

Dyslexia: An Altered Brain Architecture

¹Felice Corona, ²Francesco Perrotta, ³Emilia Tartaglia Polcini and ⁴Carla Cozzarelli

¹Department of Medicine, Faculty of Medicine and Surgery, University of Salerno, Italy

²Department of Medicine, Faculty of Science Motor, University of Perugia, Italy,

³Department of Education and Training, Faculty of Humanities,
Pegaso Telematic University of Naples, Italy

⁴Department of Education,
Provincial Education Office, Youth Policy Office, Benevento, Italy

Abstract: Problem statement: Dyslexia is defined as a syndrome belonging to Specific Learning Disorders, DSA code F81.0. Its most visible manifestation is the difficulty that subjects have to correctly read out loud and quickly. These impediments are not due to lack of linguistic intellectual abilities, not education, or properly to external causes sensory deficits. **Approach:** The objective was oriented in the verification, in the construction and examination of courses and projects likely to involve the recognition and social relationships, education of dyslexic children in relation to which still struggles to make a path of inclusion, integration and full acceptance in any context and priority in school. **Results:** Following a Memorandum of Understanding between the Ministry of Education, the Foundation Telecom Italy and the Italian Dyslexia signed in Italy, has been pursued for the purpose of promoting research-action on the DSA from the local school. **Conclusion:** The main parameters that we propose pay attention to cognitive factors, emotional and relational processes that underlie learning designed.

Key words: Compensatory tools, instruments dispensed, learning occurs, main parameters, learning designed, cognitive factors, italian dyslexia, still struggles, syndrome belonging

INTRODUCTION

Dyslexia is defined as a syndrome belonging to Specific Learning Disorders, DSA, with the code F81.0. Its most visible manifestation is the difficulty that subjects have to correctly read out loud and quickly. These impediments are not due to lack of linguistic intellectual abilities, not education, or properly to external causes sensory deficits. Because reading is done through a complicated mental process, dyslexia manifests itself in various ways such as: poor discrimination of graphemes differently oriented in space, poor discrimination of graphemes, which differ in small details, poor discrimination of phonemes corresponding to graphemes and phonemes sound deaf, difficulty of sequential decoding, the prevalence of the component interface. These channels are flanked by several different disabilities in reading. Indeed, it is possible to classify dyslexia: surface, phonological, deep. A purely clinical hypothesis of dyslexia has been expressed by which makes a distinction between: Dyseidetic dyslexia and dyslexia dysphonological.

A further distinction neuro-psycho physiological was made by showed that two types of dyslexia in the second hemisphere damage: the type L on the right hemisphere, when there are visual-perceptual deficits and the type P on the hemisphere Left, for which you can use perceptual strategies, designed to recover at least part of the reading.

This syndrome according to our most recent studies seem closely related to the morphology of the brain. As produced by researchers at Yale University School of Medicine, has identified a gene on human chromosome 6 called DCDC2, whose alterations would be associated with dyslexia. According to these scholars DCDC2 of a genetic mutation leads to a defect in the formation of brain circuits responsible for reading and also the genetic alteration to be hereditary and family. The main advocate of such research,, believes these findings, if validated definitively, could enable a precise diagnosis to identify dyslexia and a real understanding of the function at the molecular level of reading. The research was published in the journal Proceedings of the National Academy of Sciences and was based on a statistical sample of 153 dyslexic

Corresponding Author: Felice Corona, Department of Medicine, Faculty of Medicine and Surgery, University of Salerno, Italy

families. Statistical evidence showed that about 20% of cases of dyslexia is due to the alteration in the gene DCDC2. The genetic alteration on this chromosome corresponds to the deletion of a regulatory region. The same gene is then responsible, in reading centers of the brain, modulation of the migration of neurons. Emerge from other studies on 15 other chromosomes involved and especially the 2 that would send the deficit in phonological awareness and subsequent reading problems. This altered brain architecture does not allow you to read and follow the normal stages of learning to read in accordance with the Model: The logographic phase with the instantaneous recognition of familiar words, which does not take into account the order of letters and phonological factors; alphabetic phase with the discovery of the grapheme-phoneme conversion mechanism, which allows read new words and non-words based on orthographic stage analysis strategy instant spelling of the word in its units, without conversion and finally the phonological lexical phase: focus on automating the process of reading, with the construction of a warehouse lexical that allows rapid detection of known words. Together with dyslexia may be related, however, other issues such as: dysgraphia; the dysorthography, dyscalculia, dyspraxia and. Regardless of the series thus far has been enunciated conducted a systematic review with meta-analysis of (Bakker, 1996; Boder, 1973; Caylak, 2010; Cozzarelli, 2010; Landerl *et al.*, 1997; Mody and Silliman, 2008; Perrotta *et al.*, 2011), conducted on 52 studies, published between 1963 and 2007, on a sample of 1,793 adult dyslexic subjects (18-44 years) than the control group without dyslexia of about 1,893 people who made it possible to show the persistence of dyslexia in adulthood. One thing certainly not comforting, but to consider to develop even more motivation to debunk in the future such data classifiers pessimistic.

Objectives and functions: The target was oriented in the verification, in the construction and examination of courses and projects likely to involve the recognition and social relationships, education of dyslexic children in relation to which still struggles to make a path of inclusion, integration and total acceptance in any context and priority in school. The prevalence of this disorder is estimated to be around 3% of school-age children. Circular n° Prot. 4099/A/4 promulgated by the Ministry of Education October 5, 2004 has stressed the importance of the function and role of teachers in encouraging the use of compensatory and dispensers that serve to facilitate learning dyslexic children and young people applying to them a specific evaluation at all stages of their schooling, including the final

assessment. It 'was also specified that the adoption of such measures is sufficient specialist diagnosis of specific disorder or dyslexia learning to read. This move adds a bill, presented several times but not yet launched, in order to recognize dyslexia in a systematic and regulated as an actual disability, since this happens in many other EU member countries, to enable dyslexic certificates use of alternative methods of approach to knowledge that they are not necessarily conditional upon the written text. On January 26, 2007 were promulgated Recommendations for clinical practice on specific learning disabilities by the method of the Consensus Conference from the most established cultural and professional associations who are interested in this area and the problems associated with it. Representatives of nearly all these associations, have established a panel to review these recommendations as soon as possible to get some real guidelines as provided by the National Plan Guidelines. On August 19, 2009 was made official in addition to the Official Regulations concerning the coordination of the existing rules for the assessment of pupils. Subsequently the law was approved October 8, 2010, No 170, publication in the Official Gazette no. 244, October 18, 2010 Article No. 10 where it addresses precisely the situation for pupils with ASD.

MATERIALS AND METHODS

Following a Memorandum of Understanding between the Ministry of Education the Foundation Telecom Italy and the Italian Dyslexia signed in Italy, has been pursued for the purpose of promoting research-action on the DSA from the local school.

Depending on what the various systems and projects promoted by Act No. 170 of 2010, on DSA, was pursued and supported by us and will be monitored in the ongoing Project of "Dyslexia in School" focused on the documentation of best practices and customized lesson plans for students with ASD, reflecting on the methods applied and those to be introduced from scratch and possible activities to improve teaching for learning People with this form of disability. The annual projects about thirty of the whole national territory so you propose to spread on the territory of the teaching practices and effective methodologies. In order to develop the culture of schools in action research.

The Project consists of several parts: The title, the data of each school, the school experience in the field of ASD, learning and educational objectives pursued and prosecuted, the planned activities and expected the partial results, the methodologies and therefore the organization of teaching and evaluation strategies

adopted, the documentation and procedures for disclosure to make available the results of the design was carried out, then the people involved and any partner, in conclusion, the financial plan drawn up.

RESULTS AND DISCUSSION

The main parameters that we propose pay attention to cognitive factors, emotional and relational processes that underlie learning designed.

Everything revolves primarily around organizational strategies prepared, customized evaluation strategies provided by estimating the level of involvement in the design of the PDP, the student, family and resources expended in the area. In view of offering a high degree of innovation and learning that makes use of statistical standards present significant percentage of the population which would equate to the haunting.

Dyslexia is not a disease or a mental problem. According to the definition recently approved by the International Dyslexia Association (IDA), "dyslexia is a neurobiological learning disabilities home. It is characterized by difficulty in making an accurate reading and/or flowing from poor writing skills (spelling). These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the guarantee of an adequate education. Secondary consequences may include problems in reading comprehension and reduced practice reading that can prevent growth of vocabulary and general knowledge. "Even the World Health Organization classifies dyslexia and other specific learning disorders as a disability it is not possible to learn reading, writing or arithmetic in normal times and normal teaching methods. If this problem is not identified in the early years of primary school, through the evaluation of an expert in the field of learning disabilities, the consequences can be of a certain gravity.

CONCLUSION

If a dyslexic child is subjected to a usual method of learning, he will succeed only with a great deal of energy and concentration to get results for his comrades and his teacher are almost trivial. During the kindergarten you can make an assessment of the prerequisites for the ability to read, so you can intervene early and possibly enhance the skills deficient. Although the diagnosis of dyslexia can be done only in second or third class of primary school, the signs of the disorder can be caught much earlier

(when the child faces the learning of reading and writing) and should be taken immediately; waiting the difficulty increases.

REFERENCES

- Bakker, D., 1996. *La dislessia vista di lato*. Franco Angeli, Milano.
- Boder, E., 1973. Developmental Dyslexia: A diagnostic approach based on three atypical reading-spelling pattern. *Dev. Med. Child Neurol.*, 15: 663-687. PMID: 4765237
- Caylak, E., 2010. The studies about phonological deficit theory in children with developmental dyslexia: Review. *Am. J. Neurosci.*, 1: 1-12. DOI: 10.3844/ajns.2010.1.12
- Cozzarelli, C., 2010. The symbolic threshold: A dynamic form of the mind as an expression of radiant thinking. pages 34-37 a cura di felice corona. *Am. J. Neurosci.*, 1: 1948-9900. DOI: 10.3844/amjnsp.2010.34.37
- Landerl, K., H. Wimmer and U. Frith, 1997. The impact of orthographic consistency on dyslexia: A German-English comparison. *Cognition*, 63: 315-334. PMID: 9265873
- Mody, M. and E.R. Silliman, 2008. *Brain, Behavior and Learning in Language and Reading Disorders*. 1st Edn., Guilford Press, New York, ISBN: 1593858310, pp: 400.
- Perrotta, F., Perrotta, F. Polcini, E. Tartaglia and C. Carla, 2011. The new frontiers of edutainment: the development of an educational and socio-cultural phenomenon over time of globalization. *Am. J. Soc. Sci.*, 7: 408-411.