

THE INFLUENCE OF COGNITIVE STYLE ON PERSONALITY SOCIOMETRIC STATUS

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Introduction. In psychology the individual differences in intellectual activities are of great interest today. These individual differences were called by a special term «cognitive style» that was used for the first time in American psychology in 1950–1960-s. Cognitive styles were considered as formal dynamical characteristics of intellectual activity that were not connected with its substantial aspects. They were investigated in different theoretical frameworks: psychoanalysis (G. Klein, R. Gardner, W. Holzman, H. Schlesinger), gestalt-psychology (H. Witkin), studies of the individual categorization strategies (G. Kagan), cognitive personality theories (J. Kelly) [1]. In present time there are several definitions of the term *cognitive style*. R. Gardner understands it as sufficiently stable system of cognitive control that provide adaptive forms of behavior. G. Claus consider it as individually peculiar modes of information processing that could be tracked in individual differences in perception, analysis, structuralizing, categorization, evaluation of current events. These individual differences, in their turn, constitute some typical forms of cognitive reaction by which groups of people could be distinguished.

In this paper a cognitive style «rigidity-flexibility of cognitive control» was studied in connection with its influence on the sociometric status of a person. Rigidity-flexibility of cognitive control characterizes the degree of subjective difficulties in the changes of information processing modes in the situation of cognitive conflict. Rigidity supposes narrow-mindedness and non-flexibility of cognitive control. It becomes apparent in the difficulties in the changes of ways of activity or in the switching from one informational alphabet to another by virtue of low degree of their automation. Flexibility testifies the relative easiness of such changes of switches by virtue of high degree of their automation. The investigation of this cognitive style is connected with the names of Cattell and Gardner first of all.

Word-color interference test (based on Stroop effect) was used for the diagnostics of rigidity-flexibility. According to it three cards are presented consequently to subjects. On the first card the names of four main colors (red, blue, green, and yellow) are written. This card is called W-card. A subject should read the words as quickly as possible. On the second card (C-card) stars of the same four colors are drawn. A subject should name the colors as quickly as possible. The words are written again on the third card but in this case the names of the colors do not correspond to the color of the words' font. This card is called WC-card. The difference in the reaction time between the completion of the first two tasks and the completion of the third task is taken as the criterion of cognitive style. The larger this difference is the greater is the interference effect, and, consequently, the greater the rigidity of cognitive control is expressed [2–3]. Stroop's method allows us to receive an additional index – the coefficient of «verbality» of D. Broverman It is defined as the ratio of the time of completion of C-card task to the

time of completion of W-card task (C/W). High values of this index indicate the prevalence of verbal mode of information processing, low values – the prevalence of perceptual mode of information processing.

The attention surely should be paid to the statement of M. Holodnaya about the splitting of the poles of cognitive styles. This splitting of the poles of rigidity-flexibility cognitive style may be noted in the condition of separation of two aspects of intellectual activity within Stroop's test completion: the interference in terms of reaction time difference between CW-card and C-card and coordination of verbal and perceptual functions in terms of the ratio of reaction times between C-card and W-card (C/W). On one pole of rigidity we may consider subjects that overcome cognitive conflict with difficulty against a background of low integration of two forms of experience («rigid») as well as subjects that name the words' colors slower and have to add special efforts for the «separation» their verbal and perceptual reactions («integrated»). On the other pole – flexibility – we may consider the subjects that name the words' colors sufficiently quickly because they are in fact insensible to the cognitive conflict owing to disintegration of their verbal and perceptual reactions («non-integrated») as well as subjects that quickly cope with cognitive conflict due to the active work of involuntary control mechanism («flexible») [4].

Human cognitive style is revealed in peculiarities of direct interaction with other people. I. Shkuratova thinks that “field-dependence – field-independence” has the greatest influence of human behavior in the situation of communication [5]. G. Witkin and D. Gudina report the results of the investigations with the usage of sociometric technique that support the evidence about sex and criterion influence on the choice of preferable person. In such a way, D. Carden showed that in the groups of 11-years old children field-dependent girls and field-independent boys are the most popular. Similar results were received for preschool age children. Teenagers and adults give the preference to the field-dependent women and field-independent men. This could be explained by the correspondence between the characteristics of field-dependent people (orientation toward communication, conformity, tendency to be led) with the characteristics that are desirable for women independently from their age. And vice versa, men are usually considered as oriented towards intellectual activity, independence, domination, etc. – the characteristics that are typical for field-independent persons. If sex and cognitive style coincide, a person is estimated as the corresponding to social standard. In the case when the choice is very important (e. g., the choice of a roommate in a students' hostel) the preferences are given to the people with the same cognitive style as the personal one [5–6].

Among mostly investigated cognitive styles in the field of interpersonal communication there are «field-dependence – field-independence» and «cognitive complexity – simplicity”. Nevertheless, we could not find the studies dedicated to the analysis of connections between rigidity-flexibility and interpersonal relations in the groups.

Static picture of interpersonal relations in a group could be obtained with

sociometric method. This method was proposed by J. Moreno as a psychological theory and at the same time as socio-psychological test that could be used for the evaluation of interpersonal emotional relations in a group [7–8]. The essence of sociometric method is in the investigation of the results of group members' questioning about their successive choice with special conditions [8].

The criterion of choice (i. e., questions about participation with somebody in some defined activity) is extremely important for this method. There are strong (general) and weak (specific) criteria of choice. The more important for a person the activity is, the longer and closer communication it supposes, and the stronger is the criterion of choice. Several criteria are often used in the experimental investigation of interpersonal relations. Subjects do their choices on the basis of these criteria, and then a special sociometric matrix is filled with the data obtained. The main advantage of socio-matrix is the possibility to express choices in numbers that allows to rank group members by the number of received and given choices, and to establish the order of their influence in group. On the basis of the obtained results you can calculate different sociometric coefficients (indexes): relationship well-being coefficient, reciprocity coefficient, relationship satisfaction coefficient and isolation coefficient.

Experimental Study. According to the main task of our research (to study the relation between social status and cognitive style of teenagers) cognitive styles and sociometric status of every pupil in the sample were measured. In the described research 208 participants took part. All of them were the pupils of the 9th-11th forms from secondary schools No 151, 32, 126 of Minsk. The age of participants varies from 14,5 to 18 years. Among them 171 subjects were in the 9th form (80 pupils from linguistics classes, 91 pupils from ordinary classes), 37 subjects were in the 10-11th ordinary classes (table 1).

Results and discussion. The results of Stroop test are presented in the table 1. It is evident from the table that pupils from the 9th linguistic classes have the lowest values of interference, a little higher values of interference belong to the pupils from the 9th ordinary classes. The pupils from the senior classes are the most rigid. On the basis of standard deviation ($\delta=5,32$) we divided the pupils into 4 groups: 1) very flexible pupils; 2) flexible pupils; 3) rigid pupils and 4) very rigid pupils. In the 9th linguistic classes (N=80 people) 4% of pupils (N=3) belong to the first group, 67% (N=54) belong to the second group, 20% (N=16) constitute the third group and 9% (N=7) – the fourth group. The majority of children, 71% (N=57), belong to the first and second group.

Table 1

Descriptive statistics of interference index

Class	mean	Min	Max	range
9 «А», school № 32	4,65	0	17,8	17,8
9 «Б», school № 32	2,66	0,1	8,6	8,5
9 «В», school 32	3,82	0	13,8	13,8
9 «Г», school 32	3,02	-2	13,8	15,8

Class	mean	Min	Max	range
9 «Д», school 32	4,18	0,4	23,9	23,5
9 th linguistic	3,82	-2	23,9	25,9
9 «А», school 151	4,13	0,2	13	12,8
9 «Б», school 151	5,21	0,2	18,9	18,7
9 «В», school 151	7,45	0,1	23,8	23,7
9 «А», school 126	3,98	-0,3	19,8	20,1
9 «Б», school 126	6,76	0,1	23	22,9
9 th ordinary	5,40	-0,3	28	28,3
10 «А», school 151	1,02	0,41	1,43	1,02
11 «А», school 126	7,75	0	28	28
11 «М», school 126	3,64	1,6	8,9	7,3
10-11 ordinary	5,59	0	28	28

In the 9th ordinary classes the following results are obtained: there were no pupils from the first group, 64 % (N=58) of pupils constitute the second group, 21 % (N=19) belong to the third group, and 15 % (N=14), consequently, belong to the fourth group. In the 10th and 11th ordinary classes 65 % (N=24) of the pupils belong to the second group, 24 % (N=9) – to the third and 11 % (N=4) – to the fourth group. In such a way, the pupils from linguistic classes show more easiness in the changes from verbal to perceptual function.

Only in linguistic classes there exist pupils that could demonstrate very high degree of flexibility of cognitive control. There are also the lowest percent of rigid and very rigid pupils among them. We may suppose that study of foreign languages increases the ability to switch quickly from one semantic alphabet to another or that flexibility of cognitive control serves as the indicator of efficiency of foreign languages learning. The median of the data is equal to 3 indicating that in this particular sample there is a shift towards flexibility of cognitive control in linguistic classes as well as in ordinary ones. The majority of pupils (more than 50 %) in both cases are flexible.

Flexible pupils, in turn, could be divided into two groups. One group consists of subjects with the prevalence of perceptual mode of information processing (they name the colors very quickly but read the words very slowly), the index C/W tends to minimum. The other group, on the contrary, consists of pupils with the prevalence of verbal mode of information processing (subjects read the words very quickly but very slowly name the colors), at the same time the index C/W tends to maximum (table 2). Mann-Whitney U-test showed no statistically significant difference in interference index (obtained from Stroop test) between groups of boys and girls.

Table 2

Pupils' typology in different classes (%)

	9th linguistic	9th ordinary	10,11th ordinary
Flexible "flexible"	21	21	19
Flexible "non-integrated"	50	43	46
Rigid "integrated"	15	28	30
Rigid "rigid"	14	8	5

To find out the status of a pupil a sociometric method was used. This status was determined by the counting the number of the received choices. On the basis of this children could be said to belong to one of the following 4 categories: I – «stars» (6 and more choices); II – «preferable» (3–5 choices); III – «accepted»; 1–2 choices); IV – «unaccepted» (0 choices). You can see status structure of the classes in the tables 3 (linguistic classes) and 4 (ordinary classes).

Table 3

Status structure in linguistic classes

Category	9 «A»		9 «Б»		9 «B»		9 «Г»		9 «Д»	
	n	%	n	%	n	%	n	%	n	%
Stars	2	7	1	4	-	-	1	4	1	6
Preferable	9	32	10	40	4	15	8	31	3	17
Accepted	13	47	11	44	14	52	11	42	10	56
Unaccepted	4	14	3	12	9	33	6	23	4	22

Table 4

Status structure in ordinary classes

Category	School № 126				School № 151						School № 126					
	9 «A»		9 «Б»		9 «A»		9 «Б»		9 «B»		10«A»		11«A»		11«M»	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Stars	2	6	3	10	5	29	1	4	2	11	-	-	-	-	-	-
Preferable	11	34	4	14	3	18	12	48	3	16	4	20	7	33	3	9
Accepted	12	36	13	45	7	41	11	44	10	53	13	65	10	48	16	50
Unaccepted	8	24	9	31	2	12	1	4	4	20	3	15	4	19	13	41

It is interesting to note that in the 9th ordinary classes there is a complete status structure, but there are no “stars” in the 10th and 11th forms.

Correlation analysis (Spearman rank order correlation) was used to determine the relationship between sociometric status and Stroop test results. For all the calculations were done computer statistical package Statistica 6.0 for Windows was used. Significant correlation coefficient was obtained only for the 9th «Г» linguistic class ($r=0,51$; $p<0,05$).

Mann-Whitney U-test was used to compare social status of two groups that have extreme results in flexibility and rigidity, and it does not show significant difference between them ($U=1243,5$; $p=0,11$). That fact demonstrates that both rigid and flexible pupils could occupy different status positions.

Conclusion. In the present study there was found no significant relation between sociometric status of a person and his/her cognitive style «rigidity-flexibility». This may be considered as the evidence that the phenomenon of cognitive style does not allow any evaluation or assessment because both poles of cognitive style have some advantages in those behavior situations that require certain individual cognitive abilities. There was no significant difference between boys and girls in index of rigidity-flexibility as well as no difference in sociometric status between rigid and flexible pupils.

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ИНТЕЛЛЕКТУАЛЬНО-КОГНИТИВНОЕ РАЗВИТИЕ МЛАДШИХ ШКОЛЬНИКОВ В РАЗНЫХ СИСТЕМАХ ОБУЧЕНИЯ

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В отличие от традиционного обучения, основанного на парадигме преподавания и подготовке учащихся к будущей жизнедеятельности, инновационное (в том числе и развивающее) обучение рассматривает школьника как субъекта, носителя индивидуального ментального опыта со своим стилем учения в реальном учебном процессе как естественной форме социализации развивающейся личности. Сегодня, по утверждению М. А. Холодной, «не ребенка надо „подстраивать” под содержание и формы школьного образования, но, напротив, содержание и формы школьного образования должны быть в максимальной мере перестроены в соответствии с психикой ребенка, его правами и интересами» [11, с. 211]. Не ребенок существует для школы, а школа для ребенка.

Отечественная психологическая наука исходит из принципа «единства обучения и развития», подчеркивая при этом ведущую роль обучения. Именно обучение создает учащимся «зону ближайшего развития». Все психолого-педагогические концепции, основанные на названных выше положениях, принято относить к технологиям развивающего обучения или, используя терминологию В. В. Давыдова, развивающего образования.

Кроме того, младший школьный возраст является сензитивным для овладения целями, содержанием и способами выполнения учебной деятельности. В этом школьном возрасте возможно наиболее эффективное воздействие на когнитивное развитие личности ребенка.

Однако результаты психолого-педагогических исследований [1, 2, 8, 10] позволяют утверждать, что традиционная система начального обучения ко