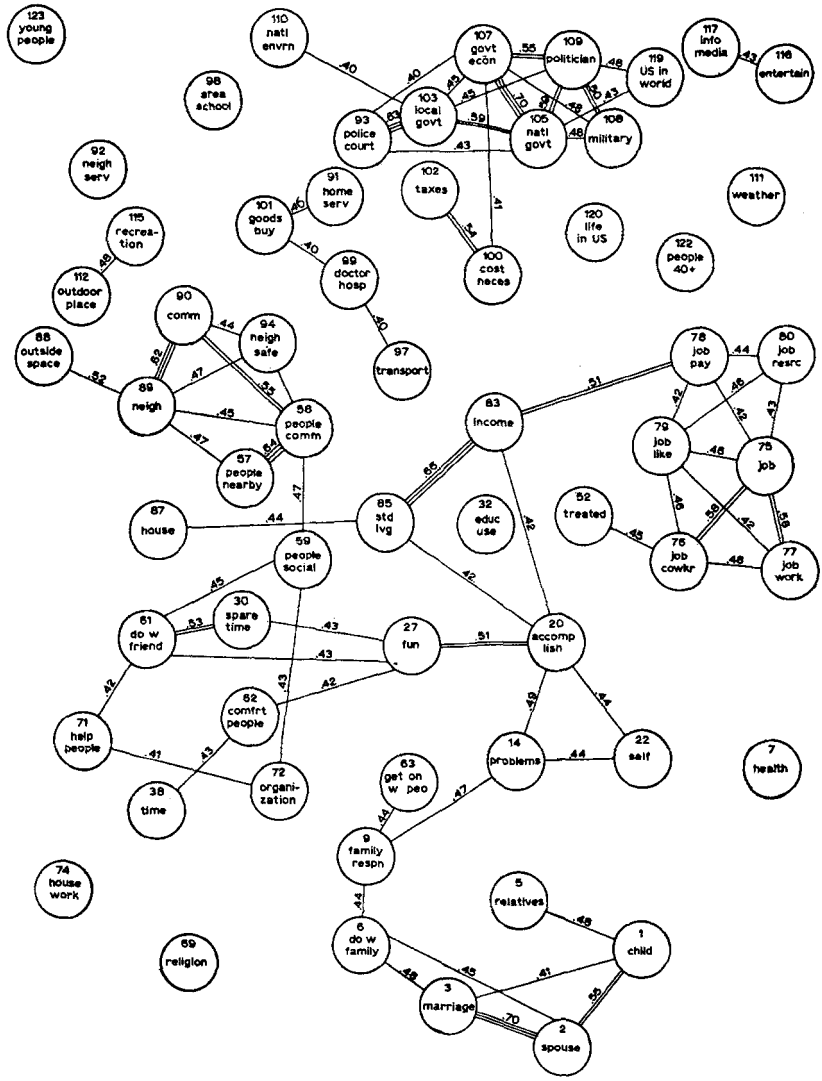
Data source: 1297 respondents to May 1972 national survey

Key

single line: $r = 0.4000 - 0.4949$

double line: $r = 0.4950 - 0.5949$

triple line: $r = 0.5950 +$

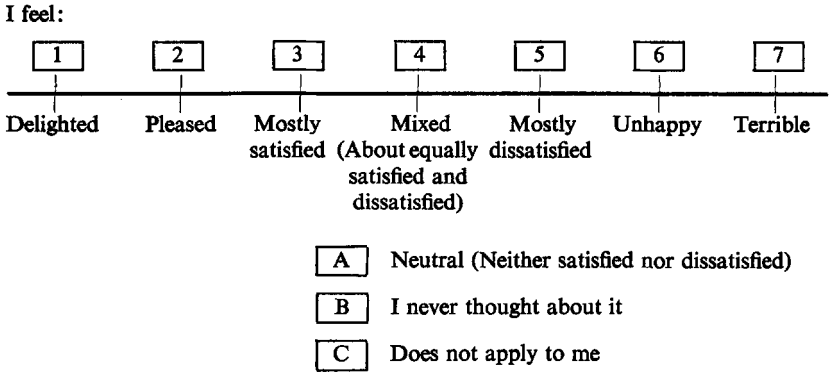


categories included to accommodate respondents who had never thought about the item or for whom it was irrelevant.

As is conventional in maps such as that in Exhibit 3, the closer two items are to each other, the higher was the correlation between them.[4] Of course, it would be surprising if 62 items as heterogeneous as these

Exhibit 4

Scale used in assessing affective responses



could be perfectly located with respect to each other in just two dimensions. Actually, four dimensions were required to meet the conventional goodness-of-fit criterion (alienation coefficient less than 0.15) of Smallest Space Analysis. However, the two-dimensional map shown in Exhibit 3 is a reasonably adequate representation of the actual relationships.

It is of interest to note that the highest correlations among these items tended to fall in the range 0.4 to 0.6. Of course, this degree of relationship was between items with short distances between them. The longest distances in Exhibit 3 are between items which correlated about zero with each other. Thus, based on Exhibit 3, one can see that a respondent who expressed an unusually positive reaction to his spouse was likely also to express an unusually positive reaction to his children. No prediction, however, could be made about his reactions to the national government based on knowledge of his feelings toward his spouse.

Although there is no need to attach conceptual meaning to the dimensions which emerge from Smallest Space Analysis, it is interesting to note that the most important dimension – the vertical dimension of Exhibit 3 –

arrays items according to social distance from the self: from concerns about self and family (at the bottom), through job and neighborhood concerns (in the middle), to governmental and media concerns (at the top).

These 62 items were reduced to 30 semi-independent domains by combining certain related items into clusters, eliminating others which were redundant, and leaving still others as single-item domains. (These 30 domains appear in Exhibit 7.)

Of course, the internal structure of a set of items may differ from one subgroup to another, and because of this our determination of clusters was based not only on the structure which resulted when all 1297 respondents were analyzed together, but also on separate analyses within ten different demographically defined subgroups. These subgroups included: men, women, blacks, four different age groups, two groups extreme with respect to socio-economic status, and a group of married, white, employed men in their middle years with children living at home. Each of the clusters formed from these 62 items had an internal structure which was reasonably similar in *all* of these subgroups.

An example of the result of applying such a procedure in defining clusters can be seen in our decision to form separate domains dealing with the local and national governments. Given the substantial interrelationships among local and national government items when all respondents were analyzed together, one might have assumed that all these items could be combined into a single cluster. The subgroup analysis, however, showed that men's affective responses to local government were unrelated to their responses to the national government. Consequently two separate domains were formed.

To explore the robustness of our clustering, several additional analyses were performed. A factor analysis with varimax rotation performed on the total set of 1297 respondents produced 14 factors, nearly all of which coincided well with our clusterings. Furthermore, an analysis based on ipsatized scores (which removed any overall differences between people which might be attributed to individual response bias and real differences in general life satisfaction) also showed a cluster structure highly consistent with that used in Exhibit 7.

Through such mapping and grouping of items semi-independent life domains can be identified, each of whose internal structures is known to be stable across a wide variety of population subgroups. These enter into the

conceptual model discussed previously as role-situations or values. The affective responses to these domains constitute the margin entries – i.e., the $E_{i.}$'s and $E_{.j}$'s – of the model.

Shortly we shall report how these many domains, individually and in various combinations, relate to perceived overall quality of life (the E.. of the model). First, however, we report on the replicability of the basic domain structure and then turn to a short description of how we measured perceived quality of life.

Replicability of Domain Structures

Including some of the same items in two surveys of independent but equivalent national samples – the May 1972 and November 1972 (Form 2) surveys – provided an opportunity to assess the replicability of the basic domain structure portrayed in Exhibit 3. Eighteen identical (or nearly identical) items were included in both surveys.[5] These generated 153 relationships matchable from one survey to another. These relationships varied in strength from 0.0 to 0.7 (Pearson r's) in each survey, and correlated with one another 0.89 (Pearson r). This indicates that the relative magnitudes of the relationships in one survey were highly similar to those in the other and supports the notion that the basic structure used to identify domains – at least among these items – is itself highly replicable.

VII. MEASURES OF PERCEIVED OVERALL LIFE QUALITY

We have used about 30 different items to assess a person's affective response to his life as a whole. As shown in Exhibit 5, some have been straightforward questions asking "How do you feel about your life as a whole?" using several different response scales. Others have asked respondents to place themselves on a ladder-type scale. And still others asked the respondent to indicate whether certain specified affective experiences have actually occurred recently in his life.[6]

While it is our intention to explore the extent to which many of these can be predicted on the basis of affective responses to specific domains, the bulk of our analysis to date has focused on a scale which we have come to call 'Life #3'. This measure is computed as the arithmetic mean of the coded responses given by the respondent to the question "How do you feel about your life as a whole?" asked twice in the interview. These two items

Exhibit 5

Items used to assess affective responses to life as a whole

M = May 1972 national survey (N = 1297)
N' = November 1972 national survey Form 1 (N = 1118)
N" = November 1972 national survey Form 2 (N = 1072)
A = April 1973 national survey (N ≈ 1450)
J = July 1973 respondents (N ≈ 200)

A	How do you feel about your life as a whole? (7-pt scale: Delighted . . . Terrible--see Exhibit 4) Short name: Life #1	MN'N"AJ
B	(Same as item A, asked later in interview) Short name: Life #2	M N"AJ
C	(Mean of coded answers to items A and B) Short name: Life #3	M N"AJ
D	How satisfied are you with your life as a whole these days? (7-pt scale: Completely satisfied . . . completely dissatisfied)	N'N" J
E	Where would you put your life as a whole on the feeling thermometer? (Graphic scale from very cold--negative to very warm--positive)	N'N"
F	Taking all things together, how would you say things are these days--would you say you're very happy, pretty happy, or not too happy these days? (3-pt scale)	M N" J
G	How do you feel about how happy you are? (7-pt scale: Delighted . . . Terrible--see Exhibit 4)	N" J
H	Considering how your life is going, would you like to continue much the same way, change some parts of it, or change many parts of it? (3-pt scale)	N" J
I	(Bradburn's Positive Affect Scale: number of five positive events experienced during past few weeks--e. g., "feeling on top of the world")	N" J
J	(Bradburn's Negative Affect Scale: number of five negative events experienced during past few weeks--e. g., "feeling depressed or very unhappy")	N" J
K	(Bradburn's Affect Balance Scale: Scale I minus Scale J plus five)	N" J
L	Most people worry more or less about somethings. Would you say you never worry, worry a little, worry sometimes, worry a lot, or worry all the time?	N'N" J
M	I think my life is Boring . . . Interesting (7-pt scale)	M J
N	I think my life is Enjoyable . . . Miserable (7-pt scale)	M J
O	I think my life is Useless . . . Worthwhile (7-pt scale)	M J
P	I think my life is Friendly . . . Lonely (7-pt scale)	M J
Q	I think my life is Full . . . Empty (7-pt scale)	M J
R	I think my life is Discouraging . . . Hopeful (7-pt scale)	M J
S	I think my life is Disappointing . . . Rewarding (7-pt scale)	M J
T	I think my life Brings out the best in me . . . Doesn't give me much chance (7-pt scale)	M J
U	Now, try and forget all the things in your life that annoy or worry you; how do you feel about the good and pleasant parts of your life? How do these nice aspects, by themselves, make you feel? (7-pt scale: Delighted . . . Terrible--see Exhibit 4)	N' J
V	Now try and forget all the good and pleasant parts of your life; how do you feel about the things that annoy or worry you? How do these poor aspects, by themselves, make you feel? (7-pt scale: Delighted . . . Terrible--see Exhibit 4)	N' J
W	Here are some circles that we can imagine represent the lives of different people. Circle eight has all plusses in it, to represent a person who has all good things in his life. Circle zero has all minuses in it, to represent a person who has all bad things in his life. Other circles are in between. Which circle do you think comes closest to matching your life? (Scale: row of nine circles with contents ranging from eight +'s to eight -'s)	AJ

X	Here is a picture of a ladder. At the bottom of the ladder is the worst life you might reasonably expect to have. At the top is the best life you might expect to have. Of course, life from week to week falls somewhere in between. Where on the ladder would you say was your best week in the past year--on which rung would you put it? (Scale: ladder with nine rungs extending from "Best life I could expect to have to "Worst life I could expect to have")	AJ
Y	Where on the ladder was your worst week during the past year--on which rung? (Same ladder scale as Item X)	AJ
Z	Where was your life most of the time during the past year? (Same ladder scale as Item X)	AJ
AA	Where was your life five years ago? (Same ladder scale as Item X)	AJ
AB	Where do you expect your life to be five years from now? (Same ladder scale as Item X)	AJ

Exhibit 6

Interrelationships among 12 measures of perceived overall life quality

Data sources: 1072 respondents to November 1972 (Form 2) national survey
1118 respondents to November 1972 (Form 1) national survey
1297 respondents to May 1972 national survey

Notes: Coefficients are product moment correlations
All coefficients based on November 1972 (Form 2) data unless otherwise noted
N' signifies November (Form 1) data
M signifies May data

	A	B	C	D	E	F	G	H	I	J	K	L	U
A Life #1													
B Life #2	.71 .61M												
C Life #3	.92 .90M	.93 .90M											
D 7-pt satisfaction	.64 .56N'	.66	.70										
E Thermometer	-.51 -.49N'	-.49	-.53	-.47 -.46N'									
F 3-pt happiness	.55 .49M	.54 .47M	.59 .53M	.49	-.39								
G 7-pt happiness	.68	.74	.77	.63	-.50	.57							
H Changes	.44	.39	.45	.44	-.36	.37	.37						
I Positive affect	-.33	-.34	-.36	-.30	.25	-.39	-.36	-.13					
J Negative affect	.30	.29	.32	.31	-.20	.31	.30	.36	.01				
K Affect balance	-.44	-.45	-.48	-.43	.32	-.50	-.47	-.35	.71	-.70			
L Worries	.24 .21N'	.27	.28	.27 .24N'	-.16 .13	.24	.30	.22	-.12	.32	-.31		
U Good parts	.37N'			.34N'	.25N'							.09N'	
V Bad parts	.25N'			.27N'	.23N'							.27N'	.06N'

have typically been separated by about 8 to 12 minutes of intervening interview material, all of it focusing on quality-of-life issues.

We know that Life #3 has at least moderate reliability. Its two constituent parts typically correlate with each other in the range 0.6 to 0.7 – as can be seen in Exhibit 6. (Ninety-two percent of respondents to the May survey answered the two component items of Life #3 with answers that were either identical or in adjacent categories.) We also know that other global measures tend to correlate as well as or better with Life #3 than they do with other global measures – as is also shown in Exhibit 6. In the few comparative analyses we have run, Life #3 has been at least as predictable (sometimes more so) as other global measures when using affective responses to specific domains as predictors.

This index which we call Life #3 will play the role of dependent variable in the analyses reported next.

VIII. PREDICTING PERCEIVED QUALITY OF LIFE

Having identified a large number of specific life domains and several global measures of perceived life quality, the next step is to put the two sets together. What is an appropriate combination rule? Which domains are most important in predicting life quality? How well do the affective responses to different domains, taken together, explain a person's overall sense of life quality? Do prediction systems derived for one population subgroup work well in other subgroups? These are the questions which need answers.

Combination rule. After rather extensive analysis of the May 1972 data – which include the items needed to construct the Life #3 measure and the 30 domains shown in Exhibit 7, we came to the conclusion that a weighted additive combination of affective responses is adequate to capture virtually all the predictive power present in the domain clusters.[7] We had thought there might be substantial interactions in the data, but so far, none of marked effect has been found. We thought, for example, that if a person were in poor health this might dominate his sense of overall life quality, regardless of how he felt about the national government, his house, or his family. The data suggest, however, that this hypothesized interaction, and a large number of others which were checked, simply did not occur.[8]

Exhibit 7

Perceived quality of life (Life #3) predicted by affective responses to 30 domains

Data source: May 1972 national survey

		All respondents		Men		Women	
N:		1297		547		750	
Percent variance explained:		55%		64%		60%	
Multiple correlation:		.74		.80		.77	
Population estimate:		50%		51%		50%	
		eta	beta	eta	beta	eta	beta
14+20+22	EFFICACY INDX	.55	.26	.53	.23	.57	.32
1+2+3	FAMILY INDX	.38	.19	.38	.20	.39	.16
83+85	MONEY INDX	.47	.15	.43	.15	.50	.14
27	AMOUNT OF FUN	.51	.15	.51	.19	.51	.17
87	HOUSE/APARTMENT	.36	.12	.40	.14	.35	.09
6	THINGS DO W FAMILY	.38	.11	.39	.12	.39	.13
38	TIME TO DO THINGS	.28	.09	.32	.16	.27	.10
123	YOUNG PEOPLE THINK	.15	.09	.11	.14	.23	.10
30	SPARE TIME ACTIVITES	.41	.09	.44	.09	.39	.08
112+115	RECREATION INDX	.22	.07	.26	.07	.22	.10
105+107+108+109	NATL GOVT INDX	.26	.07	.28	.09	.28	.10
97+99+101	CONSUMER INDX	.31	.07	.33	.11	.31	.11
93+103	LOCAL GOVT INDX	.23	.07	.31	.11	.18	.05
74	HOUSEWORK	.26	.07	.30	.12	.25	.06
116+117	MEDIA INDX	.15	.06	.22	.12	.12	.04
7	YOUR HEALTH	.29	.06	.29	.09	.30	.07
100+102	COST INDX	.26	.06	.26	.09	.29	.06
98	SCHOOLS IN AREA	.17	.06	.23	.09	.15	.08
92	SERVICES IN NGHBRHD	.20	.06	.26	.13	.18	.07
5	CLOSE ADULT RELATIVE	.22	.06	.25	.10	.22	.05
110	NATURAL ENVIRONMENT	.13	.05	.16	.09	.14	.05
62	COMFORTABLE PEOPLE	.31	.05	.35	.05	.30	.06
57+58+88+89+90+94	NEIGHBORHOOD INDX	.31	.04	.33	.07	.30	.04
122	PEOPLE OVER 40 THINK	.22	.04	.25	.10	.21	.04
72	ORGANIZATIONS BELONG	.21	.04	.22	.05	.21	.05
111	WEATHER	.12	.04	.19	.06	.10	.05
59+61	FRIENDS INDX	.34	.03	.36	.06	.34	.05
75+76+77+79+80	JOB INDX	.23	.03	.36	.11	.15	.02
69	RELIGIOUS FAITH	.24	.03	.28	.06	.24	.07
63	GETTING ON W PEOPLE	.31	.01	.35	.10	.30	.06

Predictive power. Exhibit 7 shows the results of using an additive model to predict Life #3 on the basis of the 30 domains identified in the May 1972 survey.[9] It shows results when all respondents were combined together, and also for men and women separately. The prediction scheme used in Exhibit 7 (and also in Exhibits 8–11) is that of Multiple Classification Analysis (Andrews, Morgan, Sonquist, 1967), a special form of multiple regression which does not assume that relationships are linear nor that predictor variables are intervally scaled.[10] One may note that in these data the 30 clusters explained 55% of the variance in Life #3

(multiple correlation = 0.74). When adjusted to produce an estimate for the population as a whole, this value was exactly 50%. Domains which made the largest independent contribution to this explanation (as shown by the beta coefficients in Exhibit 7) were those having to do with self-efficacy, family, money, fun, and housing. It is perhaps notable that all these domains refer to concerns close to self and home.

Exhibit 7 does not show the direction or form of the relationships between domains and Life #3. These are of considerable interest and can be summarized easily: Nearly all were close to linear and in the expected direction – i.e., positive affective responses to the domains tended to go with more positive evaluation of life-as-a-whole.

A look at the results when men and women were analyzed separately

Exhibit 8

Perceived quality of life (Life #3) predicted by subsets of the 30 domains of Exhibit 7

Data sources: May and November 1972 national surveys

Domain subset:		Best 16	Best 6	Selected 12	
Survey:		May	May	May	Nov
N:		1297	1297	1297	1072
Percent variance explained:		54%	49%	52%	62%
Multiple correlation:		.73	.70	.72	.79
Population estimate:		51%	48%	50%	59%
		beta	beta	beta	beta
14+20+22	EFFICACY INDX	.27	.28	.25	
21	YOURSELF				.17
1+2+3	FAMILY INDX	.18	.17	.19	
4	FAMILY				.19
83+85	MONEY INDX	.15	.20	.15	.18
27	AMOUNT OF FUN	.16	.21	.16	.23
87	HOUSE/APARTMENT	.12	.13	.11	.11
6	THINGS DO W FAMILY	.09	.10	.08	.09
38	TIME TO DO THINGS	.09		.07	.11
123	YOUNG PEOPLE THINK	.08			
30	SPARE TIME ACTIVITES	.08		.08	.07
112+115	RECREATION INDX	.06			
105+107+108+109	NATL GOVT INDX	.08		.09	
106+107+109	NATL GOVT INDX				.07
97+99+101	CONSUMER INDX	.06		.06	
101	GOODS & SERVICES				.06
93+103	LOCAL GOVT INDX	.06			
74	HOUSEWORK	.07			
116+117	MEDIA INDX	.05			
7	YOUR HEALTH	.06		.06	.09
75+76+77+79+80	JOB INDX			.02	
75	YOUR JOB				.10

Exhibit 9

Perceived quality of life (Life #3) predicted by affective responses to 28 domains and by a subset of 12 domains

Data source: November 1972 national survey

Domain subset:		28 domains		Selected 12
N:		1072		1072
Percent variance explained:		67%		62%
Multiple correlation:		.82		.79
Population estimate:		61%		59%
		eta	beta	beta
21	YOURSELF	.54	.12	.17
4	FAMILY LIFE	.52	.12	.19
83+85	MONEY INDX	.57	.12	.18
27	AMOUNT OF FUN	.61	.15	.23
87	HOUSE/APARTMENT	.44	.13	.11
6	THINGS DO W FAMILY	.51	.08	.09
38	TIME TO DO THINGS	.31	.08	.11
30	SPARE TIME ACTIVITES	.47	.06	.07
106+107+109	NATL GOVT INDX	.25	.05	.07
101	GOODS & SERVICES	.25	.05	.06
7	YOUR HEALTH	.38	.09	.09
75	YOUR JOB	.37	.09	.10
55	ADMIRED BY OTHERS	.34	.07	
56	RESPECT FOR RIGHTS	.28	.04	
65	RELIABILITY OTHERS	.38	.10	
60	YOUR FRIENDS	.36	.06	
11	OPPORTUNITY CHANGES	.37	.04	
26	SEX LIFE	.40	.07	
96	SECURE FROM THEFT	.27	.05	
45	PRIVACY	.37	.07	
12	GETTING A GOOD JOB	.37	.07	
42	SLEEP	.31	.08	
121	SOCIETY'S STANDARDS	.26	.05	
114	RECREATIONAL PLACES	.27	.06	
36	CREATIVITY	.32	.02	
41	RELAXATION	.39	.06	
82	AGREEMENT SPENDING	.42	.06	
25	BEAUTIFUL THINGS	.55	.16	

shows a generally high similarity – both in total explanatory power, and in the domains which made the biggest independent contributions – to the results for the total population. One of the bigger discrepancies between men and women occurred for a domain well down on the list – the job index, which, perhaps not surprisingly, had a substantially higher beta for men than for women.

Having discovered that these 30 domains explained about half the variance in overall sense of life quality does not imply that all 30 were in fact needed. Exhibit 8 records some of our explorations at reducing

Exhibit 10

Perceived quality of life (Life #3) predicted by 6 classification variables and affective responses to 12 domains

		Data source: May 1972 national survey			
Predictor set:		6 class + 12 domains		6 class	12 domains
N:		1297		1297	1297
Percent variance explained:		53%		8%	52%
Multiple correlation:		.73		.28	.72
Population estimate:		50%		5%	50%
		eta	beta	beta	beta
	INCOME FU	.18	.05	.16	
	SEX OF R	.04	.02	.01	
	RACE OF R	.03	.03	.03	
	FAMILY LIFE CYCLE	.20	.13	.19	
	R'S AGE-8PT	.09	.08	.12	
	EDUCATION R	.07	.03	.06	
87	HOUSE/APARTMENT	.36	.12		.11
30	SPARE TIME ACTIVITES	.41	.09		.08
6	THINGS DO W FAMILY	.38	.08		.08
7	YOUR HEALTH	.29	.05		.06
27	AMOUNT OF FUN	.51	.15		.16
38	TIME TO DO THINGS	.28	.07		.07
75+76+77+79+80	JOB INDX	.23	.03		.02
105+107+108+109	NATL GOVT INDX	.26	.09		.09
14+20+22	EFFICACY INDX	.55	.25		.25
1+2+3	FAMILY INDX	.38	.15		.19
97+99+101	CONSUMER INDX	.31	.07		.06
83+85	MONEY INDX	.47	.15		.15

the set – first to the 16 best predictors (which provided just as good an explanation as the full set of 30), then to the six best (which did almost as good a job), and finally to a selected set of 12. The 12 selected domains were chosen with several criteria in mind: (1) demonstrated predictive power (shown in Exhibit 7); (2) dispersion in the multi-dimensional space (shown in Exhibit 3); and (3) potential policy relevance. Exhibit 8 includes two columns of data for the 12 selected predictors – one showing results from the May survey and one from the November (Form 2) survey. While the explanatory power of these 12 was modestly higher in November (a result we currently attribute to sampling fluctuations), the general pattern of relationships is largely the same in the two surveys.

Exhibit 9 takes the 12 selected domains and combines them with other domains measured in the November 1972 survey to see whether a further increase in explanatory power can be achieved. While all of the 28 variables included in this analysis made their own contribution when others

Exhibit 11

Perceived quality of life (Life #3) as predicted by affective responses to 12 selected domains for all respondents and in 22 different population subgroups

Data source: May 1972 national survey

Population group	N	Percent variance explained	Multiple correlation	Population estimate
All respondents	1297	52%	.72	50%
Men	547	54%	.73	49%
Women	750	55%	.74	51%
16-29 years old	358	59%	.77	51%
16-29 years, head of household	276	63%	.79	53%
30-44 years old	356	69%	.83	63%
45-59 years old	275	61%	.78	51%
45-64 years old	363	56%	.75	48%
60-97 years old	305	53%	.73	42%
Low SES	337	57%	.75	48%
Mid SES	268	65%	.81	55%
High SES	408	60%	.77	54%
Employed men	413	58%	.76	51%
Low income	480	57%	.75	51%
Medium income	346	60%	.77	52%
High income	403	56%	.75	49%
Married	890	49%	.70	46%
Non-married	406	61%	.78	54%
0-11 grades of school	423	63%	.79	58%
High school graduate	307	64%	.80	55%
Some college education	330	58%	.76	49%
College degree	223	60%	.77	46%
Married and employed	512	55%	.74	50%

were held constant (i.e., all betas were greater than zero), the joint explanatory power of the set of 28 was about the same as that achieved using just the previously selected 12.

Thus in two surveys these 12 selected predictors proved to include all of the predictive power included in the larger sets of domains. Hence, we shall use these 12 in the analyses described next.

Predictive power of classification variables. In any attempt to explain perceived quality of life it is of interest to know to what extent it can be explained by conventional classification variables and how these variables compare in predictive power with affective responses to domains.

Exhibit 10 provides an answer. Here we see that six classification variables together explained only about five percent of the variance of Life #3, that the 12 selected domains together explained 50%, and that combining the classification variables with the domain scores produced no increase above the 50% level. In short, the classification variables alone related rather weakly to general sense of life satisfaction, and contributed nothing over and above the explanatory power of affective responses to these 12 domains.[11]

Application in subgroups of the population. Given the goal of constructing an instrument which will be usable in a wide variety of population subgroups, it is of interest to see how effective the 12 selected domains were at explaining variance in various subgroups. Exhibit 11 presents the results of 22 parallel analyses which begin to answer this question.

It is of considerable interest to note that these 12 domains explained about half of the variance in *each* of these groups, suggesting that these domains have a rather broad relevance to different subcultures in the United States. While it is true that the precise prediction formula by which these domains were optimally combined differed somewhat from group to group, it is our belief – based on exploratory analyses – that application of the formula derived for the total population will provide at least moderately good prediction even when applied to particular subgroups.

IX. SUMMARY AND DISCUSSION

This report presents the current status of a series of studies oriented toward the assessment of perceived life quality. Once developed and monitored over a period of years, it is our belief that such an assessment can make a significant contribution to the general goals of the social indicator movement – a better description and understanding of social change, and improved policy making.

Described here is a two-dimensional conceptual model which proposes that one's overall sense of quality of life is understandable in terms of a combination of affective responses (i.e., evaluations) of life 'domains'. Life domains are of two types: role-situations and values. Although not tested by results reported here, it is hypothesized that the role-situations are evaluated in terms of the values, and – conversely – that values are evaluated in the context of the role-situations. However, one of the im-

portant results which *is* reported is that additive combinations of affective responses to domains provided moderately good explanations of people's overall sense of life quality. The two-dimensional model can be easily expanded into additional dimensions to include social factors which may affect the evaluation process.

In an attempt to identify an appropriate set of domains, an extensive scan of several types of sources eventually led to the writing of 123 items to which people have been asked to give affective responses. (Data reported here come from several surveys of American adults. The surveys were each based on nationally representative probability samples which yielded between 1000 and 1500 respondents.) Through a variety of mapping and clustering techniques the 80-odd items from this total pool which had been included in surveys in May or November 1972 were grouped into a smaller number of semi-independent clusters. These 'clusters' (many of which include just a single item) constituted the domains of the model. Clusters were defined only when they were found to be internally stable in ten different demographic subgroups of the population. Replication in independent but equivalent national samples showed the interrelationships *between* domains also to be highly stable.

About thirty different measures of a person's sense of overall life quality are described, and of these one was selected for use as a dependent variable, to be predicted by the domains. A series of analyses, some of them replicated in more than one survey, showed that a particular subset of 12 domains could explain 50% to 60% of the variance in sense of overall life quality, that neither other domains nor standard classification variables contributed anything additional to this explanatory power, and that this level of explanation could be achieved in each of 22 different subgroups of the American population (defined in demographic terms) as well as in the population considered as a whole.

In its nature of a progress report, this document has necessarily left a number of important questions unexplored. Clearly, the reported results do not fully exploit the potential complexity of the conceptual model. This awaits further work. Also, one wonders how close to the actual upper limit is the achieved explanatory power of 50%–60%. Given the unreliability of the measures the upper limit is certainly not 100%. Further work will attempt to assess the reliability of the measures employed. It is also apparent that more domains have been identified than have been reported

upon. Data pertaining to some domains have been collected only very recently, and await our attention. The roles of the various types of social contexts in the process of evaluating life quality also need exploration. These issues, and a number of others, will set the focus of our work in coming months.

While our work is far from complete, we believe the results reported here indicate a rational, empirical basis for measuring perceived quality of life, at any of several different levels of broadness, generality, and abstraction. Substantial data have been collected from representative national samples which can provide statistical baselines for any of a wide variety of possible quality-of-life measures which may ultimately seem most appropriate.

Institute for Social Research,
University of Michigan,
Ann Arbor

NOTES

* The research reported here has been funded through grant #GS3322 from the National Science Foundation, whose support is gratefully acknowledged. Results contained herein were presented to the 1973 Annual Convention of the American Sociological Association and to the 1973 Conference of the Urban and Regional Information Systems Association. We thank Kenneth Land for his comments on an earlier version of this report. Rick Crandall, Marita Di Lorenzi, William Murphy, and Elizabeth Taylor have assisted in the design and conduct of this project.

[1] Campbell (1972) has discussed this matter.

[2] The May 1972 survey was based on a sample of adults 18 years of age and older (but included married people of any age) living in non-institutional dwelling units in the 48 coterminous states. The response rate to this survey was 76%. Several comparisons of the distributions of the survey respondents with distributions obtained from the Census lead us to believe these data are closely representative of the American adult population with respect to age, sex, and race.

The two November surveys were each the second wave of panel studies. The population from which the original samples were drawn was defined similarly to that for the May survey, except with the additional restriction that respondents had to be American citizens. Effective response rates for these two surveys are about 62% each (i.e., number respondents to Wave 2 as a percent of number of sample selections for Wave 1). No comparisons of the respondents to the November surveys with Census distributions have yet been made. However, we have no reason to expect gross biases in the data.

[3] These surveys included: (1) A series of studies carried out by Cantril (1965) and his colleagues in 13 different nations which assessed human concerns; (2) a 1969 survey of the American population which focused on attitudes about the use of violence, subsequently reported in Blumenthal *et al.* (1972); (3) a 1969 national survey of Amer-

ican workers which assessed working conditions (Survey Research Center, 1971); (4) a recent national panel survey of American youth (Bachman *et al.*, 1967); (5) several hundred interviews taken in low-income urban neighborhoods during 1970 (Lansing *et al.*, 1971); (6) a 1971 national survey on issues relating to life quality conducted by our colleagues Campbell, Converse, and Rodgers (unpublished as yet); (7) a 1966 national survey conducted by our colleagues Miller, Converse, and Stokes dealing with political and election issues; and (8) a 1967 study of Detroit residents concerned with issues of race and civil disorder (Aberbach and Walker, 1973).

[4] For reasons of economy Pearson product moment correlations were used to assess relationships. Since the affective response scale achieved no more than ordinal measurement, one might argue that an ordinal-level statistic should have been used. A check on a subset of the relationships for which both types of statistics were computed showed that in these data the order of gammas correlated 0.95 with the order of the Pearson r's.

[5] The 16 identical items can be identified from information given in Exhibit 2. The nearly identical items were numbers 103–104 and 105–106, respectively.

[6] A number of these global measures have been used in previous studies. Items D, F, and M-T of Exhibit 5 were used by our colleagues Campbell, Converse, and Rodgers in their survey of quality of life (unpublished). Items used to produce the Positive Affect, Negative Affect, and Affect Balance scales were used previously by Bradburn (1969). Items F and L were previously used by Gurin *et al.* (1960). The items using a ladder-format response scale – X–Z, AA and AB – were adapted from Cantril (1965).

[7] The weight mentioned here is that derivable from fitting a least-squares regression model and is obtained from considering only the interrelationships among the domains and Life #3. No additional weighting variable is introduced. At an early stage in our work we thought it might be useful to introduce importance scores assigned to the domains by respondents as a weighting factor. However, extensive analysis of nationally representative data suitable for this purpose convinced us that no predictive gain could be achieved.

[8] This same conclusion that additive models were appropriate for combining domain satisfactions to predict a global measure of life satisfaction has also been reached by our colleagues Campbell, Converse and Rodgers from their analysis of another set of survey data on quality of life.

[9] Domains of Exhibit 7 consisting of a cluster of several items were measured by a single index score in this analysis. The index was computed as the mean of the coded responses to the indicated items.

[10] In addition to the several measures of joint predictive power indicated in Exhibit 7 (and subsequent exhibits), Multiple Classification Analysis (MCA) produces two other statistics of interest: eta and beta. Eta is the conventional measure of bivariate relationship between the dependent variable and the indicated predictor. Beta is a special measure unique to MCA (but analagous to the beta of multiple regression) which provides an indication of the strength of relationship between the dependent variable and the indicated predictor while statistically holding constant all other predictors.

[11] One might ask whether the low explanatory power of the classification variables could be attributed to the inappropriate use of an additive model in this analysis. A careful check showed that a routine which constructs an optimal model – including interaction effects if they are present (Morgan *et al.*, 1971) – did no better than the simple additive model.

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