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THE STRUCTURE OF SUBJECTIVE WELL-BEING IN NINE WESTERN SOCIETIES*

ABSTRACT. The structure of subjective well-being is analyzed by multidimensional mapping of evaluations of life concerns. For example, one finds that evaluations of Income are close to (i.e., relatively strongly related to) evaluations of Standard of living, but remote from (weakly related to) evaluations of Health. These structures show how evaluations of life components fit together and hence illuminate the psychological meaning of life quality. They can be useful for determining the breadth of coverage and degree of redundancy of social indicators of perceived well-being. Analyzed here are data from representative sample surveys in Belgium, Denmark, France, Germany, Great Britain, Ireland, Italy, Netherlands, and the United States (each N ≈ 1000). Eleven life concerns are considered, including Income, Housing, Job, Health, Leisure, Neighborhood, Transportation, and Relations with other people. It is found that structures in all of these countries have a basic similarity and that the European countries tend to be more similar to one another than they are to USA. These results suggest that comparative research on subjective well-being is feasible within this group of nations.

1. INTRODUCTION

Interest in social indicators of life quality, including citizens' perceptions of their own well-being, has inspired a number of sample surveys in recent years.[1] Such surveys, particularly when done on a comparative and repetitive cross-national basis, have enormous potential for providing information about changing levels of social and economic development and about the processes and conditions that lead to or are associated with the 'good life'. However, the feasibility and usefulness of comparative research in this area — as in any area — are contingent upon the identification of an underlying phenomenon that is in fact *comparable* from one society to another. While a person's sense of happiness, satisfaction, etc. is of acknowledged importance, the cross-cultural comparability of the phenomenon of perceived well-being is largely unexplored. This paper reports an initial, and necessarily incomplete, examination of the comparability of psychological structures of subjective well-being in nine western societies.

This Introduction develops the conceptual framework for the analysis that follows, and describes some of the interests that motivate this presentation. Section 2, Data, describes the sample surveys from which reasonably comparable data from nine nations have been extracted and details the items

and response scales used to measure perceived well-being. The section on analysis methods discusses the statistical techniques by which we identified the structures of perceived well-being and assessed their similarity across countries. There follows the main substantive results – first for USA and then for eight European nations. The final section of the paper provides some general conclusions, some cautions about interpretation, and some suggestions for further investigation of the issues.

Research on perceived well-being commonly distinguishes between evaluations of life-as-a-whole (sometimes referred to as general or global evaluations) and evaluations of specific life concerns, such as housing, job, relations with other people, safety, or fairness. When we refer to the "structure of subjective well-being" we refer to the way specific life concerns, and evaluations of them, fit together in people's thinking. For example, we ourselves have shown that among American adults evaluations of one's marriage are – quite reasonably – strongly related to evaluations of one's spouse, that evaluations of national political leaders are strongly related to evaluations of government economic programs, but that evaluations of the first pair are virtually independent of evaluations of the second pair. These statistical results suggest that Marriage and National government are distinct life concerns for most Americans. When one combines these results with numerous others, some of which will be described later in this paper, one can identify a psychological structure, or 'cognitive map', from which one can infer the relative positions of life concerns as they are perceived by a particular group of people.

Such structures are interesting for a number of reasons. In showing how well-being perceptions are organized in people's thinking, they indicate some fundamental aspects of what evaluations of life quality *mean* to these people. Such structures help to identify the distinct well-being concerns that particular groups have, and show the extent that evaluations of these different concerns overlap or intersect with one another. This suggests one of the important practical uses of such structures: They provide guides to the adequacy of coverage and statistical efficiency of indicators of perceived well-being. To the extent that people in different societies organize their thinking about well-being in basically similar ways, it is feasible and potentially productive to undertake cross-cultural research with standardized instruments and to make well-grounded comparative statements based on the results. However, if the basic phenomenon that is being investigated – well-being perceptions – shows markedly different structures in different societies, measurements and

interpretations must be society-specific and any comparative statements must be advanced with extreme caution.[2]

The main substantive purpose of this paper is (a) to explore the structural similarity of well-being perceptions in nine western societies. In so doing, we shall have the opportunity to pursue two other matters of more didactic interest. (b) Our analysis is based on a set of national sample surveys that offer rich opportunities for secondary analysis, and our use of these data may increase analysts' awareness of their existence and accessibility. (c) This analysis involves use of some relatively new statistical methods for assessing similarities among configurations (i.e., structures) and illustrates the need for some further statistical developments; perhaps it will encourage statisticians to pursue these developments.

Before proceeding further, the reader should be cautioned that the analysis reported here is of a rather exploratory nature. The issue of crosscultural similarities in structures of perceived well-being is a fundamental one for those interested in comparative research or in social policies, but the data requirements for a fully adequate investigation are immense. While the data at our disposal are unusually extensive, they are not ideal, and they cannot provide a definitive estimate of the degree of cross-cultural similarity of structures. As will be seen, however, our results do suggest that the similarities may be substantial, and in so doing they suggest that further investigations along this line seem promising.

2. DATA

The data analyzed here come from representative national surveys of the non-institutionalized adult populations in the following nine countries: USA, France, Great Britain, Germany, Italy, Netherlands, Belgium, Denmark, and Ireland. The American data are those of Andrews and Withey (1976) and were collected in May 1972.[3] The European data come from a series of parallel surveys conducted by the European Economic Community and were collected in each of the EEC countries in May 1976.[4] The American survey includes 1297 respondents; each of the eight national European surveys includes approximately 1000 respondents (range 923 to 1047). All of the surveys were conducted by personal interviews using professional field staffs and methods such as to suggest that the data include no unusual quality problems. Interviews were conducted in the native language of the respondents.

In the American survey more than 60 questions asking for evaluations of various life concerns were answered by the respondents. The European data include fifteen such items, of which 11 are reasonably similar to those in the

EXHIBIT 1

Items Used to Assess Evaluations of Life Concerns in American and European Surveys

Reference	American wording	European wording
(Lead in)	In the next section of this interview we want to find out how you feel about parts of your life and life in this country as you see it. Please tell me the feelings you have now – taking into account what has happened in the last year and what you expect in the near future.	Now I would like you to indicate on this scale to what extent you are satisfied with your present situation in the following respects...
house	Your house/apartment	The house, flat or apartment where you live
neigh	This particular neighborhood as a place to live	The part of the town or village you live in
income	The income you (and your family) have	The income of you and your family
std lvg	Your standard of living – the things you have like housing, car, furniture, recreation and the like	Your standard of living; the things you have like furniture, household equipment, and so on
job	Your job	Your present work – in your job or as a housewife
spare time	The way you spend your spare time, your non-working activities	The way you spend your spare time
trnspt	The way you can get around to work, schools, shopping, etc.	Your means of transport – the way you can get to work, schools, shopping, etc.
health	Your own health and physical condition	Your present state of health
time	The amount of time you have for doing the things you want to do	The amount of time you have for doing the things you want to do
treated	The way other people treat you	The respect people give you
get on w peop	How you get on with other people	In general terms, your relations with other people

American data. Exhibit 1 presents the exact wording of these 11 items as presented to the American respondents and to English-speaking European respondents.

The American respondents recorded their feelings about these life concerns along a seven-point scale that ranged from 'Delighted' to 'Terrible,' or in one of several off-scale categories: 'Neutral (neither satisfied nor dissatisfied),' 'I never thought about it,' or 'Does not apply to me.'[5] The European ratings were along an eleven-point scale of satisfaction that ranged from 'Completely dissatisfied' to 'Very satisfied.' While the 7-point Delighted-Terrible and 11-point Satisfaction scales are not identical, previous research suggests that the substantive differences between them are likely to be rather small and that both offer effective means of measuring evaluations of life concerns (see Andrews & Withey, 1976, Chapters 3 and 6).

3. ANALYSIS METHODS

Our interests required the performance of two distinct analytic tasks: (a) identification of the structure of well-being assessments in each country and (b) determination of the similarities among these structures.

The structures were identified using Smallest Space Analysis,[6] one of the several forms of non-metric multidimensional scaling (Guttman, 1968; Shepard, Romney, and Nerlove, 1972). Within each country, associations (product-moment r's) between each pair of the well-being assessments were determined, and the resulting matrix of intercorrelations was used as input to Smallest Space Analysis. Smallest Space Analysis then iteratively approaches that configuration of points (i.e., of life concern assessments) in multidimensional space which maximizes the similarities of rank orderings of the distances between the pairs of points and the associations (correlations) between the respective life concern assessments. Thus, assessments that show strong positive associations with one another, suggesting that they tap the same life concern or highly related ones, are placed close to one another, and assessments that are statistically independent are placed far apart. Of course, given a large number of life concern assessments, there is no necessity that a perfect consistency can be achieved between the distances of the points in a small-dimensioned space and the sizes of the associations among the assessments; however several statistics are available for measuring this consistency.[7]

In the present analysis, structures of subjective well-being were identified

by using *all* of the available well-being assessments – more than 60 assess-
ments in the American data and all 15 items in the European data. Although
only 11 assessments were similar between the American and European
surveys, the placement of these 11 within each national structure could be
more accurately determined within the context of a larger set of items than
if only the associations among these 11 had been considered. After trial
fittings in spaces of several different dimensionalities, it was determined that
a three-dimensional space permitted an adequate portrayal of the structures.[8]

The second major analysis task was to determine the similarity between
the various national structures, represented by the three-dimensional configura-
tions of 11 items, as extracted from the larger structures. The rigid
('procrustean') approach proposed by Schönemann and Carroll (1970) was
used to match the configurations, and then the degree of match was measured
by the Lingoes-Schönemann S statistic (Lingoes and Schönemann, 1974).[9]

The technique of matching involves taking one configuration as the 'target'
and then rotating, moving, and contracting or dilating another configuration
so as to get the corresponding points in each configuration to match one
another as closely as possible. Note that the right (90°) angles between the
axes are kept rigid and that none of these several transformations changes
the relative distances among the pairs of points within either of the configu-
rations; the transformations merely serve to remove inconsequential
differences in the original locations, orientations, and sizes of the configura-
tions.

The Lingoes–Schönemann S statistic has two characteristics that make it
well suited for assessing configurational similarities in our analysis: (a) It is
a symmetric statistic – i.e., it has the same value regardless of which
configuration is used as the target. (b) It is scale-invariant – i.e., the value of
the statistic does not depend on the 'size' of the configurations. These two
characteristics are particularly desirable in the present analysis, where our
desire to measure the similarity among all possible pairs of nine configurations
makes it impossible to use the same target for all comparisons.

Since the S statistic is not yet well known, it may be helpful to comment
on its interpretation. Lingoes and Schönemann (1974, page 426) note that
$S^{1/2}$ is the matrix analogue of a coefficient of alienation $(= (1-r^2)^{1/2})$. Thus
low S values imply high similarity (low alienation) and high values imply low
similarity. For example, an $S^{1/2} = 1.0$ implies a zero product-moment correla-
tion between the dimensional locations of the points in the two configura-

tions, and an $S^{1/2} = 0.0$ implies a perfect match (product-moment $r = 1.00$). As will be seen in the following section, values of $S^{1/2}$ of 0.5, 0.6, or 0.7 were typical for the configurations matched here, and these values of $S^{1/2}$ correspond to product-moment correlations between the dimensional locations of 0.87, 0.80, and 0.71, respectively.

So far as we are aware, there have not been, as yet, any statistical tests developed for the S statistic,[10] nor any explorations of how S is afffected by various types of measurement errors in the variables that define the configurations. With respect to tests of S, it seems likely that the Schönemann — Carroll transformations, which take advantage of whatever matchings that exist between two configurations, would act to *decrease* the expected value of S (e.g., pairs of perfectly random configurations would probably show mean values of S below the theoretical S value of 1.00). On the other hand, the impact of measurement errors on the variables probably acts to *increase* the value of S (e.g., two identical latent configurations, each represented by data containing different measurement errors, would probably not generate the theoretical $S = 0$). It is virtually certain that both of these effects have influenced the S values reported in the next section,[11] but the extent to which the two effects may have canceled each other is unknown.

4. RESULTS

It will be most convenient to begin the presentation of results with the configuration for the 60+ life concern evaluations by the American respondents and to note how the 11 items that are similar to those in the European data fit within this larger structure. Following this, we shall examine similarities in the structure for all possible pairs of countries. Finally, we present plots of the structures in selected European nations and of a derived combined configuration for all eight European nations, and compare these structures to that for the USA.

Structure for USA

Exhibit 2 shows the three-dimensional structure for evaluations of 63 life concerns by American respondents and indicates the 11 items from this set that are similar to those used in the European surveys. Several things are worth noting.
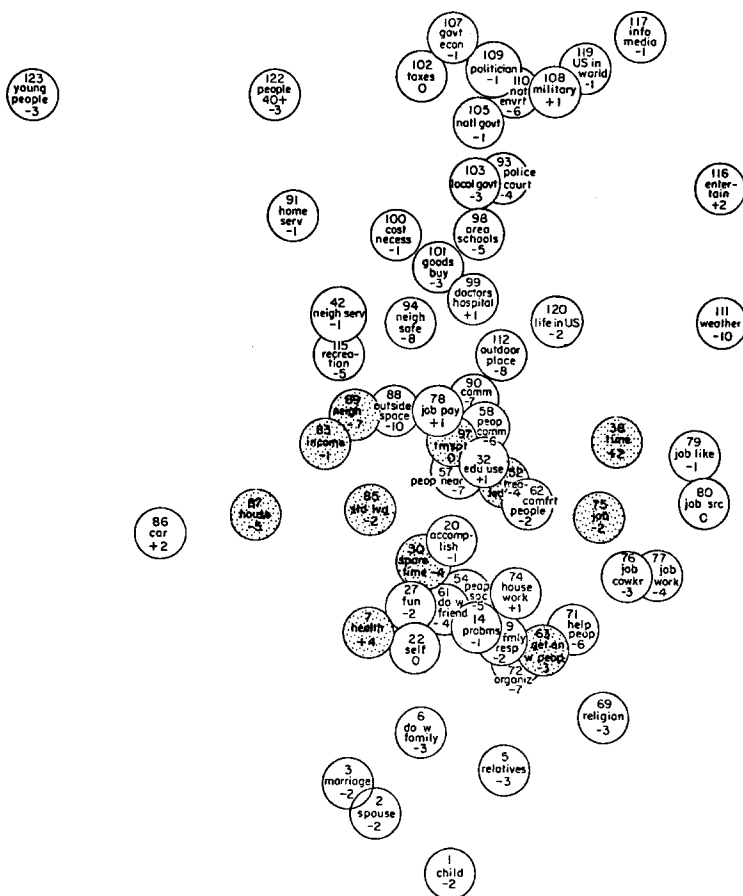
EXHIBIT 2. Three-dimensional structure of evaluations of 63 life concern items by American respondents.

Notes: Stippled items are those for which similar items exist in European surveys. Signed numbers indicate position on the third dimension. Data source: 1297 respondents to 1972 American national survey. Based on Exhibit 2.4 of Andrews and Withey (1976). For exact wording of all items see Exhibit 2.1 of Andrews and Withey (1976); wording of stippled items appears in Exhibit 1 of the present paper.

   (a) One dimension, shown vertically in the exhibit, seems to array items according to the psychological immediacy of the life concern. The dimension ranges from items tapping family concerns (near the bottom of the exhibit), through items tapping concerns about one's relations with the immediate external environment — job, neighborhood, relations with other people, etc.

(in the middle of the exhibit), to items tapping concerns about the larger society — national government, mass media, etc. (near the top).[12]

(b) Items that, on the basis of their content, would seem to tap the same life concern do in fact tend to cluster together and thereby serve to locate the nature and approximate postion of the underlying concern. For example, note the cluster of job items at the right side of the exhibit, the cluster of family items at the bottom, the cluster of government items at the top, and many others.[13]

(c) The 11 items that are similar to items in the European data (stippled in Exhibit 2) represent a rather limited middle segment of the total structure identified for American respondents. The European data contain no items that are similar to items at the extremes of the vertical (the psychological immediacy) dimension: There are no items at all that tap concerns about marriage or family, and those that tap more remote societal concerns were substantially different from those used in the American survey. Thus what appears to be a major dimension of the American structure will be, of necessity, rather attenuated in the structural matches that follow.

(d) Despite the restricted structural differentiation of the 11 items that are similar to those in the European surveys, a careful examination shows some interesting locational differences. We shall pause to detail them here so that later we can compare them with the European structures. With respect to the first two dimensions of the exhibit (the vertical and horizontal dimensions), one can see that the more personally immediate items — assessments of health, of one's relations with other people, of how one spends one's spare time, and of the amount of time available — are in the lower or right-hand portions of the structure, while items assessing more psychologically remote economic or physical concerns — housing, neighborhood, income, standard of living, and transportation — are in the upper-left portion of the structure. On the third dimension (which runs from 'in front of' to 'in back of' the plane of the exhibit), the housing and neighborhood items are well 'back,' the income and standard of living items, the two items tapping relations with other people, and the spare time item are modestly 'back,' and the health item is somewhat in 'front'.

Similarity Among Nine Countries

Having examined the structure of subjective well-being assessments in some detail as derived for American respondents, we can now ask how similar it

is to comparable structures for respondents in eight European countries. We can also ask how similar the European structures are to one another. Some initial answers appear in Exhibit 3, which presents values of $S^{1/2}$ for all possible comparisons among the nine countries.[14] Also shown in Exhibit 3 is the similarity of each national structure to a derived structure which represents the single best-fit approximation to the eight individual European structures.

EXHIBIT 3

Degree of dissimilarity between structures of life concern assessments in nine countries

	USA	FRA	GB	GER	ITA	NLD	BEL	DEN	IRE	(EC)
United States	–									
France	0.77	–								
Great Britain	0.78	0.44	–							
W. Germany	0.71	0.74	0.66	–						
Italy	0.70	0.66	0.67	0.72	–					
Netherlands	0.64	0.70	0.64	0.72	0.72	–				
Belgium	0.75	0.52	0.56	0.73	0.81	0.63	–			
Denmark	0.77	0.68	0.63	0.73	0.75	0.46	0.55	–		
Ireland	0.65	0.69	0.56	0.54	0.56	0.58	0.76	0.72	–	
(European centroid)	0.65	0.61	0.57	0.67	0.68	0.62	0.64	0.63	0.61	–

Notes: The measure of dissimilarity is $S^{1/2}$, a matrix alienation coefficient (Lingoes and Schönemann, 1974). Low values of $S^{1/2}$ indicate high configurational similarity.

The left-most column of the exhibit shows how the USA structure (of 11 items, as contained within the larger set of 63 items shown in Exhibit 2) matches each of the European national structures (of 11 items as contained within their own larger sets of 15). One can see that the coefficients vary only modestly – from 0.64 to 0.78. This suggests that Americans' structure of well-being perceptions is about as similar to the structure of one European country as it is to another. Within the limited range of the differences, however, the American structure is most similar to that of The Netherlands, closely followed by Ireland, and least similar to the structures in Great Britain, France, and Denmark.

The fact that the British structure is *least* similar to the American has interesting implications: It suggests that the cross-national differences we

observe do not reflect artifacts of translation, for the wording of the British
and American items was closely similar (in some cases identical), yet the
differences between the American and British structures are greater than
those between the American pattern and that resulting from questions posed
in German, French, Dutch, Danish or Italian.

Probably more important than these modest differences, however, is the
absolute level of the coefficients in the left-most column of the exhibit. With
values approximating 0.7 (which, as noted in Section 3 of this paper, cor-
respond to product moment r's of about 0.7), the data suggest a rather
substantial configurational similarity between structures of well-being assess-
ments in the United States and these European countries.

The value of 0.65 shown for the match between the American configura-
tion and the European centroid configuration is also of interest. This figure
suggests that the European *average* is somewhat closer to the USA structure
than are most of the individual European countries. Thus while the European
average structure is certainly not identical to the American structure, as the
individual European national structures deviate away from their own average,
they also tend to deviate away from the American structure rather than
toward it. Or in still other terms, the American structure has (slightly) more
in common with Europe-as-a-whole than with most of the individual European
structures.

Exhibit 3 also provides interesting results on the similarities among the
various European structures themselves. Here the coefficients vary from 0.44,
for Great Britain and France (which are most similar to one another), to 0.81,
for Belgium and Italy (which are least similar). Furthermore, if one computes
some averages based on the data in Exhibit 3 one finds that of all the individual
national structures, the British structure is most typical of the European
structures (mean $S^{1/2} = 0.59$) and the Italian structures is most distinctive
(mean $S^{1/2} = 0.70$). The same results can be seen in Exhibit 3 by comparing
the individual European structures to the European centroid.

To summarize these various findings from Exhibit 3 we can observe that:
(a) there seems to be a basic similarity in structures among all nine of these
western societies; (b) within this basic similarity the European structures are
distinct from the American structure; (c) even within Europe there is
modest heterogeneity; and (d) if one averages out the differences among the
individual European structures, the result is a structure that is closer to the
American structure than are most of the individual European structures.[15]

Structures for EEC Countries

What *are* the European structures? Lack of space precludes a presentation of each one, but Exhibits 4 and 5 present the structures for the Netherlands and Great Britain, respectively.[16] The Dutch structure was selected because it is the individual structure most similar to the American one; and the British structure because, while still basically similar, it matches the USA least well.
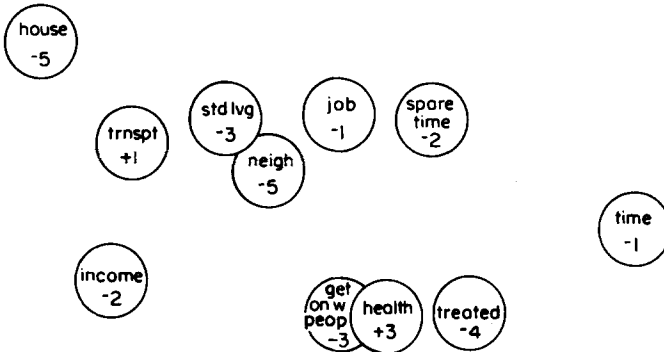

EXHIBIT 4. Three-dimensional structure of evaluations of 11 life concern items by Dutch respondents.
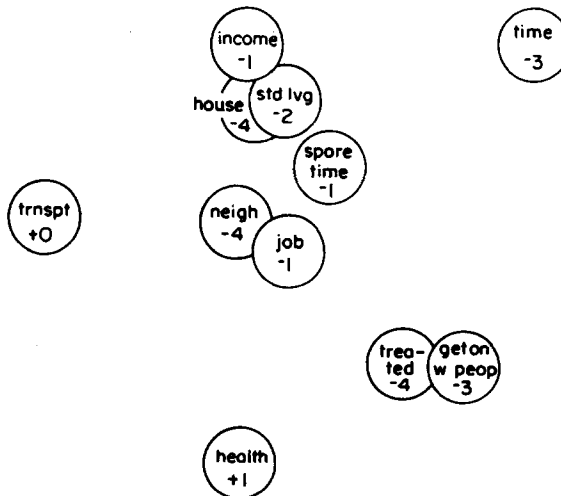

EXHIBIT 5. Three-dimensional structure of evaluations of 11 life concern items by British respondents.

As presented in Exhibits 4 and 5, the Dutch and British structures are oriented to agree with the presentation of the American structure in Exhibit 2.

In the case of both the Dutch and British structures one can see the same basic pattern among these 11 items that was identified previously in our discussion of the American structure. Note that all the personally immediate items (health, relations with other people, spare time activities and amount of time available) are located in the lower or right-hand portions of the structures, while the more psychologically remote economic or physical concerns fall in the upper left portions. Note also that, comparable with the American structure, housing and neighborhood are both well 'back' on the third dimension, that the two items that tap relations with other people, the income and standard of living items, and the spare time item are modestly 'back,' and that the health item is somewhat in 'front' of the plane of the exhibit.[17]

Another view of the similarities and differences between the American and European structures is presented in Exhibit 6. Plotted there is the United States structure (reproduced from Exhibit 2 and shown by the U's) and also
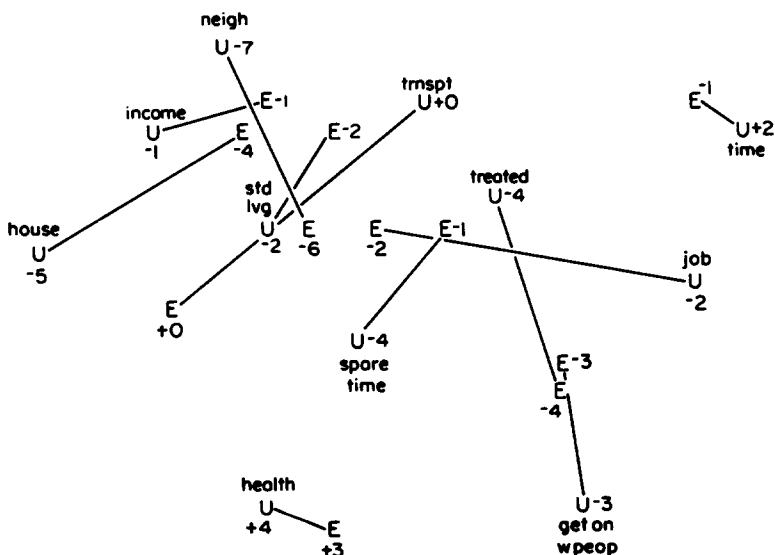

EXHIBIT 6. Match between three-dimensional structures of evaluations of life concern items by American and European respondents.

Key: U = location in United States structure; E = location in European centroid structure.

the best-fit average European structure (the European centroid configuration that was discussed previously and for which similarity measures were presented in Exhibit 3 — shown by the E's).

The basic similarity of the two configurations in the first two dimensions is indicated by the fact that most of the linkage lines are relatively short, and in the third dimension by the close similarity in values of the signed numbers.

With this exhibit it is easy to identify the modest differences that do exist. In the European centroid configuration, compared to the United States structure: the two items tapping relations with other people are much closer together; the job item is much closer to assessments of income and standard of living; and the transportation item moves out to a less central position while income, housing, and neighborhood evaluations move into more central positions. While one might speculate about the inter-cultural causes of these discrepancies, we feel such speculation is best avoided for the present. These differences may be at least partly real, but they are almost certainly at least partly the result of various methodological artifacts.[18] We believe that what is most important is the basic similarity of the structures.

5. COMMENTS AND CONCLUSIONS

The basic similarities between the structures of well-being assessments across the nine western societies examined here is, we believe, an important finding for the social indicators movement. It suggests that it is feasible to do cross-national comparative research — at least in these countries — on the topic of perceived well-being and that meaningful comparable results can be expected from the use of standardized survey instruments and methods. Only if people in different societies think about well-being in basically similar ways would this be the case, and the initial explorations reported here suggest that in fact they do.

The limited nature of the present explorations, and hence the tentativeness of the conclusions, must be recognized. The number of well-being assessments that were reasonably similar across the national surveys at our disposal was only eleven, and it happens that these eleven items represent only a portion of what previous research suggests is the larger structure. In addition, this analysis is limited by certain methodological factors, including differences in the times at which the American and European surveys were conducted (1972 versus 1976), differences in the response scales used by the two sets of respondents (7-point Delighted-Terrible versus 11-point Satisfaction) and

differences in the wording and linguistic translations of the items. Some of
these differences are endemic to any cross-national research and will always
compete with the hypothesis that observed differences are attributable to
cultural effects, but even within the limits of what is feasible in current cross-
cultural research, one could design data better suited to address the issue of
structural similarity.

Besides the restrictive nature of the data at our disposal, the definitiveness
of the results is limited by the lack of statistics for testing the significance of
similarities between configurations and the limitations of knowledge regarding
how various types of measurement errors affect measures of configurational
similarity.

Assuming that these data and statistical limitations may some day be
removed, we would propose some promising extensions of this line of
research. (a).Of course, we would wish to extend the descriptive data about
similarity of structures beyond the nine western countries examined so far.
Would other western countries show similar patterns? What about well-being
perceptions in non-western countries? (b) To the extent that significant
differences in structures of well-being assessments were identified, one would
want to move beyond the descriptive phase and begin to ask what accounts
for the structural differences and what impact they have on the behavior of
people, governments, etc. Even within the range of the modest differences
noted among the nine western societies investigated here, there are hints that
similarity varies directly with geographical contiguity, with the comparability
of the socio-economic systems, and/or with the general *level* of well-being.[19]
Any conclusions along these lines, however, must be extremely tenuous with
the present data and would have to be checked against results for a wider
range of societies. (c) We have in this paper identified *national* structures
(plus one *regional* structure — the European centroid configuration). While
national structures are conceptually convenient and have an obvious interest,
it is possible that other groups of persons should be considered. One can
imagine cross-national groupings based on characteristics such as age, sex,
occupation, socioeconomic status, cultural group, language, and others. (One
can also imagine performing the analysis on certain sub-divisions *within* a
given national grouping, but the research on this topic to data suggests that
structural differences are modest.[20])

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NOTES

[1] See, for example, Abrams (1974); Allardt (1975); Andrews & Withey (1976); Campbell, Converse, and Rodgers (1976); Development Academy of the Philippines (1975); Hall (1976), Inglehart (1977); Rabier (1974); and Riffault and Rabier (1977).
[2] Structural similarity does not, of course, imply that all societies will be similarly satisfied — either in general or with respect to specific life concerns; rather, it means that the *relationships* among the well-being assessments will be similar.
[3] Collection of these American data was supported by grant GS3322 from the National Science Foundation. These data, together with four other sets of survey data on perceptions of well-being collected under the direction of Andrews and Withey, are available from the Social Science Archive of The Institute for Social Research, The University of Michigan, Ann Arbor, Michigan and also from the Inter-University Consortium for Political and Social Research.
[4] These European data are extracted from the May 1976 Euro-Barometer, a series of national surveys conducted semi-annually in the EEC countries and coordinated by the Commission of the European Community. For more details on these surveys and a report of results from earlier Euro-Barometers, see Inglehart (1977), Rabier (1974), and Riffault and Rabier (1977). These and other data from the series are available from the Belgian Archives for the Social Sciences, Catholic University, Louvain, and also from the Inter-University Consortium for Political and Social Research.
[5] The off-scale categories were rarely used (with obvious exceptions, such as inquiries about "job"), and were treated as missing data.
[6] The technique is implemented in a computer program called MINISSA (Roskam and Lingoes, 1970; Lingoes and Roskam, 1973; Lingoes, Guttman, and Roskam, 1977). Input to MINISSA was a matrix of Pearson correlation coefficients (computed with pairwise deletion of missing data).
[7] We have, above, likened the identification of psychological structures to 'cognitive mapping.' This analogy is legitimate: If one submits a matrix of distances between *geographic* points (e.g., cities) to Smallest Space Analysis, it will produce an acceptable geographic map of the region involved.
[8] Coefficients of alienation, a measure of the consistency between the interpoint distances in the multidimensional space and the intercorrelations among the life concern assessments, ranged from 0.10 to 0.13 for the eight European countries when 15 items were arrayed in three-dimensional space, and was 0.19 for USA when more than 60 items were arrayed in three-dimensional space. Comparable figures for two-dimensional space were 0.18–0.21 for the European countries and 0.26 for USA. When only the 11 items that are similar in the USA and European data were arrayed in three dimensions, the coefficient of alienation for the USA data was 0.10.
[9] Two computer programs were used to accomplish these tasks: PINDIS (Lingoes and Borg, 1976; Lingoes, Guttman, and Roskam, 1977), and SPACES (Computer Support Group of the Center for Political Studies, 1976).
[10] Neel, Rothhammer, and Lingoes (1974) report a Monte Carlo exploration of the stability of S in one application but do not provide statistical tests which are of general applicability.
[11] From previous analyses (Andrews and Withey, 1976, Chapter 6), we can estimate that the American data used in this paper has validity of about 0.7, reliability of about 0.8, and includes about 10 percent correlated measurement error and about 40 percent uncorrelated measurement error. A roughly similar composition is expected to characterize the European data.

[12] The two other dimensions of the space, while needed to locate items in correct relative position to one another, do not seem to show conceptually meaningful progressions. While such progressions are interesting if found, there is no necessity that they occur, and no requirement that one "interpret" the dimensions of a structure. (Note that the same applies to the 2 − or 3 − dimensions of geographic or celestial maps.)

[13] Andrews and Withy (1976, Chapter 3) identify 12 clusters among these items.

[14] Values of the square root of S (i.e., of $S^{1/2}$) rather than of S are presented because it is this statistic that Lingoes and Schönemann (1974) propose as the matrix analogue of a coefficient of alienation (and because these values are produced by the PINDIS and SPACES computer programs used for the present analysis).

[15] In an exploration going one step beyond the similarity analyses reported in this subsection, we considered the possible effects of differential weighting of the dimensions of the configurations. (This is another capability of the PINDIS and SPACES computer programs referenced previously.) While differential weighting made it possible to more closely match most of the configurations, the differences were not large and the basic pattern of results just described for Exhibit 3 was maintained. In a related but as yet unpublished analysis, Russell Dalton has examined cross-national similarities in the structure of perceived well-being using 1973 and 1975 European data. His results are in general accord with those reported here and provide an approximate replication from an independent source.

[16] Configurations for the other six European countries will be provided upon request.

[17] Campbell, Converse, and Rodgers (1976, pg. 74-75) report a matching of American and British structures based on different and somewhat more limited data than those used for Exhibits 2 and 5. While some of the details of their matching differ from what we find here, their general conclusion − that "the correspondence is fairly close" − clearly agrees with ours. Levy (1976) has also reported a matching of well-being structures derived from American and Israeli respondents. Here, also, a conclusion of there being a substantial match was also put forward, though a numerical assessment of the degree of fit was not made.

[18] These include differences in item wordings (particularly for the job item), in the set of other items that were present when the original structures were determined, and in the error compositions of the measures.

[19] For example, we observed a correlation of about 0.3 between the similarity of structures of perceived well-being (shown in Exhibit 3) and the differences between the countries in mean satisfaction with "life in general." Given a more heterogeneous set of countries, this relationship might appear stronger and, if so, might be attributed to the operation of Maslovian principles.

[20] Andrews and Withey (1976, Chapter 2) and Campbell, Converse, and Rodgers (1976, Chapter 3) both report explorations of differences in such perceptual structures among subgroups of the American population. Both sets of investigators, using entirely independent sets of data, came to the same general conclusion: that while modest differences appeared among structures identified for the subgroups, the basic features of the structure identified at the national level remained evident. Andrews and Withey (1976, Chapter 4) also showed that the same prediction equation was about equally effective for a large number of different subgroups for predicting feelings about general well-being on the basis of evaluations of life concerns.

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