



Peculiarities of junior schoolchildren theoretical thinking at different levels of cultural congruence

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Peculiarities of junior schoolchildren theoretical thinking at different levels of cultural congruence

Ekaterina Anasovna Tsivilskaya

Kazan Federal University, Institute of Psychology and Education

E-mail: e.tsivilskaja@mail.ru tel. +7 (904) 662-66-77

Abstract

The article describes the features of theoretical thinking development and its connection with intellectual abilities among the children of primary school age. The article analyzed the correlation between the development of theoretical thinking and the intellectual potential of junior schoolchildren with different levels of cultural congruence. The peculiarities of thinking and intellectual potential development are revealed among younger schoolchildren. On the basis of the study, an idea has been obtained concerning the extent to which the development of the theoretical level of thinking among younger schoolchildren can be the indicator of their overall intellectual abilities, both current and potential ones. The children with high intellectual potential do not always have a high level of theoretical thinking development. Conversely, if children have a high level of theoretical thinking, they show fairly high rates of intelligence development. These results prove that theoretical thinking is being developed only during training and at a certain age. The results of the study confirm empirically the influence of culture on the development of thinking, as a mental development of junior schoolchildren. They proved the existence of a relationship between the level of cultural congruence and the development of theoretical thinking, as well as the intellectual potential of minor schoolchildren. With the cultural congruence level increase, the level of intellect and theoretical thinking increases also. However, in order to have a high level of theoretical thinking development, a child must study diligently, increasing the average score of academic achievement; follow the rules of conduct prescribed by the normative situation, increasing the level of cultural congruence; to be at least a third grader of a gymnasium. The children who have a low level of cultural congruence will not show high IQ scores and high level of theoretical thinking development, however, they will be able to study at a gymnasium if they



observe the rules of behavior, strive for successful studies and have a clear example of authority in the person of a teacher and peers.

The research was carried out with the focus on the methodology of cultural determination concerning psyche development in ontogeny.

Key words: cultural congruence, normative situation, social situation of development, junior schoolchildren, behavior, norms, rules, theoretical thinking, internal plan of action, reflection, intellect.

1. INTRODUCTION

L.S. Vygotsky introduced a very important concept of "social development situation" for the age psychology. A social situation of development is a certain system of relations between a child and a social environment that determines the content, the vector of the development process and the formation of its central line associated with the main new formations. The change of this system reflects the basic law of age dynamics (Vygotsky L.S. 1996).

By a normative situation, we mean a standard situation of social interaction, in which the rules of social behavior are defined fairly well (Veraksa N.E. 2000).

Psychology during the study of a child in a normative situation is intended to reveal the way a child differentiates a rule in a situation, the way he builds his attitude to him, the level of an internal setting (disposition) development in relation to the norm being imposed (Bayanova L.F., Tsivilskaya E.A., Bayramyan R. M., Chulyukin K.S. 2016.). The concept of "cultural congruence" determines the degree of a child's compliance with a normative situation (Bayanova L. F., Mustafin T. R. 2016).

The evaluation of a junior schoolchild cultural congruity may be performed by an adult, translating the rules set by culture (Tsivilskaya E.A. 2015).

According to L.S. Vygotsky each age period has a specific social situation of development. It is embodied in the leading activity of a corresponding age period.

At full development of educational activities, fundamental psychological neoplasms are developed in a child: the arbitrariness of mental processes, an internal plan of action, the ability to organize educational activity, reflection. In domestic psychology, the research on theoretical thinking and the development of its individual components (analysis, planning and reflection) was conducted by A.Z. Zak, E.I. Isaev, A.M. Medvedev, I.N.



Fedikin, V.A. Gurujapov, Ermakov S.S. and other scientists. The following elements were described in these studies: the levels of individual components of theoretical thinking development (Fedekin I.N. 2002), the differences in the forms of individual process implementation (Zak A.Z. 1980) and the dynamics of theoretical thinking development among the schoolchildren of different ages (Ermakov S.S.2014).

The problem of the study lies in the contradiction between the generally recognized cultural determination of mental function development in ontogeny and the absence of empirically confirmed facts of thinking features conditioning during junior school age by their level of cultural congruence. We try to study this area of a junior schoolboy social and personal development.

2. MATERIALS AND METHODS

The study of theoretical thinking features among junior schoolchildren was conducted on the sample of primary school children consisting of 251 respondents (grades 2-4) at the age of 8-11 years of a representative general population and 251 parents of the above-mentioned respondents.

The study was conducted on the basis of several educational institutions:

1. MBEI "Gymnasium № 6" of the Volga region of Kazan;
2. MBEI "Gymnasium № 8" of the Soviet region of Kazan;
3. MBEI "Gymnasium № 2", the city of Chistopol;
4. MBEI "Gymnasium № 3", the city of Chistopol.

3. TECHNIQUES

1. "Methodology of a junior schoolchild cultural congruity determination" (L.F. Bayanova, E.A. Tsvil'skaya, R.M. Bayramyan, K.S. Chulyukin). The methodology is aimed at the study of behavior correspondence features of a junior schoolchild to a typical range of rules that are characteristic of the subject's age and accepted in the given culture (Bayanova L.F., Tsvil'skaya E.A., Bayramyan R. M., Chulyukin K.S. 2016);
2. "Cultural-free intelligence test" (R. Cattell), aimed at "free" intellect measurement, not associated with the assimilation of any specific knowledge, skills or the development of any particular mental function (sensory, motor, etc.);
3. "12-factor personal questionnaire", children's version (R. Cattell), adapted by E.M.



Alexandrovskaya. The methodology evaluates the properties of a normal personality, reveals personal problems. This technique is the modification of the adult version of the 16-factor personal questionnaire by R. Cattell, and was specially developed and adapted for the children of primary school age (8 - 12 years);

3. "A new method of planning action development diagnosing" (I.N. Fedekin). They study the operational aspect of theoretical thinking (mental actions and operations) necessary for the development of reflexive skills;

4. "Rooster steps-2" technique (A.Z. Zak). The technique is aimed at theoretical thinking diagnosing, which is one of the main psychological neoplasms in primary school age, formed in educational activity.

4. MATHEMATICAL STATISTICS METHODS

- One-way analysis of variance is aimed at the study of one or several factors influence on the feature under consideration.

- Pearson's linear correlation method. This method is aimed at interrelation establishment between the internal indicators of the phenomena being studied and the identification of the interacting factors concerning the current level measured values.

5. RESULTS AND DISCUSSION

According to the results of the study, the Kolmogorov-Smirnov criterion = 0.691 at $p = 0.727$. Since $p > 0.05$, we conclude that the sample corresponds to the law of normal distribution.

1. Using the method "Cultural congruity determination of a junior schoolboy", they determined the groups of subjects with a certain level of cultural congruence were determined, depending on the interaction level of a junior schoolchild with a normative situation (Bayanova L.F., Tsivilskaya E.A., Bayramyan R. M., Chulyukin K.S. 2016).

- 133-144 points. Interactive level (high level of cultural congruence) reflects the compliance of a subject to the normative situation in real behavior;

- 98-132 points. Reflective level (average level), which reflects disposition (internal readiness or unavailability to comply with the normative situation rule);

- 0-97 points. Perceptual level (low level), associated with the perception of a normative situation and a rule differentiation (Tsivilskaya E.A. 2016).

After the study of this technique results, it was found that 16.33% of primary school age



children (41 pupils) had an interactive (high) level of cultural congruence, a reflective (average) level is characteristic of 68.13% of subjects (171 pupils), 15.54% of the subjects have a perceptual (low) level of cultural congruence (39 pupils).

The distribution of the subjects according to the levels of their cultural congruence is shown on Fig. 1.

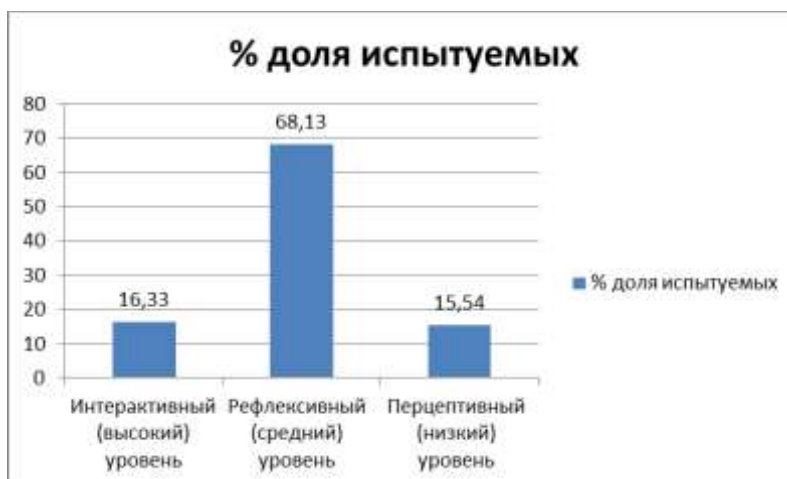


Fig. 1. Histogram of subject distribution according to their level of cultural congruence

2. After the study cultural congruence diagnosing results among younger schoolchildren in the computer program SPSS Statistics 17.0, using one-way analysis of variance, we studied the influence of cultural congruence level of students on the theoretical thinking and the intellectual potential of junior schoolchildren. Reliable differences were found for all indicators in the groups of subjects with different levels of cultural congruence (see Table 2).

Table 2. Results of statistical reliability of arithmetic mean differences according to the indicators of intellectual abilities and theoretical thinking

Theoretical thinking indicators	Mean values in a group with an interactive level of cultural congruence	Mean values in a group with a reflexive level of cultural congruence	Mean values in the group with a perceptual level of cultural congruence	Fisher's F-criterion	P (significance level)



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IQ (by R. Kettel)	116,66	107,49	92,15	27,289	0,000
"Verbal Intelligence" (by R. Kettel)	6,46	7,20	6,36	5,465	0,005
Type of planning (according to I.N. Fedekin)	2,41	1,99	1,90	8,334	0,000
Theoretical thinking (according to A.Z. Zak)	2,04	1,83	1,44	5,035	0,007

One-factor analysis showed that in the group of children with a reflexive (average) level of cultural congruence, the IQ values are in the range of 90-110 points, which is the average value of the intellectual potential (107.49 points). Children with a perceptual (low) level of cultural congruence also have average IQ values (92.15 points). These values are on the border with low scores. The children with an interactive (high) level of cultural congruence have high IQ (116.66 points), which may indicate their intellectual talent. The data differ significantly ($F = 27,289$ at $p = 0,000$) and indicate that the level of intellectual potential increase involves the level of cultural congruence increase.

In the group of children with a reflexive level of cultural congruence, the average values of verbal intelligence (B) = 7.20 points, in the group of children with an interactive level = 6.46 points; in the group of children with a perceptive level = 6.36 points. Data differ significantly ($F = 5.465$ at $p = 0.005$) and indicate that among children with a reflective level of cultural congruence, the values of verbal intelligence are higher than in other groups of subjects. This means more developed functions, such as generalization, the separation between private and general, the mastery of logical and mathematical



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operations, the ease of new knowledge learning. They establish the cause-and-effect relationship between the phenomena quickly. The children with a perceptive level scored less than the other groups under study. The solution of abstract problems requires extra effort and time. These children have poor attention often, they are tired often.

The results of planning type diagnostics showed that the children with an interactive level of cultural congruence showed an analyzing type (medium level) (54.65%) and a reflexive-analyzing type (high level) (46.35%). They easily indicate errors in problem solution, since the errors contradict its conditions. They comply with those rules that are negotiated in conditions or are limited to the repetition of those conditions of the task that can not be violated, i.e. repeat, explain a problem again. The children with a reflexive level of cultural congruence showed an analyzing type (medium level) of planning activities (61.65%). They suggest the carrying out of numerous attempts to solve the problem until it is solved. They propose to follow those rules that were negotiated in conditions and are limited to the repetition of those conditions of the task that can not be violated. The children with a perceptual level of cultural congruence have the answers of a guessing nature in 35.90% of cases, and in 35.90% of cases they have the answers of an analysis-type planning. Often they do not know how to solve a problem. They ask for help from a teacher immediately to show the way of a problem solution. These data clearly demonstrate that as the level of cultural congruence increases, the level of the internal plan of action development also increases. Children try to think through the course of a problem, which allows them to solve similar tasks quickly. The results differ significantly ($F = 8.334$ at $p = 0,000$).

The diagnosis of theoretical thinking showed average values in a group with an interactive level of cultural congruence (1.63 points); in the group with a reflective level (1.42 points); in the group with a perceptual level (1.36 points). The data differ significantly ($F = 5,035$ at $p = 0,007$). The results of the diagnostic testify that with the increase of cultural congruence level, the level of theoretical thinking development is also increased. The children with higher theoretical thinking performed the task with concentration, interest, enthusiasm, without distraction; They listened attentively, quickly, clearly and easily followed the instructions; the children were confident and



calm. After that they felt the joy from the performed task. The children who showed the average results of the task, look aloud or with the help of a pencil and pen, the beginning and the end of a problem solution, then in a whisper or by hand movements in the air they try to find the way to solve a task, empirically paving the way from one point to the other. If it does not work, then they use an experimenter, saying that it is "difficult" and they are "tired". If they find a solution, then pronouncing the steps aloud, they draw a line on a sheet, before a record, re-checking their moves. We also observed the following by task points with an index finger, or putting the points by pencil, after a course re-check in order to bring the points into a single line then. The children with a low level of theoretical analysis development often used a pencil, drawing the steps of a cock; they needed help. The children were tense, worried, asked how soon the task would end, were drawing with a pen on a sheet in a hurry, allowing many corrections. Often children did not observe the rule: "do in the mind", "do not touch certain circles (borders) of the table", "move in a straight line and diagonally alternately". At the end of the assignment, the subjects looked very tired, asked "not to repeat this task", asked for the permission to "leave play" saying that "the assignment is very difficult".

3. The correlation analysis between the results of the methods used by us showed that the groups of children with an interactive level of cultural congruence, demonstrate an inverse relationship according to age (-0.414 at $p \leq 0.01$). That is, the younger a child the more he is culturally congruent, fulfills the rules set by a regulatory situation. These rules are devoted to learning activities, obedience, self-control and social interaction. Significant associations between the level of cultural congruence and IQ (0.183 at $p \leq 0.05$) were found in the group of children with a reflexive level of cultural congruence; the level of cultural congruence and the type of planning (0.185 for $p \leq 0.05$), as well as the level of cultural congruence and academic achievement (4.15 points) of children (0.215 at $p \leq 0.01$). A significant relationship between IQ and a planning type was found (0.165 at $p \leq 0.05$). Thus, we get that this group at the age of 9 years has a close connection between intellectual potential and the development of theoretical thinking.

The correlation analysis of the group of children with a perceptual level of cultural congruence showed that IQ level is closely related to a child's gender (0.649 at $p \leq 0.01$),



and it is negatively related to academic performance (-0.375 at $p \leq 0.05$). In this group, the majority of the subjects are boys (22 out of 39 ones), which makes 56.4%. Their average performance makes 3.97 points. Thus, we get that their intelligence is within the average, but with intelligence increase their academic performance is not improved, rather the opposite takes place. They could learn better, having good IQ scores, but they do not study "good" and "excellent". Thus, we can conclude that the low level of cultural congruence, which is characterized by knowledge, but not by the following of a certain range of rules for a given age, hampers the ability to learn well.

6. CONCLUSIONS

Intellectual potential contributes to the development of theoretical thinking. An average level of intelligence development indicates an average level of theoretical thinking development. Also these two indicators are interrelated with the reflective (average) level of cultural congruence. Having a high level of intellectual potential, a child will not always have a developed theoretical thinking that is formed in the process of successful learning and taking into account a child's age. A low level of intellectual potential causes a low level of theoretical thinking development, however, the development of theoretical thinking is facilitated by the observance of behavior rules by younger schoolchildren and diligent studies, especially this is relevant for boys. The children with a low level of cultural congruity will find it difficult to study at a gymnasium. They need an example to follow and motivation to learn for this. We can conclude that a teacher plays a crucial role in a correct behavior development, the stimulus for learning and, as a consequence, the development of theoretical thinking among younger schoolchildren.

7. SUMMARY

The study was carried out with an orientation to the methodology of cultural determination of the psyche development in ontogeny.

They proved the existence of thinking and intellectual abilities development peculiarities among junior schoolchildren is related with the level of cultural congruence of children.

Practical recommendations based on the results of the study are aimed at their use in order to optimize the socialization of junior schoolchildren in a normative situation.



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9. REFERENCES

- Bayanova L. F., Mustafin T. R. 2016. Factors of compliance of a child with rules in a Russian cultural context // *European Early Childhood Education Research Journal*. 24:3, pp. 357-364.
- Bayanova L.F., Tsvil'skaya E.A., Bayramyan R. M., Chulyukin K.S. 2016. A cultural congruence test for primary school students // *Psychology in Russia: State of the Art*. Volume 9, Issue 4, pp. 94-105.
- Ermakov S.S. 2014. Diagnostics of the theoretical way of thinking development among intellectually gifted younger students // *Psychological Science and Education psyedu.ru*. Volume 2, pp. 116-128.
- Fedekin I.N. 2002. Planning as the operation in the structure of theoretical thinking. // *Herald of the International Association of developmental education*. Volume 9, pp. 34-41.
- Tsvil'skaya E.A. 2016. Communicative Properties of the Personality and Cultural Congruence at Younger school age // *Journal of Organizational Culture, Communications and Conflict*. Volume 20, Special Issue 3, P. 65-71.
- Tsvil'skaya E.A. 2015. Study of Cultural Congruence in Graders // *The Social Sciences*. Volume 10, pp. 813-816.
- Veraksa N.E. 2000. Personality and culture: structural - dialectical approach // *Changes. Pedagogical Journal*. Volume 1, pp. 81 - 107.
- Vygotsky L.S. 1996. *Developmental psychology as the phenomenon of culture* - Moscow, 512 p.
- Zak A.Z. 1980. *Development of theoretical thinking in primary school children*. Dr. Sci. (Psychology) diss. Moscow.