

mgr Marzena Walkowiak

**OCENA ZALEŻNOŚCI
MIĘDZY ZABURZENIAMI PROCESÓW
PRZETWARZANIA SŁUCHOWEGO
A POZIOMEM UMIEJĘTNOŚCI
FONOLOGICZNYCH U DZIECI
Z TRUDNOŚCIAMI W NAUCE**

Rozprawa doktorska
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Promotor:

dr hab. med. Ewa Zamysłowska-Szmytke, prof. IMP

Promotor pomocniczy:

dr n. med. Joanna Majak

Instytut Medycyny Pracy imienia prof. dra med. Jerzego Nofera w Łodzi
Klinika Audiologii i Foniatrii

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Summary

The reasons for undertaking research on the dependence of the development of auditory and phonological functions were the failure of pedagogical therapy and speech therapy in children demonstrating problems in learning basic school skills such as reading and writing. Both own observations and literature data indicated possible interactions of phonological processes and auditory processing disorders in these children, which in turn would affect the type of therapy

Despite considerable interest in the subject of APD in the context of phonological development in English-language literature, data in this area for the Polish-speaking population were very few and concerned older children. Conducting research to assess the relationship between auditory processing and phonological functions, as well as assessing whether and which of the higher auditory processes are important for the development of phonological operations may be the basis for planning a therapeutic process aimed at supporting the child and enabling him to function in the best possible way despite his difficulties.

The purpose of the doctoral dissertation

The main purpose of the study was to analyze the relationship between auditory processing disorders and the level of phonological functions that predict the mastery of reading skills in children.

The specific objectives included:

- Assessment of the relationship between the level of higher auditory processes and the level of phonological skills.
- Determining which of the individual tests evaluating auditory processing processes exhibit the greatest dependence on the level of individual phonological functions.
- Assessment of the importance of age for the development of the integration of auditory and phonological functions.

Material and methods:

115 children from the 1st and 3rd grade of Primary School took part in the study. The basic two groups were: a group of younger children aged 7–8 (1st grade), which included 30 people with learning problems (8 girls, 22 boys) and 20 healthy children without any problems in learning (8 girls, 12 boys) and a group of older children, aged 9–10, who included 40 children (7 girls, 33 boys) with learning problems and 25 children without these problems (9 girls, 16 boys). Criterion for the division into groups of children with learning problems and without problems was a school interview and

assessment based on the standardized "Questionnaire for recognizing specific difficulties in reading and writing" by M. Bogdanowicz.

All patients had questionnaire examination conducted, including detailed ENT and speech therapy anamnesis, underwent laryngological examination and performed impedance and tonal audiometry tests. In both groups, the following tests were used to assess auditory processing: the Masking Difference Test (MLD); Dichotic Digital Test (DDT), Different-Length Tone Sequence Test (DPS), Different-Height Tone Sequence Test (PPS), Auditory Reaction Test (TRS), Adaptive speech-in-noise test - words (ASPN S); Adaptive test of understanding speech in noise - sentences (ASPN Z).

Speech therapy examination concerned the evaluation of the level of phonological functions. In the group of older children, the following tests were used to assess the level of phonological functions: "Unknown language", "Zetotest", "Skala F" and "Delete phonemes". In the group of younger children, the Phonological Test Battery IBE was used to assess the level of phonological functions.

Results

Studies have shown that in the group of older children, significant relationships were related to the model: Unknown Language Test, Dichotic Digit for the Left Ear (DDT UL) and DPS (Sound Length Sequence Differentiation). For the cutoff point of the DDT UL test equal 63%, high sensitivity of the DDT UL test (90%) and high positive predictive value (88%) were found, the DPS test showed a relatively high specificity (83%). In the group of younger children, taking as a reference the total quotient of phonological functions (IFF), a relatively high specificity of the DPS test (82%) and negative predictive values of the DPS test and the speech understanding test (words) in noise (ASPN-S) were found. In the group of younger children, the models for individual component tests of the Phonological Function Quotient were also studied. Using the F10 test as differentiating between healthy and diseased children, the PPS test showed 100% specificity and a positive predictive value, while the TRS test (auditory reaction time) - high sensitivity (85%). In relation to Test F5, high sensitivity (95%) was DPS tested, and specificity - DDT UP test (82%). In the Dichotic Digit test, a significant decrease in the right ear (UP) with age was observed, both in healthy children and in those with learning difficulties. There were no significant differences between the children from the study group and control group in any age group.

Conclusions

1. The relationship between auditory processing processes and the level of phonological functions has been demonstrated, which lays grounds for isolating the APD phonological profile.
2. The most important test for demonstrating the relationship between auditory processing processes and the level of phonological functions in both age groups is the Dichotic Digit Test.
3. The level of integration of dichotomous hearing changes with the child's development, which affects his phonological skills.
4. Incorrect results of auditory processing tests in children with reading difficulties indicate the validity of early inclusion of therapy aimed at improving higher auditory processes.

Maureen Hallenble