

COMPARISON OF CLUSTERS OBTAINED IN COMMON SPACE OF SOCIAL AND PSYCHOLOGICAL CHARACTERISTICS

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On a sample of 200 healthy men a set of 26 indicators of ascribed socio-economic status and two groups of psychological tests was applied. The first group contains 3 tests for input, parallel and serial processing, and the second 6 tests, generated by a computer program, for assessment of regulation and control of activity, organic functions, defense and attack reactions, and coordination and integration of regulatory functions. Basic common space of both social and psychological characteristics was defined by maximization of scalar products of noncentered, but standardized results of sociological and psychological variables. Possibly overlapping clusters were obtained by extremization of parsimonious functions on thus obtained quasicanonical variates.

Relations between sociological and psychological clusters indicate that subjects with different positions in socio-economic space have different patterns of cognitive and cognitive regulation, and that efficiency of information processing and cognitive regulation and control, is generally better in clusters with favorable position in socio-economic space.

1. PROBLEM

The relations between cognitive and regulatory functions and the position in the social field which could affect the development of these functions, have been analyzed on several occasions by very different analytical techniques. For that purpose the most often applied were the uni- and multivariate variance analysis, different regression techniques and canonical and quasicanonical models. Taxonomic procedures, however, have been applied very rarely, and even when they were it was most frequently a simple procedure which comprised separate classification of entities described by the indicators of the position in the social field

* A good review of these studies can be found in Reuchlin, 1977; Diamantis, 1976; Homirović et al., 1981; Petrović and Hošek, 1986; Hošek, Homirović and Dugić, 1986.

and by measures of cognitive and/or conative efficiency and the analysis of relations between thus obtained taxons by a primitive technique of analysis of relations between two categorial variables, or, only exceptionally, by correspondence analysis.

The aim of this paper is to demonstrate the application of another method of taxonomic analysis in solving problems of relations between social and psychological characteristics. The essence of the proposed approach is the determination of taxonomic dimensions in the common space of social and psychological characteristics defined by maximization of scalar products of linear combinations of noncentered but standardized results in sociological and psychological variables. The taxons are defined by extremization of parsimonious functions of thus obtained quasicanonical variables, and their relations were estimated on the basis of scalar products of taxonomic vectors.

2. METHODS

The analyses were carried out on a sample of 200 psychologically and physically healthy men, between the ages of 19 and 27, which was drawn so as to be representative of Yugoslav population of this age and sex.

For the estimation of cognitive efficiency three tests were applied, which were, after a pilot analysis, judged as reliable and valid efficiency measures of the perceptive processor (GT-7, Thurstone and Gotschaldt), serial processor (ALPHA-7, Wels) and parallel processor (II-2, Dvorak). For the estimation of regulatory functions six tests were applied, generated by a computer program (Bul and Momirović, 1984), so as to estimate the dimensions postulated by a cybernetic model of regulatory

functions with the highest possible reliability and validity (Momirović, Horga and Bosnar, 1982; 1984): ALPHA-1 (regulation and control of defense reactions), SIGMA-4 (regulation and control of attack reactions), HI-2 (regulation and control of organic functions), DELTA-4 (coordination and control of regulatory functions), ETA-2 (integration of regulatory functions) and EPSILON-1 (activity regulation).

Indicators of the position in the social field were chosen in accordance with the structural model of Saksida et al. (Saksida and Petrović, 1974; Saksida, Caserman and Petrović, 1974; Momirović and Hošek, 1975; Petrović and Hošek, 1986). The following 26 ordered categorical variables have been registered: (1) subject's education (EDUCS), (2) father's education (EDUCF), (3) mother's education (EDUCM), (4) subject's knowledge of foreign languages (LANGS), (5) father's knowledge of foreign languages (LANGF), (6) mother's knowledge of foreign languages (LANGM), (7) subject's basic residential status (BREZS), (8) father's basic residential status (BREZF), (9) mother's basic residential status (BREZM), (10) subject's current residential status (AREZS), (11) father's current residential status (AREZF), (12) mother's current residential status (AREZM), (13) subject's success in school (SCSUCC), (14) subject's functions in the League of Socialist Youth (FUNCS), (15) father's qualification (QUALF), (16) mother's qualification (QUALM), (17) father's professional status (PROFF), (18) mother's professional status (PROFM), (19) father's functions in self-management bodies (SLFHF), (20) mother's functions in self-management bodies (SLFHM), (21) father's political functions (POLITF), (22) mother's political functions (POLITH), (23) father's functions in the union (SINHF), (24) mother's functions in the union (SINHM).

(25) father's functions in sports organizations (SPORTF), (26) mother's functions in sports organizations (SPORTM).

The analyses were carried out using a modified algorithm (Radaković and Momirović, 1989) for the determination of taxons by parsimonious transformations of nonstandardized quasicanonical variables (Perišić and Momirović, 1986). The algorithm determines the objects positions on nonstandardized quasicanonical variables by extremization of the brutto varimax function, and the relations of thus obtained taxons on the basis of their scalar products. The program (Momirović and Radaković, 1989) was written as a macro program in GENSTAT, version 4.04.

3. RESULTS

The final results have been summarized in three tables:

- tables 1 and 2 contain the patterns of taxonomic dimensions defined by projections of these dimensions onto the space bound by sociological characteristics vectors and the space bound by psychological characteristics vectors; only substantial projections are given;
- table 3 contains cosines of angles among three significant taxonomic dimensions obtained in the common space of sociological and psychological characteristics

Table 1

The pattern of taxonomic dimensions in the sociological space

The first taxonomic dimension

(1) subject's education (EDUCS)	.77
(4) subject's knowledge of foreign languages (LANGS)	.91
(13) subject's success in school (SCSUCC)	.98
(14) subject's functions in the League of Socialist Youth (FUNCS)	1.24
(15) father's qualification (QUALF)	.66
(19) father's functions in self-management bodies (SLFHF)	.52
(21) father's political functions (POLITF)	1.18
(22) mother's political functions (POLITM)	.91
(23) father's functions in the union (SINDF)	.73
(24) mother's functions in the union (SINDM)	.78
(25) father's functions in sports organizations (SPORTF)	.66
(26) mother's functions in sports organizations (SPORTM)	.77

The second taxonomic dimension

(2) father's education (EDUCF)	.71
(3) mother's education (EDUCM)	1.07
(5) father's knowledge of foreign languages (LANGF)	.47
(16) mother's qualification (QUALM)	1.32
(17) father's professional status (PROFF)	.81
(18) mother's professional status (PROFM)	1.65
(20) mother's functions in self-management bodies (SLFMH)	1.27

The third taxonomic dimension

(6) mother's knowledge of foreign languages (LANGM)	.52
(7) subject's basic residential status (BREZS)	1.14
(8) father's basic residential status (BREZF)	.80
(9) mother's basic residential status (BREZM)	.85
(10) subject's current residential status (AREZS)	1.15
(11) father's current residential status (AREZF)	1.21
(12) mother's current residential status (AREZM)	1.23

The pattern of the first taxonomic dimension in the space of sociological characteristics is predominantly defined by the indicators of parents' socio-political status, but also by the indicators of subject's socialization efficiency. The position of the indicators of the subject's socialization efficiency in the

constellation of parents' socio-political functions is theoretically quite unusual, but it is almost typical of Yugoslav conditions, particularly lately. This taxonomic dimension has been interpreted in accordance with the social stratification model (Saksida et al.), as family institutional status.

The second taxonomic dimension was defined by the entities possessed by the parents of above-average education and, related to that, above-average professional status and interpreted as parents' professional and educational status.

The entities representing at least the second generation of families living in large urban centers in Yugoslavia define the third taxonomic dimension in the sociological characteristics space. It has been interpreted as family residential status.

Table 2

The pattern of taxonomic dimensions in the psychological space

The first taxonomic dimension

GT-7	(perceptual processor efficiency)	.81
ALPHA-7	(serial processor efficiency)	1.13
IT-2	(parallel processor efficiency)	.65
EPSILON	(activity regulation)	1.36

The second taxonomic dimension

ALPHA -1	(regulation and control of defense reactions)	.83
SIGMA-4	(regulation and control of attack reactions)	.44
HI-2	(regulation and control of organic functions)	1.45
DELTA	(coordination and control of regulatory functions)	1.10

The third taxonomic dimension

ETA-2	(integration of regulatory functions)	.59
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The first taxonomic dimension, derived from the measures of

of cognitive functions and results in the activity measure. There is no doubt, therefore, that this taxon was determined by entities with above-average degree of cognitive efficiency (G).

The entities with the superior level of regulation and control of regulatory functions (†) have defined the second taxonomic dimension derived from the measures of cognitive and conative efficiency.

The third taxonomic dimension, derived from the measures of psychological characteristics, was defined only by the measure of regulatory functions integration (n), the only variable in this set of measures which was predominantly determined by direct influence of the social field on the socialization processes.

Table 3

Cosines of angles between sociological and psychological taxonomic dimensions

	G	†	n
1. Family institutional status	(.98)	(.96)	(.94)
2. Parents professional and educational status	.91	.88	.90
3. Family residential status	(.94)	.92	.92

On the basis of relations between thus defined taxonomic dimensions it can be seen that parents' above-average institutional status is related to the efficiency of subject's cognitive and conative functioning, as well as to the efficiency of his integration into the social field to a greater extent than their professional and educational status. In that respect the family residential status, which, as is well known, may only

indirectly stimulate cognitive and conative development, is not insignificant either. Relative inferiority of the parents' professional and educational status in children's psychological development with respect to the institutional and residential status, has in this case, due to the nature of this work, been attributed to another phenomenon of the present Yugoslav society. A more extensive sociological analysis of these results will be made in another work.

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