

EDUCATIONAL PSYCHOLOGY

A cultural congruence test for primary school students

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The study presented in this article relies on the principles of the cultural-historical theory, which defines *cultural impact* as the main driving force behind psychological development. Based on the assumption that culture is a set of normative situations, the study identifies rules that are typical for primary school students in big Russian cities. These rules are grouped into what we refer to as *factors of cultural compliance*, which ultimately can be seen as indicators of pupils' cultural congruence. In specifying the cultural congruence of primary school students, we take into account not only the rules of school life but also the whole range of stable rules for children 7- to 10-years-old. Researchers at the Psychology Institute of the Higher University of the Chinese Academy of Science (Wang, Zhu, & Shi, 2011) call such rules usual or contextually usual. We include rules that govern the behavior of children who have cultural differences, so in this article we are talking about the rules that are typical for children of this age in Russia.

The goal of the study was to develop a test to diagnose the level of cultural congruence. The test was exposed to psychometric evaluation for validity, reliability, and discriminatory power. Factor analysis by means of varimax rotation provided for calibration of the rules by consolidating them into factors. These factors underpin the test and include the categories social interaction, academic competence, regulation, obedience, self-service, and self-control. In accordance with the principles employed in psychology, the factors confirm the construct validity of the test in relation to children's development when they are between 7 and 10 years old. The study confirms that learning is the main activity at this age by introducing a factor that brings together rules inherent in normative situations in the education process. The social setting for psychological development, viewed as a specific relationship between a child at the given age and the environment, is determined by the child's interaction with an adult. The factor of obedience is the key parameter for children of the age under consideration. New at this age are arbitrariness, self-regulation, self-analysis, and an internal action plan. Self-control is also conceptually linked to these factors.

The study offers a new look at the cultural determination of psychological development in ontogenesis. Validated in the course of the investigations, the test can be used to diagnose cultural congruence — that is, the compliance of a primary school student with rules inherent in normative situations.

Keywords: primary school student, cultural congruence, normative situation, validity, reliability, discriminatory power

Introduction

Entering school, a child is facing a situation of increased standardization when he or she, just like the rest of the class, has to comply with a set of requirements, or rules, that reflect established cultural norms. The degree of compliance by a person with the rules of a normative situation indicates his or her cultural congruence. Compliance with rules by primary school students is regarded as a relevant problem that needs to be looked into. Although primary school age is one of the key periods for acquiring knowledge and skills, it imposes a whole range of rules and restrictions on students' activities.

Psychological issues of primary school students have been coming under heightened scrutiny. Manifested in, for example, attention deficit, poor self-control, and hyperactivity, these problems usually occur in a normative situation where a child fails to comply with the standards imposed on each and every student. Before we can provide a solution, we need to define the standard cultural context that contains these age-specific rules and pinpoint the factors that determine a student's ability to comply with a rule in a given normative situation. In addition, children display idiosyncratic differences in behavior under the same normative situation. For this reason the development of a special test to diagnose the ability of a child to comply with a rule in a cultural environment becomes important.

Conceptually, this diagnostic tool rests on a number of existing theories in psychology. The cultural-historical theory of L.S. Vygotsky (1928/1996) and his followers regarding the social determination of mental development in ontogenesis is the original theoretical basis. Outside cultural factors get internalized and eventually shape the internal ability of a person to control his or her own behavior. If we assume that a cultural rule is one of such outside factors, then the distinction between cultural behavior and natural behavior — one that is not regulated by cultural norms — becomes obvious. Psychology offers a clear theoretical substantiation for norm-abiding behavior when a normative situation is considered a unit of culture analysis (Veraksa, 2014). Further empirical studies identified psychological mechanisms for the internalization of rules inherent in normative situations at different ages (Pashchenko, 2010; Ulyanova, 2008; and others) and provided methodological analysis of the theory of normative situations from the perspective of Vygotsky's theory (Bayanova, 2011, 2013). Western scholars specializing in cross-cultural and social psychology have written many works defining the norm in human behavior and group behavior (Herskovits, 1955; Hofstede, 1991; Miller, 1988).

The field of developmental psychology does not provide many studies of the interaction of children of primary school age and the rules they are expected to

follow. Among such studies we can note the work of Chernyak and Kushnir (2014), who found that following a rule depends on the moral content of the rule. Research by Nielsen, Kapitany, & Elkins (2015) has shown that children may be culturally congruent without self-realization of their behavior; they are just imitating adults. Jordan, Cowan, & Roberts (1995) analyzed the process of children's assimilation of rules in sociodramatic games. In general, analysis of the works in the field of psychology on the interaction of a child and a rule shows that there are not enough techniques for measuring this behavior that have appropriate psychometric evaluation.

In designing the test, we made the assumption that the social setting for the development of primary school students features normative situations that could be combined into groups reflecting the typical rules that children of this age have to abide by. The aim of our study was to establish a test to differentiate children by their levels of cultural congruence. During the design stage, we assessed the validity, reliability, and discriminatory power of the test. In assessing its psychometric indicators, we used the methods that were employed to determine the feasibility of the test and the calculations generally accepted in the development of psychodiagnostic methods (Veraksa et al., 2014). The setting chosen was typical for large Russian cities with a population of more than one million people. Taking part in the research were students and teachers of primary schools where the language of instruction is Russian. These features determine the cultural context for further applications of the test.

Method

The aim of the research was the development and psychometric evaluation of a test to diagnose the compliance of a given primary school student with the rules inherent in normative situations typical for the age — that is, to determine his or her cultural congruence. To begin, we needed to identify the full range of rules that are typical for the age under consideration and that are inherent in normative situations; using such criteria would narrow down the definition of the cultural context. While developing a technique for measuring the cultural congruence of preschoolers, we had developed a specific algorithm for the study (Bayanova & Mustafin, 2016). We also used this algorithm while developing the technique for determining the cultural congruence of the primary school students studied in this research.

In the first stage we made a phenomenological assessment of the rules typical for the primary school students by surveying teachers, parents, and the children themselves; these respondents were required to complete sentences. The study involved 437 pupils in elementary grades (grades 2–4), 26 primary school teachers, and 324 parents of primary school students.

The pupils were asked to answer questions formulated as unfinished sentences: “Usually my mother sees to it that I do not...”. “Every day, I definitely need to...”. “At school, at home, and on the street adults can criticize if I...”. “If I want to be an obedient pupil, I...”. In response to these statements children reported on the rules that are addressed to them most often.

Parents were also asked to complete unfinished sentences aimed at identifying their ideas about compliance and in-compliance with the requirements of the norms

expressed in the rules. The questions were as follows: “I believe that every child this age must...”. “I scold the child at a party or on the street if he/she...”. “At home I usually ask of a child that he/she...”. “The most common requirements for a child’s behavior are...”. The questions for teachers also were unfinished sentences: “The most common requirements addressed to a child are...”. “It is difficult for children to comply with the rules concerning...”. “As a rule by the end of primary school all children follow the rules concerning...”. “I am satisfied with children’s work if they follow the rules concerning...”.

In this stage, we analyzed the responses of 2,503 students in grades 2–4, 2,599 responses of parents, and 73 responses of primary school teachers. The content analysis of the rules imposed on children is described in our work (Bayanova & Tsvil’skaya, 2014). The method of frequency analysis identified 55 rules specific to primary school age. Further, these rules were presented to teachers for evaluation on a 4-point scale according to the degree of compliance for the age. After that we conducted a factorial assessment.

In developing the cultural congruence test we relied heavily on the responses of our subjects. The procedure of factor analysis — with the help of varimax rotation — provided for the calibration of the rules (Table 1). After assessing by varimax rotation 55 statements of rules, we were left with 36 statements, which were then subjected to psychometric assessment.

Table 1. Factor matrix with components determining the compliance of primary school students with the rules in a normative situation

№	Statements reflecting the rules in normative situations typical for primary school students	Factor loading
Factor 1: Social interaction		
1	The pupil takes care of younger children	0.712
2	The pupil keeps his or her promises	0.652
3	The pupil can play together with other pupils without conflicts	0.601
4	The pupil does not fight	0.591
5	The pupil does not lie or cheat	0.563
6	The pupil does not offend other children	0.463
7	The pupil does not call other children names	0.418
Factor 2: Academic competence		
1	The pupil pronounces words correctly	0.751
2	The pupil thinks before saying something	0.723
3	The pupil makes correct statements	0.688
4	The pupil thinks before doing something	0.673
5	The pupil is literate	0.540
6	The pupil reads a lot	0.446
7	The pupil develops his or her memory	0.329

№	Statements reflecting the rules in normative situations typical for primary school students	Factor loading
<i>Factor 3: Self-control</i>		
1	The pupil does not intervene when adults are talking	0.720
2	The pupil does not make noise	0.665
3	The pupil sits still	0.588
4	The pupil sits upright	0.550
5	The pupil does not make mistakes in his or her homework	0.507
6	The pupil is attentive	0.445
7	The pupil gets his or her school bag ready beforehand	0.413
<i>Factor 4: Obedience</i>		
1	The pupil acts on his or her parents' instructions	0.725
2	The pupil does not leave home without permission	0.724
3	The pupil comes home on time	0.717
4	The pupil shows respect for seniors	0.564
5	The pupil makes his or her parents happy	0.545
6	The pupil obeys teachers	0.551
7	The pupil is not late	0.400
<i>Factor 5: Self-service</i>		
1	The pupil keeps his or her room tidy	0.733
2	The pupil helps his or her parents	0.701
3	The pupil helps to clean up	0.693
4	The pupil follows personal hygiene rules	0.590
<i>Factor 6: Regulation</i>		
1	The pupil does his or her homework	0.686
2	The pupil does not miss lessons	0.582
3	The pupil is obedient	0.572
4	The pupil gets good marks	0.326

Results

The study offers a procedure for psychometric assessment of reliability, discriminatory power, and validity. According to calculations, the test has a high index of discriminatory power as measured by the σ -Ferguson coefficient. This coefficient indicates the ability to differentiate respondents by the scoring system proposed in the study.

Test-retest reliability was measured with the help of the Pearson correlation coefficient applied to the results of the procedure carried out with a three-month interval. Cronbach's coefficient demonstrated a high level of one-time simultaneous reliability (Table 2).

Table 2. Indicators of the discriminatory power and the reliability of the test to determine the compliance of a primary school student with the rules in a normative situation

Scales	Discriminatory power (σ - Ferguson)	Reliability		
		One-time simultaneous reliability (Cronbach's α)	Retest reliability	
			R^*	Significance level (p)
Factor 1	0.84	0.934	0.875	0.01
Factor 2	0.90	0.910	0.885	0.01
Factor 3	0.82	0.857	0.869	0.01
Factor 4	0.83	0.896	0.926	0.01
Factor 5	0.85	0.810	0.894	0.01
Factor 6	0.82	0.761	0.807	0.01
Indicator of the cultural congruence of a primary school student	0.92	0.861	0.826	0.01

* Distribution by Kolmogorov-Smirnov is normal

We analyzed the reliability of the test by checking the consistency of every statement with the points scored in separate tables and in the test as a whole, as well as by examining the statistical reliability of differences between the top and the bottom of the sample measured by Student's t-test (Table 3). In this regard, answers to the majority of the statements reveal a reliable differentiation between the high and the low values in the sample.

Table 3. Indicators of the internal consistency of the test items to determine the compliance of a primary school student with the rules in a normative situation

Statements for parents to evaluate in order to assess their child's compliance with the rules	R1	R2	t-test
The pupil pronounces words correctly	0.376	0.764	3.098
The pupil does his or her homework	0.617	0.821	5.818
The pupil does not lie or cheat	0.761	0.819	8.060
The pupil obeys teachers	0.549	0.740	5.866
The pupil sits still	0.671	0.911	10.733
The pupil thinks before he or she does something	0.583	0.800	8.647
The pupil takes care of younger children	0.435	0.678	6.547
The pupil follows personal hygiene rules	0.545	0.622	5.710
The pupil gets good marks	0.441	0.831	4.315
The pupil does not call other children names	0.698	0.918	8.938
The pupil does not make noise	0.638	0.890	10.729
The pupil makes correct statements	0.320	0.819	3.468

Statements for parents to evaluate in order to assess their child's compliance with the rules	R1	R2	t-test
The pupil helps to clean up	0.271	0.843	3.562
The pupil makes his/her parents happy	0.334	0.606	5.152
The pupil plays together with other pupils without conflicts	0.637	0.898	8.699
The pupil thinks before he or she says something	0.634	0.823	7.155
The pupil does not miss lessons	0.325	0.785	5.862
The pupil does not leave home without permission	0.594	0.875	7.624
The pupil gets his or her school bag ready beforehand	0.731	0.909	13.856
The pupil develops his or her memory	0.606	0.857	12.063
The pupil does not offend other children	0.657	0.907	8.656
The pupil is obedient	0.627	0.616	5.634
The pupil is not late	0.577	0.774	6.220
The pupil sits upright	0.468	0.757	6.433
The pupil reads a lot	0.513	0.888	7.608
The pupil keeps his or her room tidy	0.344	0.914	5.400
The pupil keeps his or her promises	0.611	0.842	10.007
The pupil acts on his or her parents' instructions	0.604	0.732	5.418
The pupil does not intervene when adults are talking	0.482	0.712	4.804
The pupil helps his or her parents	0.220	0.816	3.180
The pupil does not make mistakes in his or her homework	0.634	0.810	8.605
The pupil comes home on time	0.573	0.845	9.508
The pupil does not fight	0.576	0.869	6.794
The pupil is literate	0.355	0.774	3.780
The pupil is attentive	0.593	0.809	9.678
The pupil shows respect for seniors	0.557	0.665	6.647

R1 (or the second column) gives coefficients of the linear correlation of an item with the total score (36 items); R2 (or the third column) presents coefficients of the linear correlation of an item with the internal scale of the subtest; the t-test (or the fourth column) reports for the item the level of the statistical reliability of differences in arithmetic averages (Student's t-test) between the top and the bottom of the sample (selected based on the value of the total score). The calculation was made on the basis of the normal distribution.

To determine the consistency of the test, we used the Spearman-Brown prediction formula and found the rate $r = 0.28$, which is significant at the level of $\alpha \leq 0.01$ for the sample of 61 respondents.

Discussion

The cultural congruence test — in its basic positions — is in line with the theoretical tenets of developmental psychology related to the evaluation of a primary school child. Learning, as the leading activity at this age, is critical in shaping new

psychological formations (Davydov, 1992; Elkonin, 1989; Talyzina, 1996) that are specifically reflected in three factors — academic competence, self-control, and self-service. These factors — in regard to construct validity — are in line with formations such as self-control, which are identified in the research literature. The factor regulation implies rules and restrictions imposed on the behavior of primary school students and is a key driver behind such new formations as arbitrariness. Adults are an integral part of the social setting for the development of a primary school student; they help the child internalize the culture (according to Vygotsky). Such factors as obedience and social interaction, which reflect the specific character of the age-specific normative situation, are in line with this theoretical tenet. The study reveals reflection as a major new function that determines the factors mentioned above. It is connected with the development by primary school students of the symbolic function, the ability to plan, and improved social interaction (Veraksa, 2006; Zack, 1981). The cultural congruence factors were positively checked against the theoretical tenets of psychology research, and this check confirmed test validity. Procedures related to the study of personality in culture have the potential to increase clarification. In this case, for example, in all cultures there are gender stereotypes and differences in the rules for boys and girls. There are differences in the rules for children living in mono-ethnic environments isolated from other ethnic groups. There are differences in the rules for children living in urban and rural areas. Therefore, research for constructing techniques to identify cultural congruence can be extended and refined. In this case the algorithm that we have developed and implemented while constructing the technique is most important for us; this algorithm includes the phenomenological assessment of rules peculiar to the given age — hereinafter, the frequency and factor analysis of the rules — and, in addition, the psychometric evaluation of reliability and validity.

Conclusion

Our cultural congruence test for primary school students consists of six factors based on age-specific rules inherent in normative situations: social interaction, academic competence, self-control, obedience, self-service, and regulation.

Psychometric assessment, among other aspects, is focused on consistency of the factors identified with the theoretical tenets of developmental psychology concerning primary school students. The theoretical substantiation of the technique is related to the position of Vygotsky (1928/1996, p. 335) in which culture “grows into the psyche of the child”, with the means as instruments. In other words, the means are the instruments aimed at the possession of behavior acquired by children in their social interactions with adults. These cultural means are internalized and become an acquisition and internal resource of the psyche. Any rule worked out in a culture serves as a mental instrument. We do not limit the sphere of the child’s rules to the school only because the social situation of development involves the greater sphere of interactions in which a child is involved. By interacting with parents and peers and other people, children will show their congruence with the rules or their incongruence. As was emphasized above, studies of the interactions of a child and a rule are almost devoid of works aimed at constructing valid and reliable techniques for identifying the congruence typical for this age. At the same time it is

incredibly important to assess the child's socialization and personal development. Low cultural congruence can be an indication of hyperactivity problems, which can occur when the rules are contained in the factors of self-control, self-service, and regulation. However, a high level of cultural congruence can be correlated with conformism and can have a negative correlation with creativity, as was observed in a study of preschool children (Bayanova, 2014). A test for identifying cultural congruence allows us to determine the level of compliance with the stable range of rules peculiar to a certain age and to the cultural context in which a child lives (Appendix A). This technique allows us to estimate the cultural congruence of primary school students living in Russia.

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Appendix. A cultural congruence test for primary school students

Please assess the behavior of [the designated] primary school student against the following statements (scores on a scale from 0 to 4):

- 0 – does not match
- 1 – does not quite match
- 2 – more or less matches
- 3 – matches in general
- 4 – fully matches

Please circle one of the numbers opposite each statement.

1	The pupil pronounces words correctly	0	1	2	3	4
2	The pupil does his or her homework	0	1	2	3	4
3	The pupil does not lie or cheat	0	1	2	3	4
4	The pupil obeys teachers	0	1	2	3	4
5	The pupil sits still	0	1	2	3	4
6	The pupil thinks before he or she does something	0	1	2	3	4
7	The pupil takes care of younger children	0	1	2	3	4
8	The pupil follows personal hygiene rules	0	1	2	3	4
9	The pupil gets good marks	0	1	2	3	4
10	The pupil does not call other children names	0	1	2	3	4
11	The pupil does not make noise	0	1	2	3	4
12	The pupil makes correct statements	0	1	2	3	4
13	The pupil helps to clean up	0	1	2	3	4
14	The pupil makes his/her parents happy	0	1	2	3	4
15	The pupil plays together with other students without conflicts	0	1	2	3	4
16	The pupil thinks before he or she says something	0	1	2	3	4
17	The pupil does not miss lessons	0	1	2	3	4
18	The pupil does not leave home without permission	0	1	2	3	4
19	The pupil gets his or her school bag ready beforehand	0	1	2	3	4
20	The pupil develops his or her memory	0	1	2	3	4
21	The pupil does not offend other children	0	1	2	3	4
22	The pupil is obedient	0	1	2	3	4
23	The pupil is not late	0	1	2	3	4
24	The pupil sits upright	0	1	2	3	4
25	The pupil reads a lot	0	1	2	3	4
26	The pupil keeps his or her room tidy	0	1	2	3	4
27	The pupil keeps his or her promises	0	1	2	3	4
28	The pupil acts on his or her parents' instructions	0	1	2	3	4
29	The pupil does not intervene when adults are talking	0	1	2	3	4
30	The pupil helps his or her parents	0	1	2	3	4
31	The pupil does not make mistakes in his or her homework	0	1	2	3	4
32	The pupil comes home on time	0	1	2	3	4
33	The pupil does not fight	0	1	2	3	4
34	The pupil is literate	0	1	2	3	4
35	The pupil is attentive	0	1	2	3	4
36	The pupil shows respect for seniors	0	1	2	3	4

Key:

Factor 1 – 3, 7, 10, 15, 21, 27, 33

Factor 2 – 1, 6, 12, 16, 20, 25, 34

Factor 3 – 5, 11, 19, 24, 29, 31, 35

Factor 4 – 4, 14, 18, 23, 28, 32, 36

Factor 5 – 8, 13, 26, 30

Factor 6 – 2, 9, 17, 22