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THE CORRESPONDENCE BETWEEN GROUP AND INDIVIDUAL IN THE FACTOR STRUCTURE OF PERSONALITY TRAIT RATINGS

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The correspondence between group and individual in the factor structure of personality trait ratings

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APPENDICES

The correspondence between group and individual in the factor structure of personality trait ratings

Jorma Kuusinen

Abstract

The purpose of the study was to examine to what extent the factor structures of personality trait ratings are equivalent when ratings are made by a group or by an individual belonging to the same group. The differences in the factor structures were examined in regard to the contents of the factors, their variance, and the degree of differentiation of the structures. An attempt was made to understand differences in factor structures of ratings in terms of the personality characteristics of the individual raters.

The material consisted of the personality trait ratings given by a group of 39 subjects (aged 17-18) from each other, using 33 seven-degree bipolar scales. The factor structure of traits obtained from the ratings of all the raters was compared with the factor structures of 12 individual raters. The individuals were selected to represent the extreme ends of the dimension of sociometric status and half of them were girls, the other half boys. The comparison between the factor structures was made by transforming the group structure into each individual structure by means of transformation analysis method.

The results indicate that the group structure and the individual structures correspond with each other in regard to the aspects studied. Individual differences in correspondence existed which could not be reconciled with the data obtained concerning the personalities of the individuals. The total amount of abnormal transformation in the individual structures correlated significantly with the correspondence in the interpretations of factor structures. The abnormal transformation in the individual scales could not be explained by means of the personality characteristics of the individuals.

According to the results obtained it is justifiable to consider the group structure to represent the individual factor structures.

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I INTRODUCTION

A. Problem

When one is interested in the factor structure of ratings scales denoting personality, he usually has a group of judges rate other persons' personality (or some other relevant objects) and then, by applying appropriate multivariate methods, arrives at a factor structure of the scales. One uses a group of judges instead of a single individual to give the ratings because it is thought that there may be individual variation in how a single judge perceive the relations between the scales. It is customary to treat this variation as an error in looking for the structure of the scales. Consequently, this kind of factor structure of personality rating scales shows:

- 1. in what way on an average words denoting personality traits are connected with each other in the ratings made of other persons, i.e., what factors we get;
- 2. as regards which traits on the average there are many discriminations made, i.e., what is the variance of factors;
- 3. as regards how many traits on an average these discriminations can be made, i.e., what are the correlations between the factors.

The ratings structure of each individual judge shows, respectively, in what way words denoting personality traits are associated in the ratings made by an individual, what are the traits as regards which an individual makes many discriminations, and between how many different aspects an individual can make distinctions in rating other people's personalities.

In this study it is attempted to clarify whether the group factor structure of personality rating scales also represents the individual structures which are part of the group structure in regard to the afore-mentioned aspects. Furthermore, it is attempted to examine whether the individual differences in factor contents, variances and differentiation of the factor structure are connected with other psychological characteristics which distinguish between individuals. The main interest in this study is the nature of those individual differences in personality ratings which usually are interpreted as an error in the description of the factor structure of personality ratings. These differences can appear a) in factor

contents, b) in factor variances, and c) in the degree of differentiation of the structure.

1. Individual differences in factor contents

Reliable differences between the raters in factor contents indicate that with Rater A certain scale x correlates differently to other scales than with Rater B. One can say that this is due to the fact that the connotative as well as denotative meanings of trait words or characteristics to which the words refer are different with different raters. At our present status of knowledge we explain these differences by saying that they come from different learning experiences that persons have had when they learned what the trait However, almost nothing can be said about how different learning experiences produce different meanings of trait words. Rommetweit (1960, pp. 19-20) has discussed the problem in some length in his analysis of how the meaning of traits could be learned, and the work done on concept formation could in principle show light to To be realistic, however, we must share Rommetweit's the problem. opinion in that.

"...The variety of complex constellations of personal attributes, the fact that one and the same composite event may "betray" a number of them simultaneously, the probabilistic nature of the cues, the extremely important fact that other persons most often are "sized up" globally by some sort of "weighting" or integration of stimulus components...,...the fact the immediate instrumental relevance of any single attribute will vary from situation to situation, all these conditions testify to a considerably higher level of complexity than that of fundamentally similar process occurring in traditional laboratory settings for discrimination learning and concept formation". (Rommetweit, 1960, p. 20)

From these considerations we turn to studies which take the individual differences in the meaning of trait words as given and try to relate them to other characteristics of the individuals.

One of the few studies made on the problem is Takala's (1953) doctoral dissertation "Oppilaiden ja opettajien suorittamista persoonallisuuden piirteiden arvioinneista" (On the personality ratings of teachers and pupils). She described differences in the factor structures of ratings given by teachers of their pupils and she was in some cases able to connect them meaningfully with other characteristics of teachers:

"...In the ratings of Teacher A, the traits dexterity and pleasant correlated with each other more than on an average - and the first thing that I learned about Teacher A was that her own interest in artistic handicraft and level of performance in tasks requiring dexterity was high. Similarly, in Teacher B's ratings the traits pleasant and drawing skill correlated above the mean - and Teacher B was known for her drawing skill not only within the school, but in the community".

(Takala, 1953, p. 53; translation mine).

The differences that Takala described appeared only in the affective meaning of trait words and there were only a few cases where such differences could be found.

In Pedersen's (1963) study (cf., Tucker, 1964) the interindividual differences model of multidimensional scaling (Tucker and Messick, 1963) was applied in the search for structural differences between the raters in their use of trait words. The number of raters was 260 and that of the traits 50. One "idealized individuals", dimension of interindividual differences was found which showed, to give a quotation again, that:

"...Being rational was less like being intelligent and more like being unpredictable, domineering, active, interesting, brave. Being aggressive shifted from being similar to selfish, tense and sociable toward being similar to unselfish, honest, mature and sociable. Defensive developed a positive relation to strong, mature, interesting, honest and graceful. Passive was no longer opposite to aggressive and developed stronger connotations. This certainly represent a change in the standard stereotype view and could lead to different perceptions of situations among people. It could also lead to different expectations regarding the results of actions taken in various situations relating to the reactions of people". (Tucker, 1964, p. 97).

As regards to the number traits and raters, the differences found were not large and most clearly they can be interpreted as reflecting the differences in the connotative meaning of trait words between the individual raters.

Ware (Miron and Osgood, 1966) studied the interindividual variation in the structure of the same set of scales used also in the present study. In Ware's study, 20 persons rated 40 personality concepts. His findings did not show that there is variation in the structure of the scales between individuals.

The semantic differential technique (Osgood, Suci, and Tannenbaum 1957) has been critized by some idiographically oriented psychologists in that the structure of semantic differential scales is not valid when considered from an individual rater's viewpoint (see, e.g., Scott, 1963, p. 270). This critique is of course relevant, and even

perhaps more so, when we are dealing with personality ratings. However, the studies made thus far have failed to show that there exist meaningful individual differences in the structure of personality ratings. In one of the studies known by this author, Levin (1966) applied Tucker's (1964) three-mode factor analysis to semantic differential data. The results showed that the differences in the intercorrelations of the scales were explained by one dimension, i.e., that the rater mode was unidimensional. In another study, Wiggins and Fishbein (1968) submitted the structure of semantic differential scales to a careful search for individual differences by using the interindividual differences model of multidimensional scaling (Tucker and Messick, 1963). Wiggins and Fishbein analysed factor structures for ten "idealized individuals". With one exception, all factor structures showed the usual pattern of Evaluation, Activity, and Potency.

In considering the predictions of the present study, the evidence presented above leads to a pessimistic rather than to an optimistic view about the possibilities of finding interindividual differences in the contents of personality rating factors.

2. Individual differences in the variance of factors

The differences in factor variances between individuals are thought to index the relative importance of the same factors with different raters. Theoretical background to this line of thought can be found e.g. in G. A. Kelly's (1955) theory of personality. Kelly's 'individuality corollary' states that "persons differ from each other in their construction of events", by which Kelly means that different individuals interpret the outside animate and inamimate world by using different 'personal constructs'. As to the present problem this means that individual raters are differently sensitive to the same traits in other persons' behavior, which leads to differences in the variances of the scales and factors.

Another theorist, Rommetweit (1960), has explained that during the long period of growth and development an individual learns that certain traits in other person's behavior are 'instrumentally relevant to the achievement of his goals and, consequently, the individual learns to be sensitive to these instrumentally relevant traits in

other persons. In testing this hypothesis Rommetweit (1960) showed that the instrumental relevance of a trait was directly related to the strength of that trait in the individual's conscious or unconscious self-concept.

The only empirical study known to this author about the individual differences in the variance of rating factors is that of Wiggins and Fishbein mentioned above. These authors reported interindividual differences in the variances of the semantic differential factors. However, these differences were not interpreted by connecting them with the personological data from the individuals and their significance remained psychologically obscure.

In the light of what has been said it is warranted to expect that there will be differences in the variances of the factors between different raters; at least one has to analyse the data in a manner which makes it possible for these differences to show up. However, the data of the present study do not justify any exact hypothesis as to the nature of these differences.

3. Individual variation in the differentiation of factor structures

The differentiation of a factor structure is generally indexed by the number of factors interpreted in a structure as well as by the intercorrelations between the factors of a structure. When speaking of differentiation in perceptual phenomena such as here the term 'cognitive complexity' is often used. One of the most representative studies concerning the cognitive complexity of social perceptions is that of Vannoy (1965). He combined various measures of cognitive complexity in a factor analysis and showed that it is a multidimensional concept, i.e., people can be cognitively complex or simple in many different ways.

Some of Vannoy's findings are relevant here. For instance, he showed that people differ from each other in the number of traits they are sensitive to when judging another person. Some people differentiate others in several characteristics, whereas others use only few traits in differentiating other people. It was also found that the degree of cognitive complexity that a person shows in his perceptions of other people is related to how great is the person's intolerance of ambiguity in his environment, and how authoritarian he is. According to Vannoy, being a non-authoritarian and not

perceiving ambiguous situations as threatening, as well as possessing a more complex verbal apparatus, correlated with a person's ability to interpret his experience in a more varied and equivocal way. The same interpretation can be found in Bieri et al. (1966, pp. 193-196) who refer to studies such as those of Leventhal (1957), Tripodi and Bieri (1964), Mayo and Crockett (1964).

In studying the individual differences in the differentiation of the structure of ratings, Walters (1963) used the number of factors as an index of differentiation. The model of analysis was that of Tucker and Messick (1963) mentioned earlier. Walters found that the intercorrelations of trait inferences were explained by two dimensions of "idealized individuals". One consisted of five and the other of four factors. However, the last mentioned factors were replications of those of the first dimension. This seems to justify a conclusion that individual differences in the differentiation of the factor structure did not exist in Walters' data.

A common approach to the study of cognitive complexity of social perceptions is to use as a frame of reference Rokeach's (1960) theory of social behavior. From the theory one can derive a hypothesis that authoritarian personality is correlated with undifferentiated social perceptions, whereas a non-authoritarian person is cognitively complex and uses a multidimensional approach in his judgements of other people In Wozniak's (1064) study subjects, who were classified into three categories (open, medium, closed) on Rokeach's dimension of "open vs. closed belief systems", gave ratings from 19 concepts by using 40 semantic differential scales. Scale intercorrelations were factor analysed separately for each group. The results did not support the hypothesis, since the number of factors was six with the "closed" group, five with the "open" group, and four with the "medium" group.

There is one approach to the problem of individual differences in the differentiation of factor structure where one is certain to find individual variation. This is the case in studies where the developmental level of the subjects is an independent variable. To mention just two examples, Takala (1953) showed that the factor structure of the same traits in pupils' ratings of other people was more differentiated with older than with younger pupils. Similarly, Signell (1965) found that with increasing age the categories of social perceptions increase and become more complex and at the same time perceptions differentiate and change to be less stereotypical.

The nature of the evidence presented above shows that in determining the correspondence of the factor structure of personality ratings between a group and an individual one needs to be aware of the possibility that there are differences in the differentiation of the structure.

B. The stability of the individual structure

In studying the congruence of a factor structure of ratings between a group and an individual, a critical question concerns the reliability of these two types of structures. In the case of a group the reliability of the structure can be shown by analysing the structure for two or more groups, or by having the same group give ratings at different sessions. In this study the same data was gathered from two other groups. The results showed that the same factors explained the variance of ratings in all cases. These results have been utilized in studying certain other problems connected with personality ratings (Kuusinen, 1967b).

In an individual's case one has to study the stability of the structure. This was done by the author by using one individual as a subject. The subject rated different personality concepts three times at one week's intervals by using the same set of 33 personality scales as in the present study. The results showed the stability of the structure was very high (for details, see Kuusinen, 1966b). Also in the study made by Takala (1953) the stability of an individual's structure of ratings was studied by having a teacher rate his pupils three times at intervals of one year. The factor structure of the 24 traits employed in the ratings was interpreted to be similar in these three analyses.

The results of these two studies show that an individual's factor structure of personality ratings can be considered reliable, or rather, stable. Of course, the meaningfulness of the comparison between the group and an individual is dependent on this fact.

II EMPIRICAL PART

A. The Data

1. Subjects and the objects of ratings

Ratings were given by a class of seventh grade secondary school pupils. The class had 39 pupils in all, of whom 18 were girls and 21 boys. Each pupil rated each other and him(her-)self. The ratings took an average of two hours and each pupil was paid for the work.

2. Scales and the method of ratings

The ratings were given by using the same scales as was used in the present writer's earlier studies (Kuusinen, 1966a, 1966b). The method was also the same. The scales have been obtained by translating 24 Ware's scales which best measure the eight factors of 'personality differential' (Miron and Osgood, 1966) added with nine semantic differential (SD) scales. The scales are presented in Appendix A. The direction and order of the scales have been varied systematically in the rating form. The instruction was typical of the SD. Each pupil was given a list of the other pupils, which contained the objects of ratings, and one half of the pupils was asked to perform the ratings in reversed order.

3. Selection of individuals

Individuals, maximally different as regards sociometric status, were chosen objects of the structure comparisons. For this purpose the class was given the following sociometric questions: 1) With whom of your classmates would you like to belong to the same group during your spare time? and 2) Name those pupils of your class whom you consider your best friends. The number of choices was unlimited in both questions. In the selection of individuals attention was paid to the results of both questions in combination. The three highest scoring boys, the three highest scoring girls, the three lowest scoring girls, were selected

It may be pointed out that the employed sociometric questions give such a group affective structure which is often called psychegroup (Gronlund, 1959; Moreno, 1960; Bjerstedt, 1963) and which is formed on the basis of the personal system of values of each individual who makes the choices. The selected 12 popular and rejected boys and girls form the group of individuals whose personality trait rating structures are compared with the group structure, to which these individuals and their rating structures also belong. From the choices received by each of these pupil it can be concluded that they belong to the extreme ends of sociometric status in their class.

The reason for the selection of the individuals in this way was that we wanted to get subjects who would be different from each other in their personality characteristics. It was thought that the selected individuals would differ from each other and from the group in general in their ratings of other pupils and that the differences

which are sought here would most clearly show up with these individuals. For practical reasons it was not possible to use other measures in the selection of the individuals. The lack of detailed personological data from the subjects results in that as the main problem of this study we regard the study of the correspondence between the group and an individual in the general sense; study of this correspondence as a function of individual characteristics can be done in rather superficial manner only,

B. Methods

1. Scoring and factor analyses

The three dimensional (scales x raters x objects) data-matrix obtained from the ratings given by the group was transformed into two-dimensional form by computing the arithmetic means of the ratings of an object on each scale across the raters. The Pearsonian correlations between the scales were obtained by computing them across the object means. Another possibility would have been to calculate the correlations across the objects and the raters, but the capacity of the computer available was inadequate for this purpose. In each case, individual differences in the scale intercorrelations are regarded as error variance.

As for the individuals under study, the scale intercorrelations were calculated across the objects using Pearson's product moment correlation.

Factor analyses from both the group and the individual scale intercorrelations were carried out by means of the principal axis method (Harman, 1960) using highest correlations as communality estimates.

2. Rotations

The interpretation of both the group and individual structures was performed using the "extended" analytic cosine rotation (Markkanen, 1964). This rotation method gives an oblique but simultaneously the most orthogonal possible solution. The rotation is carried out through those variables that form the most orthogonal vector base. The computer program searches the rotation base by taking as successive starting points each variable for which another variable, as orthogonal as possible, is sought; a third vector is then searched following the same principle; the third vector must then be as orthogonal as possible against the plane formed by the first two vectors, the fourth against the hyperplane formed by the first three vectors (variables), etc. The program goes through the base vector combinations, equal in number with the variables, in which the number of vectors = the number of factors wanted. The final rotation base is that whose determinant, which is in direct relation with the volume of the base, is greatest (Markkanen, 1964). Markkanen writes the following statement about the selection of the rotation base by the computer:

"...For the present, it has not been possible to construct a proof showing that the base chosen in this way is the most orthogonal of all possible r-dimensional bases through test vectors. the other hand, it has not been possible to find a single instance where the procedure would not yield the best result. Experiments with electronic computer have thus far shown that the procedure described here yields the most orthogonal base". (Markkanen, 1964, p. 3).

When the extended analytic cosine rotation is used, it is furthermore possible to select beforehand the variables through which the rotation would be performed. Similarly, it is possible in the selection of the base to exclude the variables which for some reason are not accepted as base vectors: a reason of this kind could be e.g. the small communality of the variable or its low reliability. The former possibility has been partly observed in the data analysis.

The interpretation of all the factor structures has been done by means of both the pattern matrix of the primary factors (A=FT) and the structure matrix (S=FT'), (F=factor matrix, T=rotation matrix). Structure matrix has been used to assist in the interpretation of factors because the structure coefficients can be regarded as a kind of validity coefficients of the variables when the factors are used as criteria (Heinonen, 1963, p. 15).

In all cases the factor intercorrelations have been obtained by

post-multiplying the rotation matrix (T) by its transpose (T'). When oblique rotation is used, the variance can be explained both by uncorrelating direct contributions of the factors and by their correlating joint contributions. The direct and joint variances of factors have been obtained according to Harman, 1960, p.272-273. Besides, a varimax-rotation (Harman, 1960) has been performed

from all the rating structures examined.

The value of the determinant of the rotation base has been used as an index of the degree of differentiation of all the factor structures (Markkanen, 1964) together with the percentage of the first principal factor eigenvalue from the common variance.

3. Comparison of factor structures

3.1. Comparison based on the congruence of vector spaces

The correspondence between the vector spaces of the group structure and the individual structure has been examined by performing a linear transformation from the group structure to each individual factor structure by means of Ahmavaara's (1954, 1957) "naive" transformation analysis. Thus each individual structure has, as it were, been measured by the same measure, i.e. by the group factor structure. If we mark A_g =the rotated primary factor matrix of the group and Fi=the factor matrix of individual, we examine with Ahmavaara's model to what extent the transformation $A_{g}L$ = F_{i} (in which L = transformation matrix) holds good. transformation matrix L is calculated with the formula

$$L = (A_g^{\dagger} A_g)^{-1} A_g^{\dagger} F_i$$

 $L = (A_g^*A_g^*)^{-1}A_g^*F_i$ and after this the comparison is made by examining to what extent the

corresponding elements of A_gL and F_i correspond with each other. The comparison can be made e.g. graphically by plotting the elements in the orthogonal coordinate system the factors of one matrix serving as y-axis and the factors of the other as x-axis. If the vector spaces are similar, the corresponding points are placed on the straight line x=y. The divergences of the corresponding points from this line indicate so-called abnormal transformation, which can be due to errors of measurement, but also due to the fact that the psychological meaning or content of the variables is different in the factor structures under comparison (Ahmavaara, 1954, 1957; Ahmavaara & Markkanen, 1958; Markkanen, 1964).

The abnormal transformation of individual scales when moving from the group factor structure to the individual structures has been examing by calculating the matrix

in which the squares of the row sums show the amount of abnormal transformation in each scale. The total amount of abnormal transformation which in each case can be called the abnormal transformation of the individual's factor structure, has been arrived at by summing the abnormal transformation of each scale.

Abnormal transformation does not depend on whether the transformation is made from the rotated or unrotated result of the group structure (Markkanen, 1964, p. 2). Abnormal transformation, as well as other results of the "naive" method of transformation analysis, however, are to some extent different, depending on the direction of transformation. In all cases the transformation has been carried out from the group structure into individual structure in order to hold constant the influence of the direction of transformation in comparison.

3.2. Comparison of factors

In the comparison between the factors of the group and the factors of the individuals, interpretation has been emphasized. To assist in the interpretation has been used the coefficients of coincidence between the group factor structure and the individual factors structures. Coefficients of coincidence have been obtained from the matrix product $L_iT_1^{-1}$ where L_i = the transformation matrix of the comparison between the group and each individual, and T_i = the rotatio matrix of the factor structure of corresponding individual. This comparison matrix contains the coefficients of coincidence, and the rows of the matrix refer to the group factors and the columns to factors of the individual in the same order which the factors have in the corresponding factor structures. The comparison matrix shows the loadings of the factors of the individual (the coordinates of the factor vector end points) on the factors of the group.

Tucker's coefficient of congruence (Harman, 1960, p. 257) has also been utilized in the comparison of the factors.

The determination of the degree of similarity between the group structure and the individual structures in the present study is based primarily on the congruence in the interpretation between the extended analytic cosine rotation of the group structure on the one hand and on the other hand the corresponding rotation of the individual structures, supported with the information given by the coefficients of coincidence and congruence. In all cases, the congruence between the individual factors is qualitative, because the indices available

do not, in principle, justify quantitative comparisons. Bearing this in mind, some quantitative comparisons have also been made. Since the rotated solutions which form the basis of the structure descriptions in each case are only one from several possible solutions, attention is also paid to the congruence between the varimax rotations of the group and individual factor structures and to the congruence of oblique rotations between and within the group and the individuals. Also these comparisons have been supported with the numerical information given by the coincidence and congruence coefficients.

The comparison of the differentiation between the structures has been made by using as an index of differentiation the first principal factor percentage from the common variance and as a second index the determinant of the rotation base. The factor structures have in all cases been described on the basis of the maximal orthogonal solution and this naturally facilitates in drawing conclusions about the degree of differentiation of the structures.

For obvious practical reasons it would have been impossible to eliminate from the group structure the structure of the particular individual with whom the group structure is compared in each case. This omission is not considered to have any effect on the results obtained about the congruence between the group and individual structures.

III PRINCIPAL RESULTS ¹

A. The group's factor structure of ratings

The estimation of the number of factors in the group structure was done with great care. Several rotation solutions and even transformation analysis from one solution to another were used in the search for the "best" description of the group structure. For details of the procedures, see Kuusinen (1967a).

The final description of the group structure is based on the results of the extended analytic cosine solution. Only the factors are reported in the following. The lower limit for a loading to be included in the interpretation of a factor was set as plus or minus .30. In the description below, column A gives the loadings in the pattern matrix $(A = FT^{-1})$ and column S in the structure matrix (S = FT'). The multiple correlation of a factor gives an estimate of the factor's independence in the structure. Dependancy of sex and factor score indexes the distribution of scores <u>received</u> by boys and girls in the factor. For factor scores, it must be noted that they are not genuine factor scores but combined scores of those scales which had highest loadings on a factor. For their estimation and other details, see Kuusinen (1967a).

The first factor

	A	S
3. <u>unique-typical</u> (ainutlaatuinen-tavanomainen) 14. <u>usual-unusual</u> (tavallinen-epätavallinen)	.95 7 8	•95 •85
25. individualistic-regular (omintakeinen-kaavoihin sidottu)	,51	-
19. unpredictable-predictable (arvaamaton-ennustetta- vissa oleva)	.40	•53
Multiple correlation to other factors: $r_m = .30$		

Multiple correlation to other factors: $r_m = .30$ Direct contribution to common variance: 8.0 %

Dependancy of sex and factor score: chi square = 0.02199; p < .90

Only the main results are reported. For details and all of the tables going with factor analyses and transformation analyses, see the full report in Kuusinen (1967a).

The first factor is clear. It corresponds completely with Ware's Uniqueness-factor (cf., Miron and Osgood, 1966) which the present writer in his earlier studies has also extracted. Since the objects of ratings in this study were people, it seems profitable to call the factor <u>Originality</u>. The first factor is the most independent factor of the group structure ($r_{\rm m}=.30$). Its share out of the common variance is second to least. The factor is not formed on the basis of the sex of the rated persons.

The second factor

```
Α
                                                                                      S
17. <u>sensitive-insensitive</u> (herkkä-tunteeton)
26. <u>emotional-unemotional</u> (tunneherkkä-asiallinen)
                                                                           -.95
                                                                                    -.95
                                                                           -.74
                                                                                    -.40
                                                                           •69
28. rugged-delicate (karkea-hienotunteinen)
                                                                                     .82
12. disreputable-reputable (huonomaineinen-hyvämaineinen) .67
                                                                                    .85
31. good-bad (hyvä-paha)
1. moral-immoral (nuhteeton-paheellinen)
                                                                          -.63
                                                                                    -.80
                                                                          -.62
                                                                                    -.78
                                                                                     .86
 6. tough-tender (kovaluontoinen-lempeä)
                                                                            .51
                                                                                     .50
15. relaxed-tense (rento-jännittynyt)
                                                                            •49
21. unenergetic-energetic (tarmoton-tarmokas)
13. subjective-objective (yksipuolinen-tasapuolinen)
18. naive-sophisticated (yksinkertainen-hienosteleva)
                                                                            .49
                                                                                     .59
                                                                            .47
                                                                                     •52
                                                                            • 46
                                                                                     .01
10. strong-weak (vahva-heikko)
                                                                            •42
                                                                                     •49
                                                                                    -.19
22. steady-capricious (vakaa-oikukas)
                                                                            •41
                                                                           •39
-.36
24. rational-irrational (järkiperäinen-järjenvastainen)
                                                                                    -.05
33. flexible-rigid (joustava-jäykkä)
                                                                                    -.35
19. unpredictable-predictable (arvaamaton-ennustettavis-
                                                                                     .22
                                        sa oleva)
```

Multiple correlation to other factors: $r_m = .83$ Direct contribution to common variance: 18.6 % Dependency of sex and factor score: chi square = 5.8671; p < .02

The second dimension is a fairly clear dimension of Toughness, which corresponds with Ware's Toughness-factor (cf., Miron and Osgood, 1966). The second dimension accounts second to most for the variance of ratings and at the same time it is the least independent factor of the group structure.

The third factor

```
Α
                                                                   S
                                                           .95
                                                                  .95
 7. proud-humble (ylpeä-nöyrä)
18. naive-sophisticated (yksinkertainen-hienosteleva)
                                                          -.93
                                                                 -.72
                                                           .74
4. excitable-calm (helposti kiihtyvä-rauhallinen)
                                                                  .81
22. steady-capricious (vakaa-oikukas)
                                                                 -.71
                                                          -.67
23. wholesome-unwholesome (terve-epäterve)
                                                          -.59
                                                                 -.37
19. unpredictable-predictable (arvaamaton-ennustettavis-
                                                           •57
                                                                  .67
                               sa oleva)
16. solitary-sociable (yksinäinen-seurallinen)
                                                          -.43
                                                                 -.70
6. tough-tender (kovaluontoinen-lempeä)
                                                           •42
                                                                  .81
21. unenergetic-energetic (tarmoton-tarmokas)
                                                          -.41
                                                                  .21
 5. gregarious-self-contained (seuraa etsivä-seuraa
                                                           • 38
                                                                  .75
                               kaipaamaton)
```

```
S
                                                              Α
                                                            -.35
                                                                    .20
10. strong-weak (vahva-heikko)
9. light-gloomy (valoisa-synkkä)
                                                            -.31
                                                                    .22
8. formed-amorphous (jäsentynyt-jäsentymätön)
                                                             .32
                                                                    .22
```

Multiple correlation to other factors: $r_m = .80$ Direct contribution to common variance: 16,6 % Dependancy of sex and factor score: chi square = 0.19897; p < .70

Scales 21, 10, 9 and 8 can be left out owing to their weak The third factor of the group factor structure does not correspond with the factors extracted in earlier studies in which the same scales have been used. This may be due to the fact that in this study ratings have been made in a school class environment and thus all the factors of this study to some extent describe specifically the personality types of the school class. Irrespective of sex the traits belonging to one pole of the third factor characterize the dominating pupils of the class. Typical of them in this case is indifference, unpredictable behaviour, and sociability. They are expressively dominant in character as opposite to the matter-of-fact-behavior described by the other pole of the third dimension. The label Expressive Dominance as opposite to matterof-factness may perhaps best characterize the third factor. factor is second to least independent among the group factors and simultaneously as an important describer of personality types within a class room it ranks third in accounting for the common variance.

The fourth factor

```
Α
                                                                         S
29. deliberate-casual (harkitseva-ajattelematon)
                                                                .97
                                                                        .97
24. rational-irrational (järkiperäinen-järjenvastainen)
2. logical-intuitive (järkeilevä-vaistonvarainen)
                                                                        .92
                                                                .95
                                                                        .85
                                                                •95
                                                               -.79
21. unenergetic-energetic (tarmoton-tarmokas)
                                                                       -.72
30. tangible-intangible (selkeä-epämääräinen)
                                                                .78
                                                                        •77
                                                               -.71
26. emotional-unemotional (tunneherkkä-asiallinen)
                                                                       -.60
22. steady-capricious (vakaa-oikukas)
                                                                .63
                                                                        .83
 5. gregarious-self-contained (seuraa etsivä-seuraa
                                                                       -.71
                                                               -.52
                                  kaipaamaton)
                                                                       -.54
13. subjective-objective (yksipuolinen-tasapuolinen)
                                                               -.50
                                                                       -.57
15. relaxed-tense (rento-jännittynyt)
                                                               -.48
12. disreputable-reputable (huonomaineinen-hyvämaineinen)-.47
                                                                       -.66
31. good-bad (hyvä-paha)
8. formed-amorphous (jäsentynyt-jäsentymätön)
                                                                        .64
                                                                • 44
                                                                • 43
                                                                        . 31
 1. moral-immoral (nuhteeton-paheellinen)
                                                                .42
                                                                        .65
27. extroverted-introverted (ulospäinkääntynyt-sisään-
                                                                       -.51
                                                               -.41
                                päinkääntynyt)
 4. excitable-calm (helposti kiihtyvä-rauhallinen)
                                                                       -.72
                                                               -.40
                                                                       •50
23. wholesome-unwholesome (terve-epäterve)
                                                                •40
                                                               -.36
28. rugged-delicate (karkea-hienotunteinen)
                                                                       -.56
16. solitary-sociable (yksinäinen-seurallinen)
                                                                • 34
                                                                        •50
Multiple correlation to other factors: r_{\rm m} = .51
Direct contribution to common variance: 25.5 %
Dependancy of sex and factor score: chi square = 0.7099; p < .50
```

The fourth factor has been extracted also in the present writer's earlier studies in which it has been named Rationality in accordance with Ware's factor Rationality. Here, as with few exceptions earlier, Rationality accounts most for the variance of the ratings. It can be regarded as a general factor which on the one hand includes most of the socially desirable vs. undesirable traits and on the other hand those traits which in the rater's opinion are characteristic of successful vs. unsuccessful pupils. The fourth factor proves to be the most central of the group factors, i.e., it accounts most for the common variance, and at the same time it is the second least independent factor of the stucture.

The fifth factor

```
Α
                                                                           S
20. <u>unhappy-happy</u> (onneton-onnellinen)
9. <u>light-gloomy</u> (valoisa-synkkä)
                                                                 -.90
                                                                         -.89
                                                                          .86
                                                                  ,84
27. extroverted-introverted (ulospäinkääntynyt-sisään-
                                                                  ,60
                                                                          .78
                                 päinkääntynyt)
16. solitary-sociable (yksinäinen-seurallinen)
                                                                 -.53
                                                                         -.75
15. relaxed-tense (rento-jännittynyt)
                                                                  .49
                                                                          .45
 8. formed-amorphous (jäsentynyt-jäsentymätön)
                                                                  ,45
                                                                          .73
 5. gregarious-self-contained (seuraa etsivä-seuraa kai-
                                                                  .38
                                                                          .52
                                   paamaton)
33. flexible-rigid (joustava-jäykkä)
                                                                  .37
                                                                          .77
Multiple correlation to other factors r_{\rm m} = .70
Direct contribution to common variance: 11,4 %
Dependancy of sex and factor score: chi square = 2.0551; p < .20
```

The fifth factor is Sociability and it corresponds with Ware's factor of Sociability and with the Sociability-factor extracted in the present writer's earlier studies. In the varimax-solution (Appendix B) this factor is clearer because in it scales 16 and 27 get the highest loadings. The fifth factor ranks fourth in accounting for the variance and third as regards the degree of independence.

The sixth factor

```
A S
32. <u>large-small</u> (suuri-pieni) .84 .84
10. strong-weak (vahva-heikko) .57 .68
```

Multiple correlation to other factors: $r_m = .61$ Direct contribution to common variance: 5.4 % Dependency of sex and factor score: chi square = 7.3919; p < .01 The sixth factor is the factor of physical strength and size, and it differentiates primarily between the sexes. It accounts least for the variance and ranks fourth in independence. The sixth factor is identified as Physical Potency.

The seventh factor

```
S
                                                                   Α
                                                                  .90
                                                                          .90
11. agile-clumsy (ketterä-kömpelö)
                                                                  .69
23. wholesome-unwholesome (terve-epäterve)
                                                                          .53
33. flexible-rigid (joustava-jäykkä)
10. strong-weak (vahva-heikko)
                                                                  •60
                                                                          .81
                                                                  •52
                                                                          .39
13. subjective-objective (yksipuolinen-tasapuolinen)
                                                                 -.50
                                                                         -.53
25. individualistic-regular (omintakeinen-kaavoihin si-
                                                                  .48
                                                                          .68
 2. logical-intuitive (järkeilevä-vaistonvarainen)
                                                                 -.33
                                                                         -.37
```

Multiple correlation to other factors: $r_m = .57$ Direct contribution to common variance: 10.9 % Dependancy of sex and factor score: chi square = 2.2109; p < .20

The seventh factor combines traits denoting physical and mental activity (agile, flexible, individualistic) with traits denoting physical and mental power (strong, objective), thus forming a factor which is best called Dynamism. The factor corresponds with the combination of Activity and Potency of the Semantic Differential which often occurs when so-called personality concepts or persons are rated with the semantic differential technique (cf., Osgood, Suci, and Tannenbaum, 1957, p. 172, 180; Kuusinen, 1966a). The Dynamism factor ranks fifth in accounting for variance of ratings and third in independence.

1. The factor structure of the group: A summary

The intercorrelations between the scales from the ratings given by the whole group are explained by seven dimensions. Four of these, namely Originality (called Uniqueness in other studies), Toughness, Sociability, and Rationality, have appeared in the author's eight other factor analyses from the same scales (Kuusinen, 1966a, 1966b). Also the factor of Physical Potency has appeared in some of the earlier analyses. The new factors, Expressive Dominance and Dynamism, are obviously due to the specific characteristics of the subjects and situation, which are here different from those of the previous studies; both of these factors are relevant descriptors of personalities in a school class. Factors and their variances have been summarized in Figure 1.

4.	25.5 % Rationality
2. 18.6	% Toughness
3. 16.6 %	Expressive Dominance
5. 11.4 % Sociab	ility
7. 10.9 % Dynamis	m
1. 8.0 % Originality	
6. 5.4 % Physical Potence	у

Figure 1. The group factors and variances

Table 1 presents the intercorrelations between the factors.

Table 1. Intercorrelations between the group factors

	Factor	1	2	3	4	5	6	7
1.	Originality (3)	1.00						
2.	Toughness (17)	08	1.00					
3.	Expressive Dominance (7)	.23	- .58	1,00				
4.	Rationality (29)	09	.29	-,47	1,00			
5.	Sociability (20)	23	-,27	26	01	1,00		
6.	Physical Potency (32)	-,01	55	. 16	.02	,, 12	1.00	
7.	Dynamism (11)	.15	,06	.31	14	53	10	1.00
.7•	Dynamism (11)	.15	,06	•31	, 14.	53	, 10	1.00

The figures in parentheses refer to those scales through which the factor space was spanned. The value of the determinant of the rotation base, 0.36067, indexes the orthogonality of the structure. If the differentiation is scaled in terms of 'low', 'medium', and 'high' differentiation, the group structure falls in the category of 'medium'. The average intercorrelation between the factors is .22.

2. Comparison of the different rotations in the group structure

In order to demonstrate the independence of the results from the method of rotation in the group structure Tables 2 to 4 are presented below. Table 2 gives the normalized transformation matrix for comparison of the varimax-solution with the analytic cosine solution. Table 3 gives the same information but here the direction of transformation is from analytic cosine solution to varimax solution. In addition, correspondence of these rotations is indexed by Tucker's coefficient of congruence in Table 4.

Table 2. The comparison of varimax-solution and cosine solution in the group structure: L-matrix

				======				
			An	alyţic	cosine	rotatio	n	
Management of the control of the con	Mile sedication which self-turns	1	2	3	4	5	6	7
	1	.015	<u>•978</u>	 150	 136	.024	•002	.032
	2	.047	 181	 015	.049	 947	 130	 218
Varimax-	3	.111	•428	002	• <u>871</u>	•150	 123	084
rotation	4	.022	•442	 <u>818</u>	 209	.282	000	.104
	5	• <u>934</u>	 207	047	 089	 251	.082	.062
	6	.029	.076	033	184	•556	 022	<u>805</u>
	7	.000	•585	 221	002	• 175	 759	.001

Table 3. The comparison of cosine solution and varimax solution in the group structure: L-matrix

		1	2	3	4	5	6	7
	1	.091	 213	.111	058	• <u>958</u>	.077	.076
	2	<u>.989</u>	003	,100	096	024	.002	010
Analytic	3	•532	446	 173	 691	.063	006	.071
cosine rotation	4	 376	.113	.895	.070	 112	 102	 122
100001011	5	277	941	.052	.011	.031	.158	.084
	6	• 545	092	.136	•129	028	•039	<u>810</u>
	7	046	 664	 151	•005	.079	<u>717</u>	.108

Table 4. The correspondence between the varimax-solution and analytic cosine rotation in the group structure: coefficients of congruece

AND THE PARTY NAME AND THE PARTY NAME AND ADDRESS AND	Varimax-rotation							
		1	2	3 3	4	5	6	7
	1	.200	301	017	 253	<u>.968</u>	-,038	.025
	2	. 741	,238	.061	.164	-,048	•164	067
Analytic	3	. 208	404	 358	 973	. 335	.072	.327
cosine rotation	4	 558	.183	• <u>974</u>	.320	 252	272	264
	5	202	 <u>804</u>	002	.029	•132	 148	042
	6	.183	457	069	•143	•222	-,419	858
	7	 101	688	 028	.099	•237	-• <u>937</u>	300

It is easy to see from the Tables 2 to 4 that the two solutions lead to the same identification on factors. The varimax-rotated factors can be seen in Appendix B of this report.

B. Characteristics of the 12 individuals

One of the objectives of this study was to correlate the personal characteristics of the individuals with the individual features of their structures of personality ratings. It was mentioned before that very little personological information could be obtained from the individuals, sociometric status being the only piece of information to begin with.

Since in the rating task every subject rated every other in the group, we can characterize the 12 individuals in terms of the ratings given to them by the group. This has been done in Kuusinen (1967a, Appendix C) where the details of the procedure can also be found. In the description, factor scores (=combined scale scores) of an individual on each of the group factor were used.

The factors differentiated subjects most clearly in the boys' group. The popular boys showed less Originality, Toughness, and Expressive Dominance than the unpopular boys. On the other hand, the popular boys were more Rational, Sociable, and Dynamic than the unpopular boys. With the exception of Physical Potency one can

conclude that the group factors differentiate popular and unpopular boys from each other. Consequently, as the objects of the study we have subjects who differ from each other in how they are perceived by others as to their personal characteristics.

In girls' case the two extreme groups are not as homogeneous than those of the boys. However, the general result is that the popular girls are less Rational than the unpopular girls and at the same time they are more Sociable and Dynamic than the unpopular girls. In addition, the popular girls show more Expressive Dominance and Toughness than the unpopular girls.

The results show that on some factors (Dynamism, Sociability) popular and unpopular pupils differ from each other in similar way, i.e., independent of the sex of pupils. On the other hand, e.g. on Rationality and Expressive Dominance the sex determines how the popular and unpopular pupils are different to each other.

The differences between the individuals in terms of the group factors were used in the search for explanations of individual deviation in the factor structure of ratings.

C. The individual factor structures

1. Factor analyses

The number of factors extracted for the individuals was ten with the exception of two subjects whose data were analysed last and for whom the results of the other subjects showed that seven factors would be enough. The whole data cannot be presented here, but to give some examples, the function of latent roots of the successive factors for four individuals have been presented in Figures 2 to 5. Also the eigenvalues and their cumulative percentage from the common variance are given.

The individuals were chosen to represent the extreme positions on the dimension of sociometric popularity. Individual A is a popular girl, B is an unpopular girl, C a popular boy and D an unpopular boy. In the final analysis, the structure of Individual A corresponded best with the group structure and that of Individual B least; the structure of Individual C corresponded best with the group structure in the boys' group, and that of Individual D least in the boys' group.

Figures 2 to 5. The eigenvalues of factors in four individual structures

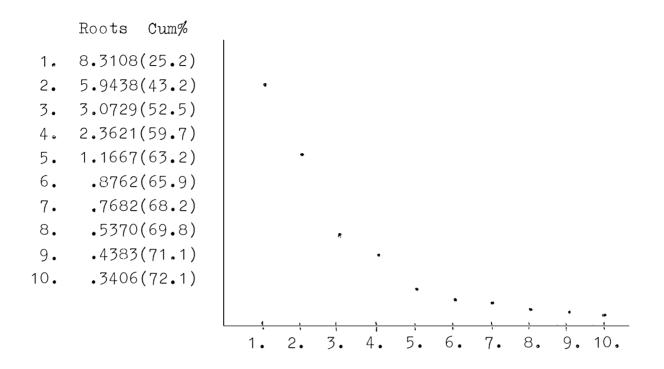


Figure 2. Individual A, a popular girl

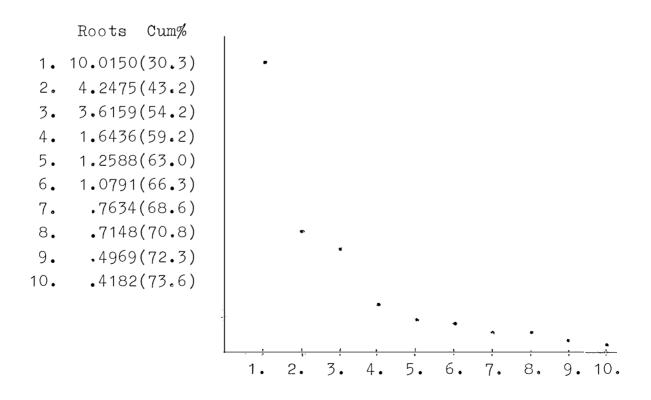


Figure 3. Individual B, an unpopular girl

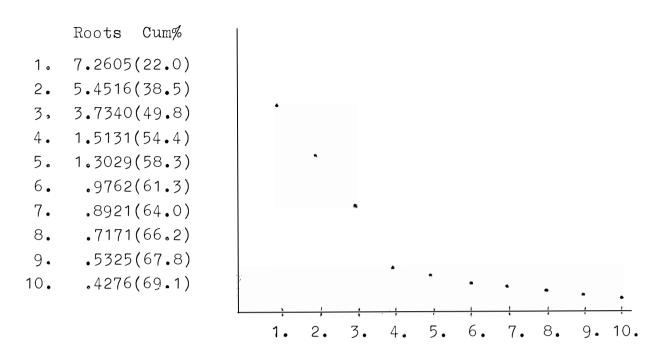


Figure 4. Individual C, a popular boy

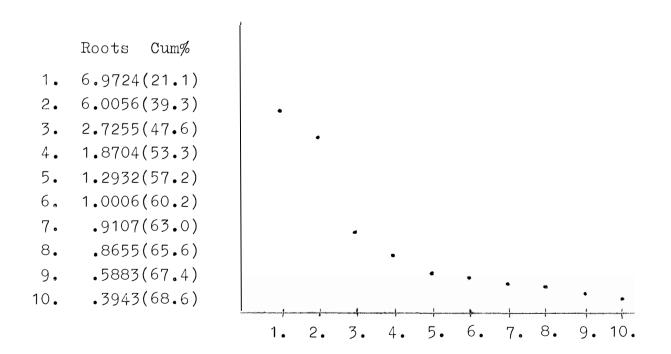


Figure 5. Individual D, an unpopular boy

Data for the other individuals are presented in Kuusinen (1967a, pp. 39-43). In all cases the number of factors extracted was sufficient. The sixth or seventh root was smaller than unity for all individuals but one, for whom this value was reached for the eight root. It may be noted that e.g., Kaiser (Harman, 1960, p. 363) has recommended to include in the interpretation of factors only those with eigenvalue larger than one, since the experience has shown that in most cases this criterium leads to a psychologically meaningful interpretation of factors.

In the group structure seven factors were interpreted. This result does not force the individuals structures to be interpreted by using the same number of factors, but by doing so great many technical problems can be solved. Most important is to take enough factors in the description of the individual structures. The results reported here as well as the interpretation of factors to be reported later show that seven factors are enough in all cases.

2. Rotations

It would have been logical to rotate the individual structures by using the same scales as the rotation base as in the group structure. This procedure was attempted but the result was unsatisfactory in each individual case. The reason was that the factors correlated with each other too high, and, consequently, the individual structures could not be meaningfully interpreted (for details, see Kuusinen, 1967a, pp. 43-44). After this, all of the individual structures were rotated by using the same procedure as in the group structure, i.e., the extended analytic cosine rotation.

The individual structures were rotated by using the varimax-method, too. The two rotations were compared by applying the transformation analysis and the Tucker's coefficient of congruence. In all cases the two solutions lead to a highly corresponding identification of factors. For the necessary tables and details accompanying these procedures, see Kuusinen, 1967a, p. 44.

3. Comparison of the group and individual structures

Correspondence of the entire vector spaces was estimated by plotting in each case the elements of the matrixes A_rL_i and F_i against each other in the same coordinate system. For individuals A, B, C, and D, these plots can be seen in Appendix C; for the others, see Kuusinen, 1967a. In all cases the corresponding elements are located near the line x = y. This shows that in the group and individual structures the locations of the scales are relatively the same. In general, the form of these diagrams suggests that the correspondence between the structure and each of the individual structures is high rather than low.

The amount of deviation (i.e., abnormal transformation) of an element from the line x=y is indexed by the row sums of the matrix $A_rL_i-F_i=d^2$. There are no tests of significance for the d^2 -values. In this study, the amount of abnormal transformation was estimated by counting first the mean (M) and the standard deviation (s) of the d^2 -values across all 12 individuals. Each single d^2 -value was then indexed by

- 1, if $(M+1s) \le d^2 < (M+2s)$:,
- 2, if $(M+2s) \leq d^2 < (M+3s)$;
- 3, if $(M+3s) \le d^2 < (M+4s)$;

In the interpretation of abnormal transformation, only those scales whose index was 1 or higher were considered. For details, see Kuusinen, 1967a, p. 45. Also the communality of a scale in the group and individual structure as an estimate of the reliability of the scale was considered in the interpretation (cf., Randell, 1964).

4. Interpretation and comparison of factors

The space does not permit to report the results for all of the 12 individuals but this has been done only for individuals A, B, C, and D. Even for these cases only the information pertaining to the interpretation and comparison of factors will be given. The two rotation solutions of the individual structure will be compared to strengthen the interpretation of factors.

4.1. Individual A's factor structure of ratings

Table 5. Comparison matrix

=======================================	=====	Individual						
		1	2	3	4	5	6	7
	1.	<u>738</u>	 165	080	.045	006	.322	.029
	2.	.257	021	.020	034	<u>•854</u>	.009	002
	3.	091	<u>456</u>	028	.047	.841	, 157	-,266
Group	4.	.138	.107	.121	.091	061	<u>.607</u>	.084
	5.	 206	140	 878	057	250	085	.186
	6.	 036	. 100	.184	•195	022	043	•965
	7.	 210	208	110	<u>•510</u>	 150	217	324

Individual factor 1 (16.6 % of common variance)		
pageage registrative in the control of the control	Λ	S
14. <u>usual-unusual</u> (tavallinen-epätavallinen)	.81	.81
3. unique-typical (ainutlaatuinen-tavanomainen)	77	75
4. excitable-calm (helposti kiihtyvä-rauhallinen	 48	49
5. gregarious-self-contained (seuraa etsivä-seuraa paamaton)	^{a kai-} 33	 20
8. formed-amorphous (jäsentynyt-jäsentymätön)	 55	43
9. light-gloomy (valoisa-synkkä)	 56	35
11. agile-clumsy (ketterä-kömpelö)	31	 15
13. subjective-objective (yksipuolinen-tasapuolinen	n) •36	•32
17. sensitive-insensitive (herkkä-tunteeton)	39	30
19. unpredictable-predictable (arvaamaton-ennustet vissa oleva)	ta- 55	 57
26. emetional-unemotional (tunneherkkä-asiallinen)	 31	32
27. extroverted-introverted (ulospäinkääntynyt-siss päinkääntynyt)	ään- 35	 23
31. good-bad (hyvä-paha)	43	34
33. flexible-rigid (joustava-jäykkä)	 32	20

The highest coefficient of coincidence of the factor is that with Originality in the group structure. The factor is identified to be the same here, too.

Individual factor 2 (14.5 % of common variance) A S 18. naive-sophisticated (yksinkertainen-hienosteleva) 2. logical-intuitive (järkeilevä-vaistonvarainen) 3. unique-typical (ainutlaatuinen-tavanomainen) 4. excitable-calm (helposti kiihtyvä-rauhallinen) 5. gregarious -self-contained (seuraa etsivä-seuraa kaipaamaton) -.38 -.47

		A	S
7.	proud-humble (ylpeä-nöyrä)	 58	 53
8.	formed-amorphous (jäsentynyt-jäsentymätön)	 72	46
12.	disreputable-reputable (huonomaineinen-hyvämaineinen)	39	 55
13。	subjective-objective (yksipuolinen-tasapuolinen)	41	 41
19.	unpredictable-predictable (arvaamaton-ennustettavis- sa oleva)	44	42
22.	steady-capricious (vakaa-oikukas)	• 33	.66

In spite of minor differences, this factor is a corresponding factor to Expressive Dominance in the group structure. The coefficient of coincidence is rather low (.451) but the contents of the factor do not suggest any other interpretation to this author.

Individual factor 3 (15.2 % of common variance)		
	A	S
20. unhappy-happy (onneton-onnellinen)	•76	•75
5. gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton)	67	48
8. formed-amorphous (jäsentynyt-jäsentymätön)	 58	
9. light-gloomy (valoisa-synkkä)	68	48
11. agile-glumsy (ketterä-kömpelö)	32	 26
15. relaxed-tense (rento-jännittynyt)	 54	 52
16. solitary-sociable (yksinäinen-seurallinen)	•61	•61
27. extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt)	 57	61
33. flexible-rigid (joustava-jäykkä)	49	42

The factor is unambiguously the same as the group factor Sociability.

```
Individual factor 4 (10.0 % of common variance)
                                                                                        S
                                                                               Α
25. individualistic-regular (omintakeinen-kaavoihin
                                                                               .78
                                                                                       .78
                                       sidottu)
                                                                              •51
10. strong-weak (vahva-heikko)
                                                                                       .51
13. subjective-objective (yksipuolinen-tasapuolinen)
                                                                              .50
                                                                                       .59
23. wholesome-unwholesome (terve-epäterve)
26. emotional-unemotional (tunnenerkkä-asiallinen)
30. tangible-intangible (selkeä-epämääräinen)
                                                                               •44
                                                                                       •46
                                                                               •45
                                                                               •51
                                                                                       .64
31. good-bad (hyvä-paha)
                                                                               •37
```

The scales connoting activity and potency of a personality as well as the value of the coefficient of coincidence make this factor a corresponding factor to Dynamism in the group structure.

Individual factor 5 (29.9 % of common variance) S Α .88 28. rugged-delicate (karkea-hienotunteinen) .88 1. moral-immoral (nuhteeton-paheellinen) 4. excitable-calm (helposti kiihtyvä-rauhallinen) - 45 - 69 .75 .58 5. gregarious-self-contained (seuraa etsivä-seuraa .26 • 30 kaipaamaton) .82 6. tough-tender (kovaluontoinen-lempeä) 1.00 7. proud-humble (ylpeä-nöyrä) 9. light-gloomy (valoisa-synkkä) .90 .72 -.54 -.28 12. disreputable-reputable (huonomaineinen-hyvämaineinen).34 .67 •49 13. subjective-objective (yksipuolinen-tasapuolinen) .36 -.75 17. sensitive-insensitive (herkkä-tunteeton) -.64 19. unpredictable-predictable (arvaamaton-ennustetta-.35 .24 vissa oleva) 21. unenergetic-energetic (tarmoton-tarmokas) 23. wholesome-unwholesome (terve-epäterve) 26. emotional-unemotional (tunneherkkä-asiallinen) • 42 .56 -.38 **-.**66 -.67 -.42 27. extroverted-introverted (ulospäinkääntynyt-sisään--.44 -.19 päinkääntynyt) 31. good-bad (hyvä-paha) **-.**53 -.54

The scale <u>tough-tender</u> weights this factor with a loading of 1.00. The fifth factor is equally composed of Toughness and Expressive Dominance of the group structure. Here the best interpretation of it is Toughness.

```
Individual factor 6 (15.5 % of common variance)
                                                                 S
                                                           Α
                                                          .89
29. deliberate-casual (harkitseva-ajattelematon)
                                                                 .89
 1. moral-immoral (nuhteeton-paheellinen)
                                                          .35
                                                                 .68
 2. logical-intuitive (järkeilevä-vaistonvarainen)
                                                          .67
                                                                 .83
                                                          • 33
 3. unique-typical (ainutlaatuinen-tavanomainen)
                                                                -.07
                                                          . 34
 8. formed-amorphous (jäsentynyt-jäsentymätön)
                                                                -.21
                                                         -.34
 9. light-gloomy (valoisa-synkkä)
                                                                -.13
                                                         -.63
21. unenergetic-energetic (tarmoton-tarmokas)
                                                               -.74
22. steady-capricious (vakaa-oikukas)
                                                                .71
                                                          .42
24. rational-irrational (järkiperäinen-järjenvastainen)
                                                          •66
                                                                 .72
27. extroverted-introverted (ulospäinkääntynyt-sisään-
                                                         -.37
                                                               -.24
                             päinkääntynyt)
```

The sixth factor is a corresponding factor to Rationality in the group structure.

```
Individual factor 7 (10.4 % of common variance)
                                                                         Α
                                                                                 S
32. <u>large-small</u> (suuri-pieni)
4. <u>excitable-calm</u> (helposti kiihtyvä-rauhallinen)
10. strong-weak (vahva-heikko)
                                                                        .76
                                                                                .76
                                                                       -.36
                                                                                .15
                                                                        •60
                                                                                •54
                                                                              -.55
11. agile-clumsy (ketterä-kömpelö)
                                                                       -.52
12. disreputable-reputable (huonomaineinen-hyvämaineinen).33
                                                                                • 44
                                                                        • 33
                                                                                .54
15. relaxed-tense (rento-jännittynyt)
23. wholesome-unwholesome (terve-epäterve)
                                                                        •50
                                                                                .06
```

The seventh factor is the same as Physical Potency of the group structure.

With Individual A, all of her factors have their corresponding dimensions in the group structure.

4.1.1. Comparison of the two rotations

Table 6. Comparison matrix

_		1	Analyt 2	ic cosi	ne-solu 4	tion 5	6	7
Varimax- solution	1.	083	.064	 161	030	•222	<u>•950</u>	096
	2.	.289	.104	<u>•929</u>	,193	033	•053	.011
	3.	041	 059	000	137	<u>893</u>	177	•381
	4.	.826	•400	.016	.078	144	342	.107
	5.	 069	035	 309	911	.220	.051	 129
	6.	222	• 774	.074	020	143	 564	073
	7.	.082	•038	•089	 089	 351	 179	<u>• 905</u>

The scales forming each factor in the varimax-solution are listed in Appendix D. From Table 6 and Appendix D it is obvious that the two rotations lead to an identical interpretation of the factors in the individual structure.

4.2. <u>Individual B's factor structure of ratings</u>

Table 7. Comparison matrix

		Tndividual						
		1	2	3	4	5	6	7
Group	1.	 069	 330	 099	1 88	.180	.137	.178
	2.	<u>• 765</u>	099	.163	.141	144	.120	 186
	3.	.663	.158	226	 350	 109	.048	 176
	4.	 268	•388	•493	305	•247	 165	•350
	5.	299	095	•510	<u>319</u>	031	.217	•055
	6.	.028	.096	.026	004	•073	058	.839
	7.	.162	.016	•219	 245	145	 024	.215

Individual factor 1 (26.8 % of common variance) S Α 6. tough-tender (kovaluontoinen-lempeä) 1. moral-immoral (nuhteeton-paheellinen) 4. excitable-calm (helposti kiihtyvä-rauhallinen) .88 .88 **-.**69 **-.**91 .78 •60 5. gregarious-self-contained (seuraa etsivä-seuraa .43 .20 kaipaamaton) 7. proud-humble (ylpeä-nöyrä) 9. light-gloomy (valoisa-synkkä) 12. disreputable-reputable (huonomaineinen-hyvämaineinen).74 .70 •43 **.**52 17. sensitive-insensitive (herkkä-tunteeton) **-.**62 -.71 .30 20. unhappy-happy (onneton-onnellinen) .17 21. unenergetic-energetic (tarmoton-tarmokas) 26. emotional-unemotional (tunneherkkä-asiallinen) .30 .02 -.42 -.63 28. rugged-delicate (karkea-hienotunteinen) .74 .57 29. deliberate-casual (harkitseva-ajattelematon) -.61 -.48 30. tangible-intangible (selkeä-epämääräinen) -.36 **-.**15 31. good-bad (hyvä-paha) -.48 **-.**35

The first factor is equally composed of Toughness and Expressive Dominance of the group structure. Its contents are best characterized as Toughness.

Individual factor 2 (12.2 % of common variance)					
	A	S			
14. <u>usual-unusual</u> (tavallinen-epätavallinen)	•77	.77			
2. logical-intuitive (järkeilevä-vaistonvarainen)	. 35	.07			
8. formed-amorphous (jäsentynyt-jäsentymätön)	•43	11			
9. light-gloomy (valoisa-synkkä)	37	 62			
13. subjective-objective (yksipuolinen-tasapuolinen)	 36	, 26			
19. unpredictable-predictable (arvaamaton-ennustetta- vissa oleva)	•42	•24			
20. unhappy-happy (onneton-onnellinen)	. 36	.64			
21. unenergetic-energetic (tarmoton-tarmokas)	30	01			
22. steady-capricious (vakaa-oikukas)	•32	02			
29. deliberate-casual (harkitseva-ajattelematon)	•59	.02			
30. tangible-intangible (selkeä-epämääräinen)	• 34	 18			
31. good-bad (hyvä-paha)	.36	 19			

The second factor does not have its equivalence in the group structure. When both the pattern and the structure coefficients are considered, the second factor is defined only by scales <u>usual-unusual</u>, <u>light-gloomy</u>, and <u>unhappy-happy</u>. The second factor is closely similar to that of Originality in the group structure but because of the differences in the contents the factor cannot be identifies in exactly the same way. The second factor is interpreted as Uniqueness and it is specific to Individual B.

Individual factor 3 (26.1 % of common variance)		
<u>,</u>	A	S
15. relaxed-tense (rento-jännittynyt) 1. moral-immoral (nuhteeton-paheellinen) 2. logical-intuitive (järkeilevä-vaistonvarainen) 3. unique- typical (ainutlaatuinen-tavanomainen) 4. excitable-calm (helposti kiihtyvä-rauhallinen) 5. gregarious-self-contained (seuraa etsivä-seuraa 7. proud-humble (ylpeä-nöyrä) 8. light-gloomy (valoisa-synkkä) 10. strong-weak (vahva-heikko) 12. disreputable-reputable (huonomaineinen-hyvämaineinen 17. sensitive-insensitive (herkkä-tunteeton) 20. unhappy-happy (onneton-onnellinen) 21. unenergetic-energetic (tarmoton-tarmokas) 22. steady-capricious (vakaa-oikukas) 23. wholesome-unwholesome (terve-epäterve) 26. emotional-unemotional (tunneherkkä-asiallinen) 28. rugged-delicate (karkea-hienotunteinen) 30. tangible-intangible (selkeä-epämääräinen) 31. good-bad (hyvä-paha)	.82 .55 .72 43 39 56 31 .47	23485
	- / -	• • • •

The third factor is second to largest in Individual B's structure. It is a general evaluative dimension which lacks a clear specific content. The third factor is identified as Morality and it does not have a corresponding factor in the group structure.

Individual factor 4 (17,4 % of common variance)		
	\mathbb{A}	S
16. solitary-sociable (yksinäinen-seurallinen) 2. logical-intuitive (järkeilevä-vaistonvarainen) 8. formed-amorphous (jäsentynyt-jäsentymätön) 11. agile-clumsy (ketterä-kömpelö) 13. subjective-objective (yksipuolinen-tasapuolinen) 19. unpredictable-predictable (arvaamaton-ennustetta-	•90 -•37 -•47 -•35 •70 -•44	.90 .08 51 62 .43
vissa oleva) 20. unhappy-happy (onneton-onnellinen) 21. unenergetic-energetic (tarmoton-tarmokas) 25. individualistic-regular (omintakeinen-kaavoihin sidottu) 29. deliberate-casual (harkitseva-ajattelematon) 30. tangible-intangible (selkeä-epämääräinen)	.40 .44 67 51 58	.50 .03 82 28 40

The fourth factor is marked by the scale <u>solitary-sociable</u> with a loading of .90. In spite of the low coefficient of coincidence (.319) the fourth factor is identified as a corresponding factor to that of Sociability in the group structure.

Individual factor 5 (8.9 % of common variance) A S 18. naive-sophisticated (yksinkertainen-hienosteleva) 1. moral-immoral (nuhteeton-paheellinen) 2. logical-intuitive (järkeilevä-vaistonvarainen) 13. subjective-objective (yksipuolinen-tasapuolinen) -.60 -.32

vissa oleva)

21. unenergetic-energetic (tarmoton-tarmokas)

33. flexible-rigid (joustava-jäykkä)

-.48

-.48

19. unpredictable-predictable (arvaamaton-ennustetta-

The fifth factor is an uninterpretable dimension in Individual B's structure.

Individual factor 6 (7.7 % of common variance) A S 27. extroverted-introverted (ulospäinkääntynyt-sisäänpäinkääntynyt) 4. excitable-calm (helposti kiihtyvä-rauhallinen) 5. gregarious-self-contained (seuraa etsivä-seuraa kaipaamaton) .51 .59

21. unenergetic-energetic (tarmoton-tarmokas) .36 .21 29. deliberate-casual (harkitseva-ajattelematon) -.36 -.10 30. tangible-intangible (selkeä-epämääräinen) -.38 -.08

Only the scales extroverted-introverted and gregarious-self-contained mark the sixth factor when both the pattern and the structure coefficients are considered. As Table 7 shows the sixth factor is not equivalent to Sociability in the group structure but it is specific to Individual B and can be labeled as Extroversion-Introversion. For a detailed interpretation of this factor, see Kuusinen, 1967a, p. 65.

Individual factor 7 (20.2 % of common variance)

		A	Ď
32. <u>large-small</u> (suur		.87	.86
3. unique-typical (a:	inutlaatuinen-tavanomainen)	•56	64
8. formed-amorphous	(jäsentynyt-jäsentymätön)	• 50	. 55
10. strong-weak (vahva	a-heikko)	a 41	.69
	lve (yksipuolinen-tasapuolinen)	• 37	- 。55
22. steady-capricious		, 57	•54
23. wholesome-unwholes		。 50	. 68
	al (järkiperäinen-järjenvastainen)	•71	, 77
	onal (tunneherkkä-asiallinen)	و 30	, 08
	karkea-hienotunteinen)	38	-,48
	(harkitseva-ajattelematon)	•57	, 47
30. tangible-intangible	Le (selkeä-epämääräinen)	∘ 37	م55
31. good-bad (hyvä-pal		。63	,66
33. flexible-rigid (jo	oustava-jäykkä)	. 55	,58

The variance of the seventh factor is third to largest in the individual structure. It has its highest coefficient of coincidence with the dimension of Physical Potency of the group structure. However, here the factor is much larger and connotes both physical and mental strength of a personality. The seventh factor is identified as Mental Potency.

With Individual B, two factors have their equivalent factors in the group structure.

4.2.1. Comparison of the two rotations

Table 8. Comparison matrix

		Marie print from home than more wife serve Marie print	====== Anal	====== ytic co	====== sine=so	====== lution		THE ROLL WHEN THE PART WHEN THE
		1	2	3	4	5	6	7
	1.	.060	 261	023	<u>•931</u>	060	, 167	 163
	2.	<u>•843</u>	 218	 376	.188	 225	.110	008
	3.	028	 128	801	•327	 193	.019	.441
Varimax- solution	4.	047	<u>•941</u>	045	 196	.070	.033	•254
	5.	075	.217	092	 391	<u>883</u>	064	.021
	6.	.222	.037	.001	•506	 139	. 155	<u>.805</u>
	7.	 063	•046	•005	.083	•015	<u>.965</u>	 234

The two rotations lead to an identical identification of the factors. The scales forming each factor in the varimax-solution have been listed in Appendix E.

4,3, Individual C's factor structure of ratings

Table 9. Comparison matrix

pymer singer pages indigen by the derive section against a committee of the control of the deriver derived derived derived deriver accommittee of the control of the contro	Name and the Part of the Part of	THE VALUE FROM THE ROOM HARD FARE ACTION		====== Indiv	======			
		1	2	3	4	5	6	7
	1.	 193	。233	.141	 251	228	 264	<u>404</u>
	2.	564	.441	.005	•105	090	.082	. 185
	う。	357	,078	270	<u>436</u>	330	297	.057
Group	4,	، 198	<u>.415</u>	•095	024	•292	,230	. 158
	5.	,028	068	<u>765</u>	197	•277	164	 129
	6.	050	。058	,027	.015	.063	.046	.879
	7.	372	343	.108	<u>575</u>	.271	• 349	 136

Individual factor 1 (16.2 % of common variance) S .85 1. moral-immoral (nuhteeton-paheellinen) .85 4. excitable-calm (helposti kiihtyvä-rauhallinen) -.36 **-.**32 6. tough-tender (kovaluontoinen-lempeä) **-.**67 -.68 -.69 12. disreputable-reputable (huonomaineinen-hyvämaineinen)-.70 14. usual-unusual (tavallinėn-epätavallinen) 15. relaxed-tense (rento-jännittynyt) .40 .38 -.55 -.45 16. solitary-sociable (yksinäinen-seurallinen) .56 .53 17. sensitive-insensitive (herkkä-tunteeton) .54 •61 19. unpredictable-predictable (arvaamaton-ennustettavis--.34 sa oleva) -.65 28. rugged-delicate (karkea-hienotunteinen) -.61 29. deliberate-casual (harkitseva-ajattelematon) • 30 .22

Both the contents of the factor and the comparison matrix show that here we have a corresponding factor to the dimension of Toughness in the group structure.

Individual factor 2 (15.6 % of common variance) A S 2. <u>logical-intuitive</u> (järkeilevä-vaistonvarainen) .86 .85 5. gregarious-self-contained (seuraa etsivä-seuraa kai-**-.**25 paamaton) .36 .34 6. tough-tender (kovaluontoinen-lempeä) 17. sensitive-insensitive (herkkä-tunteeton) **-.**59 **-.**52 18. naive-sophisticated (yksinkertainen-hienosteleva) 24. rational-irrational (järkiperäinen-järjenvastainen) .32 .25 •73 .69 27. extroverted-introverted (ulospäinkääntynyt-sisään--.36 -.25 päinkääntynyt) .50 28. rugged-delicate (karkea-hienotunteinen) •47 •54 •62 29. deliberate-casual (harkitseva-ajattelematon) 33. flexible-rigid (joustava-jäykkä) -,49 -.44

The second factor seems to be a compound of three elements which can be identified as Toughness, Rationality, and Dynamism of the group structure. Here the factor is best interpreted as Rationality, with a connotation of tough rationality versus tenderminded irrationality.

```
Individual factor 3 (13.6 % of common variance)
                                                                  S
                                                            Α
20. unhappy-happy (onneton-onnellinen)
                                                           .71
                                                                 .71
 5. gregarious-self-contained (seuraa etsivä-seuraa kai-
                                                                -.38
                               paamaton)
                                                                -.70
                                                          -.61
9. light-gloomy (valoisa-synkkä)
                                                                 •55
16. solitary-sociable (yksinäinen-seurallinen)
                                                           •46
18. naive-sophisticated (yksinkertainen-hienosteleva)
                                                           •49
                                                                 •50
19. unpredictable-predictable (arvaamaton-ennustettavis-
                                                          -.42
                                                                -.42
                               sa oleva)
                                                           .32
                                                                 .17
22. steady-capricious (vakaa-oikukas)
27. extroverted-introverted (ulospäinkääntynyt-sisään-
                                                          -.64
                                                                -.54
                             päinkääntynyt)
```

The third factor is an equivalent to the dimension of Sociability of the group structure.

Individual factor 4 (20.7 % of common variance) S A. .78 21. <u>unenergetic-energetic</u> (tarmoton-tarmokas) 7. <u>proud-humble</u> (ylpeä-nöyrä) .78 -.80 -.67 8. formed-amorphous (jäsentynyt-jäsentymätön) -.63 -.73 9. light-gloomy (valoisa-synkkä) 10. strong-weak (vahva-heikko) -.40 **-.**61 -.30 -.47 11. agile-clumsy (ketterä-kömpelö) -.59 12. disreputable-reputable (huonomaineinen-hyvämaineinen) .41 -.67 •30 13. subjective-objective (yksipuolinen-tasapuolinen) 14. usual-unusual (tavallinen-epätavallinen) 15. relaxed-tense (rento-jännittynyt) • 34 .57 •49 .27 -.40 -.66 18. naive-sophisticated (yksinkertainen-hienosteleva) •53 • 39 19. unpredictable-predictable (arvaamaton-ennustettavis--.38 -.47 sa oleva) 24. rational-irrational (järkiperäinen-järjenvastainen) . 34 . 14 25. individualistic-regular (omintakeinen-kaavoihin si--.64 -.66 dottu) 27. extroverted-introverted (ulospäinkääntynyt-sisään--.38 -.46 päinkääntynyt)

The factor is rather equally correspondent with Expressive Dominance and Dynamism of the group structure. The contents of the factor lead to its identifications as Dynamism.

```
Individual factor 5 (16.5 % of common variance)
                                                                                S
                                                                         Α
                                                                       .78
30. <u>tangible-intangible</u> (selkeä-epämääräinen)
                                                                               .78
 4. excitable-calm (helposti kiihtyvä-rauhallinen)
                                                                      -.67
                                                                              -.68
 6. tough-tender (kovaluontoinen-lempeä)
7. proud-humble (ylpeä-nöyrä)
                                                                      -.35
                                                                              -.15
                                                                      -.39
                                                                               .07
13. subjective-objective (yksipuolinen-tasapuolinen)
17. sensitive-insensitive (herkkä-tunteeton)
                                                                      -.37
                                                                              -.48
                                                                        • 40
                                                                               •16
19. unpredictable-predictable (arvaamaton-ennustettavis-
                                                                              -.20
                                      sa oleva)
22. steady-capricious (vakaa-oikukas)
                                                                        .73
                                                                               .67
23. wholesome-unwholesome (terve-epäterve)
28. rugged-delicate (karkea-hienotunteinen)
                                                                       .39
                                                                              -,65
                                                                      -.43
                                                                              -.24
29. deliberate-casual (harkitseva-ajattelematon)
                                                                               .53
                                                                        • 46
33. flexible-rigid (joustava-jäykkä)
                                                                               .34
                                                                        • 47
```

The fifth factor is specific to Individual C. Traits referring to emotional stability versus emotional lability contrast with each other on the factor. Consequently, the factor is identified as a dimension of Emotionality.

-.42

-.56 **-.**22

-.31

27. extroverted-introverted (ulospäinkääntynyt-sisään-

päinkääntynyt)

Also the sixth factor is specific to the individual. The other end of the dimension is composed of traits good, typical, selfcontained, introverted, and the other end of their opposites. The individual C has regarded traits referring to sociability as bad and traits referring to solitariness as good. The sixth factor is perhaps best characterized as a dimension of Light-hearted Sociability versus Seriousminded Solitariness.

Individual factor 7 (8.7 % of common variance)

		\mathbf{A}	S
32.	large-small (suuri-pieni)	.83	. 83
3.	unique-typical (ainutlaatuinen-tavanomainen)	 39	40
10.	strong-weak (vahva-heikko)	•59	• 73
14.	usual-unusual (tavallinen-epätavallinen)	•32	.30
26.	emotional-unemotional (tunneherkkä-asiallinen)	 37	42

The seventh factor is unambiguously an equivalent to that of Physical Potency in the group structure.

With Individual C there are five corresponding factors in his structure to those of the group structure.

4.3.1. Comparison of the two rotations

Table 10. Comparison matrix

		Anal	sine-so	olution						
	1	2	3	4	5	6	7			
1.	 124	.028	، 255	940	 073	. 166	.012			
2.	.196	<u>.941</u>	190	.070	.126	.017	 129			
3.	<u>936</u>	,221	.033	.167	106	.173	061			
4.	.066	 153	838	.014	。094	480	166			
5.	004	.216	,034	321	<u>,883</u>	000	.260			
6.	020	.132	-,019	-,089	.080	•039	982			
7.	 225	,,059	170	.212	131 ، –	•920	.079			
	 2. 3. 4. 6. 	2196 3936 4066 5004 6020	1 2 1124 .028 2196 <u>.941</u> 3 <u>.936</u> .221 4066153 5004 .216 6020 .132	1 2 3 1124 .028 .255 2196 .941190 3936 .221 .033 4066153838 5004 .216 .034 6020 .132019	1 2 3 4 1124 .028 .255940 2196 .941190 .070 3936 .221 .033 .167 4066153838 .014 5004 .216 .034321 6020 .132019089	1. 124 .028 .255 940 073 2. .196 .941 190 .070 .126 3. 936 .221 .033 .167 106 4. .066 153 838 .014 .094 5. 004 .216 .034 321 883 6. 020 .132 019 089 .080	1 2 3 4 5 6 1. 124 .028 .255 940 073 .166 2. .196 .941 190 .070 .126 .017 3. 936 .221 .033 .167 106 .173 4. .066 153 838 .014 .094 480 5. 004 .216 .034 321 883 000 6. 020 .132 019 089 .080 .039			

The scales forming each factor in the varimax-solution are listed in Appendix F. The correspondence between the two rotations is obvious.

4.4. Individual D's factor structure of ratings

Table 11. Comparison matrix

<u> </u>			<u></u>	====== Indiv	====== idual		<u> </u>	
		1	2	3		5	6	7
Specific in the second section of the second	1.	•095	 277	.214	.226	277	,040	.565
	2.	 193	.144	•480	<u>.417</u>	282	 123	•250
	3.	.166	107	<u>.463</u>	•279	270	236	. 162
Group	4.	 159	234	018	.061	400	589	•223
	5.	.082	 179	267	 059	.062	 627	090
	6.	596	<u>430</u>	.129	.826	•093	 199	.512
	7.	.183	.150	174	.037	039	.084	,224

Individual factor 1 (2	21.1 % of common variance)		
	· ·	A	S
5. gregarious-self-co	ontained (seuraa etsivä-seuraa kaipaamaton)	. 86	.86
2. logical-intuitive	(järkeilevä-vaistonvarainen)	56	44
	elposti kiihtyvä-rauhallinen)	. 50	•23
	(jäsentynyt-jäsentymätön)	 35	 13
10. strong-weak (vahva		36	 03
	vallinen-epätavallinen)	53	 23
	(yksinäinen-seurallinen)	74	85
22. steady-capricious		 68	 52
	al (järkiperäinen-järjenvastainen)	67	 52
25. individualistic-re	egular (omintakeinen-kaavoihin si- dottu)	 35	28
	(harkitseva-ajattelematon)	41	30
32. large-small (suur:	i-pieni)	 54	 15

The other end of the first factor is composed of traits <u>self-contained</u>, <u>logical</u>, <u>calm</u>, <u>usual</u>, <u>solitary</u>, <u>steady</u>, <u>rational</u>, and the other pole of their opposites. The factor is specific to the individual and can be best characterized as Introverted Rationality vs. Extroverted Irrationality.

The marker scale of the second dimension is <u>agile-clumsy</u>. The remaining scales on the factor refer to the traits of Physical Potency of the group structure. Here the dimension is identified as Physical Activity and it is specific to Individual D.

Individual factor 3 (22.2 % of common variance) S A .80 13. subjective-objective (yksipuolinen-tasapuolinen) .80 -.60 -.57 1. moral-immoral (nuhteeton-paheellinen) .41 .35 3. unique-typical (ainutlaatuinen-tavanomainen)4. excitable-calm (helposti kiihtyvä-rauhallinen) .48 • 35 7. proud-humble (ylpeä-nöyrä) 9. light-gloomy (valoisa-synkkä) •50 .70 -.46 -.48 .67 12. disreputable-reputable (huonomaineinen-hyvämaineinen) .58 18. naive-sophisticated (yksinkertainen-hienosteleva) **-.**55 -.42 25. individualistic-regular (omintakeinen-kaavoihin si-.01 .32 dottu) 27. extroverted-introverted (ulospäinkääntynyt-sisään--.69 -.67 päinkääntynyt) .60 •64 28. rugged-delicate (karkea-hienotunteinen) -.55 31. good-bad (hyvä-paha) **-.**73 33. flexible-rigid (joustava-jäykkä) -.69 -.69

The third factor is specific to Individual D. It is a compound of Toughness and Expressive Dominance in the group structure, but it does not correspond to either of them. The third dimension is not very clear by contents. It can be identified as a dimension of Morality which largely differentiates socially desirable vs. undesirable traits from each other.

Individual factor 4 (15.4 % of common variance) Α S .70 15. <u>relaxed-tense</u> (rento-jännittynyt) 1. moral-immoral (nuhteeton-paheellinen) .69 --,50 -.44 2. logical-intuitive (järkeilevä-vaistonvarainen) .43 .46 .56 6. tough-tender (kovaluontoinen-lempeä) .47 8. formed-amorphous (jäsentynyt-jäsentymätön) .31 .37 10. strong-weak (vahva-heikko) .59 .34 12. disreputable-reputable (huonomaineinen-hyvämaineinen) .42 ,26 19. unpredictable-predictable (arvaamaton-ennustettavissa .51 .55 oleva) 25. individualistic-regular (omintakeinen-kaavoihin si-.39 ٥40 dottu)36 31. good-bad (hyvä-paha) -.21

.59

.,37

32. large-small (suuri-pieni)

The fourth factor has two high coincidences, one with Toughness and the other with Physical Potency. The contents of the factor do not allow its identification as a corresponding factor to either To this author, the factor gives an impression of being of them. a dimension of Masculinity vs. Femininity.

Individual factor 5 (12.7 % of common variance)

```
A
                                                                         S
                                                                        .75
17. sensitive-insensitive (herkkä-tunteeton)
                                                                -.37
                                                                       -.41
 1. moral-immoral (nuhteeton-paheellinen)
 2. logical-intuitive (järkeilevä-vaistonvarainen)
                                                                -.38
                                                                       -.46
                                                                -.32
 3. unique-typical (ainutlaatuinen-tavanomainen)
                                                                       -.34
                                                                -.39
                                                                       -,43
 6. tough-tender (kovaluontoinen-lempeä)
 7. proud-humble (ylpeä-nöyrä)
                                                                -.42
                                                                       -.23
 8. formed-amorphous (jäsentynyt-jäsentymätön)
                                                                -.39
                                                                       -.42
12. disreputable-reputable (huonomaineinen-hyvämaineinen) .49
                                                                        •42
24. rational-irrational (järkiperäinen-järjenvastainen)
25. individualistic-regular (omintakeinen-kaavoihin si-
                                                                -.37
                                                                       -.48
                                                                       -.38
                                dottu)
26. emotional-unemotional (tunneherkkä-asiallinen)
                                                                 • 44
                                                                        .49
29. deliberate-casual (harkitseva-ajattelematon)
                                                                -.44
                                                                       -.48
```

The strongest component of the factor, in terms of the group factors, is Rationality; after that there are the equal components of Originality, Toughness, and Expressive Dominance represented on the factor five. All these together form a dimension of Toughminded Rationality vs. Tenderminded Irrationality, which is specific to Individual D.

Individual factor 6 (21.2 % of common variance)

```
S
                                                                    Α
                                                                   .64
                                                                          .64
20. unhappy-happy (onneton-onnellinen)
 2. logical-intuitive (järkeilevä-vaistonvarainen)
                                                                  -.46
                                                                         -.19
 4. excitable-calm (helposti kiihtyvä-rauhallinen)
                                                                   •39
                                                                          .34
                                                                  -.72
 8. formed-amorphous (jäsentynyt-jäsentymätön)
                                                                         -.43
18. naive-sophisticated (yksinkertainen-hienosteleva)
21. unenergetic-energetic (tarmoton-tarmokas)
                                                                   .36
                                                                          .20
                                                                   .48
                                                                          .12
22. steady-capricious (vakaa-oikukas)
                                                                  -.70
                                                                         -.27
24. rational-irrational (järkiperäinen-järjenvastainen)
                                                                  -.67
                                                                         -.22
25. individualistic-regular (omintakeinen-kaavoihin si-
                                                                  -.55
                                                                         -.20
                                  dottu)
                                                                         --.38
                                                                  -.71
29. deliberate-casual (harkitseva-ajattelematon)
30. tangible-intangible (selkeä-epämääräinen)
31. good-bad (hyvä-paha)
                                                                  -.66
                                                                         -.46
                                                                  -,39
                                                                         -.41
```

The sixth factor is a compound of Rationality and Sociability of the group structure. However, the factor does not include any of the original scales of Sociability (scales 5, 16, 27). The most natural interpretation of the sixth factor is to identify it as a dimension of Rationality.

Individual factor 7 (14.8 % of common variance)		
	\mathbf{A}	S
23. wholesome-unwholesome (terve-epäterve)	• 75	,75
3. unique-typical (ainutlaatuinen-tavanomainen)	•51	• 57
8. formed-amorphous (jäsentynyt-jäsentymätön)	•31	• 34
10. strong-weak (vahva-heikko)	•52	•51
12. disreputable-reputable (huonomaineinen-hyvämaineinen)		•19
14. usual-unusual (tavallinen-epätavallinen)	 63	 54
19. unpredictable-predictable (arvaamaton-ennustettavis- sa oleva)	• 39	• 25
21. unenergetic-energetic (tarmoton-tarmokas)	46	 52
25. individualistic-regular (omintakeinen-kaavoihin si- dottu)	• 43	. 43
30. tangible-intangible (selkeä-epämääräinen)	35	.32
32. large-small (suuri-pieni)	.48	•41

Here we have a corresponding factor to that of Originality in the group structure.

4.4.1. Comparison of the two rotations

Table 12. Comparison matrix

		1	Anal 2	lytic cosine-solution 3 4 5 6										
	1.	•507	• 246	 158	 059	. 275	<u>• 733</u>	 196						
	2.	•006	.124	<u>918</u>	 045	•358	.088	.041						
	3.	<u>669</u>	• 185	264	.127	•194	.626	•035						
Varimax- solution	4.	•379	<u>827</u>	.083	344	 078	021	197						
	5.	•513	 255	086	 018	.019	.287	<u>.761</u>						
	6.	 375	•092	.117	•211	<u>.813</u>	 200	• 300						
	7.	•263	 192	 166	<u>•850</u>	 033	•376	.010						

For Individual D the comparison does not lead to an identical identification of factors in all cases. To this author there seems to be an identity in the interpretation for factor 6 in the cosine-solution and factor 1 in the varimax-solution (Rationality), and, respectively, for factors 3 and 2 (Morality), 2 and 4 (Physical Activity), and 7 and 5 (Originality). The equivalent of factor 1 in the cosine-solution (Introverted Rationality) is more or less pure Sociability-dimension in the varimax-solution (cf., factor 3, Appendix G); the equivalent of factor 5 in the cosine-solution

(i.e., Toughminded Rationality) does not have as strong connotations to rationality in the varimax-solution (factor 6, Appendix G), and the equivalent of factor 4 (Masculinity) which is factor 7 in the varimax-solution does not differentiate masculine vs. feminine traits for this author.

It is possible that these differences might have led to a different interpretation of factors in the individual structure and to a different picture of the correspondence between the group and the individual structure. Now there are two corresponding factors between the structures, namely Originality and Rationality. The varimax-solution might add a third one, which would be Sociability.

5. Abnormal transformation in the individual structures

For Individual A, 2 scales showed abnormal transformation to the criterion (cf., p. 27). For Individual B there were 11, for Individual C 2, and for Individual D, 8 such scales. The number of scales showing abnormal transformation is clearly related to the overall correspondence between the group and an individual structure.

The abnormal transformation of single scales could not be meaningfully interpreted in any case. The author tried to use all the available information from a subject to explain the abnormal transformation on the level of single scales. Only the unreliability of a scale suggested an explanation in some cases but in general the abnormal transformation remained psychologically obscure. (For details, see Kuusinen, 1967a).

6. The correspondence of factors between the group and all of the 12 individuals: A summary

Tables 13 to 20 were made to give a general picture of the correspondence between the group and the individual factors. These tables give the factors for those individuals in whose structure a factor equivalent to a factor in the group structure appeared. The factors of the group from the oblique rotation are given in

column G of Tables 13 to 19 and the other columns refer to the individuals who are identified so that numbers 1 - 3 refer to the popular girls, numbers 4 - 6 to the unpopular girls, numbers 7 - 9 to the popular boys, and the numbers 10 - 12 to the unpopular boys. Individuals A, B, C, and D are identified as 2, 5, 9, and 10, respectively. The coefficients of coincidence and congruence in the tables give the index of similarity of a factor between the group and an individual, and in column G the means of these indices for each corresponding factor can be seen. The tables also indicate direct contributions of each factor to the common variance as well as the rank order of factor within a structure with respect to the common variance.

Each group factor appeared in some of the individual structures, but no group factor appeared in all of them. The most stable of the group factors was that interpreted as Toughness and it could be found in nine of the individual structures. Two factors, Rationality and Sociability appeared in eight cases; three factors, interpreted as Originality, Expressive Dominance, and Physical Potency, were obtained in seven cases; and one factor, Dynamism appeared in five cases.

It is interesting to note the high degree of similarity of results between Tucker's coefficient of congruence and Ahmavaara's coefficient of coincidence. However, an exception to this correspondence occured with the two factors of Rationality and Physical In the former case the coefficient of congruence gives a "better" result than the coefficient of coincidence, and viceversa in the latter case. With Physical Potency the difference can be explained by the fact that only two scales out of the 33 defined the factor in the group structure while the coefficient of congruence was calculated over all 33 scales so that variables not included in the <u>interpretation</u> of the factor could have confounded the index of congruence. This finding suggests that Tucker's coefficient of congruence might in some cases be more meaningful if it were computed only across those variables which are included in the interpretation of at least the other member of a pair of factors to be compared, so that the effect of non-interpretational scales could be eliminated

The stability of each group factor across the individual structures is one aspect of the total picture of similarity between the structures. The results also show the correspondence of the factor structures as a whole between the group and the individuals.

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₽€81€	G	, jone	2	3	4	5	6	8	9	11	G	2	3	4	7	9	10	11	12
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2. logical-		54		807754	41	6	- 54			resident.	.95		31	52	.70	.86	46	56	.68
3. unique-						recome.						. 33	1		.63		4		
4. excitable-	1 5		1.75	•	33	.78			32	į	40		. 68				.39		
5. gregarious-	right of the state	ALCOHOL:	.30	7	31	.43		39			52			Development of the second		34			
6, tough-	1.51	60			45	Ą	57	65	6	34	The second secon					.36	3		
7. proud-		3		31	ž .			≈.53			Architecture of the control of the c		A CANA		32				
8. formed-	Heway)						32		Ý	ĺ	.43	. 34		and the second			72		
9. light-	9	ě	54	OCHECIANO O		48						34	.30	41	-				
10. strong-	.42	B	1-25-		75	1		~.37		77	San	•34		32	¥		70.44		
11. agile-	2			9 9			•	*~'						1	CAMPACA CAMPAC	a)		.52	
12. disreputable-	.67	33	2/.	35	- 30	74	ĺ	_ 32	70	olivataro (m. 1	47	ļ		.42	Opherostro	on the second			ļ
l3. subjective-	.47	Y	.49		44	. / 7].		70	b account	50	4)CTACEMENTS	.74	4		exceptions and an article and article article and article and article article and article article article and article arti		66	58
14. usual-	8 4 3			Ġ					.40	41	50	goyaa	.,	3 3 7		- Superiori		.43	
15. relaxed~	.49			39				. 55	~.55	4	48	disyonetes.			9		Í	ಿನಿಕ	\$ 6
16. selitary-	2 2 2		#A	.46				.43	3	•	.34			No.	.39				.31
17. sensitive-	95	75	75		76	62	.70				, , , , ,	edition the contract of the co			0.33	59			
18. maive-	.46	•	1.73	.00	. 10	0.02	2/0	.39				nacounige.		Ì	.57				.46
19. unpredictable-		45	.35					. 27	30	8	į	and the second			/	1 . 34	€ ت. ۰		37
20. unhappy-	, w. J.	-,4,	• • • •	.46		.30			-, 30	.30	· ·		E .	.44		No.	.64		.34
20. uneappy- 21. uneaergetic-	.49		.42			.30	and the second		Ĭ	.30	70	63	.45	1	37	and	.48		9
21. steady-	.41		g ott	35	. 36	.30					.63		82				€ .	9 1	K
23. wholesome-	• • • · · · · · · · · · · · · · · · · ·		66		* 30				9				~.6∠	1	.32		/0	34	ę.
	***		00								.40			49				-	.33
24. rational-	.39			À	٠,٠		35			31	.95	.66	t	68	.52	1.15		~.6l	
25. individualistic-	1 .,				.35			44		34		-	.45	4		Del Contraction de la contract	-,55	39	.53
26. emotional-	74	- 56	67		.89	-,42		.31	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	.65	71			.63	orea/stage				
27. extroverted-		Properties:	44	9 :	86	٠,		~.35			2	~.37				36			
28. rugged-	69	41	£	and house	30	3	38	40	5	g ·	36		.30	Act and a second	34	\$.40	
29. deliberate-		31	egocres c	and the state of t		61			.30		.97	.89	-,91		.58	*		56	
30. tangible-			- 4			36	Beraville.				.78		83	47			ă	40	47
31. good-	63	.31	53	BALLACOR	.30	-,48			15 co	. 62	.44			36	.57		39	∽.38	ğ Ç
32. large-		and the second		o consistence					9	59				THE COLUMN TWO IS NOT	riente de la constante de la c			31	
33. flexible-	⊸. 36	\$ -			.51				MECONSEC	Deciment	The state of the s	Appendix and a second s	.31			49			
Per cant of common	18.6		29.9	11.0		26.8	11.3	17.4	16.2	17.3	25.5	15.3	2211	16.4	17.4	15.6	21.1	15.1	18.1
veriance and rank b	2.	3.	1	δ	3.	1	6.	2.	3.	1.	1.	3.	4.	4.	4.	4.	3.	4.	3.
Coef. of congruence	. 54 . 64	. 63	.57		.63		, 34	. 5,2	:49	.63	. 68	.83	.73 .56	.73	.71 .46	.52 .42	.68 .59	.72	.55
Coef. of coincidence			85	1.45	.77	277	1.37_	64		65	50	<u>i 61</u>	L.26_	ļ	1.45	1.42	1,59	50_	L.34
a Column G presents to Numbers indicate the	vari	ance	of a	factor	r and	វ ខែន	rank i	พริสาร์	nan	artic	alar s	truct	ure						
C Each column gives the	ne coe	ffici	ent o	F 2 F	actor	with	th	at of	the	grain	ลกส	the r	<u>alimn</u>	e for	the	arenir	. 12Y	nrace	en f

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,				St	ructur	e							Struc	ture			
Scale	G	1	2	5	6	8	9	11	12	G	1	2	3	6	ŝ	10	12
1. moral-					62				A TO LOS APPEARS			egopata por properties de la constanta de la c		of the control of the	. 59	and	
2. logical-		. 33		37	43	52			-						.38		
3. unique-		:		00000000000000000000000000000000000000	•		*	.52		95 ء	.87	77	79	-,43	.78	.51	.70
4. excitable-						Į		:				48					.35
5. gregarious-	.38	Ţ	67			.73	63	. 34	.45			33				si Postular	.35
6. tough-						~.32	arcontes.		- Company				30				
7. proud-					41				appropriate in the control of the co			and the state of t	40	.34		accional and a second	
8. formed	.45	.37	~.58	47	30		Ž	. 65	.50			55		A poor		.31	
9. light-	.84	. 39	68		39	.50	61	.74	.55			56	2		.47		
10. strong-				-			į	. 34					Ž.			.52	
ll. agile-			32	~.35	.35	1		. 54	.68			31	*		.30		37
12. disreputable-				•	.53				CLL VOICE OF THE PROPERTY OF T				7			.38	
13. subjective-		30		.70			de constant de con		Table 1			.36					.62
14. usual-					.43					78	90	.81	.86	.81	70	63	68
15. relaxed-	.49	. 65	54						. 58			X	32	47			
l6. solitary-	53	35	.61	.90		86	.46	49	37				Production of the control of the con			S PARTIE DE LA COMPANIA DE LA COMPAN	
17. sensitive												39					
18. naive-					.75	36	.49							50			
19. unpredictable-				44	į		42	.61	51	.40	.45	55		~.59		.39	.43
20. unhappy-	90	48	.76	.40	.83	63	.71		36			-	1				
21. unenergetic-				.44	.42	.58			45				Adaments.		-	46	
22. steady-							.32										
23. wholesome-		.44				.35			.40				N TO SEE SEE SEE SEE SEE SEE SEE SEE SEE SE			.75	
24. rational-		.50															
25. individualistic-				67						.51	.70					.43	
26. emotional-						.53						31	76000 76000				
27. extroverted-	.60	. 38	57			.72	64	.39				35	450e0	32			-
28. rugged-		43			THE CONTRACT OF THE CONTRACT O	33			49								
29. deliberate-			·	51		50							33	.35		-	Á
30. tangible-		.73		58	-,50								43		.44	.35	.51
31. good-		• • •				.32		.38	.47	·		43					
32. large-					The state of the s			""					and the second	36		.48	
33. flexible-	.37	.37	49		· ·	.74			.83			32		43			
Per cent of common	11.4	14.3	15.2	17.4	16.4	26.9	13.6	13.6	23.9	8.0	12.4	16.6	8.8	12.5	12.9	14.8	16.1
variance and rank	4.	4.	4.	4.	3.	1.	5.	6.	1.	6.	5.	2.	7.	4.	5.	5.	L,
Coef. of congruence	.65	.79	.87	.41	.47	.72	.77	.47	.72	.60	.85	. 65	.46	.35	.66	.62	.63
Coef. of coincidence	.62			.32	.55	.78	.77	.32	.63	. 67	.96	.7 4	.63	.35	.77	.57	, 66

Table 17. The Fifth Common Factor: Expressive Dominance

Note. - See fotenotes of Tables 13 and

Table 18. The Sixth Common Factor:
Physical Potency

Table 19. The Seventh Common Factor:

Dynamism Structure Structure Structure Scale 2 12 G 6 Ž 8 12 G G -,42 -. 62 -.55 . 66 -.40 -.39 1. moral-~.331-.40 ,30 2. logical--.39 .38 .40 -.57 .61 3. unique--.36 -.46 -.39 -.65 .83 1 . 86 . 85 .71 .82 4. excitable-. 74 43 .32 .36 .58 | -. 38 | -. 75 .38 5. gregarious-. 38 .47 .30 .70 .66 .59 6. tough-.42 .45 -.66 .62 -.80 .73 . 59 .79 1-.581-.90 .79 . 35 . 68 7. proud-. 95 . 34 .43 -. 63 .43 .32 -.72 8. formed--.40 -.52 a, 44 .30 9. light--.31 .31 .51 -.30 .57 . 55 .79 .59 .43 .52 .62 .60 . 57 10. strong--.35 -,54 -.59 . 90 . 73 .731~.401 -.52 -.48 .48 11. agile-.41 .33 .73 -.39 12. disreputable-. 65 34 -.50 -.62 -.50 .31 -.41 -.34 .57 .39 13. subjective-.49 -.36 .321-.37 -.37 .72 14. HBual --.40 ,47 .49 .33 .40 15. relaxed-.46 -. 34 -.42 . 33 .51 -.43 -.42 -.43 |-.61 16. solitary-~.55 17. sensitive-.39 -.56 .82 -.41 -.41 .44 . 84 -.93 18, naive-.32 - 47 -.44 . 64 .48 .57 .84 19. unpredictable-~.38 -.47 -.30 20. unhappy-.78 -.37 .60 - 41 21. unemergetic-. 64 -. 67 .33 .40 |-.42 |-.61 |-.51 -.73 22. steady-.44 .641-.37 .44 . 69 -.46 .50 -.59 |-.44 23. wholesome-. 34 .47 -.36 24. rational-. 34 - . 64 .36 -.40 .48 . 78 . 63 .77 .32 .50 25. individualistic--.37 .45 .32 .42 26. emotional--.38 -,49 .32 . 35 .55 -.35 -.30 27. extroverted-- 36 .33 . 34 . 64 28. rugged-.33 .35 .79 -.41 29. deliberate-.32 .51 .55 -.54 .45 30, tangible-.37 -.36 31. good-- 63 .53 .83 . 84 .70 .76 . 67 . 66 .66 32. large-.37 . 34 .53 -.32 -.46 . 60 33. flexible-.38 8.5 20.7 8 10.9 16.8 10.0 16.9 5.9 10.1 25.6 9.0 8.7 15.9 23.6 14.5 24.8 27.1 14.6 15.4 23.3 5.4 10.4 16.6 Per cent of common 2. 5. 2. \$ 6 7. 7. 5. 4. 2. 7. 7. 6. 2. variance and rank 1. 5. î. .74 .48 753 .64 .72 .68 .50 .30 . 65 .34 .61 .67 .41 . 60 .61 .41 .56 . 74 . 54 .631 .68 Coef. of congruence .62 .76 .51 .56 .70 .76 .73 .97 .87 .61 .67 .88 .61 .68 .46 .75 . 58 .60 Coef. of coincidence

Table 20. Summary of the correspondence between the group factors and the individual factors

		Factors of the group														
Individuals	Toughness (18.6%)			nality .5%)		ubility		nality 0%)	Domi	essive nance 5.6%)	Physical Potency (5.4%)		Dynamism (10.9%)		Mean corre- spondence for an individual	
	T ^a A	a	Т	A	Т	A	Т	A	Т	A	Т	A	Т	A	T	A
1	.63 .6	6	_	_	.79	•72	.85	•96	.68	. 68	.30	•73	.72	.76	6/.78	6/.75
2	.57 .8	5	.83	.61	.87	.88	.65	•74	.61	.46	.65	•97	.68	•51	7/.69	7/.72
3	•54 •4	5	.73	.56	_	_	.46	.63	-	-	•34	.87	_	-	4/.52	4/.63
4	.63 .7	7	.73	•51	_	-	_	-	.41	•75	.61	. 61	_	-	4/.60	4/.66
5	.56 .7	7	-	-	.41	.32	_	_	_		 -	-	_	-	2/.49	2/.54
6	.34 .3	7	-	_	•47	• 55	• 35	• 35	_	-	-	***	•74	.76	4/.48	4/.51
7			.71	•46	_	-	_	-	•56	•58	.67	.67	_	-	3/.65	3/.65
8	.52 .6	4	_	_	.72	.78	.66	•77	•74	•51	-	-	•48	• 50	5/.62	5/.64
9	•49 •5	7	.52	,42	•77	•77	_	-	_	-	•53	.88	•59	.58	5/.58	5/.64
10			.68	•59	_	-	.62	.57	_	-	-	-		-	2/.65	2/.58
11	.63 .6	5	•72	•50	•47	•32	_	-	•54	. 56	_	-	_	-	4/.59	4/.51
12			•55	• 34	.72	.63	•63	.66	•63	.70	.41	•41	_	-	5/•59	5/.59

Mean corre- 9/.54 9/.64 8/.68 8/.50 8/.65 8/.62 7/.60 7/.60 7/.60 7/.60 7/.50 7/.76 5/.64 5/.62 group factors

Note. - The empty entries indicate that a factor was not identified in an individual structure.

^a T = Tucker's coefficient of congruence; A = Ahmavaara's coefficient of coincidence.

b The index gives the number of group factors identified in an individual structure and their mean congruence and coincidence to the group structure.

The index gives the number of individual structures where a group factor was identified and its mean congruence and coincidence.

From Table 20 it can be seen that the group structure corresponded entirely to an individual structure in one case (Individual 2). Six corresponding factors were interpreted in the case of another individual (Number 1); five corresponding factors in three cases (Individuals 8, 9, 12), and four corresponding factors were obtained in four cases (Individuals 3, 4, 6, 11). Three or two corresponding factors were interpreted in three cases (Individuals 5, 7, and 10). Thus in nine cases out of twelve there were four or more corresponding factors between the group structure and the individual structures. The similarity of the factor structures was also increased by the fact that many of the factors interpreted as specific to the individuals highly resembled some of the group factors.

Variances of the corresponding factors were compared by using the rank orders of factors within the structures. Although differences between the structures existed, the overall picture of the correspondence of the factor variances seemed to justify the conclusion that the group structure represents the individual structures in this respect.

D. Differentiation of the group and individual structures

Conclusions about the differences in differentiation between the group structure and the individual structures were made on the basis of what could be observed from the differences in the index formed by means of the first principal axis and in the index formed by the determinant of the rotation matrix. In the group structure, the first principal axis accounts for 42.4 % of the common variance. This figure is bigger only with three individuals (41, 45, 49), but the differences are very small. The smallest index value is 30.3 % in the structure of individual 19. All in all, the individual structures appear more differentiated than the group structure in the light of this index.

The value of the group structure rotation matrix determinant is 0.36067. In the cse of all individuals it is bigger than this, and its greatest value (0.72755) occurs in the case of individual 35. Even in the light of this index, the individual structures are more differentiated that the group structure.

The differences in differentiation between the group structure and the other structures as regards the number of factors have not been investigated in detail. In the group structure, seven factors could be interpreted and similarly, in seven individual structures. In the case of four individuals six factors could be interpreted, and in the case of one subject five factors. When it is considered that the individual structures of the seven interpreted factors contain some narrow and obscure dimensions, it is hardly possible to describe the individual structures within the framework of more than seven factors. Obviously one can say that the individual structures are not more differentiated than the group structure as regards the number of factors and in this respect the structures under comparison seem to be similar.

All in all, the result show that the individual structures are somewhat more differentiated than the group structure. The result in this case is due to the fact that in the individual structures the common variance between the scales is smaller and their specific variance greater than in the group structure, in which this individual specific variance has not been taken into account.

E. Differences in the factor structures between the individuals

Although the main purpose of the study was to examine to what extent the individual structures correspond with the group structure, some differences in structure between individuals were examined, because they add something to our picture of the congruence between the groupand the individuals. Tables 21-26 contain some data about the individual structures.

In the table of congruence indices (Table 25), the rank order of individuals is presented from one to twelve with the increase of congruence. Table 26 gives the rank order correlations between the data obtained from the individuals. In computing the rank order correlations, the congruence index is exceptional in the sense that the mutual rank order of the subjects is not determined by the entire index value, but by the number of corresponding factors only, because it was thought that the mean of coincidences of corresponding factors is somewhat arbitrary in placing individuals in order.

According to Table 21, differences in the amount of common variance follow the sex of the individuals so that the common variance between the scales is greater with girls than with boys. The result can be said to indicate that in the ratings made by girls the specific and/or error variance is smaller than in the ratings made by boys. Furthermore, a similar difference between the subjects can be seen in Table 22, because it is seen that the factor structure of girls are less differentiated that the boys': this result is seen again when the values of the rotation matrix determinants in Table 23 are examined. The rank order correlations of Table 26 show that the correlations between the said indices are significant at .10 (indices 1/3 and 2/3) and at .02 (indices 1/2 and 4/5) level (two-tailed). The results can be hypothetically explained in several ways.

First, it must be observed that the rating task took over 2 hours on an average. This time is rather long, so long really that individual differences in working habits and attitudes toward the task can influence the results. Thus in the case of such individuals whose motivation is weak, the error variance of ratings is obviously larger than in cases where the pupils work with deliberation and consistency all the time. The increase of error variance in former cases weakens the reliability and constancy of ratings and decreases the common variance between the scales. Let us assume that the girls' ratings contain less error variance (are more reliable) than the boys' and for this reason the amount of common variance in their ratings is greater. This assumption is consistent with the general view that the girls' performances in school life situations show greater carefulness than the boys' performances.

The figures that indicate the amount of common variance on the one hand and the amount of structure differentiation on the other hand may also reflect differences in the amount of specific variance with different individuals. According to the results, the amount of specific variance is smaller with girls than with boys, if the figures are interpreted in this way. It is not entirely unwarranted to assume that the girls' ratings can be more halo-affected than the boys' ratings and that the boys could see most traits as evaluatively more neutral than girls, and this follows that the amount of common variance is greater with girls and that their structures are less differentiated than boys' factor structures.

Table 21. Common variance in the individual factor structures

Pop	Popular Girls Rejected Girls				Girls	Popular Boys Rejected Boys							
S	%	Rank	S	%	Rank	S	%	Rank		%	Rank		
1	64.3	8	4	65.1	9	7	60.5	3	10	63,0	7		
2	68.2	11	5	68.6	12	8,	59.1	2	11	61,3	4		
3	62.4	6	6	65.2	10	9	64.0	5	12	51.3	1		

Table 22. Differentiation of individual structures by the first principal axis

Pop	Popular Girls Rejected Girls						Popular Boys Rejected Boys							
S	%	Rank	S	%	Rank	S	%	Rank	S	%	Rank			
1	37.3	7	4	41.5	9	7	36.2	5	10	33.6	3			
2	36.9	6	5	44.3	12	8	30.3	1	11	39.7	8			
3	43.1	10	6	44.2	11	9	34.4	4	12	33.5	2			

Table 23. Differentiation of individual structures by rotation matrix determinant

Pop	ular Girl	Ls	R	ejected 0	irls	P	opular Bo	oys	Re	Rejected Boy			
S	Det.	Rank	S	Det.	Rank	S	Det.	Rank	S	Det.	Rank		
1	0.72755	1	4	0.54173	5	7	0.51180	7	10	0.52452	6		
2	0.40248	12	5	0.45082	11	8	0.57253	2	11	0.46990	10		
3	0,48632	8	6	0.48405	9	9	0.54877	4	12	0.54935	3		

Table 24. Total amount of abnormal transformation in individual structures

Popular Girls Rejected Girls						Po	Popular Boys Rejected Boys					
wa	is Desire Table 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980	March March March	WANTAND BE OF THE STATE OF	-	The second secon		T.		COMPANY OF MANY PROPERTY OF STREET STREET, SAME STREET, S			
S	Tr.	Rank	S	Tr.	Rank	S	Tr.	Rank	S	Tr.	Rank	
1	4.5926	3	4	6.4620	7	7	5.4847	5	10	7.1480	12	
2	4.5830	2	5	7.0846	11	8	4.6545	4	11	6.6264	8	
3	6.6275	9	6	6.0417	6	9	4.5328	1	12	6.6776	10	

=====		=====		===	=====	=====		===	=====			.===:	=====	=====			
Por	pular	Girls	5	Re	jecte	ed Gi	rls	Po	pular	Boys	3	Rejected B			oys		
S	NF	CC	Rank	S	NF	CC	Rank	S	NF	CC	Rank	S	NF	CC	Rank		
1	6 /	.751	2	4	4 /	.659	6	7	3 /	.650	10	10	2 /	•577	11		
2	7 /	.715	1	5	2 /	•542	12	8	5 /	.639	3	11	4 /	.507	8		
3	4 /	.628	7	6	4 /	.506	9	9	5 /	.640	4	12	5 /	.589	5		

Table 25. Indices of congruence by individuals 1)

Table 26. Rank order correlations between indices describing individual factor structures

	1	2	3	4	5
1. Amount of common variance					
2. Differentiation (the first principal axis)	•71	a			
3. Differentiation (determinant of rotation matrix)	• 55	•59			
4. Abnormal transformation	.06	.21	.22	-	
5. The total index of congruence	.08	,31	.31	.71	War-s

Significance levels:
$$r_s = .506$$
; p < .05 (one-tailed) $r_s = .712$; p < .01 (one-tailed)

It was observed in the above that there are differences between the sexes in the factor structures. Tables 24 and 25 show, however, that the differences in the structures are also consistent with psychologically more interesting differences between the individuals. Table 24 indicates that all cases considered the total amount of abnormal transformation is smaller with popular boys and girls than with rejected boys and girls. Further, it is seen from Table 25 that the congruence between the group structure and the individual structures is greater with popular pupils than with rejected. Sociometric status is not, however, a unidimensional quality, and apparently it is for this reason that there are exceptions from the general results. Owing to the small number of subjects, it is not possible here to analyze the common factors which might affect the fact that in some cases the sociometric status is in different ways

¹⁾ Whole number refers to the number of corresponding factors (NF), decimal part to the mean of coefficients of coincidence (CC) between the corresponding factors.

connected with the congruence between the group and individual rating structures. As regards the rejected or unpopular pupils, it can be said that they have more than an average share of a variety of personality problems (Gronlund, 1959; Moreno, 1961), which might cause deviations from the average denotative and connotative meanings of the personality traits used in the rating instrument.

It is also interesting to note that the total amount of abnormal transformation correlates significantly with the similarity between the group and individual factor structures which is indicated by the congruence index based on the number on congruent factors and coincidence coefficients between them. The result means that the index of abnormal transformation alone can show to what extent the interpretations of factors in different structures correspond to each other. This result confirms the view (e.g. Ahmavaara and Markkanen, 1958), according to which abnormal transformation indicates differences in the psychological meaning of the variables be between the structures under comparison.

Besides sociometric status, information was obtained about the ratings given about the subjects studied. The structures of ratings given by the individuals do not differ from each other so much that even the most careful examination could show consistent and psychologically interpretable connections between the factor structures and the ratings received by the individuals studied. This is clearly due to the fact that the individuals performed ratings with a limited number of personality traits whose meanings are so similar to different individuals that the factor structures do not become different.

F. Abnormal transformation and its interpretation

Again, only a summary about the results as regards the abnormal transformation of single scales in the individual structures is presented here.

In most cases, the abnormal transformation of the scales seemed to be "real", in other words, it cannot be assumed to be due to low reliability (communality) or to small standard deviation (length of scale vector); instead, it seems to have some psychological basis,

as has been proposed. That abnormal transformation has "real" psychological content is supported by the fact that the total amount of abnormal transformation was connected with the congruence in factor structures (Table 26) and in the interpretation of factors.

In the hypotheses (cf., Kuusinen, 1967a) it was stated among other things that the differences in meaning of qualifiers could be most easily seen in regard the connotative meaning of trait denominators. However, only in the case of few individuals could instances of this be seen. Most of the differences in the meaning of traits appear to be denotative and individuals seem to have opinions about the denotative meaning of a trait different from the average group view. These differences could not be combined with other individual properties in this study, but they remained unexplained error variance, i.e., such individual properties which in the group structure are interpreted as error. It may be added that an attempt is sometimes made to remove this source of variance by teaching raters the specific definition of each trait during the course of pre-experiment training.

In the preface of the present study the question was put if in forming the factor structure of scales of the group it is justified to interpret the individual differences in structure incorporated with the group factor structure as error variance. This problem has been studied from different angles and the answer is in the affirmative.

IV DISCUSSION

The problem of the study was stated as follows: How does a factor structure of personality ratings, which is composed of ratings given by several raters, represent or correspond to a structure of ratings of each individual rater? This correspondence was studied as regards to the contents of factors, factor variances, and differentiation of structures. The results show that there are differences in all these aspects between the group and the individual structures. However, the interpretation of the results as a whole was that the group and the individual structures correspond with each other, or, that the group structure represents the individual structures included in it. In the following, issues that might strenghten or weaken this interpretation are discussed.

A. Rotations

In the interpretation and description of factors the most essential operation is rotation. In this study the correspondence between the two type of structures was estimated on the basis of such rotational outcome which is derived by using similar formal criteria, the most important criterium being that the outcome of the rotation is a maximally orthogonal oblique factor structure.

It is important to notice that the group and individual structures were not made maximally similar by their rotations. As to the conclusions of the study this state of affairs has its positive and negative sides. On the negative side we have the fact that now we do not really know how similar the group and an individual structure could be if the structures had been rotated to be maximally similar. This uncertainty has its effect on the generality of the results since alternative solutions might lead to different conclusions.

On the positive side we have the fact that the individual structures have not been forced or restricted in any way such that could have effected results of the individual's characteristic way of perceiving the trait relationships. In a way this means that the individual structures are now as individualistic as possible, and all individual features in the structures were given a full oppor-

tunity to show up. In the author's opinion the consequence of the procedure is that the present results are in principle more powerful in showing the correspondence between the group and individual structures than in a case where the maximization of the structures had taken place before the comparisons.

B. Differences between the group and the individual structures

Differences existed between the group structure and the individual structures as regards factor contents, variance and differentation of structures, as was expected. Only in one out of twelve
cases were all the factors of the individual structure identified
the same as in the group structure, and even in this case the
factors were not completely identical. Besides, in the cases of
two individuals only two corresponding factors were named, and in
the case of one individual three. What in these results justifies
the conclusion that the group and the individual structures on the
whole correspond with each other and are similar?

This question is connected with the problem of how one may explain the individual features of the structures which in the group structure are interpreted as error variance. Another alternative for interpretation of this variance is that it is not error variance but possibly reflects real individual differences which are consistently connected with other psychological factors that differentiate between individuals.

The results do not support the aforementioned assumption. The associative relationships between the scales, the variance of the factors and the differentiation of the structures were different by individuals, but in no case could the differences be explained psychologically. Only as regards the sociometric status were differences obtained in the congruence of structures and in the amount of abnormal transformation, but the differences were both small and inconsistent. Further, there were differences between the sexes in the differentiation of the structures, which could best be explained due to differences in orientation to the task and in consistency of working. The fact that the individual differences remained psychologically unexplained is due partly to the fact that the available psychological data on the individuals were rather slight. When the individual factor structures were examined,

nothing came up which might have been psychologically interesting; further, in these structures no special trends — such as might invite hypotheses — were found which to some extent would have organized into characteristic features of each individual structure. As this was the case, in the absence of further material the only possibility remains to interpret the individual variation in the structures as error variance and make the conclusion according to which the individual differences in forming the group structure may be interpreted as error variance as customary.

The expression "error variance" as a label for the idiosyncrasies of the individual structures may need some refinement since these terms in factor analytic terminology and in measurement in general have a meaning somewhat different from the use of these terms here. The author has chosen to use the expression to point out the fact that in the computing of the group structure the individual differences in the ratings given to each object on each scale, and in the intercorrelations and subsequent factors of the scales are not taken into account in any way. Another alternative in naming the individual variation would be to call it simply "idiosyncratic variation" what it in fact is; however, the terms "error variation" give more weight to the nature of this variation in the interpretation of the group structure.

The results of this study are consistent with the results of some earlier studies. In a study of Takala (1953), some individual differences in the associative relationships of traits were observed, but in the main the examined individual structures corresponded with each other and with the group. The individual differences in the intercorrelations of traits in Ware's study (Miron & Osgood, 1966) could be explained almost completely by one dimension, but some of the variance between individuals also remained unexplained. The same situation can be seen in Levin's (1966) 3-mode factor analysis concerning semantic differential ratings and in a recent study by Wiggins and Fishbein (1968). Using a great number of subjects (N=260) and personality trait denominators (50), which were objects of similarity ratings, Pedersen (1963) succeeded in finding a narrow dimension, which described the associative relationships of traits different from the average, but in the most the individuals also in this study seem to have been rather more similar than different as regards the associative structure of the traits

As regards the variance of factors and the differentiation of the structure an analogous situation prevailed as in the case of factor contents. There were differences between the subjects and between the group and the individuals, but they were not organized into any clear general picture consistent with the information obtained from the subjects.

C. The investigation of interindividual differences in the structure of personality ratings

The main results of the present study is certainly hard for many psychologists to accept. The way people perceive other persons is fundamentally important to human adjustment, and there certainly must be relationships between how people see others and what their personality characteristics are. Individuals differ from each other as to personality, so why is it that these differences do not reflect themselves in the study of personality ratings in investigations such as the present one?.

It has already been mentioned that the negative outcome of individual differences may be due to the fact that the personological data from the individuals were rather scarce. The differences found may in fact be psychologically meaningful but in the light of the available information they remained obscure. There is also another. more methodological aspect which may have worked against finding said differences. This aspect concerns the selection, or sampling of the ratings scales. There are writers (e.g., Kelly, 1955) who would say that it is completely meaningless to study an individual's perception of other people by first giving him the categories against which a person rates other people. These given categories may be quite irrelevant to him, i.e., they may not belong to his active vocabulary of describing other people, and he does not see it important to discriminate people along the given categories. Instead, there is another set of categories which represent the more basic dimensions along which a person differentiates other people. It is this set of categories which should first be elicited from each individual before any comparisons between individuals can be made if it is hoped that the individual differences relate meaningfully to the personalities of the individuals.

The study of individual differences in the way outlined above is certainly useful in clinical practice where the personalities of people who come to treatment may vary considerably. it is interesting to note that at least with more "normal" type of subjects the given versus own categories of personality ratings do not contrast as much as one is prone to think. Thus, for instance, Tripodi and Bieri (1963) showed that cognitive complexity in personality ratings was equally indexed by both types of cate-Similarly, Weksel (1964) found that the similarity ratings from the objects as well as ratings by categories given to the subjects differentiated the objects into corresponding groups. Furthermore, Jaeckle (1965) showed that peer ratings given by own categories correlated highly with leadership ratings from the same objects. Finally, Wolfe (1966) showed that the personality scales used by Ware (Miron and Osgood, 1966) and the present author differentiated the objects of ratings into groups similar to those which were derived from ratings given by subjects' own categories. least these findings show that the difference between the own versus given categories of personality ratings may be overemphasized.

D. Conclusions

The differences between the group and the individuals were negligible and psychologically obscure. This supports the notion that it is justified to disregard the idiosyncratic variation which is included in the group structure as an error, as it is done in the computation of the group structure.

The present argument is restricted to rater characteristics of the type usually considered within normal limits. No claim is being made here which would deny the possibility of individual differences in cognitive functioning of the type represented e.g. by contrasting normal vs. psychotic groups. Beyond such gross differences which are known to have significant consequences in the perceptional and behavioral functioning of individuals, the effect of the remaining interindividual differences to the factor structure of personality ratings does not seem to have ordinary psychological concomitance and can be considered uninteresting.

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Direction and order of the scales in the rating sheet

- 1. moral-immoral (nuhteeton-paheellinen)
- 2. logical-intuitive (järkeilevä-vaistonvarainen)
- 3. unique-typical (ainutlaatuinen-tavanomainen)
- 4. excitable-calm (helposti kiihtyvä-rauhallinen)
- 5. gregarious-self-contained (seuraa etsivä-seuraa kaipaamaton)
- 6. tough-tender (kovaluontoinen-lempeä)
- 7. proud-humble (ylpeä-nöyrä)
- 8. formed-amorphous (jäsentynyt-jäsentymätön)
- 9. light-gloomy (valoisa-synkkä)
- 10. strong-weak (vahva-heikko)
- 11. agile-clumsy (ketterä-kömpelö)
- 12. disreputable-reputable (huonomaineinen-hyvämaineinen)
- 13. subjective-objective (yksipuolinen-tasapuolinen)
- 14. usual-unusual (tavallinen-epätavallinen)
- 15. relaxed-tense (rento-jännittynyt)
- 16. solitary-sociable (yksinäinen-seurallinen)
- 17. sensitive-insensitive (herkkä-tunteeton)
- 18. naive-sophisticated (yksinkertainen-hienosteleva)
- 19. unpredictable-predictable (arvaamaton-ennustettavissa oleva)
- 20. unhappy-happy (onneton-onnellinen)
- 21. unenergetic-energetic (tarmoton-tarmokas)
- 22. steady-capricious (vakaa-oikukas)
- 23. wholesome-unwholesome (terve-epäterve)
- 24. rational-irrational (järkiperäinen-järjenvastainen)
- 25. individualistic-regular (omintakeinen-kaavoihin sidottu)
- 26. emotional-unemotional (tunneherkkä-asiallinen)
- 27. extroverted-introverted (ulospäinkääntynyt-sisäänpäinkääntynyt)
- 28. rugged-delicate (karkea-hienotunteinen)
- 29. deliberate-casual (harkitseva-ajattelematon)
- 30. tangible-intangible (selkeä-epämääräinen)
- 31. good-bad (hyvä-paha)
- 32. large-small (suuri-pieni)
- 33. flexible-rigid (joustava-jäykkä)

An example of a scale

moral: : : : : : : : : : immoral

Varimax-rotation of the group structure

Factor 1.

1.	moral-immoral (nuhteeton-paheellinen)	-,82
4.	excitable-calm (helposti kiihtyvä-rauhallinen)	• 45
	tough-tender (kovaluontoinen-lempeä)	.86
7.	proud-humble (ylpeä-nöyrä)	•51
	strong-weak (vahva-heikko)	•51
	disreputable-reputable (huonomaineinen-hyvämaineinen)	.88
	subjective-objective (yksipuolinen-tasapuolinen)	• 56
	relaxed-tense (rento-jännittynyt)	•54
	sensitive-insensitive (herkkä-tunteeton)	94
	unenergetic-energetic (tarmoton-tarmokas)	.67
	emotional-unemotional (tunneherkkä-asiallinen)	33
	rugged-delicate (karkea-hienotunteinen)	.84
	deliberate-casual (harkitseva-ajattelematon)	 37
	tangible-intangible (selkeä-epämääräinen)	 50
	good-bad (hyvä-paha)	82
	large-small (suuri-pieni)	• 46
33.	flexible-rigid (joustava-jäykkä)	 35

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1. moral-immoral (nuhteeton-paheellinen)
                                                                  .37
 5. gregarious-self-contained (seuraa etsivä-seuraa kai-
                                                                 -.63
                                  paamaton)
 7. proud-humble (ylpeä-nöyrä)
                                                                 -.42
 8. formed-amorphous (jäsentynyt-jäsentymätön)
                                                                 -.70
9. light-gloomy (valoisa-synkkä)
10. strong-weak (vahva-heikko)
                                                                 -.82
                                                                 -.35
11. agile-clumsy (ketterä-kömpelö)
                                                                 -.60
13. subjective-objective (yksipuolinen-tasapuolinen)
                                                                  • 46
14. usual-unusual (tavallinen-epätavallinen)
15. relaxed-tense (rento-jännittynyt)
                                                                  •41
                                                                 -.66
16. solitary-sociable (yksinäinen-seurallinen)
                                                                  .86
18. naive-sophisticated (yksinkertainen-hienosteleva)
                                                                  .68
19. unpredictable-predictable (arvaamaton-ennustettavissa
                                                                 -.42
                                  oleva)
20. unhappy-happy (onneton-onnellinen)
                                                                  .84
23. wholesome-unwholesome (terve-epäterve)
                                                                 -.36
25. individualistic-regular (omintakeinen-kaavoihin si-
                                                                 -.67
                                dottu)
26. emotional-unemotional (tunneherkkä-asiallinen)
                                                                 -.32
27. extroverted-introverted (ulospäinkääntynyt-sisään-
                                                                 -.85
                                päinkääntynyt)
                                                                 -.36
30. tangible-intangible (selkeä-epämääräinen)
33. flexible-rigid (joustava-jäykkä)
                                                                 -.79
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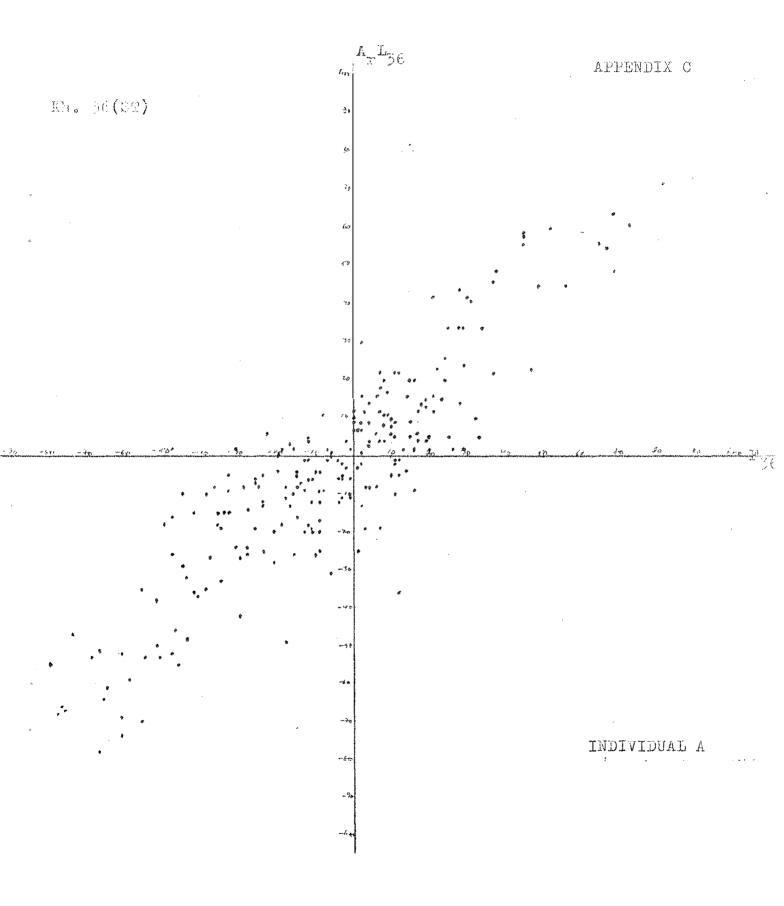
2. 4.	moral-immoral (nuhteeton-paheellinen) logical-intuitive (järkeilevä-vaistonvarainen) excitable-calm (helposti kiihtyvä-rauhallinen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton)	.33 .91 49
8. 12. 13. 15. 16.	formed-amorphous (jäsentynyt-jäsentymätön) disreputable-reputable (huonomaineinen-hyvämaineinen) subjective-objective (yksipuolinen-tasapuolinen) relaxed-tense (rento-jännittynyt) solitary-sociable (yksinäinen-seurallinen) unpredictable-predictable (arvaamaton-ennustettavissa oleva)	.33 33 34 31 .38
	unenergetic-energetic (tarmoton-tarmokas) steady-capricious (vakaa-oikukas) wholesome-unwholesome (terve-epäterve) rational-irrational (järkiperäinen-järjenvastainen) emotional-unemotional (tunneherkkä-asiallinen) extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt)	58 .70 .38 .95 73
30.	deliberate-casual (harkitseva-ajattelematon)	•87 •64 •33
Fac	tor 4	
5. 6. 7. 18. 19.	excitable-calm (helposti kiihtyvä-rauhallinen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton) tough-tender (kovaluontoinen-lempeä) proud-humble (ylpeä-nöyrä) naive-sophisticated (yksinkertainen-hienosteleva) unpredictable-predictable (arvaamaton-ennustettavissa oleva) steady-capricious (vakaa-oikukas) wholesome-unwholesome (terve-epäterve)	56 31 36 66 .58 38 .48
Fac	tor 5	
14. 19.	unique-typical (ainutlaatuinen-tavanomainen) usual-unusual (tavallinen-epätavallinen) unpredictable-predictable (arvaamaton-ennustettavissa oleva)	.91 79 .47
∠D•	individualistic-regular (omintakeinen-kaavoihin si- dottu)	.54

APPENDIX B (continued)

Factor 6

10.	strong-weak (vahva-heikko)	33
	agile-clumsy (ketterä-kömpelö)	64
13.	subjective-objective (yksipuolinen-tasapuolinen)	• 38
23.	wholesome-unwholesome (terve-epäterve)	49
33.	flexible-rigid (joustava-jäykkä)	37

10.	strong-weak ((vahva-heikko)	 42
32.	large-small ((suuri-pieni)	68



Kh. 41(TT)

TNDTATDOAT B

Ith. 13(TP)

TMDTATOOUT D

Varimax-rotation of Individual A's structure

2. 4. 5.	moral-immoral (nuhteeton-paheellinen) logical-intuitive (järkeilevä-vaistonvarainen) excitable-calm (helposti kiihtyvä-rauhallinen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton) proud-humble (ylpeä-nöyrä)	•59 •83 ••39 ••44 ••36
12. 13. 18. 21. 22. 24. 29.	disreputable-reputable (huonomaineinen-hyvämaineinen) subjective-objective (yksipuolinen-tasapuolinen) naive-sophisticated (yksinkertainen-hienosteleva) unenergetic-energetic (tarmoton-tarmokas) steady-capricious (vakaa-oikukas) rational-irrational (järkiperäinen-järjenvastainen) deliberate-casual (harkitseva-ajattelematon) tangible-intangible (selkeä-epämääräinen) good-bad (hyvä-paha)	60 31 .59 63 .71 .70 .86
Fac	tor 2	
5.	gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton)	 65
9. 11. 15. 16. 20.	formed-amorphous (jäsentynyt-jäsentymätön) light-gloomy (valoisa-synkkä) agile-clumsy (ketterä-kömpelö) relaxed-tense (rento-jännittynyt) solitary-sociable (yksinäinen-seurallinen) unhappy-happy (onneton-onnellinen) extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt)	49 64 32 64 .68 .69
	tangible-intangible (selkeä-epämääräinén) flexible-rigid (joustava-jäykkä)	37 51
Fac-	tor 3	
4. 6. 7. 9. 12. 15. 17. 23.	moral-immoral (nuhteeton-paheellinen) excitable-calm (helposti kiihtyvä-rauhallinen) tough-tender (kovaluontoinen-lempeä) proud-humble (ylpeä-nöyrä) light-gloomy (valoisa-synkkä) disreputable-reputable (huonomaineinen-hyvämaineinen) relaxed-tense (rento-jännittynyt) sensitive-insensitive (herkkä-tunteeton) unenergetic-energetic (tarmoton-tarmokas) wholesome-unwholesome (terve-epäterve) emotional-unemotional (tunneherkkä-asiallinen) rugged-delicate (karkea-hienotunteinen) good-bad (hyvä-paha)	.52 49 81 64 .39 41 34 .65 42 .38 .44 77

APPENDIX D (continued)

4. 6. 7. 8. 14. 17.	unique-typical (ainutlaatuinen-tavanomainen) excitable-calm (helposti kiihtyvä-rauhallinen) tough-tender (kovaluontoinen-lempeä) proud-humble (ylpeä-nöyrä) formed-amorphous (jäsentynyt-jäsentymätön) usual-unusual (tavallinen-epätavallinen) sensitive-insensitive (herkkä-tunteeton) unpredictable-predictable (arvaamaton-ennustettavissa oleva)	83 57 31 32 54 .75 33
22.	steady-capricious (vakaa-oikukas)	• 35
Fac	tor 5	
13. 23. 25. 26. 27.	strong-weak (vahva-heikko) subjective-objective (yksipuolinen-tasapuolinen) wholesome-unwholesome (terve-epäterve) individualistic-regular (omintakeinen-kaavoihin si- dottu) emotional-unemotional (tunneherkkä-asiallinen) extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt)	53 .59 51 73 53
	tangible-intangible (selkeä-epämääräinen) good-bad (hyvä-paha)	57 48
Fac	tor 6	
8. 13.	proud-humble (ylpeä-nöyrä) formed-amorphous (jäsentynyt-jäsentymätön) subjective-objective (yksipuolinen-tasapuolinen) naive-sophisticated (yksinkertainen-hienosteleva)	38 32 39 .54
Fac	tor 7	
11. 12. 15. 28.	strong-weak (vahva-heikko) agile-clumsy (ketterä-kömpelö) disreputable-reputable (huonomaineinen-hyvämaineinen) relaxed-tense (rento-jännittynyt) rugged-delicate (karkea-hienotunteinen) large-small (suuri-pieni)	.48 55 .39 .38

Varimax-rotation of Individual B's structure

	unique-typical (ainutlaatuinen-tavanomainen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton)	-,58 -,45
8. 9. 11. 13. 16. 20.	formed-amorphous (jäsentynyt-jäsentymätön) light-gloomy (valoisa-synkkä) agile-clumsy (ketterä-kömpelö) subjective-objective (yksipuolinen-tasapuolinen) solitary-sociable (yksinäinen-seurallinen) unhappy-happy (onneton-onnellinen) individualistic-regular (omintakeinen-kaavoihin si-	60 32 57 .51 .85 .39
30. 31. 32.	dottu) deliberate-casual (harkitseva-ajattelematon) tangible-intangible (selkeä-epämääräinen) good-bad (hyvä-paha) large-small (suuri-pieni) flexible-rigid (joustava-jäykkä)	46 54 31 43
Fac	tor 2	
4. 5. 6. 7. 9. 11. 17. 22. 22. 23. 23. 30.	moral-immoral (nuhteeton-paheellinen) excitable-calm (helposti kiihtyvä-rauhallinen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton) tough-tender (kovaluontoinen-lempeä) proud-humble (ylpeä-nöyrä) light-gloomy (valoisa-synkkä) agile-clumsy (ketterä-kömpelö) disreputable-reputable (huonomaineinen-hyvämaineinen) sensitive-insensitive (herkkä-tunteeton) unhappy-happy (onneton-onnellinen) unenergetic-energetic (tarmoton-tarmokas) steady-capricious (vakaa-oikukas) wholesome-unwholesome (terve-epäterve) emotional-unemotional (tunneherkkä-asiallinen) rugged-delicate (karkea-hienotunteinen) deliberate-casual (harkitseva-ajattelematon) tangible-intangible (selkeä-epämääräinen) good-bad (hyvä-paha)	
Fac	tor 3	
3.	logical-intuitive (järkeilevä-vaistonvarainen) unique-typical (ainutlaatuinen-tavanomainen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton)	61 .42
10 .	tough-tender (kovaluontoinen-lempeä) strong-weak (vahva-heikko) relaxed-tense (rento-jännittynyt)	37 39

APPENDIX E (continued)

20. 21. 22. 23.	sensitive-insensitive (herkkä-tunteeton) unhappy-happy (onneton-onnellinen) unenergetic-energetic (tarmoton-tarmokas) steady-capricious (vakaa-oikukas) wholesome-unwholesome (terve-epäterve) em•tional-unemotional (tunneherkkä-asiallinen)	.72 .37 .36 35 40
Fac	tor 4	
9. 10. 11. 14.	proud-humble (ylpeä-nöyrä) light-gloomy (valoisa-synkkä) strong-weak (vahva-heikko) agile-clumsy (ketterä-kömpelö) usual-unusual (tavallinen-epätavallinen) unhappy-happy (onneton-onnellinen)	.31 50 35 33 .71 .52
Fac	tor 5	
18.	logical-intuitive (järkeilevä-vaistonvarainen) naive-sophisticated (yksinkertainen-hienosteleva) unpredictable-predictable (arvaamaton-ennustettavissa oleva)	•33 •51 •38
33.	flexible-rigid (joustava-jäykkä)	- .36
Fac	tor 6	
8. 10. 12. 15. 22. 23. 24. 30. 31.	unique-typical (ainutlaatuinen-tavanomainen) formed-amorphous (jäsentynyt-jäsentymätön) strong-weak (vahva-heikko) disreputable-reputable (huonomaineinen-hyvämaineinen) relaxed-tense (rento-jännittynyt) steady-capricious (vakaa-oikukas) wholesome-unwholesome (terve-epäterve) rational-irrational (järkiperäinen-järjenvastainen) tangible-intangible (selkeä-epämääräinen) good-bad (hyvä-paha) large-small (suuri-pieni) flexible-rigid (joustava-jäykkä)	.31 .34 .67 32 .38 .67 .66 .77 .30 .50
Fac	tor 7	
	excitable-calm (helposti kiihtyvä-rauhallinen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton)	。31 。49
	unhappy-happy (onneton-onnellinen) extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt)	31 .74

Varimax-rotation of Individual C's structure

8. 9. 10. 113. 14. 15. 16. 19.		.66 .48 .68 50 63 43
23。	wholesome-unwholesome (terve-epäterve) individualistic-regular (omintakeinen-kaavoihin si- dottu)	.54
30.	extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt) tangible-intangible (selkeä-epämääräinen) flexible-rigid (joustava-jäykkä)	•37 •37
Fac. 2. 4. 8. 17. 22. 24. 29. 33.	tor 2 logical-intuitive (järkeilevä-vaistonvarainen) excitable-calm (helposti kiihtyvä-rauhallinen) formed-amorphous (jäsentynyt-jäsentymätön) sensitive-insensitive (herkkä-tunteeton) steady-capricious (vakaa-oikukas) rational-irrational (järkiperäinen-järjenvastainen) emotional-unemotional (tunneherkkä-asiallinen) deliberate-casual (harkitseva-ajattelematon) flexible-rigid (joustava-jäykkä)	.81 44 .31 31 .74 33
	tor 3	
4. 6. 12. 14. 15. 17.	moral-immoral (nuhteeton-paheellinen) excitable-calm (helposti kiihtyvä-rauhallinen) tough-tender (kovaluontoinen-lempeä) disreputable-reputable (huonomaineinen-hyvämaineinen) usual-unusual (tavallinen-epätavallinen) relaxed-tense (rento-jännittynyt) solitary-sociable (yksinäinen-seurallinen) sensitive-insensitive (herkkä-tunteeton) rugged-delicate (karkea-hienotunteinen)	-,80 .70 .71 -,31 .30 -,40

APPENDIX F (continued)

1ºac	tor 4	
7. 9. 15. 16. 18. 19.	gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton) proud-humble (ylpeä-nöyrä) light-gloomy (valoisa-synkkä) relaxed-tense (rento-jännittynyt) solitary-sociable (yksinäinen-seurallinen) naive-sophisticated (yksinkertainen-hienosteleva) unpredictable-predictable (arvaamaton-ennustettavissa oleva) unhappy-happy (onneton-onnellinen) steady-capricious (vakaa-oikukas) extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt)	•71 •36 •60 •37 •54 •56 •50 •-59 •38
Fac	tor 5	
7. 13. 19. 22. 23. 28.	, , , , , , , , , , , , , , , , , , , ,	•53 •32 •33 •36 ••59 ••38 •33
	deliberate-casual (harkitseva-ajattelematon) tangible-intangible (selkeä-epämääräinen) flexible-rigid (joustava-jäykkä)	31 63 42
Fac	tor 6	
10. 14. 23. 26.	unique-typical (ainutlaatuinen-tavanomainen) strong-weak (vahva-heikko) usual-unusual (tavallinen-epätavallinen) wholesome-unwholesome (terve-epäterve) emotional-unemotional (tunneherkkä-asiallinen) large-small (suuri-pieni)	.36 63 34 33 .37 81
Fac	tor 7	
	unique-typical (ainutlaatuinen-tavanomainen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton) relaxed-tense (rento-jännittynyt)	54 34 .33
20. 23. 26.	unhappy-happy (onneton-onnellinen) wholesome-unwholesome (terve-epäterve) emotional-unemotional (tunneherkkä-asiallinen) good-bad (hyvä-paha)	35 37 32

Varimax-rotation of Individual D's structure

5. 8. 17, 19. 21. 22. 24. 25. 26. 29.	excitable-calm (helposti kiihtyvä-rauhallinen) gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton) formed-amorphous (jäsentynyt-jäsentymätön) sensitive-insensitive (herkkä-tunteeton) unpredictable-predictable (arvaamaton-ennustettavissa oleva) unenergetic-energetic (tarmoton-tarmokas) steady-capricious (vakaa-oikukas) rational-irrational (järkiperäinen-järjenvastainen) individualistic-regular (omintakeinen-kaavoihin si- dottu) emotional-unemotional (tunneherkkä-asiallinen) deliberate-casual (harkitseva-ajattelematon) tangible-intangible (selkeä-epämääräinen) good-bad (hyvä-paha)	74 .43 .39 75 .31 86 88 74 86 69 30
Fac	tor 2	
3. 4. 6. 7. 9. 12. 13. 18. 27. 28. 30. 31.	tough-tender (kovaluontoinen-lempeä) proud-humble (ylpeä-nöyrä) light-gloomy (valoisa-synkkä) disreputable-reputable (huonomaineinen-hyvämaineinen) subjective-objective (yksipuolinen-tasapuolinen) naive-sophisticated (yksinkertainen-hienosteleva) extroverted-introverted (ulospäinkääntynyt-sisään- päinkääntynyt)	.48 46 41 30 62 .55 54 73 .37 .71 69 .62
Fac	tor 3	
7; 9; 16; 18;	gregarious-self-contained (seuraa etsivä-seuraa kai- paamaton) proud·humble (ylpeä-nöyrä) light-gloomy (valoisa-synkkä) solitary-sociable (yksinäinen-seurallinen) naive-sophisticated (yksinkertainen-hienosteleva) unhappy-happy (onneton-onnellinen)	74 30 33 .80 .36

APPENDIX G (continued)

Fac	tor 4	
10. 11.	tough-tender (kovaluontoinen-lempeä) strong-weak (vahva-heikko) agile-clumsy (ketterä-kömpelö) large-small (suuri-pieni)	53 81 50
Fac	tor 5	
4. 14. 21.	unique-typical (ainutlaatuinen-tavanomainen) excitable-calm (helposti kiihtyvä-rauhallinen) usual-unusual (tavallinen-epätavallinen) unenergetic-energetic (tarmoton-tarmokas) wholesome-unwholesome (terve-epäterve)	.533 66 34
Fac	tor 6	
12. 17. 26.	moral-immoral (nuhteeton-paheellinen) disreputable-reputable (huonomaineinen-hyvämaineinen) sensitive-insensitive (herkkä-tunteeton) emotional-unemotional (tunneherkkä-asiallinen) good-bad (hyvä-paha)	56 .65 .32
Fac	tor 7	
6. 15.	logical-intuitive (järkeilevä-vaistonvarainen) tough-tender (kovaluontoinen-lempeä) relaxed-tense (rento-jännittynyt) unpredictable-predictable (arvaamaton-ennustettavissa oleva)	.35 .43 .64