

# EARLY IDENTIFICATION OF ATTENTION DEFICIT / HYPERACTIVITY DISORDER AND LEARNING DIFFICULTIES AT PRIMARY SCHOOL

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## Introduction

- Attention deficit/hyperactivity disorder (ADHD) is a chronic devastating condition that has major effects to patients, families and society (Taylor & Sonuga-Barke, 2008).
- If we take into regard the bio-psycho-social model (Engel, 1977), we can view ADHD as evolving out of developmental pathways from risk to disorder, with the outcome determined by the interaction between genetic and environmental risk factors (Sonuga-Barke & Halperin, 2009).
- Many of these environmental risk factors arise early in development, which is consistent with the idea that ADHD is a neurodevelopmental condition (Das Banerjee et al, 2007).
- In addition, as Nigg et al. (2010) claim, this interaction of genes and environment can help the understanding of ADHD etiology or even explain the extent to which an individual is vulnerable to environmental hazards in the development of mental disorders (Wermter et al., 2010).
- Besides, the genes do not determine whether an individual will develop a mental disorder, but can identify the individuals prone to the environmental risk factors that cause it (Chmura Kraemer et al, 2001).
- Although there is recent evidence proving brain plasticity (Dawson, 2008), a developmental perspective on ADHD is gradually adopted and there are facts of successful prevention strategies to other disorders, early intervention has been less frequently used for ADHD than for other cases (Shaw et al., 2006).

## Aim of the study

The present study aimed to investigate the possibility of early identification of children with ADHD at nursery school by their educators.

## Method

### A. Sample

141 children attending nursery schools (m= , sd= )

### B. Measures

The ADHD Test (Gilliam, 1997 *To έργο βρει μόνο το 1995.*) was used for the evaluation of ADHD. The test is based on the criteria of DSM-IV and contains 36 items which comprise 3 subtests representing the core symptoms necessary for the diagnosis of ADHD: hyperactivity, impulsivity and inattention. It provides an ADHD quotient showing the probability of ADHD as well as 3 separate scores showing the predominance of each core symptom.

### C. Procedure

Educators completed the translated Greek version of the ADHD Test for each child in nursery schools of a small provincial town of Peloponnese. The children identified with possible presence of ADHD were reassessed two years later with the same instrument by their primary school teachers, who were unaware of the first evaluation. A control group, matched for age and sex, was also used at this stage of the study.

## Results

Table 1. The evolution of the ADHD children of our sample (N=26) from Nursery to Primary school

ADHD at Primary school	ADHD at Nursery school					
	ADHD, Combined Type		ADHD, Inattentive Type		ADHD, Hyper./Impuls. Type	
	f	%	f	%	f	%
Still existing	4	66.8	1	8.3	1	12.5
Not existing anymore	1	16.6	10	83.4	6	75
Evolved to another type of	1	16.6	1	8.3	1	12.5
Total	6	100	12	100	8	100

C=0.49, P<.001

Table 1 shows that the majority of children with ADHD, Combined type still present the disorder (83.4%), while the majority of children with the two other types of ADHD seem to have overcome their symptoms, agreeing with previous longitudinal studies. [(Lavigne et al., 1998; Mathiesen & Sanson, 2000) in Sonuga-Barke & Halperin, 2009].

Table 2. Correlation coefficients C between every type of the disorder (at Nursery school) and different sections of the child's functioning (at Primary School)

	ADHD Comb. Type	ADHD Inattentive Type	ADHD Hyper. Type	ADHD All types
	Adjustment	0.49 ***	0.08	0.17
Co-operation	0.30	0.32	0.34	0.44**
Motivation	0.30	0.29	0.32	0.40*
Acad. Achievement	0.40 *	0.37	0.17	0.36
Reading	0.36 *	0.30	0.09	0.24
Writing	0.40 **	0.25	0.20	0.30
Maths	0.49 ***	0.25	0.17	0.30
Behaviour	0.43 **	0.08	0.13	0.32*
Relationships	0.44 **	0.27	0.16	0.39*
Incentive	0.26	0.34 *	0.18	0.39**
Self-esteem	0.28	0.23	0.16	0.30

\*\*\* p<.001 \*\*p<.01 \*p<.05

As we can see in table 2, significant interactions were found between ADHD, Combined Type and the child's adjustment at school (C= 0.49, p<.001), academic achievement (C= 0.40, p<.05), behaviour (C= 0.43, p<.01) and relationships with peers (C= 0.44, p<.01). Furthermore, it seems that all types of ADHD have an impact on the child's co-operation level (C= 0.44, p<.01), and his/her motivation for learning (C= 0.40, p<.05).

Table 3. Correlation coefficients C between every type of the disorder (at Primary school) and different sections of the child's functioning (at Primary School)

	ADHD Comb. Type	ADHD Inattentive Type	ADHD Hyper. Type	ADHD All types
	Adjustment	0.55 ***	0.55 ***	0.55 ***
Co-operation	0.33	0.57 ***	0.33	0.51 ***
Motivation	0.38 *	0.55 ***	0.23	0.45 **
Acad. achievement	0.41 *	0.59 ***	0.30	0.49 ***
Reading	0.33	0.46 **	0.33	0.37 **
Writing	0.41 **	0.56 ***	0.41 **	0.47 ***
Maths	0.46 **	0.54 ***	0.38 *	0.44 **
Behaviour	0.60 ***	0.32 *	0.59 ***	0.48 ***
Relationships	0.50 ***	0.50 ***	0.43 **	0.48 ***
Incentive	0.19	0.46 ***	0.12	0.35 **
Self-esteem	0.11	0.36 **	0.20	0.28

\*\*\* p<.001 \*\*p<.01 \*p<.05

As it can be observed in table 3, all measures are clearly elevated. Particularly Inattentive type of ADHD is highly correlated to the domains of learning, while children's behaviour is more affected by ADHD, Combined type.

Table 4. ADHD at Nursery school and co-operation level at Primary school

Co-operation level at Primary school	ADHD at Nursery school		
	Yes %	No %	Total
High	40,4	59,6	100
Average	80	20	100
Low	100	0	100

C= 0.44, p<.01

Table 4 shows that the total of the children with low co-operation level at Primary School, were presenting ADHD at Nursery School.

Table 5. Correlation coefficients C between different sections of the child's functioning

	1	2	3	4	5	6
1 Co-operation	-	0,81***	0,74***	0,66***	0,69***	0,78***
2 Motivation	-	-	0,71***	0,62***	0,68***	0,78***
3 Relationships	-	-	-	0,60***	0,61***	0,66***
4 Self-esteem	-	-	-	-	0,76***	0,65***
5 Incentive	-	-	-	-	-	0,68***
6 Acad. achievement	-	-	-	-	-	-

\*\*\* p<.001

Table 5 shows that the child's co-operation level, motivation for learning, relationships with peers, self-esteem level, incentive level and academic achievement constitute a group of interacting factors which are combined in multiple ways and influence each other.

## Discussion

- Our data from nursery to primary school, showed continuity in certain aspects of ADHD such as co-operation levels, students' academic achievement, adjustment to school and their relationships with peers.
- Furthermore, as Sonuga-Barke & Halperin (2009) state, early intervention can be really helpful if we are sure of the connection and the stability of instrumental factors across development.
- Therefore, it would be really helpful if nursery teachers, who interact with children for a long period of the day, were more informed and ready to recognize certain children's behaviors that can indicate ADHD, along with their training in the use of simple screening tests.
- In conclusion, early identification of ADHD can prevent children from a series of secondary symptoms which often develop on the basis of ADHD when the child has to face the multiple demands of Primary school, while early intervention to the underlying causal mechanisms of the ADHD could be really effective for its treatment.
- Future research could target to further examining the underlying causal processes in order to improve early identification of children with ADHD and to develop original therapies that can modify developmental outcomes.

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