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Occupational prestige and sex typing in the collective conscience

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Abstract. Previous work has shown that prestige is the only factor that is consistently employed in individuals' perceptions of the occupational structure. Is is argued that these results are in part an artifact of the methods. Using direct paired comparison estimates of differences between occupations and metric MDS to analyze the data, it is shown that perceptions are highly multidimensional. The data also show that prestige and sex typing are salient features in the collective conscience of respondents. Implications for occupational choice research are discussed.

In the study of perceptions of the occupational structure, sociologists have focused almost exclusively on how people evaluate the prestige of occupations. Since the first empirical study by Counts was published in 1925, research in this area has proliferated. Haller and Bills (1979) have suggested that the reason for the popularity of such measures is that they hold the promise of a relatively easy mechanism to determine an individual's location in the stratification system, thereby providing a useful research tool. The basic findings concerning the stability of prestige rankings, cross cultural similarities, and similarity between subgroups (Hodge et al., 1964; Treiman, 1977) have become a standard part of even introductory textbooks in sociology.

While the empirical studies of prestige rankings seem to suggest that people share a status differentiated concept of the occupational hierarchy (Treiman, 1977; Balkwell et al., 1978), until recently this was merely a plausible assumption. In a very cogent argument, Kraus et al. (1978) have pointed out that many of our generalizations about the occupational structure result from researchers asking respondents to evaluate a set of occupations in terms of relative prestige or some other attribute the theorist believes to be of importance. These attributes may or may not play a salient role in how respondents differentiate among occupations. To determine the role of prestige in individuals' perceptions, Kraus and associates sought to ascertain how respondents organized a set of occupations when left free to use any number of criteria and select their content.

In their research, a national sample of Israelis were asked to sort occupations on the basis of overall similarity and the resulting proximity data was

analyzed with non-metric multidimensional scaling (MDS). The data appear to show that Israelis share a one dimensional view of the occupational structure, and this dimension is highly correlated with prestige. Burton (1972), using a similar approach, found basically the same pattern.

The problem

We are in fundamental agreement with the view of Kraus et al. that for certain kinds of research one ought to be more interested in how a population differentiates among occupations than in the views of sociologists. The general method used to discover the structure of public perceptions is also appropriate. MDS techniques are low in experimenter contamination in that the subject is asked to estimate the similarity between all possible pairs of objects without specifying the attributes by which the comparisons are to be made (Schiffman et al., 1981).

Nevertheless, the findings raise some puzzling questions. It is not surprising to discover that prestige plays a central role in perceptions of the occupational world. It does seem unusual, however, to find that whatever other attributes might be employed by people to differentiate among occupations, there is apparently little consensus about them. Kraus et al. report correlations between second dimension coordinates across random subsamples in the range of 0.2, and across population subgroups in the range of 0.4.

Given the range of the scaled occupations and the number of attributes on which they can potentially differ, these results are surprising. This is particularly so in light of research of the past ten to fifteen years which shows that sex stereotyped views of occupations are clearly defined (Shinar, 1975). Recent studies have also demonstrated that the sex incumbency of occupations plays an important role in the occupational aspirations and expectations of young persons (Marini and Greenberger, 1978; Strange and Rea, 1983; Saltiel, 1988).

It is the contention of this paper that the Kraus results are an artifact of both the procedures for obtaining the similarity estimates between occupations and the non-metric MDS techniques used to analyze the data. It may be that prestige is the only consistently employed dimension of occupational differentiation, but this cannot be determined with any degree of certainty from these procedures.

The basic data gathering procedure involved asking respondents to partition a set of occupations into different groups on the basis of perceived similarity. Proximity measures between pairs of occupations were derived by calculating the probability that the pair in question were placed in the same group.

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An alternative procedure

Despite the popularity of the non-metric
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While this procedure is quite economical when dealing with a large number of objects, it has a tendency to blur differences between stimuli. The reason for this is that two objects which are viewed as dissimilar in a direct comparison task might be placed in the same grouping in a sorting task if they are seen as related in some way. In research bearing on this point, Rosenberg and Kim (1975) discovered that when respondents were given the task of sorting kinship terms, they ignored an obvious dimension: sex. Apparently, when stimulii differ on several attributes, a one shot sorting task tends to produce only the most salient dimension. Although more sophisticated techniques for calculating proximities are frequently used (e.g., Rosenberg and Sedlak, 1972; Burton, 1972), they all start from a sorting task that tends to minimize differences between stimuli.

With respect to data analysis techniques, it is important to realize that while non-metric MDS was appropriate for the data Kraus had, these procedures are designed to produce low dimensional solutions. They employ algorithms which attempt to find a configuration of points in the space of smallest dimensionality such that, to a close approximation, the resulting interpoint distances are monotonically related to the original proximity measures. In seeking to preserve the order relations, however, these procedures tend to discard a great deal of information in the data (Torgerson, 1965). Given these methods, the results of the Kraus et al. study should not be viewed as surprising.

An alternative procedure

Despite the popularity of the non-metric approaches, there are some areas of inquiry where metric MDS is advantageous. Sociologists and communication scientists frequently employ these procedures when the interest is in the structure of cultural and aggregate domains and changes in those domains over time (Woelfel and Barnett, 1982). In such cases researchers will make use of a technique in which two concepts from the domain under consideration are assigned an arbitrary but agreed upon distance. This criterion pair is then used by respondents as a standard to obtain direct magnitude estimates of the dissimilarities between all pairs of concepts under study. Estimates are provided as a ratio of the criterion pair, with 0 meaning no difference is perceived. Since there is no upper bound, this technique is quite sensitive to the full range of perceived differences.

The pairwise estimates are then averaged over the cases to yield a matrix of distances that is taken to represent the cultures' view of the domain. Although averaging obscures individual differences, it is quite appropriate

for investigating the central tendencies of a cultural belief system (Woelfel and Fink, 1980). Furthermore, the random component of this scaling task can be substantially reduced by averaging more cases into the means.

One of the major objections to this procedure is that the dissimilarity estimates frequently violate the triangular inequality axiom of Euclidean geometry (Tversky, 1977) with the cosines of some of the angles being greater than 1.0. When this occurs, the eigenvalues from the scalar products matrix will be both positive and negative, with associated eigenvectors that are respectively real and imaginary. Such outcomes have given rise to methods for transforming the data in order to render it Euclidean. But these techniques rarely have a sound theoretical base, and they have serious practical disadvantages, especially when trying to compare two spaces transformed by different procedures. Furthermore, there is strong evidence that the triangular inequality violations are not due to unreliability in measurement. There are sound theoretical reasons as to why these outcomes can be expected when stimulii from different domains are scaled and/or when the objects are ambiguous to the subjects (Woelfel and Barnett, 1982). Hence, attempts to eliminate these features result in the elimination of meaningful information about cognitive structures.

This paper reports the results of one study using the metric MDS techniques outlined above to measure college students' perceptions of the occupational structure. The primary purpose is to show that the procedures are precise and reliable, and that attributes known to span the occupational domain fit into the space.

Design of research

Data was obtained from students enrolled in Introductory Sociology at Montana State University in 1981 and 1982. This is a required university core course and the distribution of students by sex, major, and year in school was virtually indentical in each of these two years.

Because the primary purpose of this study is to demonstrate the reliability and validity of the above procedures for representing an aggregrate conception of the occupational world, issues of generalizability are not particularly important. However, given that ratings of occupational status have been shown not to differ substantially across subgroups (Riess, 1961; Treiman, 1977), the evaluations of these students with respect to commonly used attributes of occupations should not differ sharply from what one would find with a more representative sample.

Because of the small sample size and the fact that the number of pairwise

comparisons ($n(n-1)/2$) increases rapid
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sex typing) in the space is determined
study discussed above is compared with
orientation of the space and the location

Results

Since there is little reason to expect that
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comparisons ($n(n-1)/2$) increases rapidly as the number of stimuli increases, a relatively small number of occupations were scaled. A total of 23 occupational titles were selected according to the following criteria. First, thirteen were taken from a similar study done with Michigan State University students in 1977 and 1978 for purposes of comparison. Second, the occupations of rancher and ranch hand were included because this is an important grouping in the rural Montana labor force. Finally, eight other occupations were selected in an attempt to cover a wider range of jobs than included in the Michigan study. Although these occupations cover a fairly broad spectrum of prestige and differ considerably in sexual incumbancy, no claim is made that this is a representative sample. The implications of this for the findings will be discussed below.

Since providing estimates for all possible pairs (253) was judged to be too fatiguing, each respondent was given approximately 85 pairs. A few common pairs were included in the forms, and a check of these distance estimates showed no significant differences between groups of students with different sets of paired comparisons. These procedures generated approximately 100 estimates per pair from the 1981 sample, and about 80 per pair from the 1982 sample.

The pairwise distance estimates were averaged over the sample to yield a symmetric matrix D, where d_{ij} is the mean distance between occupations i and j. The underlying vector space was obtained by transforming D to a scalar products matrix (Torgerson, 1958) and then factoring. The resulting eigenvectors can be represented in a matrix C where any entry c_{ij} represents the projection of the ith occupation on the jth dimension. This process is equivalent to converting a matrix of distances among cities into a geographic representation such as a map.

Since the basic purpose of this paper is to demonstrate that these procedures can produce a reliable and valid representation of the occupational domain, the following analysis was done. First, evidence is provided on the precision and reliability of the spaces by correlating the data obtained across the time interval. Next, the orientation of two attribute vectors (prestige and sex typing) in the space is determined. Finally, data from the Michigan study discussed above is compared with this data set in terms of the overall orientation of the space and the location of the above attribute vectors.

Results

Since there is little reason to expect that perceptions of occupational differences should change for a given group over a short period of time, an initial

attempt to determine reliability is based on the correlations betweeen the 1981 and 1982 data sets. The correlation between the distance estimates was 0.913.[1] While quite high, this figure does not tell us about the precision of the coordinates. The proper procedure for determining this is to examine the correlation between eigenvectors across the time interval.

Because of the fact that the orientation of the eigenvectors is arbitrary, some sort of Procrustean rotation is necessary before comparing the data sets. In this case, the set of coordinates for the 1982 data was rotated to a least squares best fit with the 1981 data. This rotation does not alter the pairwise distances between stimuli and eliminates purely artifactural differences in the orientation of the axes.

Table 1 presents the correlations between dimensions (the columns of the coordinate matrices) across the time interval. The data are presented in order of decreasing algebraic value of the associated eigenvectors. The lowest

Table 1. Correlations between dimensional coordinates for 1981 and 1982 samples after rotation

Dimension	Eigenvalue 1982	Eigenvalue* 1981	Correlation	Angle
1	136481.48	146986.36	0.9895	8.31°
2	61279.52	69236.87	0.9858	9.67°
3	42351.58	39758.37	0.9406	19.84°
4	27566.96	32998.18	0.9739	13.11°
5	25106.09	33863.73	0.9199	23.10°
6	15804.01	16245.03	0.9787	11.86°
7	14206.49	11975.14	0.9002	25.81°
8	10450.16	12722.49	0.7094	44.81°
9	7382.76	10822.87	0.7807	38.67°
10	5201.15	8139.83	0.8682	29.75°
11	4693.89	7103.62	0.8052	36.37°
12	3202.9	4864.23	0.8035	36.53°
13	2872.96	5119.97	0.5728	55.05°
14	970.0	5911.15	0.8205	34.87°
15	−230.46	−5273.52	0.2562	75.16°
16	−2309.86	−4404.18	0.7023	45.39°
17	−2715.35	−5042.99	0.6499	49.46°
18	−4889.79	−10861.39	0.8379	33.08°
19	−7887.04	−5390.06	0.8062	36.28°
20	−10269.80	−14820.38	0.8475	32.06°
21	−14332.16	8119.09	0.8678	29.79°
22	−17870.61	−10466.31	0.7951	37.33°

*These eigenvalues are not in order of decending value due to the rotation procedures which minimize the sum of squares between concepts.

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;.36	0.9895	8.31°
;.87	0.9858	9.67°
;.37	0.9406	19.84°
-.18	0.9739	13.11°
.73	0.9199	23.10°
.03	0.9787	11.86°
.14	0.9002	25.81°
.49	0.7094	44.81°
.87	0.7807	38.67°
.83	0.8682	29.75°
.62	0.8052	36.37°
.23	0.8035	36.53°
.97	0.5728	55.05°
.15	0.8205	34.87°
.52	0.2562	75.16°
.18	0.7023	45.39°
.99	0.6499	49.46°
39	0.8379	33.08°
06	0.8062	36.28°
38	0.8475	32.06°
09	0.8678	29.79°
31	0.7951	37.33°

)f decending value due to the rotation
quares between concepts.

correlations are found for those dimensions with the smallest absolute values, which probably reflects random error in the data. Overall, the correlations are quite high, which is especially impressive in light of the small sample size.

As the findings show, perceptions of occupations are highly multidimensional and reliably non-Euclidean. The last point deserves special mention in that the high correlation among the imaginary eigenvectors demonstrates that the non-Euclidean components are not the result of random errors of measurement. This provides further evidence that the practice of transforming data until only a few real dimensions remain results in a substantial loss of reliable information.

Since the correlations are actually the cosines of angles between corresponding axes, they indicate the degree to which the axes are oriented in the same direction. The data clearly show how similar the spaces are. Virtually identical patterns occur when the data for subgroups such as males and females is examined.[2] This finding contrasts sharply with that of Kraus et al.

Another way to illustrate the precision of the coordinates is to examine the stability of the occupations themselves within the spaces. Table 2 shows the correlation between rows of the coordinate matrices. Since each row represents the position vector of the occupation, the angles indicate the degree to which the occupations lie in the same direction in the space. While these correlations are clearly quite high, the reader is reminded of the non-Euclidean features of the space which can result in cosines greater than 1.0. Such values were calculated for plumber, bank president, waiter, doctor, hairdresser, accountant, rancher, and secretary suggesting that there is some ambiguity about the meaning of these concepts. Unfortunately we did not have sufficient data to explore this issue.

It is clear that these methods yield highly reliable and precise spaces. It is also clear that the space is Riemannian and of high dimensionality. What is not known as yet is what is represented in this space. What serves to structure the perceptions of occupations?

In attempting to determine the attributes used to differentiate among occupations, it is important to point out that, unlike factor analysis, it is not expected that attributes will correspond to the dimensions of the MDS solution. To clarify this point, it is useful to distinguish between attributes and dimensions. As Kruskal and Wish (1978) have pointed out, the dimensions of the MDS solution are the result of mathematical operations and have no substantive significance. They represent only the orthogonal axes of a Cartesian coordinate system. Attribute lines may take any orientation within this grid. Furthermore, a number of researchers (Rosenberg and Sedlak,

Table 2. Correlation between position vectors (occupational coordinates) for 1981 and 1982 samples after rotation

Occupation	Correlation	Angle
Computer programmer	0.9717	13.66°
Newspaper reporter	0.9915	7.48°
Plumber	1.0295	****
Ranch labor	0.9587	16.52°
Bank president	1.0107	****
Mail carrier	0.9966	4.74°
Carpenter	0.9388	20.15°
Veterinarian	0.9594	16.38°
Waiter	1.0302	****
Construction labor	0.7868	38.12°
Teacher	0.9845	10.11°
Doctor	1.0032	****
Insurance agent	0.9881	8.85°
Nurse	0.9989	2.67°
Hair dresser	1.0274	****
Sales clerk	0.9915	7.48°
Policeman	0.9970	4.470
Accountant	1.0331	****
Rancher	1.0098	****
Restaurant manager	0.9965	4.83°
Electrical engineer	0.9821	10.85°
Auto mechanic	0.9298	21.60°
Secretary	1.0185	****

**** Since the correlation (cosine) exceeds 1, the magnitude of the angle cannot be computed.

1972; Woelfel and Barnett, 1982) have shown that the number of attributes may exceed the number of dimensions, the attributes are frequently correlated, and they typically span several dimensions. Since it is unlikely that every dimension will be interpretable, it is necessary to examine all the directions in the space, not simply those along the orthogonal axes.

In a research effort involving the scaling of a larger and more representative sampling of occupations, an important goal would be to determine the set of attributes people use to differentiate among jobs and the orientation of the attribute vectors in the space. With this set of occupations, however, it is very likely the case that there is only a small amount of variation in some characteristics. Thus, there are attributes that are probably having an effect on the total configuration, but are not contributing strongly enough to become easily visible (Kruskal and Wish, 1978). Given these limitations, the objectives of this study are more limited.

Specifically, evidence for the validity
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The orientation of the attribute vectors
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Table 3. Correlation betwe
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from the merged Montana

Dimension	Prestige
1	0.956
2	0.077
3	−0.018
4	0.038
5	−0.078
6	−0.179
7	0.110
8	−0.001

between position vectors for 1981 and 1982 samples after

Correlation	Angle
0.9717	13.66°
0.9915	7.48°
1.0295	****
0.9587	16.52°
1.0107	****
0.9966	4.74°
0.9388	20.15°
0.9594	16.38°
1.0302	****
0.7868	38.12°
0.9845	10.11°
1.0032	****
0.9881	8.85°
0.9989	2.67°
1.0274	****
0.9915	7.48°
0.9970	4.470
1.0331	****
1.0098	****
0.9965	4.83°
0.9821	10.85°
0.9298	21.60°
1.0185	****

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ited.

Specifically, evidence for the validity of the procedures is determined by the degree to which attributes known to span the occupational domain fit reliably into the space. In this research, two fundamental characteristics of occupations were used: prestige and sex typing. These are of particular interest because both status level and sex appropriateness have been shown to be salient in the occupational choice process.

Measures of these variables were taken from respondent evaluations of the social standing of the occupations and of the degree to which they were considered masculine or feminine. These attribute vectors were then located in the space generated from the merged 1981 and 1982 data, which was used to generate more reliable estimates.

The orientation of the attribute vectors was determined by ordinary regression techniques. Taking advantage of the orthogonality of the eigenvectors, the angle of each attribute to each dimension can be computed from the correlation between scores on the attribute and the projection of the occupations on each axis. The arcosine of this value is the angle. Table 3 presents the correlations between prestige, sex typing and the first eight dimensions. The data show that the prestige vector lies at an angle of about 17 deg with the first dimension, clearly indicating the significance of this attribute for how respondents organize their perceptions of occupation.

The data also show that the sex typing vector lies essentially in the subspace generated by the second, third and sixth dimensions. The multiple correlation of this attribute with the first six dimensions was 0.940. Furthermore, a comparison of the data obtained from males and females showed the location of the attribute vectors to be virtually identical for these two groups.

Table 3. Correlation between coordinates for 23 occupational titles and prestige and sex typing evaluations on the first 8 dimensions generated from the merged Montana sample

Dimension	Prestige	Sex typing
1	0.956	0.034
2	0.077	−0.683
3	−0.018	0.395
4	0.038	−0.243
5	−0.078	0.0238
6	−0.179	0.381
7	0.110	0.108
8	−0.001	−0.188

Two samples compared

As further evidence of the reliability of these procedures, this data was compared with that obtained by Woelfel and associates in Michigan. Using very similar procedures, but slightly smaller sample sizes (60 students one year and 50 the next) and only 15 occupations, Woelfel et al. (1980) reported reliabilities virtually as high as those found in our data. Even more important, they found that prestige correlated quite well with the first dimension ($r = 0.89$), and that the sex typing vector spanned the second through the fourth dimensions.

Due to the fact that neither the occupations in the Michigan nor the Montana data set could be considered a representative sample, it is not expected that the attribute vectors would be at stable angles within the spaces. Hence, in order to meaningfully compare the data sets it is necessary to use only the occupational titles employed in common. Sacrificing some minor precision, analysis was carried out on 13 comparable titles.

For this analysis, the 1977 and 1978 Michigan data sets were merged into one file and the resulting coordinates rotated to those of the merged Montana data. As Tables 4 and 5 show, the orientation of the axes are quite similar as is the location of the concepts. These correlations are especially impressive in light of the smaller sample sizes, the slight differences in questionnaire wording and occupational titles, and the fact that the respondents were from two different areas; a midwestern industrial state and a rural western region.

Table 4. Correlations between dimensional coordinates for Montana and Michigan samples after rotation

Dimension	Eigenvalue Michigan	Eigenvalue* Montana	Correlation	Angle
1	84612.34	93836.23	0.9738	13.14°
2	45486.65	67487.21	0.9433	19.39°
3	26917.32	31329.71	0.9378	20.31°
4	14015.96	13407.32	0.7963	37.22°
5	7244.56	16821.57	0.8540	31.35°
6	5631.00	14813.57	0.9392	20.08°
7	3303.84	4556.79	0.8928	26.78°
8	1539.86	8507.85	0.7910	37.72°
9	1056.71	10252.78	0.6242	51.38°
10	−2551.16	−1684.28	0.4245	64.88°
11	−5884.27	−4871.34	0.8497	31.82°
12	−8707.88	−5043.41	0.7583	40.68°

* Since the Montana data was rotated to least squares best fit with the Michigan data, the eigenvalues will not be in order of descending algebraic value.

Table 5. Correlation b
(occupational coordinates)
samples after rotation

Occupation	
Accountant	
Teacher	
Hair dresser	
Doctor	
Secretary	
Newspaper reporter[a]	
Carpenter	
Farmer[b]	
Plumber	
Construction worker	
Veterinarian	
Computer programmer	
Nurse	

[a] In Michigan, the title journ
[b] In Montana, the title ran

A comparison of the locations of the
more interesting. The data show that p
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precise location of these vectors with r
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incumbancy to differentiate among occu

Table 6. Correlations between coordir
prestige and sex typing evaluations o
Michigan and Montana samples after

Dimension	Prestige	
	Montana	Michig
1	0.955	0.915
2	0.115	0.049
3	−0.158	−0.008
4	0.043	0.161
5	−0.095	−0.006
6	0.010	0.006
7	0.057	0.037
8	0.132	0.069

ity of these procedures, this data was
)elfel and associates in Michigan. Using
/ smaller sample sizes (60 students one
:upations, Woelfel et al. (1980) reported
found in our data. Even more important,
quite well with the first dimension ($r =$
· spanned the second through the fourth

: occupations in the Michigan nor the
ered a representative sample, it is not
would be at stable angles within the
ully compare the data sets it is necessary
employed in common. Sacrificing some
l out on 13 comparable titles.
78 Michigan data sets were merged into
rotated to those of the merged Montana
orientation of the axes are quite similar
ese correlations are especially impressive
, the slight differences in questionnaire
the fact that the respondents were from
dustrial state and a rural western region.

)nal coordinates for Montana and Michigan

value* ına	Correlation	Angle
.23	0.9738	13.14°
.21	0.9433	19.39°
.71	0.9378	20.31°
.32	0.7963	37.22°
..57	0.8540	31.35°
.57	0.9392	20.08°
.79	0.8928	26.78°
.85	0.7910	37.72°
.78	0.6242	51.38°
.28	0.4245	64.88°
..34	0.8497	31.82°
.41	0.7583	40.68°

to least squares best fit with the Michigan
der of descending algebraic value.

Table 5. Correlation between position vectors (occupational coordinates) for Michigan and Montana samples after rotation

Occupation	Correlation	Angle
Accountant	0.7870	38.20°
Teacher	0.9397	20.00°
Hair dresser	0.9717	13.67°
Doctor	0.9308	21.45°
Secretary	0.9653	15.14°
Newspaper reporter[a]	0.9179	23.38°
Carpenter	0.9842	10.18°
Farmer[b]	0.9507	18.07°
Plumber	0.9624	15.77°
Construction worker	0.9533	17.58°
Veterinarian	0.9826	10.70°
Computer programmer	0.8434	32.50°
Nurse	0.9616	15.94°

[a] In Michigan, the title journalist was used.
[b] In Montana, the title rancher/farmer was used.

A comparison of the locations of the attribute vectors in Table 6 is even more interesting. The data show that prestige correlates very strongly with the first dimension, and the sex typing vector spans primarily the second, third, fourth and sixth dimensions. Even though we cannot establish the precise location of these vectors with respect to all occupations, it is clear from this data that college students consistently use prestige and sexual incumbancy to differentiate among occupations.[3]

Table 6. Correlations between coordinates for 13 occupational titles and prestige and sex typing evaluations on the first 8 dimensions from the Michigan and Montana samples after rotation

Dimension	Prestige		Sex typing	
	Montana	Michigan	Montana	Michigan
1	0.955	0.915	0.195	0.274
2	0.115	0.049	−0.640	−0.640
3	−0.158	−0.008	0.559	0.450
4	0.043	0.161	−0.270	−0.447
5	−0.095	−0.006	0.083	−0.150
6	0.010	0.006	0.288	0.344
7	0.057	0.037	−0.098	−0.184
8	0.132	0.069	−0.073	−0.014

Discussion

Social scientists have shown an increasing interest in the non-socioeconomic dimensions of occupation. Extant research, however, has focused on differentiating among occupations in terms of various objective measures of a number of attributes specified by the theorist (Cain and Trieman, 1981; Parcell and Mueller, 1983). With the exception of prestige studies, there have been few attempts to determine the basis upon which some population perceives differences among occupations.

In this paper, a case was made for the use of a variant of metric MDS to determine how people organize their perceptions of the occupational world. Based on a study of college students estimates of differences between occupations, it was demonstrated that these methods yield precise and reliable spaces. The data also show that while prestige is probably the central factor in occupational differentiation, perceptions are not dominated by it. A number of other attributes are employed in a consistent fashion. While identification of these attributes awaits further research, the data reported here clearly indicate that sex typing is a salient feature in the collective conscience of respondents. It appears quite likely that the Kraus et al. finding of a basically one dimensional view of the occupational structure was a product of the non-metric scaling techniques.

While these findings are quite interesting and show the advantages of these procedures, the reader should keep in mind the limitations of the data. The nature of the sample and the lack of representativeness of the scaled occupations preclude any definitive statement about the orientation of the attribute vectors. And, small sample studies can be extremely sensitive to exclusion or deletion of a few cases.

Despite these limitations, the precision and stability of the results are impressive and warrant further work. If subsequent research should substantiate the role of sex stereotyping, it has important applications in status attainment research. One of the reasons that this work has not been able to clearly explain sex differences in the attainment process is that males and females choose from different sets of occupations, and the use of prestige scores to measure aspirations and attainments tends to obscure this (Marini and Greenberger, 1978; McLaughlin, 1978). As the social pychological attainment models have shown, aspirations are formed and modified largely on the basis of information received from others about the occupational structure and the self (Haller and Portes, 1971). The research reported in this paper clearly shows that sex typing as well as prestige is a salient aspect of how people see the occupational world, and thus plays an important role in the process of setting vocational preferences. As such it also provides

support for the view that many of tl
related to early socialization practices
in the direction of traditonal roles (R

Notes

1. Due to space limitations, the distance matr
included, but are available from the author
pair comparison shows relative standard err
in the 1982 data, and 6% for the merged d
2. This and other data referred to in this pa
paper are available from the author upon r
3. In studies such as this with a small numbe
scaled can easily effect the location of the
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Notes

1. Due to space limitations, the distance matrices and other summary descriptive data are not included, but are available from the author upon request. Analysis of the variances for each pair comparison shows relative standard errors of approximately 8% in the 1981 data, 9.5% in the 1982 data, and 6% for the merged data.
2. This and other data referred to in this paper that is too lengthy to be reproduced in this paper are available from the author upon request.
3. In studies such as this with a small number of cases, the particular occupations that were scaled can easily effect the location of the attribute vectors. Furthermore, although it is not the case here, differences in the samples could also have this effect. For example, in a study of rural high school students using similar procedures to scale 34 occupations, Saltiel (1988a) found that the sex incumbancy vector had a correlation of 0.93 with the second dimension. It seems likely that sex stereotyping is more salient for younger respondents.

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Analysis of deviance and of socia methodological research

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Abstract. In an analysis of deviance and social means of progress in the theoretical domain, w consensus vs. conflict debate by introducing two be clarified by reference to norms or values tha to the legitimacy of the intervention of a particul problematic behavior; and (2) the comprehension tation necessitates an understanding of their mea are the framework in which these judgements this second aspect constitutes the working hyp questionnaire data ($N = 804$) concerning the social by an original method of hierarchically ascendi cation. This method, which crosses an automatic similar analysis of the variables, produces signifi describe the five archetypes of social represent archetypes are then analyzed further with the app

The research presented here involves bo ological considerations; an original met in the theoretical domain. The latter see consensus vs. conflict debate by introc First, this debate or disagreement cann or values that are abstractly described of the intervention of a particular social problematic behavior (Faugeron & Jak hension of these phenomena and their understanding of their meaning and of are the framework in which these judg made. Indeed, this second aspect const research.

The resolution of any theoretical pr more complex requires the developme In this context, two problems had to be

(1) How to condense the collected da