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DIAGNOSTIC EVALUATION OF LEARNING DIFFICULTIES AT CHILDREN WITH EPILEPSY

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Summary

Epilepsy is a neurological disorder, which is characterized by the disposition for the appearance of epileptic seizures, as a result of the simultaneous, excessive depolarization of the cerebral neurons. The disorders that affect the educational performance or daily activities of the persons who need reading, writing or learning skills are defined as learning disabilities. The aim of this research is to investigate and determine the learning difficulties in a sample of children with epilepsy as well as another sample of children without epilepsy after the comparison of the results. Two methods were used for the research and the collection of information, the scales WISC-III partially and mainly the LAMDA method. The first of the above mentioned is divided in two parts, the practice and the oral intelligence where the values of both result from a series of examinations that the pupils of elementary, junior high school and high school are submitted to. The results are acquired based on the answer and the time limit of the answer of each pupil.

The LAMDA method similarly examines the pupils in similar characteristics with WISC-III with a different medium. In detail, everything takes place through audiovisual stimuli (computer) and according to the results they are divided in 4 grades that indicate the learning difficulties of the examined person in comparison to the medium of the results of the pupils of the same class.

According to the performance of the pupils in the learning difficulties diagnosis tests, the children with epilepsy fall short in some skills and tend to have falling or lower cognitive function compared to the children without epilepsy. This fact constitutes an indication of existence of learning difficulties in children with epilepsy. However, this observation does not refer to the total of the population of epileptic pupils, if the medication, the intervention and the interference on the level of the school and the family shows that it has positive results to the total intellectual operation.

Furthermore, the children suffering from epilepsy face many difficulties mainly in their adaptation in school and their interpersonal relationships. Their cohabitation with other children, inside and outside the school, is difficult because of the danger of an epileptic seizure appearing and the ignorance of treatment from their fellow pupils or the teachers themselves. For this reason the education of the children with epilepsy must take place in special educative areas, equipped with full and trained teaching personnel, that know the strategies of treatment of a possible epileptic seizure arises. It is important to mention that the children with epilepsy are often stigmatized and forced to confront their being different. We comprehend the big impact that epilepsy has, not only on a learning level but also on a psychological level.

Key words: Epilepsy, learning difficulties, diagnosis tests, falling cognitive function, learning level, psychological level.

Research Results

The results analysis was realised through the Statistical Package for Social Sciences . The methods used were the descriptive statistics, the frequencies and the independent samples T-Test. The collected data came from 50 boys and girls from 6 to 16 years of age, from the 1st grade of Elementary school to the 2nd grade of High school, who were diagnosed with epilepsy. The sample comes from the university hospital of Larissa, in collaboration with pediatrician, Mrs. Vasiliki Koute as well as from

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schools in Greece. The tools I used were collected from KEDDY (Centre for Differential Diagnosis, Diagnosis and Support for students with special learning needs) and they were the following:

-LAMDA: Software for Screening Learning Difficulties
-WISC-III Scales

As ascertained from the results analysis, the highest percentage of the students with epilepsy who were studied during this research had Average or Low normal mental function level. However, the sample did not lack participants with Marginal level and Mental disability, or Higher normal, Higher and Highest level. A percentage of 16% of the participants were at a Marginal or Mental disability level while a percentage of 22% were at a low normal level, which confirms the general opinion there is in the relevant bibliography that enough students with epilepsy – regardless of the type – tend to have a declining or lower cognitive function in comparison to the average. This observation, however, does not concern the epileptic student population in its entirety, seeing that medication, operations and school or family interventions seem to have positive results in the total mental function (Holmes, 2006).

Despite the satisfactory mental function level that characterises most students of the present research, the performance in individual oral and practical scales indicates the existence of learning difficulties. As observed, the lowest performance averages of the students were found in the main scales "Arithmetic" (6.08), "Codification" (7.84), "Information" (8.59), "Object Assembly" (8.96) and "Vocabulary" (9.06) and in the supplementary scale "Numbers memory" (5.75). These values are lower than half (9.50) of the maximum typical points a child can reach in each scale (19). This observation confirms the prevailing opinion that most students with learning difficulties have a lower performance in the "Arithmetic," "Codification," "Information," and "Numbers memory" scales. What is more, the fact that the highest average was found in the "Image Filling" scale (11.20) confirms the finding that the highest performance of students with learning difficulties is usually found in that scale.

In more explicit terms, the low performance of students, epileptic or not, with learning difficulties in the "Arithmetic" scale in practice means that those children have a reduced ability to arithmetic calculations in relation to the average. The fact that during the administration the arithmetic problems appear orally and not in writing when the students are asked to calculate with their mind, without a paper and a pencil, indicates that students with learning difficulties have lower hearing perception of complex verbal stimuli and they have difficulty in comprehending questions and guidelines. Moreover, they have weak short-term memory and reduced ability of recalling information, weak accounting ability (where data are arithmetic terms) and low cognitive processing velocity. This observation is also confirmed by the research of Nikolai et al., according to which children with benign epilepsy have – among other things – a worse outgrowth concerning visual perception and memory.

In practice, low performance in the "Codification" scale means that those children have reduced visual perception of abstract stimuli as they are called to reproduce some material with no significance (drawings, symbols). Furthermore, it is possible that they have reduced hearing perception as they have difficulty in following the oral instructions they are given. Also, low performance indicates low information processing ability of both hemispheres (oral-sequential ordering and visual-spatial), weak short-term memory, writing of low velocity and precision, and deficient visual-kinetic coordination.

In practice, low performance in the "Information" scale means that those children have reduced verbal comprehension and hearing perception of complex verbal stimuli and have difficulty in comprehending questions. What is more, given that the questions asked concern acquired knowledge, this low performance may indicate deficits in long-term memory, as well as parental stress about their children's academic achievements. In general, low performance in this scale is very possibly due to the hostility of the child towards activities that remind them of school, which is a usual enough behavior in students, epileptic or not, with learning difficulties.

In practice, low performance in the "Object Assembly" scale means that those children have difficulty in perceiving important, specific and everyday stimuli, seeing that they are called to assemble images with significance, such as people and objects. In general, they have problems in their perceiving organisation and virtual intelligence, as well as their contemplating ability and learning through test and error (children can try to assemble the objects in different ways until they find the right one, within a given timeframe). Moreover, they have difficulty in processing stimuli simultaneously, in the holistic stimuli process in the right hemisphere of the

brain and in the strategic planning for facing a problem. These observations comply with the research of Nikolai et al. , which showed that discharges of the right hemisphere, especially during sleep, in people with epilepsy have been related to attention and concentration problems.

In practice, low performance in the “Vocabulary” scale means that those children have reduced hearing perception of simple verbal stimuli and weakness in comprehending simple words, seeing that the children are asked to explain the meaning of everyday and usual words. Children with low performance in the “Vocabulary” scale generally have low verbal comprehension, limited abstract thinking and learning ability, and they have deficits in crystallized intelligence, long-term memory and acquired knowledge. Furthermore, epileptics with discharges in the right hemisphere make more mistakes on the vocabulary other people use and the meaning of the words they use themselves . Except for knowing what a word means, this scale also evaluates the verbal fluency of a child. For this reason, long or extremely detailed answers might indicate obsessive-compulsive tendencies, while bizarre or unreasonable answers indicate psychic disorder.

In practice, low performance in the supplementary scale “Numbers memory” means that those children have deficits in their short-term memory and their concentration ability. Also, it indicates difficulties in recalling information, in sequential ordering information processing, as well as in their codification for further cognitive process (inverse repetition of numbers that were presented orally). These difficulties are notably obvious in students, epileptic or not, with learning difficulties.

Concerning the positive co-relations found between the performances in the “Image Filling,” “Similarities,” “Cube Sketches,” and “Vocabulary” scales, they confirm older findings, according to which the “Image Filling” scale has a bigger co-relation to the “Cube Sketches” scale (in this case $r = 0.521$, $p = 0.000 < 0.05$) and the “Similarities” scale is more related to the “Vocabulary” scale (in this case $r = 0.419$, $p = 0.003 < 0.01$). Those are the scales in which students with learning difficulties have the highest performance, as happened in the present research as well.

Concerning the sex influence, no differences were observed between the performances in each scale of the test, except for the “Object Assembly,” where the girls reached a higher average of typical points than the boys ($9.72 > 8.35$). In practice, this means that they have higher contemplating ability and synthesis ability (part-whole relations), as well as better simultaneous stimuli processing.

Furthermore, the girls had higher General Intelligence Quotient (Verbal and Practical) than the boys ($99 > 92$), which confirms that learning difficulties with or without epilepsy are found more often at boys than at girls.

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