

# Learning Disabilities among Greek Adolescents: Differences between First and Follow-up Attendance

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**Abstract** Learning disorders start early and very often affect people throughout their lives. A number of previous studies in Greece showed that adolescents are more frequently presented with learning difficulties than younger children. At the same time, learning disorders are very often co-morbid with other mental health disorders and conditions. The aim of our study was to investigate the hypothesis that the age of referral may be indicative of the clinical significance of learning difficulties and to assess the co-morbidity of learning disorders with other mental health problems. We conducted a retrospective study of the medical records of all children and adolescents, who have been referred due to learning difficulties to an outpatient child and adolescent psychiatric service in Greece, over a period of two years. Among 390 adolescents, who have been referred to the unit, 330 adolescents (84.61%) have been referred due to learning difficulties. There were statistically significant differences between first-attenders ( $N_1=174$ ) and those with a history of previous attendance ( $N_2=156$ ). Learning disorders were very often co-morbid with a number of mental health conditions, especially with emotional and behavior disorders. In our study the age of first referral due to learning disorders appeared to be a significant factor in relation to clinical significance. The high co-morbidity of learning difficulties with other psychiatric conditions shows that therapeutic programs should also include various forms of psychotherapeutic support.

**Keywords:** *adolescence, co-morbidity, first attendance, follow-up attendance, learning disorders, psychiatric disorders*

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## 1. Introduction

Learning disorders are responsible for producing a significant burden of disability worldwide. They start early in life and their implications and consequences spread across the lifespan. In the past, the assessment of learning difficulties has been haunted by complex debates over definition and classification issues [1,2]. However, it has now been agreed that the core concept behind these disorders is the construct of "unexpected underachievement", which is expected to identify a group of children, who find it difficult to master academic skills, although there is no known cause for poor achievement (sensory disorder, intellectual disability, emotional symptomatology, socioeconomic adversity or inadequate instruction) [3].

A number of studies investigating learning difficulties have been conducted in Greece during the last decades. A recent study, which was based on data from a national representative sample of Greek adolescents (mean age: 13.33, SD = 1.49), calculated a prevalence rate of 5.52% for self-reported dyslexia, a finding consistent with prevalence rates from other countries [4]. A further study that used data from various institutional sources provided

evidence for the entire school population (ages 6 to 18 years old) and found a prevalence rate of dyslexia slightly higher than 1%, while relevant figures in the USA and Europe often rise up to 5.5% [5]. In the same study the authors stressed out the phenomenon of a disproportionate percentage of students with dyslexia in secondary schools, when compared to that in elementary schools. This observation is consistent with findings from a clinical sample in Greece, showing that learning difficulties are statistically significantly more often observed in adolescents older than 12 years than in children aged 9 to 12 years old [6]. Thus, it could be argued that the age of referral may be indicative of the clinical significance of learning difficulties.

Regarding the clinical significance of learning difficulties, the presence or not of comorbidity arises as highly important. Learning disorders are very often co-morbid with other mental health disorders and conditions. One third of the children with learning disorders suffer from emotional or behavior disorders as well. Children with attention deficit hyperactivity disorder (ADHD), behavior disorders, major depressive disorder, psychosis or school phobia may do poorly in school [7,8,9,10]. In Greece a recent study that used a clinical sample of children aged 6-11 years old from an outpatient

psychiatric unit found substantial comorbidity between learning difficulties and psychiatric disorders [11].

To our knowledge there has been no study in Greece investigating learning disabilities in adolescence using the clinical sample from a psychiatric service. The aim of our study is to investigate learning disorders among adolescents being referred to an outpatient child and adolescent psychiatric unit and to explore possible differences between adolescents attending the unit for the first time and those with a history of previous attendance.

## 2. Materials and Methods

### 2.1. Description of the Data Set

The data reported here are obtained through a retrospective study of the medical records of an outpatient child and adolescent psychiatric service in Greece, over a period of two years. The sample consists of the total number of children and adolescents referred to the Child and Adolescent Unit of the Community Mental Health Centre (CMHC) of the University of Athens due to learning difficulties between 01/01/2013 and 31/12/2015.

### 2.2. Child and Adolescent Unit of the Community Mental Health Centre

The CMHC is integrated in the 1<sup>st</sup> Psychiatric Department of the National and Kapodistrian University of Athens. It was established as a model mental health service serving four boroughs, with a total population of 410.000 inhabitants, in the Greater Metropolitan area of Athens. The population of these boroughs belong mainly to middle and working class. The Centre provides exclusively outpatient services and is free of charge for the community. The Children and Adolescents Mental Health Unit of the CMHC, which began operating in 1982, offers diagnostic and therapeutic services to children and adolescents till the age of 17 years. The unit provides also preventive services and some of its activities focus on collaborative work with preschool, elementary and high-school teachers. The professional team working in the unit is multidisciplinary, consisting of two child psychiatrists, three psychologists, two social workers, two occupational therapists, a learning-difficulties specialist and a speech therapist.

### 2.3. Educational System in Greece

In Greece children enter kindergarten at the age of five years old and attendance is mandatory. At the age of six years old they enter primary school (compulsory), where they spend 6 years (grades 1-6). Secondary education is distinguished into lower secondary (grades 7-9; ages 13-15 years; attendance is compulsory) and upper secondary (grades 10-12; ages 16-18 years; attendance is not compulsory). Upper secondary schools are further distinguished into senior high schools (Lyceum) and technical vocational schools with the majority of students (75 %) attending senior high schools. All state schools are under the jurisdiction of the Ministry of Education, while all private schools are supervised by the same Ministry.

### 2.4. Variables

In this study we investigated the following sociodemographic variables: age, gender and type of school, in which the adolescent is currently enrolled.

The main variables of interest were the "reason for referral" and the "diagnosis". The diagnostic evaluation relied on the International Classification of Mental and Behavioural Disorders of the World Health Organisation, 10<sup>th</sup> Edition (ICD- 10) [12].

### 2.5. Statistical Analysis

Since the aim of our study was to investigate possible differences between first-time referrals due to learning difficulties and those with a history of previous referral, we divided our sample in two groups: "Group A", who were adolescents being referred to our unit for the first time and "Group B", who were those with a history of previous referral to us.

Descriptive statistics, such as frequencies- percentages for categorical variables and mean- standard deviation for the continuous variable (age), were calculated.

Bivariate associations between dependent and independent variables were studied using Pearson's Chi-square (with Monte Carlo correction test) for categorical variables. The age variable failed the normality test (Kolmogorov- Smirnov), hence non-parametric test (Mann-Whitney) was applied in order to define significant relationships between the continuous (age) and categorical variable (Re-assessment). All association testing was conducted assuming a 0.05 significance level and a two-sided alternative hypothesis.

All analyses were performed using the Statistical Package for the Social Sciences statistical software package version 19.0 (SPSS Inc., Chicago, IL, USA).

## 3. Results

1,054 children and adolescents attended the Child and Adolescent Unit of the CMHC between 2013 and 2015. Among them there were 390 adolescents aged 12 to 18 years, representing 37.0% of the CMHC's total number of cases. Our sample consisted of 330 adolescents (84.61%) who have been referred to the unit due to learning difficulties. Group A consisted of 174 first-attenders ( $N_1$ ) and Group B of 156 adolescents with a history of previous attendance in our unit ( $N_2$ ).

Table 1 shows the sociodemographic characteristics, the reason for referral and the diagnostic category for all the adolescents, who have been assessed for learning disorders in our unit.

The comparison of groups A and B is shown in Table 2. There was no statistically significant difference between the two groups in terms of gender. The mean age was statistically significantly lower among first-attenders ( $U=9686.5$ ,  $p<.001$ ). Moreover, there were significant differences between the two groups regarding the type of school currently enrolled in ( $\chi^2= 64.361$ ,  $p<.001$ ). Most of the adolescents in group A attended lower secondary school. Regarding the reasons for referral, adolescents being referred for the first time were presented statistically

significantly more often with “learning difficulties” in comparison to those with a past history in our unit ( $\chi^2= 28.032$ ,  $p<0.001$ ). As regards the type of diagnosis, a statistically significant difference appeared ( $\chi^2= 31.677$ ,  $p<.001$ ). More specifically, the diagnostic category “without any ICD-10 diagnosis” was significantly more frequently observed in group A, while the category “learning disorders with co-morbidity” in group B. Three out of four adolescents in Group A (75.5%) and one out of two (50.3%) in Group B have been diagnosed

with a learning disorder with or without a co-morbid condition.

The co-morbidity of learning disorders with major categories of psychopathology in adolescence is shown in Table 3. Almost two thirds of the adolescents (65.4%) who have been diagnosed with a learning disorder had a co-morbid behavioural disorder, while 22.1% of them had an additional emotional disorder, 8.8% reported somatic complaints and 3.5% have been diagnosed with a psychotic condition.

Table 1. Mean (SD) and frequency distributions for adolescents who were assessed for learning disorders

	M	SD
<b>Age</b>	13.93	1.59
	N	%
<b>Gender</b>		
Male	242	73.3
Female	88	26.7
<b>Re-assessment</b>		
Yes	156	47.3
No	174	52.7
<b>Reason for referral</b>		
Learning problems	288	87.3
Developmental problems	14	4.2
Emotional problems	12	3.7
Behavioral problemst	16	4.8
<b>Type of school currently enrolled in</b>		
Lower secondary school	225	68.2
Senior high school	66	20.0
Technical vocational school	35	10.6
Technological Educational Institute	4	1.2
<b>Diagnostic category</b>		
Learning disorders	87	27.2
Learning disorders with co-morbidity	113	35.3
Other disorders	85	26.6
Without any ICD-10 diagnosis	35	10.9

Table 2. Mean (SD) and frequency distributions for groups A and B

	Group A		Group B		$p^a$
	M	SD	M	SD	
<b>Age</b>	14.38	1.74	13.53	1.32	< .001
	N	%	N	%	$p^b$
<b>Gender</b>					.517
Male	117	75.0	125	71.8	
Female	39	25.0	49	28.2	
<b>Reason for referral</b>					< .001
Learning problems	121	77.5	167	96.0	
Developmental problems	14	9.0	-	-	
Emotional problems	10	6.4	2	1.1	
Behavioral problems	11	7.1	5	2.9	
<b>Type of school</b>					< .001
Secondary school	74	47.4	151	86.8	
High school	47	30.1	19	10.9	
Technical high school	31	19.9	4	2.3	
Technological Educational Institute	4	2.6	-	-	
<b>Diagnostic category</b>					< .001
Learning disorders	46	29.7	41	24.8	
Learning disorders with co- morbidity	71	45.8	42	25.5	
Other disorders	34	21.9	51	30.9	
Without any ICD-10 diagnosis	4	2.6	31	18.8	

Notes. <sup>a</sup> p- value of Manfn- Whitney test for two independent samples; <sup>b</sup> p- value of Pearson’s  $\chi^2$  tests.

**Table 3. Co-morbidity of learning disabilities with psychopathological conditions in adolescence**

	N	%
Behavior disorders (including ADHD)	74	65.4
Emotional disorders	25	22.1
Somatic complaints	10	8.8
Psychotic conditions	4	3.5

ADHD: Attention Deficit Hyperactivity Disorder.

## 4. Discussion

Our findings show that the majority of the adolescents, who attended our unit, were referred to the service due to difficulties with their school performance. This could be linked to the following two factors:

1. Our unit is a community centre and, as such, it is possibly expected to evaluate and treat the less serious conditions of the spectrum of mental health problems, with the more serious ones being directly referred to a hospital. This notion may be related to phenomena of stigmatization that were evident in Greek society during the previous decades.
2. Pressure for academic competence and high achievements, especially during adolescence, is common in most Greek families.

The Greek society, partly due to its small size, is less diverse and shows more uniform cultural attitudes towards academic and educational matters. There is a strong tradition in the country, which overvalues university studies. As a consequence, pressure is frequently being posed on adolescents, who are expected to succeed in the university entrance exams [13]. Moreover, the exam system in secondary education (written exams throughout the year and final written exams at the end of the school year), as well as the special education law, that exempts students being diagnosed with a learning disorder (that has to be certified by a service of the Greek National Health System) from written exams, leads many families to seek an evaluation for possible learning disorders for their children.

In our study the age of first referral due to learning disorders appeared to be significant, since first-attenders and those with a history of previous attendance showed a number of differences. First-attenders come usually at the onset of adolescence, during the first years of lower secondary school. They are often being diagnosed with learning disorders and, in many cases, show no other signs of psychopathology. It could be argued that these adolescents show mild learning disabilities and, probably, mediocre achievements in primary school [14,15,16,17,18].

Additionally, our study showed that the majority of the adolescents, who had been diagnosed with a learning disorder, had also a co-morbid condition. The finding that comorbidity was higher among adolescents, who had a history of previous referral for learning difficulties, may indicate that serious forms of learning disorders could co-exist with behaviour problems or lead to internalizing disorders (stress disorders, depression) or even be prodromal symptoms of psychosis. There is extensive literature about co-morbidity in adolescents, who have been diagnosed with a learning disorder in their childhood. It could be argued that our findings reflect the impact of a learning disorder on a child's developing personality. Very often, however, it is difficult to determine, whether

learning difficulties are a manifestation of an existing emotional disorder, or the cause for one [7,8,9,10].

The rates and types of co-morbidity reported in our study are consistent with international studies. Bäckér and Neuhäuser (2003) reported psychiatric syndromes in 66.2 % of the cases in a clinical sample of children with dyslexia [19]. The most frequently met conditions were adjustment disorders, followed by hyperkinetic disorders and anxiety. 66.3 % of the adolescents in our sample have been diagnosed with a behavior disorder (including ADHD). ADHD is the most common psychiatric disorder, which co-exists with learning disorders during childhood. Various studies have shown that 25- 40% of children with ADHD fulfill the criteria for a learning disorder, while 15-40% of children with learning disabilities fulfill the criteria for ADHD [20,21,22].

The second more prevalent co-morbid diagnostic category in our study was the one of emotional disorders (22.1%), followed by somatic complaints and psychotic conditions. Students with learning disorders tend to show higher levels of emotional distress, such as depression, anxiety and loneliness and lower self-esteem when compared to their healthy peers. Mugnaini et al (2009) confirm that dyslexia is an independent risk factor for internalizing, anxious and depressive symptomatology [23]. Sideridis (2007) argues that failure in achievement tasks may constitute a stress factor that could trigger a depressive episode, especially among students with learning difficulties [24].

Arnold et al (2005) studied the severity of behavioral and emotional problems among adolescents with poor and typical single word reading ability [25]. Poor readers reported higher levels of depression, trait anxiety and somatic complaints when compared to typical readers. Parent reports showed no difference in depression, anxiety or aggression between the two groups, but indicated more inattention, somatic complaints and delinquent behaviors among the poor readers.

In our sample, there were five children with learning difficulties (3.5%), who later developed schizophrenia. There are clear indications for impairments in cognitive functioning and lower cognitive skills in children, who later develop schizophrenia, either in adolescence or in adult life. Adolescents who will develop schizophrenia tend to have lower IQ (by 5.3 points) than their healthy peers. It is argued that cognitive impairments in schizophrenia spread across all domains of cognitive functioning; lower IQs seem to support this argument [26,27,28].

## 5. Conclusions

Our findings indicate that cases of learning disorders seeking a first assessment in early adolescence possibly have already had learning disabilities, which may had not

been diagnosed in earlier developmental stages and emerged now due to higher academic demands in lower secondary school. Among older adolescents, learning disorders were recurring ones that had already been diagnosed in the past. The present difficulties of the adolescents included mainly emotional and behavioral problems. Many students have not received adequate help and, as a result, moved on in their school career with significant unaddressed deficits.

Based on the above-mentioned findings it could be argued that an early diagnosis of learning difficulties in preschool or elementary school years is expected to facilitate greater effectiveness of the indicated therapeutic measures. Finally, the high rate of co-morbidity of learning difficulties with psychiatric disorders underlines the need for psychotherapeutic support rather than for interventions focusing exclusively on performance deficits.

## Statement of Competing Interests

The authors have no competing interests to declare in relation to this study.

## List of Abbreviations

ADHD: Attention Deficit Hyperactivity Disorder

CMHC: Community Mental Health Centre

ICD-10: International Classification of Diseases, 10<sup>th</sup> Edition

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