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COGNITIVE SPHERE DIAGNOSTICS
IN VISUALLY IMPAIRED STUDENTS

Kokhan S.T., Vinogradova N.I., Grabovskaya Ya.I.

Transbaikal State University, Chita, Russian Federation

In the paper, the authors focused on the need to identify the individual characteristics of the cognitive sphere in students with severe visual impairments, being qualified as late-onset blind individuals. Cumulation of the necessary data on the specifics of building reality in the mind of a blind person allows specialists to expand the cognitive trajectories for students of this academic and professional field when studying at a university.

Keywords: *blind; student; diagnostics; cognitive environment; mind; mental development; personality.*

ДИАГНОСТИКА ПОЗНАВАТЕЛЬНОЙ СФЕРЫ
У СТУДЕНТОВ С АНОМАЛЬНЫМ ЗРЕНИЕМ

Кохан С.Т., Виноградова Н.И., Грабовская Я.И.

ФГБОУ ВО «Забайкальский государственный университет»,
г. Чита, Российская Федерация

В своей статье авторы акцентировали внимание на необходимость выявления индивидуальных особенностей когнитивной сферы

среди студентов с глубокими нарушениями зрения, являющиеся поздно-ослепшей категорией лиц. Кумуляция необходимой информации о специфике выстраивания реальной действительности в сознании слепого человека, позволяет специалистам расширять познавательные траектории возможностей у студентов данной категории при обучении в вузе.

Ключевые слова: незрячий; студент; диагностика; познавательная среда; сознание; психическое развитие; личность.

Summary

The current stage of development of psychological science is characterized by increased attention to the study of various features and variants of human development. The inconsistency of the socio-economic realities of modern society leads to an increase in the number of people with developmental delays [14]. It should be pointed out that many of them need specified conditions to be created rather than treatment itself. Thus, along with medical measures, psychological and pedagogical management is required, which is based on clinical, psychological and pedagogical diagnostics [1; 7; 13].

The relevance of developing the theoretical aspect of the laws and specifics that determine the mental development of the blind, when studying at university, is primarily due to the needs of the psychological and pedagogical practice, since these people have severe visual impairments, and that requires the use of specific teaching methods [12; 15].

The cognitive sphere of all groups of blind people (congenitally blind, early-, late-onset blind individuals) has its own characteristics. Disclosing the individual characteristics of the cognitive environment of the blind is one of the topical issues of modern psychology of the blind and visually impaired. The generalization of information on the specifics of the way the world is reproduced in the mind of a blind person does expand the concepts in the study of ontogenesis within general psychology [7; 9].

A blind person is believed to need a specially organized psychological and pedagogical support throughout their life. Such support can be effective only provided it is built on the knowledge about the characteristics of mental development and the individual's personality. It is necessary to

identify these features with the help of diagnostic techniques for further management, which will contribute to the rehabilitation or abilitation of an adult blind person and their full inclusion in society. In the literature we studied, the topic of cognitive ability of visually impaired younger children and children aged 5 and older is sufficiently covered [5; 6].

The increasing number of young people with severe visual impairments, which are aimed at receiving secondary professional education and then higher education, often face the problem of reproducing reality in their mind, adaptation in the group of fellow students and the actualization of their mental abilities. Therefore, the diagnostics of cognitive sphere is considered to be a topical issue [2; 4].

The study involved 6 extramural students, 4 male students and 2 female ones aged 25 ± 4.4 . Both individual and group testing was carried out.

The purpose of the study: the diagnostics of the cognitive sphere and the reproduction of the external world in the minds of blind students.

Materials and research methods

In order to determine the amount of balanced assistance as well as to what degree students with severe visual impairments are capable of adapting themselves to studying at a higher education institution, the respondents were diagnosed using the following techniques, i.e. *Identification of essential features*, *Test for logical thinking* (M. Voinarovsky), as well as tests, namely, *Logical thinking*, *Anagram – 2011. Form G*, *Study of the speed of thinking*, *Study of tactile capabilities*, *Study of spatial orientation skills* [3; 8; 10; 11].

According to the time of loss of vision, the students were divided into 2 groups: 2 early-onset blind individuals and 4 late-onset blind ones.

According to the age, the late-onset blind students were divided into groups: 1 – at the age of 12, 4 – at the age of 14–16, 1 – at the age of 18–20.

All students in this category were diagnosed with the first-degree disability, but according to visual acuity they were divided into:

4 – totally blind individuals;

2 – the ones that retain light sensation.

The totally blind individuals (6 people) were divided into two categories: the ones with the preserved memory of the colour spectrum

(60%); the ones without the above-mentioned memory (40%). The 2nd group was subdivided into a group of individuals with the formed colour memory, which amounted to 12.9%, and a group of individuals without such memory – 27.1%.

The students' blindness was largely related to a lesion of visual organs (5 respondents – 83.4%) and central nervous system (CNS) disease (1 respondent – (16.6%).

The study was carried out at the Regional Center for Inclusive Education of the Zabaykalsky State University (Chita, Russia).

Research results and discussion

The *Identification of essential features* technique was used to identify individual characteristics of thinking, objects distribution and ability to differentiate the main features of objects. The results of individual testing according to the nature of defined attributes were distributed as follows: a concrete style of thinking was identified in 2 students, concrete-situational – 3 students, abstract-logical – 1 person. The largest number of the concrete-situational style of thinking for blind students depended on their orientation as the predominance of this style allows one to use their practical knowledge and skills in analyzing the situation and making adequate decisions.

To assess the development degree of logical thinking in visually-impaired students, the test suggested by M. Voinarovsky was used. None of the students scored the maximum number of points. Good development degree of logical thinking (20–25 points) was revealed in two students. Three respondents showed a satisfactory result (15 to 19 points), which is associated with the transfer of the conditions of the test tasks in their usual perspective in order to facilitate the perception of the test. The motivation of the test subjects was as follows: 'The names of the tasks are unclear or unknown,' 'I was being confused,' 'It was not what one would be thinking about,' etc. It should also be noted that to some of the assignments the correct answer was given over a period of time while the respondent was doing a different task.

On testing for logical thinking, a low level was found in one student, i.e. 7 points, who explained the failure saying that 'The questions in the test were absurd.' In his opinion, it is impossible to assess logical think-

ing by means of such tests. This student, due to being visually impaired, was engaged in an individual online program when studying in secondary school, which in this case, predetermined both a decrease in the cognitive interests and the educational process deterioration.

5 to 10 points were observed in 5 respondents, which correlates to the average level of mental abilities and logical thinking.

In order to establish combinatory abilities as well as the level of abstract logical thinking and the ability to generalize learning material and use one's own vocabulary, *Anagram – 2011. Form G* was applied in group testing, which was transferred into a tactile writing format using the L. Braille system. All the test subjects, except for the two blind students, found it difficult to do the tasks. As a result, 2 students showed a middle level of their combinatory abilities (up to 6.16), a low level of combinatory abilities and vocabulary was revealed in 4 students (5.15 up to 0.5). It is also likely that the low results obtained were affected by the complexity of the perception of information by means of the Braille language due to poor command of the latter.

When conducting the research on the speed of mental operations, the blind students had no difficulty doing the tasks using the tactile writing system. A low reading speed was noted in 3 students, which affected the length of the experiment.

Tactile capabilities studies showed good results in 5 people and satisfactory in 1 person. Of the proposed groups of objects, the first group included household items, while the second one consisted of animal figures. As for the first group of objects, the tasks '*Identification of the grip wrench*,' '*The can opener*' were found to be the most difficult. In the second group, crocodile and gorilla caused most difficulty.

The study of spatial orientation skills revealed the test subjects' correct concept of the three-dimensionality of space. The tasks on turning to the sides by a certain number of degrees (45, 90, 180, 360) were done well. Such concepts as 'up,' 'down,' 'right,' 'left,' 'farther,' 'nearer' were understood and carried out with ease. It was noted that the accuracy of movements when taking an object significantly depended on the distance of the object, i.e., the closer it was from the participant the quicker was

the response. Thus, everyone was found to have the correct image of the reality while retaining the visual memory.

Conclusion

According to the results of the study, it can be assumed that the predominance of a concrete-situational style of thinking allows most students to use their own experience in communication and psychological and pedagogical interaction when building a specific trajectory in the educational space. The possibilities of short-term and long-term memory were found to be within the normal range. The level of logical thinking and mental abilities allows visually impaired students to successfully absorb the learning material. It is necessary to emphasize that the majority of respondents (2/3) were revealed to have a low level of vocabulary and poor ability to generalize the material to be learnt, which may later affect the presentation of the studied topics.

It is important for specialists at university to consider both individualization and an integrated approach in planning and implementing activities while carrying out the psychological, pedagogical and educational support that contributes to the improvement of blind students' cognitive sphere. Tests on speed of thinking and spatial orientation skills were found to show good results.

Practical implications

The results of the study can be applied in the educational process, namely, in the organization of psychological and pedagogical support of visually impaired students.

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