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Children referred to a diagnostic-consulting center with special reference to specific learning disorder

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ABSTRACT

The Child Protection Center named Mihalinio is one of the services that PIPKA provides to children and their families (PIPKA is regarded as the major national organization concerning the welfare of children in Greece).

This study was based on 283 cases referred for assessment during the past two years. All cases were evaluated and interviewed. In 55.6% of cases, learning disorder was the reason for referral. In 13.1% of cases no disability was diagnosed. There were three times as many boys affected by specific learning disorder as there were girls (66.3%, 33.7% respectively). In 34.3% of these children with specific learning disorder, speech delay had been recorded at an earlier age. 11.8% of the specific learning disorder group were identified during the first grade of primary school while 29.4% the first grade of high school.

INTRODUCTION

The Child Protection Center named Mihalinio has been working with children since 1961. Children and adolescents presenting a wide range of disabilities affecting the developmental, behavioral and cognitive domain were referred to the center for diagnostic evaluation and advice on management. This study is an investigation of problems presented by the referred population, especially focusing on the specific learning disorders subgroup. This subgroup is of major interest because of its high prevalence and diagnostic complexity, associated with diversity in origin and manifestation. A growing body of literature throughout the world has been exploring this important area of developmental pediatrics.

MATERIALS AND METHODS

All children referred to the center from 1 October 1992 to 31 December 1994 underwent diagnostic approach and interview. The analysis was based on 283 cases referred for the first time, during the above mentioned period. Most of the families were residents in the greater Piraeus area and the neighbouring islands (population around two million). Only a few families were residents of rural areas. Most of the families were of low-income status stemming from the high proportion of low-income residents in the part of Piraeus. That the center provides free services as being part of a national organization is also a relevant fact. The diagnostic process in relation to the specific learning disorder subgroup comprised:

- a questionnaire covering personal, family and medical history data
- developmental history
- clinical observation
- direct observation of performance in basic academic skills such as reading, writing, spelling and arithmetic
- the DSM III - R criteria of Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD)
- the WISC - R scale for the IQ score.

The data collected covered a series of variables derived from the developmental, environmental and psychological domain. Group contrasts for continuous variables, such as age, were subjected to t-test analysis, while for contrasts of nominal variables, uncorrected χ^2 values were computed.

All probabilities are two tailed. Significance is stipulated as $p < 0.05$ with trends of $0.05 < p < 0.10$ indicated.

RESULTS

The most common referral reason was learning disorders (55.6%), while 44.4% was referred because of other less frequent causes initially suspected as mental retardation, cerebral palsy, autism and immaturity. After diagnostic evaluation, no disorder was identified in 13.1% ($n = 37$). Specific learning disorders was the diagnosis in one-third of the cases (36%, $n = 102$) while other deficiencies were diagnosed in 50.9%, $n = 144$ (Table 1).

Table 1. Referral reason and final diagnosis

	Referral reason		After the diagnosis	
	N	%	N	%
No problem	-	-	37	13.1
Learning disorders	157	55.6	102	36
Other problems	126	44.4	144	50.9
Total	283	100	283	100

Table 2. Age at referral

Age in years	Children referred (n = 283)		Specific learning disorders group (n = 102)	
	N	%	N	%
1-2	5	1.8	-	-
2.01-5.06	26	9.2	-	-
5.7-12	166	58.7	65	63.7
12.01-18	85	30	36	35.3
>18	1	0.03	1	1
Total	283	100	102	100

Table 3. School grade attendance of the specific learning disorders group

	Primary school		High school	
	N	%	N	%
Grade 1	12	11.8	30	29.9
Grade 2	11	10.8	9	8.8
Grade 3	11	10.8	2	2.0
Grade 4	5	4.9	-	-
Grade 5	11	10.8	8	7.8
Grade 6	3	2.9	-	-
Total	53	52.0	49	48.0

Of a total of 283 children, 69.6% (n = 197) were boys and 30.4% (n = 86) were girls. There were thus twice as many boys affected as were girls. In respect of the specific learning disorder subgroup, there were three times as many boys affected as there were girls (75.5%, n = 77 and 24.5%, n = 25 respectively).

Of the 283 referred, 58.7% (n = 166) was between 5.07 and 12 years of age, while 11% were preschoolers and 30% were between the ages of 12 and 18. Focusing on children diagnosed as subject to specific learning disorder, 63.7% (n = 65) belonged to the 5.07-12 years age group and 35.3% (n = 36) to the 12.01-18 years age group (Table 2). Of the specific learning disorder subgroup 52.0% (n = 53) presented during the primary school program, 11.8% of them of the first grade. It is also interesting that 29.4% (n = 30) proved to be high school first grade (Table 3).

Data concerning parental education revealed that only 39.2% of the fathers and 37.5% of the mothers had only primary school education. Moreover, only 27.9% of the fathers and 30.7% of the mothers completed the formal schooling years (high school graduates). Finally, only 9.2% of the fathers and 5.7% of the mothers had formal educational experience beyond school.

The number of children in the family and birth order were not found to have a significant relationship with the existence of specific learning disorders.

There was no association demonstrable between specific learning disorders and hand preference in the present study.

Earlier speech problems

One of the findings we considered important was that children with specific learning disorder were known to have had speech delay and other language problems during their earlier years of life:

- 18.6% of the specific learning disorder group spoke first words at an age > 14 months (p < 0.005)
- 34.3% of the above group spoke phrases at an age > 25 months (p < 0.009)
- About 20% of the group had receptive (p < 0.01) or expressive (p < 0.002) language difficulties
- There is also a positive association between problems of verbal structure and syntax and the existence of specific learning disorders (p < 0.07)
- Finally, articulation problems were frequent in the specific learning disorder group (Tables 4 and 5).

Associated cognitive development

About 74.5% of the specific learning disorder subgroup were evaluated as of normal intelligence (IQ

score > 85), while 20% achieved a borderline IQ score (84-70). Cases with mild mental retardation were also noted (5%, IQ = 69-55) and this will be further discussed in the current study.

Half of the children were referred to the center by their teachers (50.5%) and in 22.6% initiative was taken by the parents themselves, while 26.1% of the cases were referred by other professions (doctors, social workers). Focusing on the specific learning disorder group, 67.6% were referred by teachers, 20.6% by parents and 11.8% by others (Table 6).

DISCUSSION

The present study was designed to investigate the problems of the referred cohort, especially focusing on the specific learning disorder group. These appear to arise on the basis of developmental impairment involving understanding or the use of language (written or spoken) which may manifest itself in an imperfect ability to listen, to read, write, spell or accomplish mathematical calculations. This may be due to genetic factors linked or otherwise to a relative failure in cerebral maturation, brain damage or to a combination of these factors. The term "specific" does not include children who have learning problems which are the result of visual, hearing or motor handicaps, or of mental retardation or of environmental, cultural or economic disadvantage^{1,2}. Specific learning disorders have been reported to affect about 10-15% of the total school population^{3,4}, although a considerable challenge remains before accepting these figures because of the lack of universal diagnostic criteria (major diagnostic difficulty)^{5,6}.

In addition, previous reports describe a link between specific learning disorders and adolescent maladjustment as well as ultimate substance abuse, adult delinquency and criminality^{7,8,9}.

There is a change in tabulation (Table 1) between the referred and the after diagnosis situation since in 13.1% no dysfunction was confirmed. Of a total 55.6% referred because of learning disability, 36% were found to accord with specific learning disorders after evaluation. That implies that an objective and well designed diagnostic process is most critical, as in some instances children providing an unsatisfactory school performance can simplistically be characterized as having specific learning disorders although no dysfunction really exists. Such a label not only stigmatizes the child but also creates a situation whereby the environment expects the child to be different and therefore treats him or her as such, which further perpetuates the existence of a problem³. In other

Table 4. Speech development

		Specific LD (n=102)		No Problem (n=37)		p* value
		N	%	N	%	
Age child talked (words)	<14 months (normal)	53	52	25	67.7	<0.005
	>14 months	19	18.6	1	2.7	
	No data	30	29.4	11	29.7	
Age child talked (phrases)	<25 months (normal)	37	36.3	16	43.3	<0.009
	>25 months	35	34.3	7	18.9	
	No data	30	29.4	14	37.8	
Verbal comprehension	Satisfying	86	84.3	34	91.9	<0.01
	Medium-bad level	16	15.7	3	8.1	
	No data	-	-	-	-	

* Significance is stipulated as $p \leq 0.05$ with trends of $0.05 < p \leq 10$ indicated

Table 5. Speech development

		Specific LD (n=102)		No Problem (n=37)		p* value
		N	%	N	%	
Verbal expression	Satisfying	74	72.5	33	89.2	<0.002
	Medium-bad level	21	20.6	2	5.4	
	No data	7	6.9	2	5.4	
Verbal structure and syntax	Satisfying	73	71.6	33	89.2	<0.007
	Medium-bad level	23	22.5	2	5.4	
	No data	6	5.9	2	5.4	
Articulation	Satisfying	65	63.7	30	81.1	<0.006
	Medium-bad level	32	31.4	5	13.5	
	No data	5	4.9	2	5.4	

* Significance is stipulated as $p \leq 0.05$ with trends of $0.05 < p \leq 10$ indicated

Table 6. Referral source

	No Problem		Specific LD		Other Problems		Total	
	N	%	N	%	N	%	N	%
School	21	56.8	69	67.6	53	36.8	143	50.5
Parents	13	35.1	21	20.6	30	20.8	64	22.6
Others	3	6.1	12	11.8	59	41	74	26.1

cases, such as in the diagnosis of dyslexia, the labelling of the problem often comes as a relief for both parents and teachers who are no longer held responsible for the child's academic failure. They may even remain convinced that success can be achieved in other fields, taking refuge in the knowledge that many outstanding personalities have been dyslexic.

It seems also of interest that some children belonging to the specific learning disorders group were first referred because of emotional or behavioral problems expressed in excessive fatigue, anxiety or depression. It is generally misleading to assume that a particular behavioral disorder is the cause of a child's difficulty. Depression and anxiety can develop as secondary manifestations of specific learning disorders, in fact because of chronic isolation and peer rejection. The literature supports the view that specific learning disorders may primarily appear as a behavioral problem because of the psychological complications of chronic success deprivation^{10,11,12}. It is significant that behavioral problems are viewed as contributory factors or rather as possible components of an underlying developmental dysfunction.

Our finding that three times as many boys were affected as there were girls in the specific learning disorders group is in agreement with the literature².

No association was defined between the existence of specific learning disorders and left-hand preference in the study, and this seems to be in agreement with previous relevant studies¹³, although it could be the outcome of a significant number of missing data (57.6%) concerning this specific factor in the present study.

Another finding of this study was that children who had learning difficulties were referred mostly during the first years of primary school and the first year of high school. It is evident that significant learning disorders are revealed through the first contact with school work. In other cases, a youngster may have performed well in the early elementary years, when there is no great detail, volume or depth of subject matter. As the quantity and complexity of academic input and output increase, the developmental deficit emerges as a source of handicap^{5,14}. Such late diagnosis of a learning disorder reduces the prospect of adequate management because of the child's chronic failure and belated secondary manifestations. A major issue at this point is whether specific learning disorders can be detected early enough to permit an effective diagnostic and therapeutic response which can enhance their prognosis and final outcome.

It is interesting that many children with specific learning disorders had already shown speech delay and other language problems during their preschool period. A significant association between language problems in earlier years and the emergence of learning disorders during school years is noted in previous studies^{2,15}. This association implies that specific learning disorder is basically a developmental problem and could be detectable at preschool age as a language disorder. Other manifestations of developmental dysfunction could also be present during earlier years, such as hyperactivity, fine motor dysfunction and clumsiness. An important tool in early detection is the application of prescreening questionnaires to parents and teachers concerning the language history and learning ability of preschoolers and children in the first years of primary school. This should be followed by thorough evaluation and screening tests of the suspected youngsters^{5,14}. Children with identified developmental dysfunction can then be helped by educational and other specialists as well as by the family and teachers in order to achieve a better future adjustment at school.

Most of the children in the current sample (50.5%) were referred by the school, while in 22.6% initiative was taken by the parents, and 26.1% was referred by other professionals. Trying to explain this situation, one must take into consideration that parents are often reluctant to accept the problem (even if it is obvious), and also that they are not often aware of the appropriate services available. In some cases, however, the problem is already diagnosed and parents come to the center requesting a formal confirmation. This may be exploited for specific and practical purposes, such as avoidance of school exams. Teachers often need a diagnosis in the hope that they will be relieved of responsibility for academic failure. However, teachers as well as parents need to be educated and informed about the existence of special diagnostic centers and services, and in due course about the early detection of associated manifestations and problems. A diagnostic label is of no use if the child is not helped by the school and home environment, and that is why educational programs for both parents and teachers are of major significance⁵.

The IQ score of children with specific learning disorders was found to be normal (IQ > 85) in 75% of cases. 20% of the children had borderline intelligence (IQ = 84-70) while cases of mild mental retardation were also noted (5%, IQ = 69-55). Some investigators believe that normal intelligence is a non-questionable condition for the specific learning disorder diagnosis.

However, children with learning difficulties often present attention deficits which impede their WISC-R scale performance and affect the IQ score while no mental retardation really exists. The existence of severe attention deficit can, therefore, account for the below normal IQ score of a small number of the specific learning disorders group⁶.

CONCLUSION

Children referred to the Child Protection Center Mihalinio present a wide range of disabilities.

In some cases no disorder was diagnosed and in one-third of the cases specific learning disorders proved to be the diagnosis. The diagnostic approach is of

major significance and must be well designed. Preschool children having language problems or other developmental disorders may demonstrate specific learning disorders at a later age. This makes early detection possible, eg by using questionnaires and screening tests on the preschool population. Early detection and intervention can help future school adjustment and also prevent chronic success deprivation and social rejection.

Appropriate sensitivity and support must come from parents, teachers and specialists, educational, psychological and others, so that the progress of children with developmental dysfunction can be carefully monitored and enhanced.

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