A prognostic screening test of Learning Disabled -ADHD children: www.dyagnosis.gr

A quick, easy to administer, and highly accurate screening tool for children with suspected LD-ADHD

Dr. Xystrou Maria

Ph. D., (Sociology of Education), Brunel University, West London, U.K

Abstract:

Aim: a) There is a significant correlation between the socio-phycho-educational-environmental problems and LD

b) Where LD can be differentiated from their normal controls on the basis of their psycho-socio-educational profile.

Material: The parents of the LD as well as their normal controls who participated in the study completed a comprehensive questionnaire, about their children's behavior, their psycho-educational and social behavior.

Subjects: 227 children took part, raging in age from 6 to 11. The sample consisted of 136 normal controls, and 91 LD-Dyslexic children. All were drawn from the "Dyslexia & I.Q. Center". The controls were identified according to their parents' answers that had filled the questionnaire that was mentioned above.

Results: The LD children's psycho-educational characteristics were found to be significantly worse than those of the normal controls of the same age. The two groups differed so much that on the basis of their psycho-socio-educational profile the Discriminant Analysis correctly classified the two groups with the high accuracy of 94,6%. The LD-Dyslexic group was correctly identified with 97,6%, while the normal controls were classified with 93,7% accuracy.

Conclusions: The very high discrimination accuracy between the two groups raises the possibility to use the 21 questions as a quick, easy to administer, inexpensive and highly accurate screening tool –DYAGNOSIS.GR- for children with suspected LD. (Xystrou, 2016) As it does not include questions about reading, spelling or language, therefore may become appropriate for screening even at preschool age, as a prognostic screening test of LD.

Keywords: Dyslexia, Dyagnosis.gr, Learning Disabilities, Learning Disorders, Social Behavior, Phycho-Socio-Educational Characteristics, ADHD

Introduction

Learning disabilities were almost unknown as a field until the mid-1960s. For the sake of brevity, suffice it to say that historically, dyslexia is not a new discovery for it has existed as a specific medical entity for well over seventy-five years under an assortment of names. It was Kussmaul who, in 1877, first called the loss of reading ability 'word-blindness' (Saunders, R.E., 1965). During the past two decades, however, millions of children have been identified as learning disabled (L.D) and have been 'treated' by educators and psychologists. There is no question that children identified as learning disabled do indeed have serious learning difficulties that commonly begin in the early grades. (Coles G., 1987) They are labeled by teachers and peers as different, which may alienate them from «normal society». There have been many changes in the terminology used to describe people with L.D. in recent years. One of the arguments of 'new' terms is their more positive connotation. Apart from the label 'exceptional', all had very similar negative connotations. (Hastings, RP etc., 1993).

Dyslexia and learning disabilities are used in this study as they have been described in all Pavlidis' s research. As a syndrome, that is best exemplified by an unexpected severe reading retardation, which is not caused by any known intelligence, psycho-educational or environmental factors. (Pavlidis, 1990)

A major difference between dyslexia and other reading disabilities is that, unlike dyslexia, other categories of reading failure can be predicted on the basis of neurological, intelligence, socio-economic, educational, and psychological (motivational, emotional) factors known to adversely affect the reading process. (Pavlidis, 1990) If, for instance, a child has problems in one or more of the above-mentioned areas, it is expected to have reading problems. The extent of the reading disability is determined by the

severity and number of factors that are involved. In contrast, if a child has none of the above-mentioned problems, he is expected to be a normal reader. ***Children can be classified as dyslexic when their failure to learn to read cannot be predicted by deficiencies in any of the known causes of poor reading. Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, although they can contribute to its severity or amelioration. The causes of dyslexia are constitutional (e.g. subtle brain malformation or malfunction) but they remain as yet undetermined. If dyslexia is due to neurological factors, then there is no reason why dyslexia should not occur at all intelligence levels and in all psycho-socio-cultural backgrounds, as all other neurologically based condition do. (Pavlidis, 1985).***

There is a widespread recognition that children with specific learning difficulties may experience social and emotional problems because of their learning difficulties. Poor use of the language skills must cut deep into the personality and cultural factors of those who experience early failure. Others view L.D. children negatively in society. Compared to non-L.D. children, more L.D. children were rejected and fewer were popular. They were classed as shy, seeking help and as victims of bullying significantly more than non-L.D. children. (Nabuzoka, D., Smith, PK., 1993). There is reason to think that, because of the circumstances in which dyslexic children find themselves, an important characteristic of their inner life is that they feel frightened-fear of failure, fear of being «different», fear of words, fear of social «gaffes». (Miles, T., 1996).

Earlier research demonstrating that learning disabled -who experienced consisted academic failure-, also experience social isolation, social exclusion in relation to their lack of access to social goods -i.e. education, employment, welfare, etc.- and loneliness experience. (Bryan, JH., Bryan, T., 1990). Children with learning disabilities are more likely to be rejected or neglected by their classmates than children without learning disabilities, and even by their parents and teachers who are supposed to be concerned about the emotional impact of this rejection. Students with learning disorders view themselves as more lonely and report lower levels of the sense of coherence than the average achievement students. (Wiener, J., 1998)

They enjoy minimal academic success throughout their school years, and as learning failure deepens, so does the disappointment and insecurity. Certainly the ramifications extend far beyond the classroom. Their reading and other learning problems are likely to continue into adulthood, with destructive effects on their feelings of self worth, personal relationships and job opportunities. It is not uncommon to hear apprentice tradesmen express remorse over not being able to read well enough to pass prescribed tests in order to become a member of the local union.(Saunders, R.E., 1965)

Recent research on the adult status of individuals with L.D. was reviewed. The manifestations of learning disabilities in adulthood are different than in childhood, and that is why many adults with L.D. are not independent or self-sufficient. A research indicates that there is a considerable gap in access to paid employment for young people with disabilities compared with young people in general. And the transition from school to further education, training, employment, unemployment can be difficult. (Hirst, MA. 1983)

Last but not least, learning disabilities have been associated with juvenile delinquency. There has been a resurgence of interest in the possibility of a link between learning disabilities and juvenile delinquency. In part this stems from an appreciation of the fact that many children who were or are adjudicated have learning and school performance difficulties. Learning disabilities cause school failure, which leads to a negative view of the child by adults, his or her peers, and by the child himself or herself, and then leads to association with a delinquent peer group. If children reject social institutions (such as school), they may seek alternative, frequently delinquent, activities. Several authors have suggested that there is a strong association between specific learning disabilities and aggression, antisocial behaviour, and juvenile delinquency. Claims that learning disabilities cause aggressive behaviour and delinquency are increasingly common in the popular press. A variety of theories concerning this purported causal relationship have been proposed.(Cornwall, A., Bawden, HN., 1992). For example Davies & Byatt (1997) in their study have tried to discover the incidence of dyslexia and/or basic Skills difficulties amongst offenders on Probation, Community Service, on licence or within the Youth Justice System in the County of Shropshire, UK. Also Alm & Anderson (1997), have been carried out a study at three prisons in the county of Uppsala, and in their results for Swedish group, found that 64% of their samples are considered to have reading and writing difficulties. This includes all types of background causes e.g. dyslexia problems, lack of knowledge, mental retardation, brain lesion or emotional problems.

<div align="center">**Methodology-Research Design**</div>

Aim

This study examined whether:

1) There is a significant correlation between the socio-psycho-educational-environmental problems and LD

2) Dyslexics-LD could be differentiated from their normal controls on the basis of their psycho-socio-educational profile.

This thesis poses and analyses a problem, but it is not claimed that resolves it. It defines a field of observation and makes a step towards its investigation. There should be others to come. We do not enter deliberately in many issues and questions that come up during the research. We were not that interested in building up a general theory of learning difficulties and to examine in retrospect if this agrees with experience. Though that it was more essential to start regaining to a limited extent the lost supervision of the procedure, *the peculiar change of human behaviour*, to pursue afterwards a certain understanding of its causes and at the end to collect as many theoretical thoughts emerged during this course. If we succeeded to create a somehow solid basis for speculation and future work towards this direction, this study has fulfilled its purpose. It would need the reflections of many people and the collaboration of different scientific fields, which often nowadays are separated by artificial barriers, to be able to answer little by little the questions that arise in the course of the study. Those concern psychology, anthropology, sociology or ethnology.

Subjects

Two hundred and twenty seven participants (122 boys and 104 girls) took part in this thesis ranging in age from six (6) to twelve (12) and their parents. The sample consisted of a hundred and thirty six (136) normal controls -boys and girls- from different schools in the region of Thessaloniki and socio-economic status, ninety one (91) dyslexics, ADHD and learning disabled children from the "Dyslexia and I. Q. Centre". All subjects came from the region of Thessaloniki. The subjects' selection as well as their testing took place according to standard ethics and after the necessary permissions were received and the appropriate informed consents were filled out.

Material

The basic tool used in the study is a questionnaire. The questionnaire is a comprehensive questionnaire that was developed by Prof. Pavlidis, about children' s psycho-educational and social behavior. It was also used in England, USA and Greece with Dyslexic and other Learning Disabled populations. The above mentioned Questionnaire mainly refers to non-verbal aspects of children' s life. Was constructed for clinical and research reasons by Prof. Pavlidis (Pavlidis 1982; 1986). Most of the questions are "closed", but in some of them were open questions, e.g. "describe some specific talents or special qualifications of your child". The construction of this questionnaire was based on a detailed literature review and on the wide international (England, USA, Greece) clinical experience of Prof. Pavlidis. The whole Questionnaire is not included in.

In Xystrou's study the criteria used for identifying dyslexics have been fairly strict and as «quantitative» as possible. The criteria were set after long consultations with educational psychologists and careful critical search through the dyslexia literature. The main aim of the criteria is to distinguish dyslexics from backward readers, and for dyslexics to be at least as retarded in reading as backward readers. Another aim has been the quantification of as many qualitative factors as possible, e.g., educational opportunities. The children had to fulfill all the criteria in order to be included in studies.

In this study we deal with different age groups and with a breadth of disorders ranging from learning disorders and dyslexia across emotional problems and antisocial behaviour. All the normal control subjects come from the region of Thessaloniki and were given the following tests: RAVEN: Standard Progressive Matrices (RAVEN IQ test), Reading Text, Spelling text, Comprehension.

All of the children and their parents spoke Greek as a first language. The dyslexic and learning-disabled participants were tested and diagnosed mainly in "Dyslexia and IQ Centre, Thessalonica. The normal controls were tested in their schools. Completing the questionnaire took 40-50 minutes.

Procedure

The parents of normal controls participating in the study were be individually given the above mentioned questionnaire to complete about their children's reactions and social behaviour in terms of friendship, social adjustment, educational and behavioural problems. The dyslexic children's parents had already filled in an extended questionnaire that was especially developed for Greek students with Learning Difficulties, ADHD and Dyslexia. Further investigations, particularly socio-educational evaluation, were of major importance.

Both groups of participants wrote a dictated text appropriate for their age. Participants also read a text appropriate for their age and a second text two years below their grade, and their reading speed was calculated. Finally, the RAVEN IQ test and WISC-R verbal and performance scores were analyzed, in a classical as well as in a novel way.

The average duration of the test was 45 minutes per child. There were few children who needed 50-55 minutes. The children were tested individually. There was a stopwatch for the timing. The RAVEN IQ test was given for the whole group at the same time of the 360 delivered questionnaires, 280 were completed and returned (boys and girls). In this research only 136 were used. In August 1999 the Questionnaire was sent to 80 parents in Melissoxori-Thessaloniki, who were from mid-low socio-economic status. 60 questionnaires were returned and 30 of them are used in the research. In December 2000 the Questionnaire was sent to 280 parents who were from middle-high socio-economic status. Questionnaires were returned by 180 of the parents and 106 were used in the research.

Statistical Analysis

Discriminant Analysis Technique was used to **Classify** if a child is a Dyslexic-LD recording to his psycho-socio-educational profile and to Define those factors that are particularly significant in this estimation (rejecting certain others) and to use them in order to evaluate if a child is LD-Dyslexic or not.[**To define the question diagnosing LD**]

1st Analysis

The Dyslexic-LD children's psycho-socio-educational characteristics were found to be significantly worse than those of the normal controls of the same age. The two groups differed so much that, the Discriminant Analysis correctly classified the two groups with an accuracy of 94,6%. The LD-Dyslexic group was correctly identified with 97,6%, while the normal controls were classified with 93,7% accuracy.

Diagnosis (Normal/Dyslexics-LD)		Predicted Group Membership		TOTAL
		DYSLEXICS-LD	NORMAL	
Original Count	Dyslexia-Ld	40	1	41
	Normal	8	119	127
%	Dyslexia-Ld	97,6	2,4	100,0
	Normal	6,3	93,7	100,0

94.6% Accurately Diagnosed

2nd ANALYSIS

In order to classify if a child is a LD-Dyslexic focusing only in his psycho-sociological profile, we exclude questions relevant to educational profile (a. reading, spelling & arithmetic/ b. reading, spelling). The Discriminant Analysis was repeated.

The two groups differed so much that the psycho-sociological profile itself was enough to correctly classify them with an accuracy of 88,8% & 89,9% respectively. The LD-Dyslexic group was correctly identified with 83,7% while the normal controls were classified with 90,6% accuracy.

Reading-Spelling-Arithmetic excluded

Classification Resultsᵃ

		Diagnosis (Normal - With learning difficulties)	Predicted Group Membership		Total
			Has learning difficulties	Normal	
Original	Count	Has learning difficulties	36	7	43
		Normal	12	115	127
	%	Has learning difficulties	83,7	16,3	100,0
		Normal	9,4	90,6	100,0

a. 88,8% of original grouped cases correctly classified.

Reading Spelling Exluded

The LD-Dyslexic children' s phycho-sociological characteristics –reading & spelling excluded- were found to be significantly worse than those of the normal controls of the normal controls of the same age. The LD-Dyslexic group was correctly identified with 87,8% while the normal controls were classified with 90,6% accuracy.
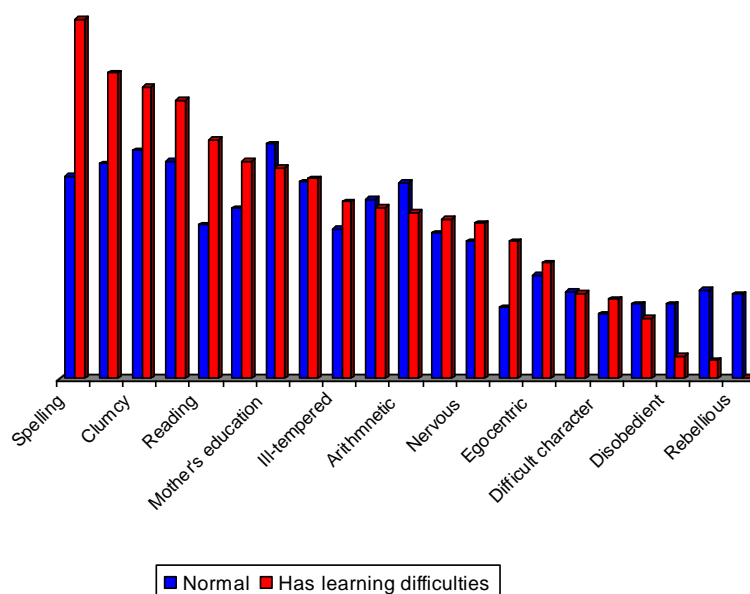
Classification Resultsᵃ

		Diagnosis (Normal - With learning difficulties)	Predicted Group Membership		Total
			Has learning difficulties	Normal	
Original	Count	Has learning difficulties	36	5	41
		Normal	12	115	127
	%	Has learning difficulties	87,8	12,2	100,0
		Normal	9,4	90,6	100,0

a. 89,9% of original grouped cases correctly classified.

The results of this thesis using the Questionnaire were most promising. The LD-dyslexic children psycho-socio-educational characteristics were found to be significantly different from the normal controls of the same age. In fact, the two groups different so much that on the basis of their psycho-socio-educational profile the Discriminant Analysis (DA) successfully classified the two groups with accuracy of 94,6%. The LD-dyslexic group was correctly identified with 97,6% while the normal controls were classified with 93,7%.

Classification Function (LD diagnosis)

Spelling, Clumcy, Reading, Mother's education, Ill-tempered, Arithmnetic, Nervous, Egocentric, Difficult character, Disobedient, Rebellious

■ Normal ■ Has learning difficulties

The results of this study when seen superficially, i.e. the total percentage of their emotional and behavioral problems, confirm and agree with existing literature, which claims that learning disabled and dyslexic children differ in their social skills social, behavior and psycho-educational profile. Learning disabled children seem to understand what is acceptable behavior in our society, they have problems choosing appropriate social behaviours to actually use. (Schumaker & Hazel,1984).

Conclusion

The very high discrimination accuracy between the two groups raises the possibility to use the **Questionnaire** as **a quick, easily used, inexpensive and highly accurate screening test –dyagnosis.gr** for children with suspected LD-Dyslexia. As it does not include questions about reading, spelling or language, therefore may become appropriate for screening even at preschool age, as a prognostic screening test of LD. The high diagnostic accuracy of the questionnaire has been proven to be highly consistent in different studies ranging from 93,7% to 97,6%.

The present research was primarily designed to create a social profile of the learning disabled and dyslexic children, likewise designed to empirically identify distinct behaviour in children with learning disabilities and dyslexia through the use of the appropriate part of **the specific 21 questions from the above mentioned questionnaire**. Also, to compare family background in relation to their individuality and self-image in Learning Disabled children to normal controls. . Socio-Emotional, educational and behavioral problems may help to better identify that a child may have Learning Difficulties. Although we must keep in mind two important facts: 1) The socio-psycho-educational profile of the LD child may not be unique and it is very likely that its secondary to their learning problems. 2) Psycho-socio-enviro-educational and intelligence factors do not cause dyslexia, but they can contribute to its severity or amelioration (Pavlidis, 1985, 1990, 2004)

One has to be cautious to the strong possibility that the items that compose the "Prognostic Model" may not be specific to Dyslexics-LD but may also characterize children with general LD of different etiologies, e.g. low IQ, adverse psycho-socio-educational environment, etc, as shown by Aslanidou & Pavlidis (2004). **Even so, the "dyagnosis.gr screening test" with high accuracy differentiates children with LD-ADHD from normal controls.** (Xystrou 2016)

The potential benefits of such a successful rate are of great importance. In today's societies of advanced technology any divergence from the ideal prototype of the perfectly healthy person often causes rejection and exclusion from the majority of social activities. Learning disabled and dyslexics persons have a limited choice and a reduced possibility of participating in the social activities in a community, as well as poor social behaviour. Perhaps the needs of those with Dyslexia, ADHD and Learning Disabilities could be neglected and so individuals could loose out on the support they need. The aim is to provide a quick, easy to use, inexpensive and accurate tool –www.dyagnosis.gr-for the screening of LD-dyslexics. (Xystrou 2017) This potential will be of particular importance to countries like Greece, where only few and very limited possibilities exist within the educational system for the diagnosis of the LD-dyslexic children. The easy identification of children with possible Dyslexia and Learning Disabilities raises the possibility to satisfy their need for treatment. Learning disabled children must be identified so that programs, which also minimise the disability while emphasising the children's strengths, can be instituted.

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International Journal of Latest Research in Humanities and Social Science (IJLRHSS)
Volume 01 - Issue 05
www.ijlrhss.com || PP. 05-11

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