Methodology of studying the value-semantic readiness for learning

Olha Iu. Horbachova[1 [0000−0003−2507−7306]],
Zoia M. Miroshnyk[1 [0000−0002−3984−6009]], and
Yuliia M. Soshyna[1 [0000−0001−7821−7590]]

Kryviy Rih State Pedagogical University, 54 Gagarin Ave., Kryvyi Rih, 50086, Ukraine
horbachovaolhakdpu@gmail.com, miroshnik@kdpu.edu.ua, sohinajull@gmail.com
https://kdpu.edu.ua/personal/oyuhorbachova.html
https://kdpu.edu.ua/personal/zmmiroshnyk.html
http://irbis-nbuv.gov.ua/ASUA/1167693

Abstract. The article represents methodological substantiation and results of approbation of the diagnostic tool for studying of psychological readiness of preschool age children to training at school. The presented work is a continuation of scientific research in the direction of expanding the structure of psychological readiness for school through addition of its value-semantic component, as well as creation of a tool for its measurement. In the process of developing the methodology for diagnosing the value-semantic component of the psychological readiness for learning, the author relies on the age-related psychological characteristics of a preschool age child, which are oriented toward the choice of projective technology. In addition to this, the theoretical basis for the methodology creation was the author's vision of the content of value-semantic component of psychological readiness for learning, which constitutes an activity dynamic conceptual system of "study", containing a set of such values: health, active and productive life, cognition, politeness, education, tenacity. The article provides a thorough description of all the stages of the methodology development, accompanied by the results of an empirical study of its accuracy, reliability, and validity. Author's methodology of studying the value-semantic readiness for learning contains two sets of twenty-four pictures in each according to the gender of the testee with the instruction to them. Based on the results of the methodology standardization, the forms for fixing the results of the study, as well as the decil norms for each component of the value-semantic readiness for learning (affective and cognitive), and its general index are presented.

Keywords: psychological readiness · preschool age children · training at school · value-semantic readiness for learning

1 Introduction

Taking into account the age features of preschool age children, namely: the level of development of consciousness and self-awareness, reflexive possibilities, as well

as the specifics of the phenomenon of our research – values as a high-level semantic structure, we conclude that projective methods correspond to the basic norms of diagnostic procedures, and therefore, are most effective in working with children of the specified age [1, 3, 4].

The most famous and common in the modern diagnostics of a preschool child with projective techniques are the drawing, the Children's Therapeutic Apperception Test [2], S. Rozenzweig Picture-Frustration Study [6], Rorschach test [13], Lüscher color test [9], "Three Wishes" test [11], the technique "Thematic Pictures" by N. I. Nepomnyashchaya [10], the anxiety test by R. Temple, M. Dorkey, E. W. Amen [7, 14] and others.

Considering the above, we attempted to develop a projective methodology for diagnosis of value- semantic readiness for learning (hereinafter VSRL). In its creation, we proceeded from the basic requirements for test effectiveness, namely: norm, reliability, validity. Creation of the methodology passed he following stages:

I. Methodological justification of the approach tasks (specification and development of the test framework).
II. Registration of the methodology (creation and testing of stimulus material, preparation of instructions).
III. Carrying out the research (pilot testing, retest).
IV. Analysis of the obtained research data (registration of the final complex of the stimulus material based on the results of pilot testing, determination of normativity, reliability, validity of the test).

2 Theoretical foundations of the methodology

Theoretical and empirical studies of the semantic sphere of a senior preschooler made it possible to identify the values that are in correlation with readiness for learning, namely: health, active and productive life, cognition, politeness, education, tenacity. These values in the complex are the basis of the activitydynamic semantic system of "learning", which is formalized at the end of preschool childhood and is the basis of the VSRL [8].

We proposed the definition of value orientations of a senior preschooler, which formed the basis of the methodology. We consider the value orientation as a model of activity that determines the child commitment in all spheres of his life – game, communication, cognition, education. In this case, we are talking about the activity dynamic semantic system [12] that ensures functioning of personal dynamic sense systems and, thus, the material for diagnostics. Therefore, each of the values that we have identified should be realized in all the dynamic activity systems of a preschool child and determine the child's activity and behaviour in this way.

However, it should be noted that the value orientation or a specified set of value orientations in general can be formed in a child, whereas an activity dynamic conceptual system – "learning" is absent – in this case it is impossible

to talk about VSRL and it is necessary to create a development program aimed at its formation.

3 Methodology formalization

As an incentive material, we chose drawings for the following reasons:

(1) the visual-figurative thinking of a senior preschooler determines the conditions for organizing effective interaction. Therefore, it becomes necessary to use visual material that activates the images necessary for thinking process realization;
(2) insufficient level of speech development. Senior preschoolers still commits many verbal errors, which considerably complicates the further process of interpretation. In addition, they cannot always express their opinion;
(3) pictures make it much easier to organize a preschooler for interaction and supports interest in the diagnostic procedure.

Analysis of existing projective methods showed the advantage of using black and white stimulus in diagnosis, which is explained by the focus on avoiding possible distraction of children for colour. Therefore, the stimulant material was also developed by us in a black and white colour scheme.

In our definition, value orientation is the basis of children's behaviour and activity in all spheres of their life, therefore, the pictures show the manifestation of values in various life situations. We created an authorial stimulus material, which passed several stages of validation.

Approbation of stimulus material took place in two stages:

The first stage is expert validation. Selection of pictures by analyzing and interpreting images by children of senior preschool age and expert evaluation by educators and practical psychologists of a pre-school educational institution.

The thorough work involved correction of the pictures, which created the conditions for implementation of the *second stage of approbation of the stimulus material – composition of a set of pictures.*

We have developed two versions of pictures sets. In the first set of pictures a series of plot pictures located on one sheet corresponds to each value orientation, reflecting realization of a certain value orientation in all the activity dynamic sense systems of children. This picture consists of four ones, which conditionally divide the sheet into four parts.

The second set consists of 24 pictures, each of which depicts the implementation of the value orientation in a certain activity dynamic conceptual system. In this case, each of the above situations should be shown on a separate sheet.

Both sets of pictures are equipped with the general instruction: "Soon, in September, you will go to school and be a schoolboy, like this boy / girl (show image / doll). In the meantime, you go to a kindergarten, like this boy / girl (show image / doll). I'll show you pictures, and you look carefully and think which picture shows the student's life in school, and which one relates to a child's life in kindergarten. If you think that pupils act as in the picture – put

it to the image / doll of a pupil, and if the picture shows the behaviour of children in kindergarten – put the picture to the image / doll of a preschooler." Each picture should be shown to the children separately and they should not be allowed to play or view all the pictures at once, which distracts the children's attention. Each image should be accompanied with a verbal instruction.

4 Research practice

Experimental studies were conducted on a sample of 99 children with an average age of 6 years. The obtained data required modification of the stimuli, because the first variant of the pictures caused the non- identical reactions of the subjects: considering that on one sheet a series of situations depicting the realization of a specific value was represented, 57% of the total sample wanted to put the picture to the image / doll of a pupil, and to the image / doll of a preschooler. Therefore, the use of pictures with a series ofimages is not valid. We decided to stay on the second set, since it contains pictures that reflect the realization of the value orientation in the activity-based semantic system of "learning", which is the basis of VSRL, and therefore separation of such images from others and their correlation with the image of pupil is the evidence of the formation of the cognitive component of the semantic system. Thus, we developed two sets of pictures (one for psychodiagnostics of boys, the other for girls) each set containing 24 pictures. However, we suggest to show at once all four images, depicting the implementation of a specific value orientation, and choose among them only one, or not to put aside any that could be put to the image / doll of a pupil and to the image / doll of a preschooler. In this case, we need to get two sets of pictures of 6 sets in each one.

In addition to the indicated classification of pictures, the child was asked the question: "What behaviour shown on the pictures do you like better?" The question reflects the child's desire for change or an attempt to build a line of behaviour in accordance with the considered situations that are the realization of value orientations. Such a question, in our opinion, reflects the affective component of the value-semantic readiness for the school, in fact it presupposes revealing the child's attitude to the situations depicted, when choosing a picture depicting the realization of the value orientation in the activity dynamic semantic system of "study," testifies to the positive emotional coloration of the notions of the school life and significance of the relevant behaviour model.

5 Analysis of the obtained research data

The results of the pilot study give right to state the following:

– considering that one of the criteria for the formation of VSRL is the formation of the child's semantic sphere, which provides for the availability of all values from the list, it is necessary for the child to choose all values. The results of the research showed that 42% of the total sample put pictures

depicting all values to the picture / doll of a pupil, but not all of them reflected the realization of value in the activity dynamic semantic system of "learning";
- 32% of children did not form a complete set of pictures to the image / doll of a pupil;
- to the question "Whom do you want to be like?" 56% of the children chose the image / doll of a preschooler.

The obtained data enabled us to create a key to this technique.

For the data calculation, we offer such an accrual system: every correct choice, that is, assigning an image of the realization of the value orientation in the activity dynamical semantic system "learning" to the pupil's image / doll, is estimated at 1 point. For attribution of the picture with the realization of the value orientation in the activity dynamic semantic system "cognition" to the image / doll of a pupil is assigned 0.5 points, for realization of the value orientation in the activity dynamic semantic system "communication", in the activity dynamic system "game" – 0 points. We consider this assignment of scores to be appropriate, because, given the mathematical calculations of the correlation links between the activity dynamic semantic systems of "learning" and "cognition" and the psychological readiness for school, they are more or less in line with the formation of the latter. Thus, the maximum number of points that a child can score is 6 points, the minimum score is 0 points (if the child does not put the picture to the image / doll of a pupil). The above data analysis reflects the cognitive component of the VSRL.

To quantify the affective component, which is diagnosed with the question "What behaviour do you like more from the pictures in the pictures?" which is asked before each picture is shown to the child, we suggest to charge points in the same way as in calculations of the cognitive component index. Thus, the range of the indicator of VSRL affective component will also be 0-6 points.

Creation of our methodology was primarily aimed at solving one of the problems of ensuring the continuity of preschool and primary education – supplement of a diagnostic tool for studying children's psychological readiness for school. Therefore, standardization was one of the stages in the design of the methodology, which was intended to unify the instruction, form, as well as mathematical-statistical calculations (mean values, standard deviations, derivation of decil norms for all VSRL components).

Standardization was conducted on a sample of 99 respondents at the age of 6 years. All the children included in the sample are constantly attending pre-school educational institutions during the last three years.

Having carried out statistical calculations, all the data obtained from the sample can be represented as the degree of each of the indicators formation, as well as the overall indicator of the formation of the VSRL at three levels. Such a representation of quantitative data fully reflects the content of the value-semantic readiness for training as a separate mental phenomenon and makes it possible to interpret the results and make up an individual characteristic of the children.

According to the results of the mathematical calculations, the average indicator of the VSRL affect component formation in the sample is 3.71 (standard deviation = 1.05; max = 6; min = 1.5; D = 0.136; p < 0.1000). The data obtained make it possible to distinguish the following levels (decil norms) of the VSRLaffective component formation:

0-2 points – low level;

2,5-4,5 points – average level;

5-6 points – high level.

The conversion of raw points into decil scores was carried out by adding / subtracting the standard deviation value to the average. This is the standard procedure.

Features of the cognitive component formation in the sample are as follows: the average is 3.74; standard deviation = 1.13; max = 6; min = 1.5; D = 0.1253; p < 0.1000. The obtained data enable us to allocate the same levels of the cognitive component of the VSRL formation, as in the affective component.

The average sample value of the total VSRL score is 7.45 (standard deviation = 2.05, max = 12, min = 3, D = 0.0825, p < n.s.) and, accordingly, makes it possible to allocate such levels of the formation of this indicator:

0-5 points – low level;

5,5-9,5 points – average level;

10-12 points – high level.

The obtained results of mathematical calculations enable us to speak about the reliability of the technique developed by us, because the data obtained correspond to the law of normal distribution of the feature, in our case, VSRL, its components.

To fix the received data, we suggest using tables (tables 1, 2).

Table 1. Fixation of the child's choices.

Value orientation (picture/doll of a pupil)	No of picture	
	Cognitive component	Affective component
Politeness		
Active and productive life		
Education		
Health		
Tenacity		
Cognition		

The quantitative characteristics of each component of VSRL and its overall index are presented in table 3.

We analyzed the basic requirements for any diagnostic technique: norms, reliability and validity. We consider it necessary to verify the compliance of our methodology with the specified requirements.

To determine the reliability of the methodology, we used retest, which makes it possible to calculate the correlation coefficient by comparing the data ob-

Table 2. Total score that reflects formedness of VSRL on cognitive, affective levels and its total index.

Components	Scores
Cognitive	
Affective	
Total index of VSRL	

Table 3. Levels of component formedness and total index of VSRL.

Components	Levels		
	low	medium	high
Cognitive	0–2	2,5–4,5	5–6
Affective			
Total index of VSRL	0–5	5,5–9,5	10–12

tained from the two data analysis procedures. Based on the age-specific features of the senior preschooler, as well as the conditions for organizing the teaching andupbringing process on the eve of entering school, a month is a necessary and sufficient interval between the diagnostic procedures [3].

Statistical calculations indicate the reliability of the compiled methodology, because we obtained a correlation coefficient of 0.8660 (with $p = 0.001$), which is sufficient [3].

Today, there are many reliable diagnostic methods for studying psychological readiness for school, so we provided evidence of validity using a parameter of competition that involves a correlation study with other methods, the validity of which has been proved. To determine the competitive validity, we chose the Kern-Jirásek test [5], since it undergoes quantitative and qualitative processing and is quite popular, and therefore well-tried; method of studying the formation of internal position of a schoolchild, which reflects at once two components of the child's psychological readiness for school - motivational and social (personal), and also based on the results of our research, is in statistically reliable correlation with the child's value orientations.

Based on the data obtained, it can be stated that the validity is proved, because a large number of statistically significant relationships have been diagnosed. It should also be noted that the highest correlation coefficient of 0.6765 (at $p = 0.001$) was obtained between the student's internal position and the indicator of the VSRL affective component, which indicates that there are close links between the value orientations (components of the VSRL) and the age-related neogenesis – "schoolchild's internal position". We draw attention to the absence of statistically reliable links between the indices of the Kern-Jirásek test, "imitation of the drawing" and VSRL in general, and its components. We consider such results as confirmation of the focus of the VSRL research methodology developed by us on the definition of the preschooler's semantic filling of school life, and imitation of the drawing is an activity that characterizes the teaching itself and is typical for a the preschooler.

Another of the leading parameters of validity is constructive validity, which contains obvious prognostic, incremental, differential, and substantial validity [3]. It provides evidence of the existence of the phenomenon under investigation, in our case – VSRL, as well as the degree to which a reliable methodology characterizes individual differences in the personality according to its formation.

Constructive validity was studied by us by conducting a correlation study between the data obtained during the diagnostics conducted in the spring in children's educational institutions and the data obtained after the end of the first academic year in general schools in the same sample of children. The study was aimed at clarifying the features of the relationship between:

- the diagnostic data of the VSRL (the methodology of the VSRL study)
- an average indicator of a child's success after the end of the first academic year (expert review)
- an indicator of adaptation to the school (a questionnaire by R. V. Ovcharova [12]).

It is worth making some clarifications on the choice of criteria for validation.

The average indicator of a child success of at the end of the first class demonstrates, in our opinion, the success of adaptation to the new conditions of life, provides for the development of relations in dyads "pupil– pupil" and "pupil–teacher", as well as the necessary and sufficient level of the formation of learning activity. Given that the primary school assessment system does not provide for the scoring in the first grade, we used the method of expert assessments: we suggested that primary school teachers assess the total academic performance of pupils in the usual 0–12 range, without marking out indicators for academic subjects.

This method is subjective, therefore we consider it necessary to use one more criterion of validation, given that a child's psychological readiness for school can be considered as an adaptation factor. The concept of "adaptation" is used to describe a child adaptation to school conditions in connection with such aspects: formation of learning activity and the proper pupil's activity – study, which are based on the skills of joint, collective activity; formation of the child's relationship with classmates and the teacher. Adaptation is the result of preparation for school, one of the criteria of which is the child's psychological readiness for school. Therefore, we used the adaptation index obtained with the Ovcharova questionnaire [12] as an additional criterion for validation.

In the above correlation matrix, the results of a study of the relationship between VSRL and the results of expert assessment of performance and school adaptation are presented.

Table 4 shows that there are a number of statistically significant links between the indicators that are being tested, which confirm the validity of the projective test we have developed, and the existence of this component in the psychological readiness for school as a systemic and holistic education.

The highest correlation coefficient was obtained between the overall indicator of VSRL and the indicator of school adaptation. The indicators in connection with expert assessments are somewhat lower, which can be explained as follows:

Table 4. Results of the study of the relationship between the components and the total index of VSRL (VSRL research methodology) and the expert assessment of the success rate, the indicator of a child adaptation to school (R. V. Ovcharova's questionnaire).

Indexes of VSRL / indexes of adaptation	Affective component of VSR	Cognitive component of VSR	Value-semantic readiness – total index
Expert assessment of learning successfulness	0,5099 p = 0,001	0,5398 p = 0,001	0,5570 p = 0,001
School adaptation	0,7575 p = 0,001	0,6479 p = 0,001	0,6949 p = 0,001

given that the method of expert evaluations was applied at the end of the academic year, the circle of success determinants increased, because in addition to psychological readiness (including the value-semantic component), significant influence on it is the personal qualities of the teacher, especially the construction of the teaching and educational process in a particular school, in a particular class, and so on.

6 Conclusions

Summing up the data of mathematical calculations of the study results, we can state the validity and reliability of the projective method of studying the VSRL developed by us. Further research in this direction we see in the methodological justification of value-semantic readiness for training at the next ordinary levels of general education school and creation of a diagnostic tool for their measurement.

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