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VALUE HIERARCHIES IN FLEMISH ADOLESCENTS AND PARENTS

William DE COSTER, Eric POT & Geert DE SOETE

University of Ghent

Flemish adolescents and their parents were asked to rankorder sets of terminal and instrumental values according to importance. By applying seriation methods to the paired comparison matrices derived from the ranking data, it was found that both the terminal and the instrumental values were hierarchically organized and that there was a striking similarity between the value hierarchies of the adolescents and the parents.

INTRODUCTION

The term "value" is a rather common and frequently used concept in the social sciences. Yet, its theoretical and operational conceptualization is a complex matter. The value concept seems hard to define and difficult to distinguish from related concepts, and there is no agreement as to its operational characteristics. As such, the term "value" has been used alternately to refer to motives, attitudes, interests, duties, desires, aspirations, measurable quantities of reinforcement, goals and preferences (for a review, see Connor & Becker, 1979; Kluckhohn, 1951; Williams, 1979).

In the last two decades, however, some serious attempts have been undertaken to clarify this unfortunate state of affairs. One of the most important contributions towards a more scientific study of human values and value systems has been made by Milton Rokeach. This author not only provided a well-articulated conceptualization of values, but also developed an instrument for measuring personal and social values (Rokeach, 1968, 1973, 1979).

Rokeach set out a model in which the value concept is clearly differentiated from such related concepts as beliefs, attitudes and social norms. Like Kluckhohn (1951), Williams (1968), and Smith (1969), Rokeach considers values as conceptions of the desirable and as general standards or criteria in terms of which evaluations are made (Rokeach,

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1973). According to Rokeach, a value is "an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence" (Rokeach, 1973, p. 5).

In this conception, values are hypothetical internal constructs that transcend specific objects and situations (unlike attitudes) and that are potential determinants of both attitudes and behavior. This conception suggests the existence of at least two different, yet related sets of values: desirable modes of conduct (called instrumental values) and preferable end-states of existence (labeled terminal values) (Rokeach, 1973). A further important assumption states that values are not isolated beliefs, but are organized into a value system. This system is conceived of as a relatively enduring hierarchical organization of instrumental or terminal values along a continuum of importance (Rokeach, 1973). This implies the existence of a hierarchy of instrumental values and a hierarchy of terminal values.

Within this conceptual framework a research instrument — the Rokeach Value Survey (Rokeach, 1973) — was developed and has been widely used as a measure of personal and social values. Yet, in spite of the many critical remarks on the operationalization of the value construct, there has been very little empirical research evaluating the instrument and the research methodology on which it is based (Braithwaite & Law, 1985). In addition, systematic empirical validations of the basic assumptions underlying values and value systems as defined by Rokeach, are rather scarce.

Research topics

In line with the Rokeach value conceptualization, we propose a value research taxonomy based on the combination of two dichotomized dimensions. The first dimension is called the subjects dimension. Based on the number of subjects involved in a value study, it is reasonable to use an individual-group dichotomization. The second dimension is called the value level dimension. Two levels can be distinguished: a specific single value level and a general value system level. As shown in Table 1, the combination of these two dimensions yields four broad areas of value research.

The value study presented here, can be situated in the group-general cell of Table 1. Along with the application of a rather innovative methodology in this field of research, the study entails an empirical

Tab. 1. — A general taxonomy of value research areas

Value level	Subjects	
	Individual	Group
Single values	*Individual-specific:* study of specific values of individuals ($N = 1$ studies in which specific values of individuals are of interest)	*Group-specific:* study of particular values of groups (most of the research by Rokeach (1973, 1979) can be situated here)
Value systems	*Individual-general:* the total value system rather than specific values of individuals is studied	*Group-general:* study of the total value system of different groups

validation of the assumed hierarchical structure of value systems for different groupings of subjects. One of the most important issues in this area of research concerns the general assumption that values are hierarchically organized into a value system. If values are organized into a hierarchical structure, then it must be possible to produce a "real" hierarchy of (terminal and instrumental) values, for different groups of people. Deriving this value hierarchy constitutes the primary objective of this study. Again, it should be stressed that empirical research addressing this issue is markedly absent.

The second purpose is of a more explorative nature and aims at comparing the value system of different socio-cultural groups. According to Rokeach (1973, 1979) values are responses to social demands and psychological needs, values are learned and determined by culture, society and personal experience. So the value system similarity should be rather high for groups with a similar social and personal background. Some basic results concerning the value system similarity of adolescents and parents, boys and girls, catholics and non-catholics are reported. Furthermore, a brief discussion of the specific value system content of some of these groups is offered.

METHOD

Subjects

The study reported in this article was part of a larger value survey. This survey required a structured sampling. A total of 908 subjects participated in the study. Most of them were selected from the provinces East- and West-Flanders. Two major groups were distinguished: adoles-

cents and parents. The most stringent stratification criteria were imposed on the adolescents group. These criteria were: age (15 and 18 years), sex (male, female), daily occupation (students, employed, unemployed) and within the student group: type of education (general, technical, professional, apprenticeship (work and school)). Due to educational laws concerning compulsory schooling, employed and unemployed adolescents could not be selected in the age 15 group. The parents of the selected adolescents constituted the parents group. The number of subjects in the different groups can be found in Table 2. Due to missing data, some of the numbers in Table 2 are sometimes smaller than the actual number of subjects involved.

Materials

Inspired by the Rokeach Value Survey and the distinction between instrumental and terminal values, two sets of scales were constructed: one set consisting of 21 desirable "goals of life" and a second set consisting of preferable "personality characteristics". Whereas "goals of life" can be considered as terminal values, "personality characteristics" are instrumental values as they can be regarded as guidelines of behavior. The items were presented as single stimulus words followed by a synonym or a brief description. The values were selected from a large list compiled from various sources: existing value surveys (Rokeach, 1968, 1973); preliminary studies in which different research and data gathering methods were applied (such as depth-interview, essay-writing, open questions, ranking and rating of values, etc.) on a sample similar to the present one; previous value studies (Kluckhohn & Strodtbeck, 1961; Poole, 1983); and lists of personality traits and desirability norms (Mervielde, 1977).

The final item selection was based on several principles. Besides the guidelines proposed by Rokeach (1973), the following criteria were adopted: virtually all values were to be socially desirable; the content and formulation had to be adapted to the specific adolescent groups and the parent group; the stimulus words could neither be too concrete nor too abstract in order to cover a broad value domain with a rather small number of commonly used and well-understood items. To check how well these criteria were met, the lists of values were reviewed by a team of experts. The final sets of terminal and instrumental values that were used can be found in Tables 3 and 4 respectively.

Design

In order to provide a test of the existence of a value hierarchy, a ranking procedure was needed. However, the usual overall ranking of a list of values as, for instance, applied in the Rokeach Value Survey, could not be used. Simultaneously ranking 21 objects is a too difficult and de-motivating task for most of the respondents in our study. A paired comparison procedure, on the other hand, was also not very practical because of the large number of pairs it would require. Therefore, it was decided to use a balanced incomplete block design (Cochran & Cox, 1957, p. 528, design 13.13). On the basis of this design, each set of 21 values was arranged in 21 blocks of five values each. Each value occurs in five different blocks, while each pair of values occurs in exactly one block. The subjects were instructed to rankorder the five values in each block according to importance.

Procedure

The two sets of 21 blocks of values that were to be rankordered, were part of larger survey, that was presented as a pencil and paper questionnaire. The blocks of values were preceded by a few open questions regarding general value orientations. They were followed by rating and ranking scales regarding attitudes, values and aspirations related to school and compulsory education, work and unemployment.

The questionnaires were administered by second year psychology students, in partial fulfillment of certain class requirements. These student-interviewers received theoretical and practical training concerning the purpose of the survey and the interview techniques that were to be applied.

Results

From the ranking data, paired comparison matrices P were derived where p_{ij} indicates the proportion of subjects who ranked value i higher than value j. Separate paired comparison matrices were constructed for the instrumental and the terminal values based on the data for the total sample as well as for selected groups of subjects (e.g., adolescents, parents, etc.).

In order to check whether there was any structure whatsoever in the paired comparison matrices, we tested for each matrix the null hypothesis that for all pairs of values (i,j) the data were sampled from a binomial distribution which with parameters (N, 0.5), where N denotes the

number of replications on which the paired comparison data is based. If this null hypothesis cannot be rejected, it means that, except for sampling error, all p_{ij} are equal to 0.5 and consequently that the subjects do not differentiate between the values as far as importance is concerned. Assuming independence over all pairs (i,j), the relevant likelihood ratio statistic for testing this null hypothesis is

$$2N \sum_{i<j}^{n} [p_{ij} \ln p_{ij} + (1 - p_{ij}) \ln(1 - p_{ij})] - Nn(n-1)\ln(0.5), \quad (1)$$

with n the number of values (i.c. 21). Under the null hypothesis, this statistic is asymptotically distributed as a χ^2 with n(n-1)/2 degrees of freedom. Table 2 lists the values of this statistic for both the terminal and the instrumental values. Results are given for the total group and for specific cultural subgroups. As can be seen from the tables, all χ^2-values are highly significant, implying that the subjects really do regard certain values to be more importent than others.

Tab. 2. — Goodness-of-fit indices for the total sample and selected subsamples

Group	*N*	Terminal values		Instrumental values	
		$\chi^2(210)$	*Z*	$\chi^2(210)$	*Z*
Total group	908	60721	5.89	37379	5.60
Adolescents	339	18899	5.82	14750	5.73
Parents	567	48296	6.00	25419	5.66
Fathers	277	21578	5.83	11304	5.36
Mothers	290	27160	5.89	15360	5.87
Boys	169	8111	5.47	6289	5.59
Girls	169	11491	5.64	9155	5.76
Catholic adolescents	198	13119	5.93	9188	5.87
Non-catholic adolescents	141	7118	4.28	6435	5.01
Catholic parents	470	41969	6.06	21380	5.68
Non-catholic parents	92	7047	5.20	4425	5.42

While these preliminary analyses show that some values seem to be more important than others, they by no means establish the existence of a value hierarchy. If a hierarchy exists *and* assuming that the data in P are perfect (i.e., that the p_{ij} are binomial probabilities instead of estimates of probabilities based on a finite sample), then a simultaneous permutation of the rows and columns of P can be found such that all entries above the diagonal of the permuted matrix are larger than 0.5 and all entries below the diagonal are smaller than 0.5. The value

corresponding to the first row of the permuted matrix then constitutes the most important value, the value corresponding to the second row the second most important value, etc. Unfortunately, the data are not perfect. Therefore, even if a hierarchy exists, it will generally not be possible to permute the rows/columns of P such that all the entries above the diagonal are larger than 0.5. One can, however, apply a seriation algorithm for finding the permutation for which the permuted matrix satisfies this condition as well as possible (for a review of such algorithms, see Hubert, 1976). Such a seriation algorithm will always find a best permutation, even if a hierarchy does not exist at all (in which case, of course, the best permutation will not be a very good one). Since we explicitly wanted to test whether a hierarchy exists, we decided — following an approach recommended by Hubert, Golledge, Kenny, and Richardson (1981) — to distinguish between two different kinds of information in P. In a paired comparison matrix P, the quantity $|p_{ij} - p_{ji}|$ gives an indication of the extent to which one of the two elements dominates the other, while the sign of $p_{ij} - p_{ji}$ tells us which one of the two dominates the other. Hubert et al. (1981) propose to use the $|p_{ij} - p_{ji}|$ to estimate the best permutation of P, while the signs of the $p_{ij} - p_{ji}$ quantities are used to test the goodness-of-fit of that best permutation. One method for deriving the positions $a_1, a_2, \ldots, a_n$ of the values on the hierarchy continuum from the $s_{ij} = |p_{ij} - p_{ji}|$ is based on an eigenvector analysis and maximizes the following objective function

$$\sum_{i,j} s_{ij}(a_i - a_j)^2 \tag{2}$$

subject to the normalization constraint

$$\sum_{i=1}^{n} a_i^2 = 1. \tag{3}$$

It can be shown that the maximum of (2) is equal to the largest eigenvalue of

$$\begin{bmatrix} s_{1+} & -s_{12} & & -s_{1n} \\ -s_{12} & s_{2+} & \cdots & -s_{2n} \\ \cdot & \cdot & & \cdot \\ \cdot & \cdot & & \cdot \\ & & \cdots & \\ -s_{1n} & -s_{2n} & & s_{n+} \end{bmatrix} \tag{4}$$

with

$$s_{i+} = \sum_j s_{ij}, \tag{5}$$

and that the optimal $a_1,\ldots,a_n$ are equal to the eigenvector corresponding to that eigenvalue (see, for instance, Guttman, 1968).

From the P matrix, we now can derive a matrix Q by re-arranging the rows and columns of P such that the first row/column of Q corresponds to the value that has the largest a-value, the second row/column of Q corresponds to the value that has the second largest a-value, etc. However, because the eigenvector analysis only relies on absolute value information, the direction of the a-scale is not determined. This implies that the first row/column of Q corresponds to either the most important or the least important value. Consequently, if a value hierarchy really exists, the entries above the diagonal in Q should be either predominantly larger than 0.5, or predominantly smaller than 0.5. Hubert et al. (1981) propose a formal test of the goodness-of-fit of the a-scale based on the number of proportions above the diagonal in Q that are larger than 0.5. Let e_{ij} be defined as

$$e_{ij} = \begin{cases} +1 \text{ if } q_{ij} > 0.5 \\ 0 \text{ if } q_{ij} = 0 \\ -1 \text{ if } q_{ij} < 0.5 \end{cases} \tag{6}$$

then

$$C = \sum_{i<j} e_{ij} \tag{7}$$

denotes the number of entries above the diagonal in Q that are larger than 0.5. Under the null hypothesis that Q is derived from P by re-ordering its rows/columns at random (which happens when the sign information bears no relationship to the absolute value information), C will be approximately normally distributed with mean zero and variance equal to

$$V = \frac{1}{6}\left[\sum_{i,j} e_{ij}^2 + 2\sum_i\left[\sum_j e_{ij}\right]^2\right]. \tag{8}$$

Thus, if

$$Z = C/V^{\frac{1}{2}} \tag{9}$$

is larger than 1.96 or smaller than -1.96, the randomness hypothesis

can be rejected at the 5% significance level, providing strong evidence for the existence of a value hierarchy.

As stated earlier, the direction of the a-scale is not determined. But, by looking at the P matrix, it is easy to find out whether large a-values correspond to important values or whether the opposite is true. Let k and l be indices such that

$$a_k = \max(a_1,\ldots,a_n)$$

and

$$a_l = \min(a_1,\ldots,a_n),$$

then if $p_{kl} > 0.5$, it is very likely that large a-values indicate important values, while the opposite is true if $p_{kl} < 0.5$.

Tab. 3. — Hierarchy of terminal values

Terminal value	Total group ($N=908$)	Adolescents ($N=339$)	Parents ($n=567$)
True friendship	4	2	7
A life full of change	18	16	18
To be able to accomplish something	9	8	9
Peace	5	5	4
Good health	2	1	2
A happy family	1	3	1
Be respected	11	9	12
To be able to enjoy life	14	11	15
Freedom	8	7	8
Personal comfort, money	16	18	17
Inner rest, general contentment	7	14	5
Love, tenderness	3	4	3
A religious life	17	20	16
An easy life, without much effort	21	21	20
Success (at school, at work)	13	10	14
An assured life, a safe future	6	6	6
Knowledge, wisdom	12	12	11
To have influence and power	20	19	19
An adventurous life	19	15	21
A life in service of others	15	17	13
To preserve one's own ideals	10	13	10

Note: Table entries are rank numbers: 1 refers to the most important value, 2 to the second most important value, etc.

Tab. 4. — Hierarchy of instrumental values

Instrumental value	Total group ($N=908$)	Adolescents ($N=339$)	Parents ($N=567$)
To work hard to achieve a goal, to be ambitious	11	9	12
To be open minded	15	17	13
To be competent	5	8	5
To be cheerful, joyful	7	5	11
To be attractive	17	16	19
To be idealistic	18	18	18
To be caring	12	13	10
To be honest	1	1	1
To be original and inventive	16	14	17
To be independent	14	15	15
To be bright, intelligent	8	7	9
To be religious	19	21	16
To dare taking risks	13	10	14
To be loving and tender	3	4	3
To be a person who respects others	6	6	7
To be critical	20	19	21
To have a sense of duty	9	12	6
To be friendly and social	4	2	4
To be calm and in control of one's self	10	11	8
To be reliable	2	3	2
To be a leading person	21	20	20

Note: Table entries are rank numbers: 1 refers to the most important value, 2 to the second most important value, etc.

The approach described above was applied to the paired comparison matrices obtained for the total sample and selected subsamples. For each of the matrices the a-scale was determined by computing the eigenvector associated with the dominant eigenvalue of matrix (4). Subsequently, the goodness-of-fit of this solution was tested by means of the Z-statistic defined in (9). Table 2 lists the values that were obtained for this statistic. Since all of them are highly significant ($p < 0.0001$), we can conclude that the paired comparison data reflect a true value hierarchy. Table 3 shows the hierarchy of the terminal values obtained for the total sample as well as the hierarchy obtained for the adolescents and the parents separately. The results for the instrumental values are presented in Table 4. Table 5 gives Spearman rank correlations between the value hierarchies obtained for specific subsamples of interest.

Tab. 5. — Spearman rank correlations between the value hierarchies of different socio-cultural groups

Pair of groups	Terminal values	Instrumental values
Parents — adolescents	0.84	0.87
Fathers — mothers	0.89	0.89
Boys — girls	0.94	0.97
Catholic adolescents — non-catholic adolescents	0.81	0.93
Catholic adolescents — catholic parents	0.86	0.86
Catholic adolescents — non-catholic parents	0.92	0.88
Non-catholic adolescents — catholic parents	0.60	0.80
Non-catholic adolescents — non-catholic parents	0.77	0.83
Catholic parents — non-catholic parents	0.96	0.95

$p < 0.005$ for all correlations

Discussion

The correlations in Table 5 range from 0.60 to 0.98 and are all highly significant ($p < 0.005$). This indicates that there is a considerable similarity in the value hierarchies of different socio-cultural groups. However, it is apparent from Table 5 that the similarities between the groups considered are not equally high. In particular, this is the case when grouping subjects according to the catholic/non-catholic and the parents/adolescents criteria. Moreover, the pattern of correlations for the terminal values is somewhat different from the one for the instrumental values. There is, for instance, much more agreement in the hierarchies of the instrumental values than in the hierarchies of the terminal values between the non-catholic adolescents and the catholic parents groups.

In general, however, the similarities between the value hierarchies for the different socio-cultural groups are much more striking than the differences. Therefore, we will restrict ourselves to discussing the value hierarchies presented in Tables 3 and 4. The three most important terminal values are good health, a happy family, and love. The least important values are an easy life and power and influence. Less impor-

tance is also attached to the more materialistic values. Although religiosity and adventure are not exactly favorite values in both the parents and the adolescents groups, there is a marked difference between those two groups in that respect. Contrary to the parents, the adolescents do not care very much for religiosity, inner rest and altruism, while, on the other hand, they attach more importance than the parents to enjoying life, adventure, success, respect and true friendship.

The rankings of the instrumental values reveal that honesty, reliability, being loving and sociable are generally favored values. The least important instrumental values are being a leader, being critical and being idealistic. Compared to the adolescents, parents give a higher priority to religiosity, competence, sense of duty, open-mindedness, caring and being in control of one's self. They tend to attach less importance to taking risks, originality, external appearance, ambition, and especially to being a joyful and cheerful person.

Conclusion

Two major conclusions arise from the present study. First of all, the particular research methodology we adopted, allowed us to obtain strong evidence for the existence of true value hierarchies, both for terminal and instrumental values. Secondly, the value hierarchies of different socio-cultural groups turned out to be strikingly similar. However, further research is needed to explain these similarities. In particular, the influence of social and personal variables on the value systems needs to be re-evaluated. The methodology put forward in this paper could be useful in such an endeavor.

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Laboratorium voor Experimentele, Differentiële
en Genetische Psychologie
H. Dunantlaan 2
9000 Gent

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