

Dynamic versus Static Diagnostics

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Abstract

The presented article summarizes the importance of the dynamic diagnostic approach, which focuses on revealing the student's potential and his ability to develop through interaction with the examiner of the diagnostic battery. Dynamic diagnostics does not look only at the current level, but follows the process and change in the student's abilities and skills. Furthermore, it emphasizes the way in which the student comes to solving tasks and how his approach to them changes. It also takes into account the individual needs of the student, which can lead to a longer diagnostic process. Research has shown that students with ADHD/ADD have different performances in the test of distracted attention. We identified differences in their ability to internalize tasks in the speed and accuracy of work. This knowledge helps to better understand the individual needs of students and adapt the diagnostic process to support their learning and development.

Keywords: *Dynamic diagnosis, Static diagnosis, Distracted attention test – Lahy. Attention. Attention disorder. ADD. ADHD.*

Introduction

Dynamic diagnostics like the opposite static diagnostics represents not only very much an interesting but also useful alternative to the traditional testing of cognitive processes, which is examined to an individual will provide comparatively big quantity significant information, but especially in terms of his learning process. This approach places emphasis primarily on mapping the cognitive processes of an individual at any age, an individual in whom deficits in learning processes can be observed, which are manifested when acquiring new ones knowledge or solutions to any problems. Dynamic examination does not focus on current level individual, your own attention however devotes in big measure above all his potential, to everything what he can this one an individual to handle or teach with. He also draws attention to whether he is able to optimally interact with the teacher, possibly other experts. However, the examination in dynamic diagnostics does not have specifics established standards or phrases that could guide us during the diagnostic process. Dynamic diagnostics puts a little more emphasis on high-quality and proven theoretical approaches (Krejčová, 2015; Sender et al. 2023).

They exist various situations whether categories individuals, at which can right now ordinary standardized examination will bring distorted results, or only minimal results measure will tell what kind form interventions we can apply. V this one meaning we can to speak ocases when you are we put question: “What to do with individuals, whose results they are average, even until above average but v school continuously is it failing?”; “What to do with such individuals, to which at common diagnostics results they report band of below average mental abilities, but in school this individual thrives and not only parents, but also teachers problem do they not perceive?” “It is important a necessary at control examination to use standardized diagnostic tools that we used earlier, even if already in advance do we know that the results will be similar?” For these mentioned situations and similar categories individuals with dynamic diagnostics in big measure shows like very much beneficial (Tzuriel, 2015). During a dynamic examination, as well as during a traditional, i.e. static examination, we observe the level of individual abilities and skills. Dynamic examination in particular offers each diagnosed individual intensive support and at the same time we can to include intervention whenever it requires (Krejčová, 2016).

Authors RJ Sternberg et al. (2011) state that the approach applied in dynamic diagnosis is much more in line with the traditional concept of intelligence than ability teach with. It is that right now therefore that during examinations this one ability immediately we activate and thus we have the opportunity

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to direct attention to the individual's reactions and subsequently his others development.

C. S. People (2014) emphasizes that intervention, which creates component dynamic diagnostics, he doesn't teach diagnosed individual, which way to solve established task however strengthens more generally cognitively processes. V framework dynamic diagnostics individuals are constantly supported in the self-regulation of their own behavior within the framework of the solution tasks, in active learning, in thinking and also searching for individual solution strategies problems.

R. Feuerstein etc al. (2002) they point out on the following the most significant characteristics dynamic diagnostics:

1. Knowing is a process in which there is constant change, but above all development in an individual. It is a process in which it is possible to constantly stimulate it development in this area. The diagnostician is interested in what the individual can acquire, a too what kind changes (from point of view access) maybe at solutions tasks to observe.
2. Within dynamic diagnostics, emphasis is not placed on results and answers to partial questions. Increased emphasis is placed during the entire dynamic examination on options growth of the individual a consequently his transformation.

Necessary task diagnostics is continuously find out like diagnosed an individual grown up k solution, why you are thinks that elected the answer is the one correcta another the answer no is suitable. Diagnostician finds out what kind strategies a thought operations were used by the individual in solving tasks. Equally important are the sources of error. The diagnostician finds out from the individual what way of thinking led him to make mistakes. Mon this one in more detail analysis is possible consequently apply suitable correction.

1. Dynamic examination no is oriented on finding out levels mental abilities, but his target area is the thought process in which he considers partially thought operations, consequently them suitability whether intensity of use.
2. Adapting to the individual needs of the diagnosed individual is, however by necessity dynamic examinations. This one way often extends diagnosticwork, as each individual is unique and it is necessary to see for the diagnosis also its process, i.e. how the individual learns, not just how he responds. Mutual interaction, supporting individual a too prevention situations failure whether any failure, they support positive motivation of the individual to work, willingness and, above all, perseverance to continue the examination despite its difficulty or scope.

Comparison static a dynamic diagnostics

In the professional literature, the areas in which the static (traditional) standardized diagnostics differentiates it from an examination in dynamic diagnostics. She straightened up lists five primary areas. For a better understanding of these differences, see them in more detail we will discuss below

V comparison with Krejčová (2020), Tzuriel (2015) defines dynamic diagnostics from static in five basic differences.

1. Purpose of diagnostics: the main purpose of dynamic diagnostics is to assess the potential learning pupil and changes in performance, cognitively functions and non-intellectual factors related to cognitive functions. Observed changes are considered indicators future changes provided adequate intervention is provided to the student for support his classroom potential. On the contrary, main goal static diagnostics is to map the student's current cognitive abilities without effort o assessment of changes in process learning.

2. A change nature tasks: standardized tests they put emphasis to psychometric characteristics of the task, increasing the difficulty of individual tasks, reflecting abilities and knowledge pupils in results. On the difference from dynamic diagnostics comes out structure individual tasks from assumption them classroom potential, ie ability teach with important cognitively strategies, to support cognitively functions and evaluate cognitively changes. Aye with dynamic diagnostics gradually we increase difficulty tasks, well we prefer learning cognitive strategies so that mastering the procedure for one task prepares the student for the solution more demanding tasks.

3. Changing the test situation: given that static tests compare the student with his by peers, testing conditions require strict adherence to procedures. It isn't there space not even for learning to interactive approach. The student receives a question and will answer on her. Any help whether management they are considered for violation standardized procedure. Given that the goal of dynamic diagnostics is change the student's functioning, the examiner acts as an active teacher here. His task is not passively recording the student's answers, but actively conveys to the student cognitively strategies, various rules, operations whether content. If would we are that they wanted to say easier, standardized testing limits role examiner to administer test items and subsequent evaluation and interpretation, for now which in dynamic diagnostics the examiner actively enters into the action, changes the method functioning of the pupil and interprets potential future changes in terms of actual ones of changes during testing. This one interactive process dynamic diagnostics is established on modification behavior pupil suppressing impulsiveness, arrangement and structuring various aspects of tasks or developing weakened cognitive skills functions pupil.

4. Changing the orientation from the end result to the process: in standardized testing the examiner focuses on the result. On the other hand, during dynamic diagnostics, attention concentrates to cognitive processes causing changes in specific, insufficiently developed cognitive functions (e.g. impulsivity) and on the non-intellectual factors (e.g. need dominance), which affect functioning of the pupil. In other words, we focus on the individual components of the process, between which belongs e.g. nature cognitive behavior, process learning and his strategy, like also specific interventions needed to change these components. Pri static diagnostics with comes out from typical levels performance pupil for now what with dynamic diagnostics with attention concentrates to unique and qualitatively aspects cognitive processes pupil. Dynamic diagnostics with he doesn't ask "what" a "how much" but "how" a "why".

5. Changing the interpretation of the results: in the case of static diagnostics, the interpretation of the results is focused mainly on quantitative aspects. Dynamic diagnostics focuses to qualitative factors mediating performance pupil analysis cognitive deficits a on types of counseling a help which with they change

Table 1. Basic differences between dynamic and static diagnostics (Lidz, 2000; in Chuchutová, 2008)

	Dynamic diagnostics	Static diagnostics
Behavior the examiner	Interactively High level controls Mediation	Neutral Low level controls Mediation
Behavior pupil	Active	Passively
The task	Related with process	Product related, as a result performance
The principle	Creates the nearest zone development	Evaluates level the current one development
Assumptions	Pupil is unstable	Pupil is stable

Distracted attention test - LAHY

As part of our research, we used the LAHY test, which is part of the LPAD dynamic diagnostic test battery,

the main creator of which is Professor Reuven Feuerstein. The Lahy instrument is attributed to the French psychologist Jean-Maurice Lahy, who developed it from the work of Zazzo, dating from 1964. The test is composed of tasks requiring a triple combination, namely a combination of speed, precision and efficiency. The Lahy test is used to evaluate the way of learning through the repetition of tasks with the intention of automating learning and then defining the level, which leads primarily to an increase in success, which is subsequently reflected in accuracy and speed. This tool belongs to tests that do not emphasize complex cognitive strategies (Feuerstein, et al., 2015).

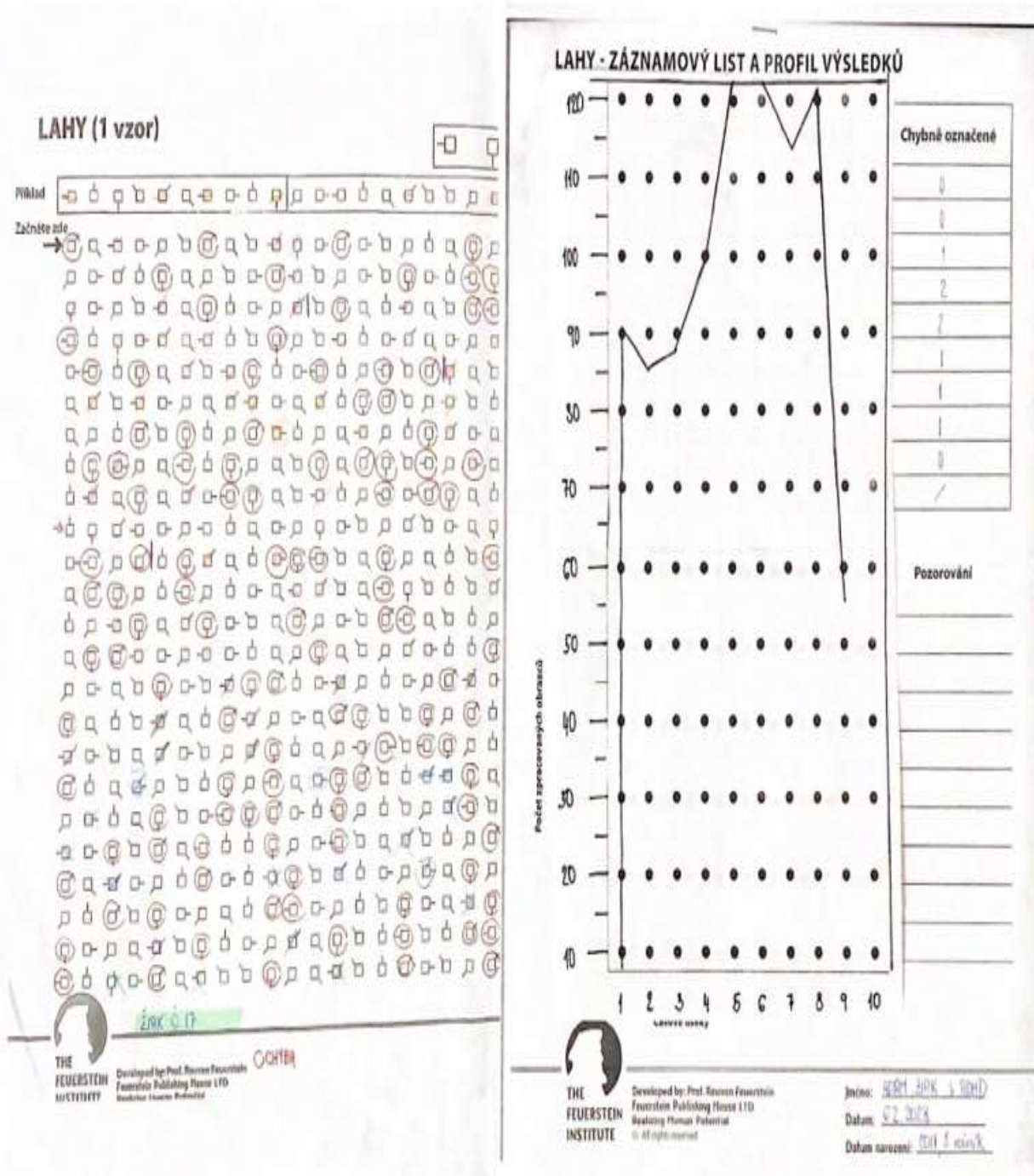
The test is limited in time. The duration of the test is 10 minutes and the individual's performance is observed in minute intervals. The modality of Laha's distracted attention test is visual-motor and graphic. The test is based on the use of cognitive functions according to individual phases. In the Input phase, accurate visual perception, spatial orientation, systematic investigation, accuracy in gathering information, receptive verbal tools and also the ability to maintain constancy are required. The elaboration phase requires selection of relevant information, spontaneity in comparison, attention to logical evidence, planning or internalization. The output phase requires the projection of visual relations and subsequently visual transmission, limiting the procedure in the form of a trial-and-error method, applying verbalization for a solution without errors (Krejčová & Pokorná, 2021).

The Lahy tool contains specific goals that must be observed throughout the testing process. These goals include: tracking the level of learning efficiency when processing a routine, i.e. simple task in a time interval of 10 minutes; determining the development of accuracy and also the pace of the individual during practice based on the repetition of the same task; noting how quickly the individual becomes independent on the given test item and how he can work automatically; determining the learning curve when practicing with the help of repeating the same task (Krejčová, & Pokorná, 2021).

Before the actual testing, the individual is familiar with the individual principles of how the task works. The test sheet consists of eight simple shapes/figures (geometric shapes, namely squares) that contain a comma protruding from one of the four sides of the square or one of its four corners. The individual shapes are arranged in rows in a different order in the test sheet. Each row contains 40 figures. In the upper part of the test sheet there are three of the eight figures - model characters, which the individual searches for in rows and crosses out if they are identical figures. For a more efficient evaluation, it is advisable for the individual to use a different colored crayon every minute. Even before the actual testing, the individual can try recognizing and searching for three sample squares on the test line, which is located under the model figures (Krejčová & Pokorná, 2021) .

It is imperative that the individual proceeds line by line throughout the testing. The diagnostician measures the time during the test, after each minute he marks with a vertical line where the individual finished in that minute. The tenth minute is the last minute, but in case of a very poor performance of the individual, the time can be extended by another ten minutes. The Lahy distracted attention test does not include the standard learning phase that is applied in other LPAD tests. The motive for mediation can be a loss of attention in an individual, an unsystematic rhythm of work or skipping patterns. The diagnostic informs each individual that a certain way of working with this task can be practiced and also learned. For an individual, it can be just as motivating to watch performances in which they improve. During the evaluation, the number of found shapes, the number of not found or missed shapes and the number of incorrectly crossed out shapes are checked within one minute (Krejčová & Pokorná, 2021)

Figure 1. LAHY test + record sheet



Research Methodology

Research Design

Ours research file consisted of from two groups respondents. The first group created pupils Satspecial ones educational needs, specifically such who they had diagnosed disorder ADHD or ADD. The second group consisted of from groups intact pupils. Pupils were divided in the same ratio, ie 20 intact pupils and 20 pupils with the above diagnosed malfunction ADHD whether ADD. Overall it went o forty respondents in age 10 to 12 years old, attending the second grade of elementary school, specifically the 5th and 6th grade. In the next part of our contribution, for illustration, we present the observation and results obtained with two respondents, to whom we applied the LAHY test and who have been diagnosed with attention disorder.

Pupil no. 1

girl, ADD, 6. year, 12 years

Observation while completing the Lahy test

The student was very quiet and withdrawn during the entire test phase. She answered the questions in one word, in a very quiet and fearful voice. It was more difficult to start working with her. She was quite attentive in the orientation phase. She understood the test instructions quickly, no reproduction was necessary. The student worked at a slower pace. In the first minutes, she worked according to the template of three model figures, she started working after about half of the time with occasionally support o template. When with however got it wrong repair performed in the way of painting an individual figure. Sometimes it happened that she went back in the line and looked for any figure she didn't miss. V final conversation we are however from pupils they didn't get verbal feedback. When asked if the test was difficult, she nodded her head.

Results from testing

Plate 2. *The results of the second tested 6th-grade pupil diagnosed with ADD, who worked with the Laba distracted attention test*

Temporal sections	Count processed figures	Unmarked	It's wrong marked
1	25	1	1
2	26	3	0
3	27	2	2
4	30	3	5
5	32	3	1
6	32	4	1
7	23	2	1
8	29	2	4
9	34	2	2

10	37	5	1
Together	295	27	18

In table no. 2 we can see that this student was able to process 295 figures in total time, which is less than 8 lines. We can see the most processed figures in the 10th minute, namely 37 figures. We see the smallest number of processed figures in the 7th minute, namely 23 figures. The student made a total of 45 mistakes in the test. We can see a total of 27 unmarked figures, but the most in 10th minute (5 figures), at least in the 1st minute (1 figure). The total number of wrongly marked figures is 18, while the student wrongly marked a figure at most in the 4th minute (5 figures), at least in the 2nd minute (0 figures).

Pupil no. 2

girl, ADHD 5. year, 11 years

Observation during filling test

Since it was a stereotypical task, we noticed this student's significant lack of interest in working with the test. Her attention was very divertable. She asked us a lot while filling out the test questions by which us she wanted closer get to know. They had to we are her warn that phase in progress testing, which when will end we will with be able to to talk. Method work this one pupils was very unsystematic, until hectic. Pupil she had problem with perception individual figures in the test, which she got very wrong. While working on the test sheet, she skipped figures and lines. She started the first minute in the second row, which she noticed. She corrected herself very often in the course of testing, often circling correctly marked figures. She did not internalize the individual model figures during the entire time of working with the test, she required constant support. She tried to work as well without supports, since you are she thought that some figures already knows, but this one way work with he bounced back in her error rates. During observations we are you are noticed that pupil in the test, she very often mistook the square for the line on the right side. The student had a psychomotor disorder restlessness shaking with on chair and tightening fists on hands, with which she didn't write.

Table 3. Results of the fourteenth tested 5th grade student diagnosed with ADHD who worked with the Laha distracted attention test

Temporal sections	Number processed figure	Unmarked	It's wrong marked
1	24	2	2
2	26	1	4
3	31	6	4
4	17	5	3
5	12	4	1
6	28	7	2
7	23	7	5
8	19	6	1
9	34	9	5

10	22	5	3
Together	236	52	30

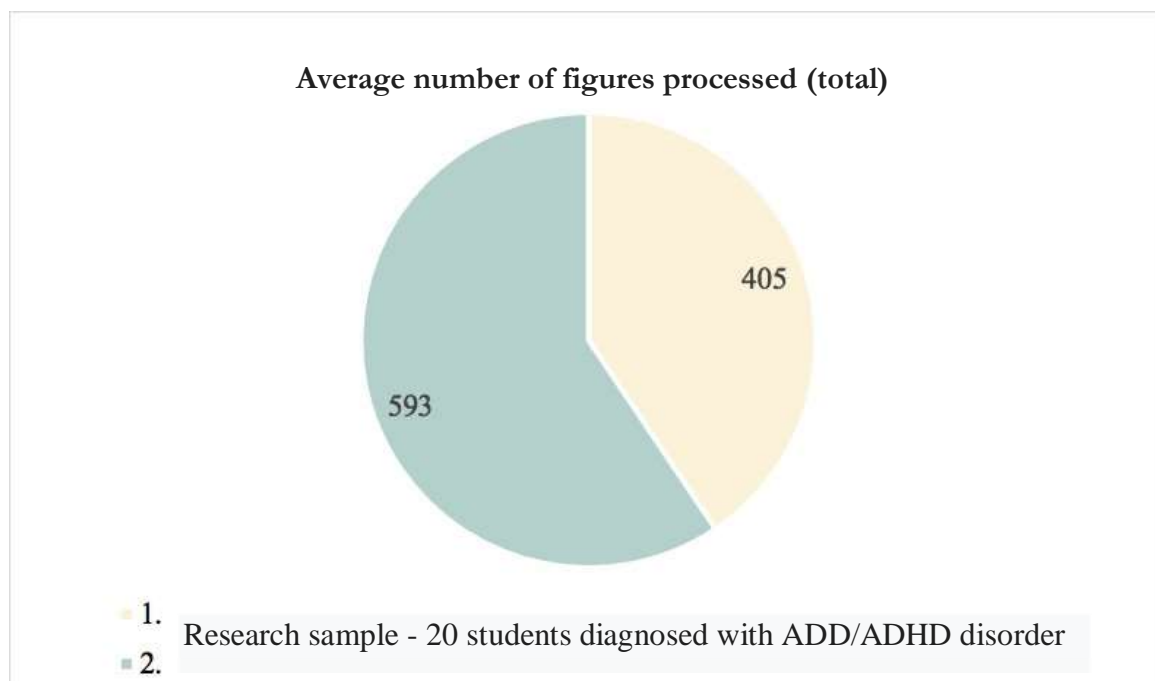
V table no. 14 we can to see that this one pupil she proved it process for overall time 236 figures, which represents less than 6 lines. We can see the largest number of processed figures in the 9th minute, namely 34 figures. We see the smallest number of processed figures in the 5th minute (12 figures). The error rate of this student was relatively high. The student made a total of 82 mistakes in the entire test. Of these, she did not mark 52 figures and incorrectly marked a figure 30 times. The most unmarked figures can be seen in the 9th minute (9 figures), the least in the 2nd minute (1 figure). The most wrongly marked figure we can to see v 7. a 9. minute (5 figure), the least v 5. and 8. minute (1 figure).

Comparison results research between the first a the second research sample

V the next one part of the article we present comparison performances (via tables and graphs) in the Laha distracted attention test between the first and second research sample. We focus primarily on comparing the total number of processed figures and the total error rate in students diagnosed with ADHD/ADD and intact students.

Differences v count processed figure

Figure 2. LAHY test + record sheet Figure 1: Average number of processed figures (total) of the first and second research samples

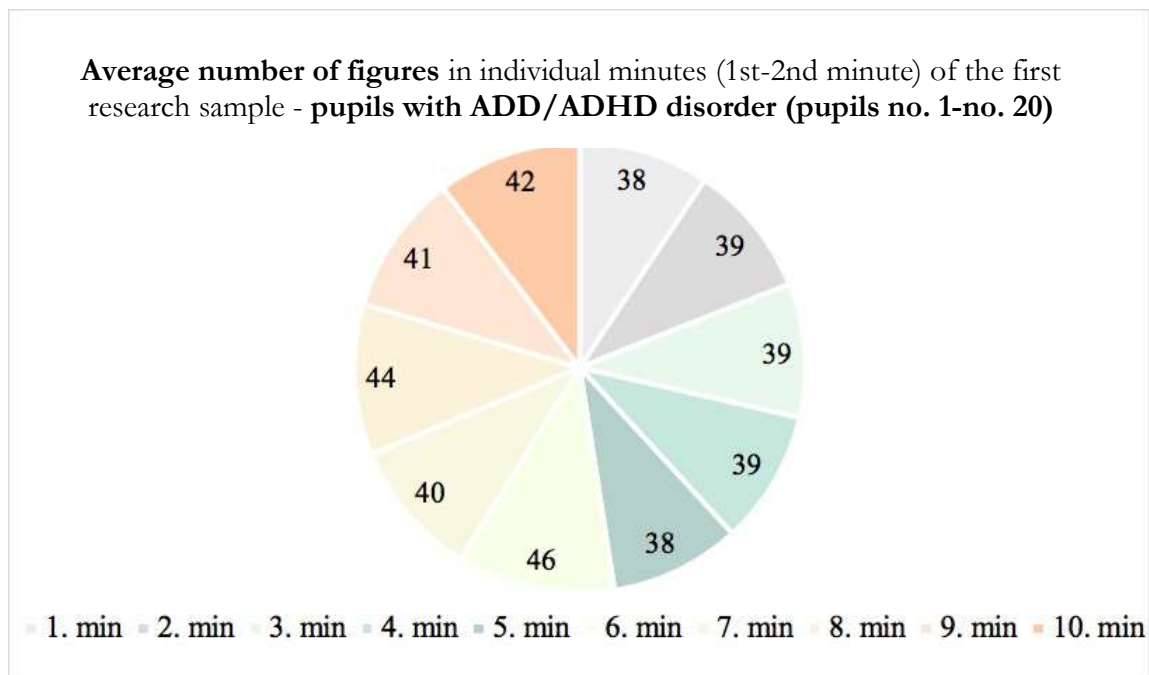


Based on the results listed on fig. no. 1 we see that the students of the second research sample - intact pupils – they proved it for overall time (10 minutes) process in average up to 593 figure. Pupils of the first research sample - pupils diagnosed with ADHD/ADD - were able to process on average 405 figures. On basis results we have to state that the difference in the average number of processed

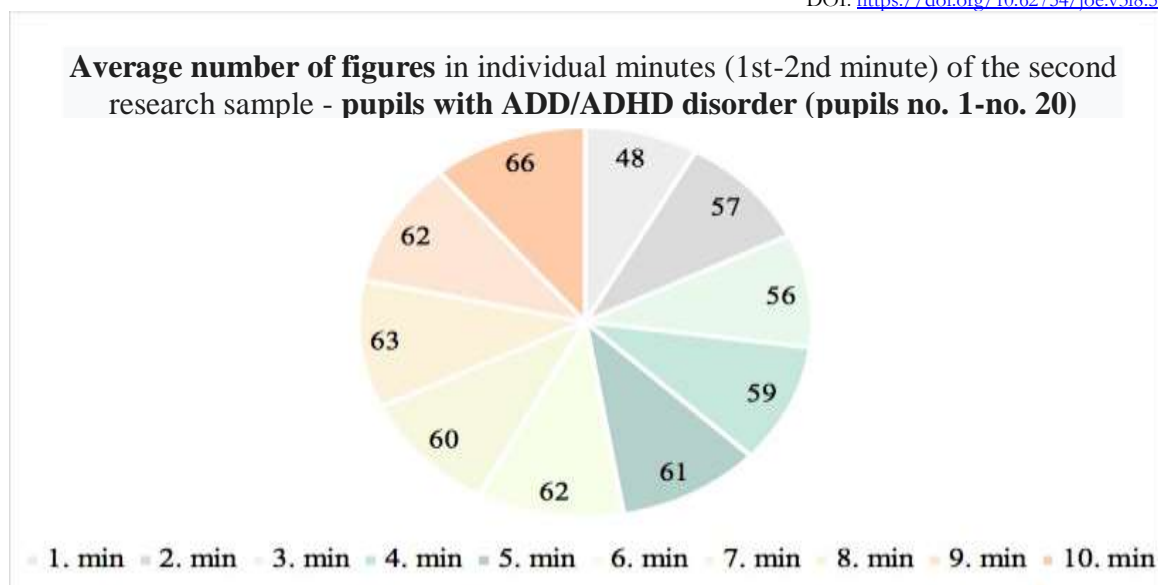
figures between the first and second research sample is considerable high, however v benefit intact pupils, who they proved process until o 188 figures more compared to the first research sample.

The graphs below (Fig. 2 and Fig. 3) show the average number of processed figures per minute. In fig. no. 2 we can see the average number of processed figures (per individual minutes) of the first research sample - students diagnosed with ADHD/ADD disorder. On the other hand, we can see in fig. no. 3 to see the average number of processed figures (per individual minutes) of the second research sample - intact pupils.

Figure 3. Average number of processed figures of the first research sample - students diagnosed with ADD/ADHD disorder



On the basis of the graphic representation, we can see that the average number of figures processed in individual minutes was in the range of 38-46 figures/min for pupils with a diagnosed ADHD/ADD disorder. However, with this sample we can see a fluctuating rise in the number of processed figures. We see the smallest average number of processed figures v the first a too the fifth minute, a that 38 figures/min. However the biggest average count processed figures with manifested at six minute, 46 figures/min. In the last one minute processed students average 42 figures.



Based on the graphic representation, we can see that the average number of intact students processed figure in individual minutes moved v ranges 48 – 66 figures/min, what represents the difference v comparison with the first research sample on level 10 – 20 figure/min – v benefit intact pupils. However at this one sample we can see gradual growth number of processed figures. Intact students were able to the first minute to process in the smallest on average count figure a that 48 figures/min, whereas pupils the first research samples v this one minutes processed in an average of 10 figures less. We see the largest average number of processed figures v the last one minute, it goes o 66 figures/min, what represents v average o 24 processed figures more v comparison with the first research sample, whereas the first research sample managed to process an average of 42 figures/min in the last minute.

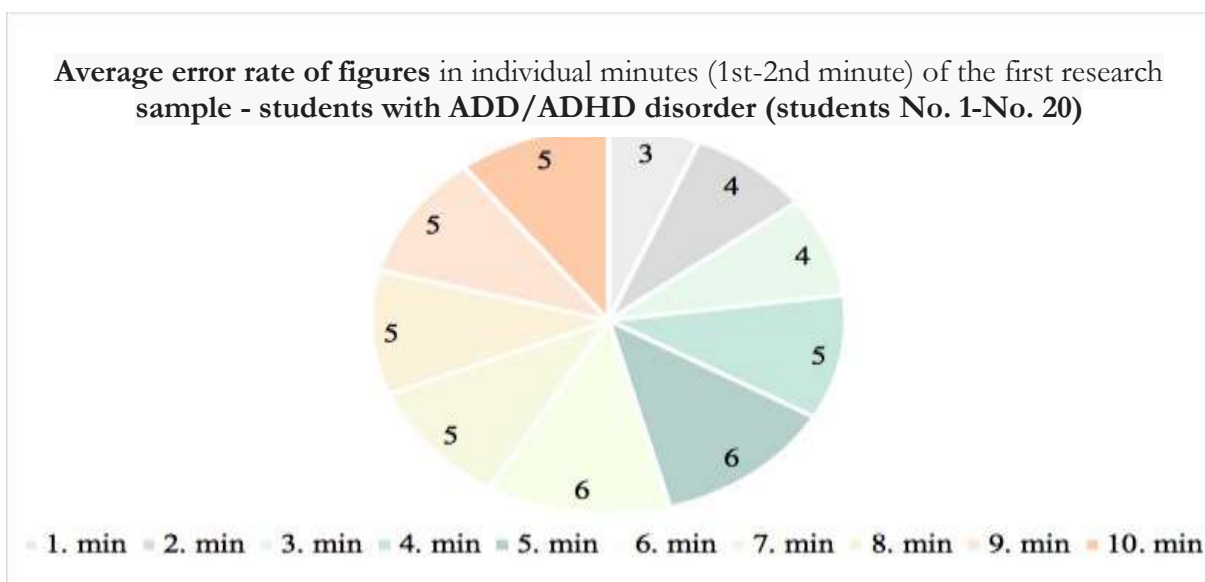


Figure 5. Average error rate of the first research sample - pupils diagnosed with ADD/ADHD

On the basis of the graphic representation, we can see that for students with a diagnosed ADHD/ADD disorder, the average error rate in individual minutes ranged from 3 – 6 figures/min, however the most common average error rate in individual minutes we see 5 figures/min. We can notice this error rate

especially in the last minutes. We see the smallest average error rate immediately in the first minute, a that's 3 figures/min. However the biggest average error rate we see at five a too the sixth minute, a that's 6 figures/min.

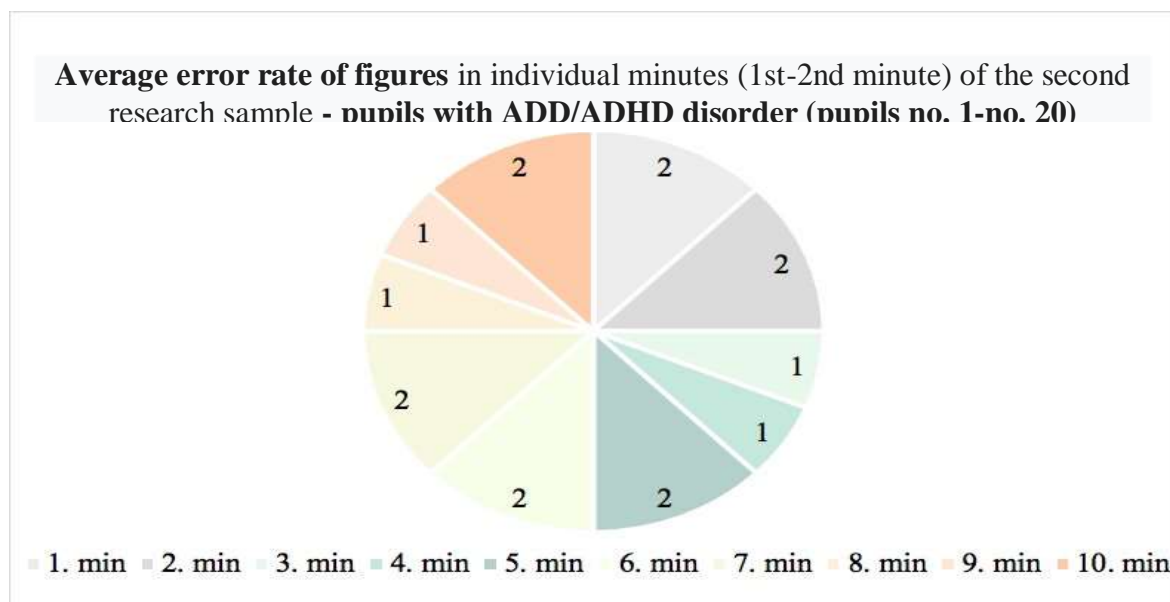


Figure 6. Average number of processed figures of the first research sample - pupils diagnosed with ADD/ADHD disorder
Figure 6: Average error rate of the second research sample - intact pupils

Based on the graphic representation, we can see that for intact students, the average error rate in individual minutes ranged from 1 to 2 figures/min. Despite the fact that the error rate of this research sample was relatively low, not a single student managed to complete the test flawlessly. On average, we can see the smallest error rate in the 3rd, 4th, 8. a 9. minute. V these minutes they did pupils average 1 error. In others minutes, students made an average of two mistakes.

Summary of results

They summarized would we are results research work, v framework which we are with were targeting on difference mapping performances v test scattered attention Lies between intact pupils and students with the aforementioned diagnosed ADHD/ADD disorder.

We can claim that there really are different performances among our sample. By carrying out the research, we found that the level of attention in intact pupils is significantly higher than in pupils diagnosed with ADHD/ADD, who have significant problems with maintaining attention, especially when it comes to stereotypical tasks, which was i in this case. Level attention she was for each o pupil different. Differences v attention we are they found out even among intact pupils. U pupils of the first research sample, we noticed significant fluctuations attention curve attention she was considerably fluctuating. At this one samples we are very much often noticed a significant decrease in number of processed figures between individual minutes (see appendix no. 2 a no. 4) . Opposite to that u pupils the second research samples we are recorded also a fluctuating attention curve, but to a significantly lower extent. This group of respondents worked almost during whole times work with by test Lies in the same tempo whether even at a pace that gradually increased (see Annex No. 1 and No. 2).

V framework observations pupils during filling test Lies we are you are noticed them the ability to internalize the individual figures and also the level of efficiency of the students' learning when processing a simple, routine task within 10 minutes. In the students of the first research sample, we observed problems with by this process. Almost everyone pupils they worked during the course of the test, with

the help of three model figures, or with their occasional support, they were unable to fully internalize them. However, the pupils of the second research sample had no problem with learning the three model figures. Since it was about stereotyped, routine task, the students were able to master the individual figures of the test relatively quickly. With these students, we noticed that they were able to internalize the individual figures in the first minutes of working with the test, that is, they were able to work automatically and independently.

Another partial goal that we noticed after evaluating the results was the development of accuracy and students' pace during practice through repetition of individual actions.

Pupils the first research samples they worked comparatively fluctuating pace. Some the students started with a slower pace of work, which gradually increased. However, there were also those who started with a very fast work pace, which gradually slowed down. However, some students worked at almost the same pace during the entire time of working with the test. The development of the accuracy of this research samples was as well fluctuating. Some pupils they started with a smaller one error rate and they finished with bigger, some again they started with a bigger one error rate a they finished with smaller. They were also such students u which she was error rate v individual minutes test approximately the same. Pri in the students of the second research sample, we noticed that the development of the pace increased in individual minutes. Pupils they proved process gradually increasingly more figure for a minute. However development accuracy u of these pupils was also fluctuating. Some students did in individual minutes have a gradually smaller error rate, some on the contrary, a larger one.

When analyzing a comparing obtained research give us they found out significant differences i in performances between the first a the second research sample. Intact pupils they proved process a larger number of figures (in individual minutes and in total). The assumption that the respondents of the first research sample will be affected by the ADHD/ADD disorder to such an extent that we will see significant differences in the error rate was also confirmed.

Conclusion

The research shows that dynamic diagnostics focuses on revealing the student's potential and his ability to develop through interaction with teachers. It is not just about finding out the current level, but about monitoring the process and changes in the student's abilities and skills. This diagnosis does not emphasize only the result, but also the way in which the student comes to solving tasks and how his approach to them changes. It also takes into account the individual needs of the student and can lead to a prolongation of the diagnostic process. We found that students with attention and activity disorders have significantly different performances in the Laha distracted attention test compared to intact students. By observing their behavior during the test, we identified differences in the ability to internalize tasks and in the speed and accuracy of work. This knowledge helps us better understand the individual needs of students and adapt the diagnostic process to support their learning and development.

Acknowledgements

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References

- Feuerstein, R., et al. (2002). The dynamic assessment of cognitive modifiability. The learning propensity assessment device: Theory, instruments and techniques . Jerusalem: The ICELP Press.
- Feuerstein, R., et al. (2015a). Changing minds and brains – The legacy of Reuven Feuerstein: Higher thinking and cognition through mediated learning . Columbia University: Teachers College Press.
- Feuerstein, R., et al. (2015b). The dynamic assessment of cognitive modifiability learning propensity assessment device (LPAD) standard . Jerusalem: The Feuerstein Institute.

- Krejčová, L. (2015). Dynamic diagnostics. In Felcmanová, L., et al. Methodology for the catalog support measures for the partial section for pupils with a need for support in education due to social disadvantage . (pp. 7-13). Olomouc: UPOL.
- Krejčová, L. (2016). The use of dynamic diagnostics in the inclusion of pupils with special educational needs needs. Special teacher , 1 (1), 50-70.
- Krejčová, L., & Pokorná, V. (2021). Unpublished lectures from the LPAD course.
- Lidz, CS (2014a). Dynamic testing of cognitive functions in children (3-6), Test manual . Otrokovice: Pro-psycho.
- Lidz, CS (2014b). Leaning towards a consensus about dynamic assessment: Can we? Do we want that? Journal of Cognitive Education and Psychology , 13(3), 292-307.
- Sender, B., Duchovičová, J., & Žovinec, E. (2023). Testing and diagnosing dyslexia in adolescents – Focused on phonemic awareness. Journal of Education Culture and Society, 1*, 335-351.
- Sternberg, RJ, et al. (2011). *Explorations in giftedness.* New York: Cambridge University Press.
- Tzuriel, D. (2015). Dynamic diagnosis of learning potential: theoretical and research perspectives. *Psychology for practice, 1-2*(1-2), 9-3