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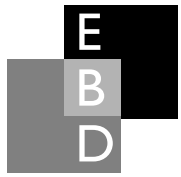

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How Greek teachers perceive school functioning of pupils with ADHD

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ABSTRACT In this study Greek teachers assessed school functioning in 26 pupils with the possibility of attention deficit hyperactivity disorder (ADHD) subtypes, i.e. combined (C) type, inattentive (IA) type and hyperactive-impulsive (HI) type, and 26 controls. Results showed that C and IA pupils were evaluated as impaired in all areas of academic and social functioning. On the other hand, HI pupils, while rated as displaying adaptability problems as well as poor academic performance, were not perceived as exhibiting low motivation for learning or low self-esteem. Further analysis demonstrated that inattentiveness and impulsivity had the strongest effect on academic functioning. Unlike hyperactivity, these behaviours are negatively valued by Greek society and the Greek school environment. The findings support the idea that attitudes towards pupils with ADHD are highly determined by the cultural evaluation of the predominating ADHD symptom. Additionally, they suggest a more active role for teachers in intervention in with ADHD pupils.

KEYWORDS *ADHD behaviours; Greece; teacher attitudes*

Introduction

It is now widely accepted that attention deficit hyperactivity disorder (ADHD) is the most commonly diagnosed developmental disorder in school children, although the estimates of prevalence vary widely across different cultures (Armstrong, 1996; Barkley, 1996; Kakouros and Maniadaki, 2002; Shelley-Tremblay and Lee, 1996; Taylor, 1997). Current research emphasizes that the prominent causal factors of ADHD lie in genetic or neurobiological abnormalities that have a direct effect on brain development and functioning (Castellanos et al., 1996; Hechtman, 1994; Tannock, 1998).

Nevertheless, it has been shown that ADHD children are not perceived as a homogeneous group. Standardization procedures in clinic-referred and non-referred school children, which are based on teachers' and clinicians' evaluations, validate the three subtypes of ADHD proposed in the DSM-IV (American Psychiatric Association, 1994): predominantly inattentive type (IA), predominantly impulsive-hyperactive type (HI) and combined type (C) (Baumgaertel et al., 1995; Lahey et al., 1994; McBurnett et al., 1995; Wolraich et al., 1996). Moreover, it is argued that the course as well as the outcome of ADHD are strongly affected by the cultural norms predominating in a particular educational environment (Armstrong, 1996; Brown, 1995; Conrad, 1975; Glass and Wegar, 2000; Hartmann, 1996).

In order to elucidate the context of this study, it was felt necessary to present some relevant aspects of the Greek educational system as well as some social attitudes regarding education in Greece. The Greek school system consists of a 6 year elementary school followed by a 3 year junior high school and a 3 year high school. Children enter the primary school at the age of 6. The vast majority of children attend nursery school for at least 1 year before elementary school. Education is compulsory for 9 years (elementary school and junior high school). The system is centralized and the curriculum is fully prescribed by the Ministry of Education. An important aspect of the Greek school system is the lack of selectivity. Within schools, there is rarely streaming, special placement, or any other kind of grouping according to achievement (Hopf and Hatzichristou, 1999). Education is highly valued by Greek parents who invest considerable resources and effort in providing their children with the best education opportunities. Thus, much pressure on school achievement is exerted on children and academic success is connected to the social elevation aspirations of the family. In this framework, teachers focus mainly on the transmission of knowledge, and their main purpose is to lead their students to high academic performance.

Since the attitudes predominating in the educational environment appear to influence the course and outcome of children with hyperactivity and inattentiveness problems, it seems necessary to identify teachers' perceptions of the social and academic functioning of students displaying different subtypes of ADHD. The use of teachers' ratings as the means of assessment for child behaviour seems well documented in the literature. Several studies support the use of teacher ratings for initial screening and identification of elementary students at high risk for social-behavioural problems (Tur-Kaspa and Bryan, 1995). In a study by Verhulst et al. (1994), teachers' reports predicted poor outcomes for children at risk for academic and behavioural problems equally well or even somewhat better than parents' reports. Schachar et al. (1986) examined the correlation between results obtained by direct observations in classroom and teacher ratings,

and demonstrated the validity of the latter as a screening tool for assessing academic and behavioural problems such as hyperactivity and inattentiveness.

Teacher ratings have been particularly used in order to assess the presence and associated difficulties of ADHD in children. Barkley and his colleagues (1991) compared a group of ADHD adolescents with a matched control group on teacher ratings of social competence, behavioural and emotional adjustment, and school performance. The findings showed that ADHD adolescents were rated as more impaired in all the above factors. In the study of McBurnett and colleagues (1995), parents' and teachers' ratings in a clinic-referred sample indicated differences in behavioural characteristics associated with the three ADHD subtypes. In particular, HI children were assessed as more academically successful than C or IA children. The C children did not differ from HI children on ratings of peer dislike, but both these groups were more disliked than the IA group. Additionally, both C and HI groups received higher ratings than the IA group on measures of disruptive behaviour. However, clinic-referred samples may operate a bias such that those children who are referred to clinics are more likely to suffer from behavioural and academic problems related to ADHD. Other studies (Baumgaertel et al., 1995; Gaub and Carlson, 1997; Wolraich et al., 1996) classified non-referred children into different ADHD subtypes using a teacher-completed DSM-IV based diagnostic checklist. Moreover, the authors explored how teachers perceive social, emotional, behavioural and academic functioning of IA, HI and C children and found significant differences.

So far, relevant studies have focused on the association between social and academic behaviour and the ADHD subtypes defined in DSM-IV. This classification views hyperactivity and impulsivity as a single dimension, since when children display one of these types of behaviours they usually display the other as well. Moreover, the combined type (C) encompasses problems in inhibiting behaviour (hyperactivity and impulsivity) and in behavioural persistence (inattentiveness) (Barkley, 1996; Lahey et al., 1988). Nevertheless, as described in DSM-IV, inattentiveness, hyperactivity and impulsivity are markedly distinct behaviours; moreover, they are perceived and valued differently by diverse cultural communities (Weisz et al., 1995). Thus, teachers' evaluations of school functioning displayed by ADHD pupils may not be primarily influenced by an ADHD subtype as such; rather, they may be the result of teachers' attitudes towards the behaviours related to a particular symptom. To our knowledge no published research has addressed this issue, at least in Greek samples.

The present study has a twofold purpose: (1) to examine the effect of different ADHD subtypes on Greek teachers' assessments of young pupils'

academic skills and adaptive functioning; and (2) to investigate to what extent these assessments are affected by each single symptom of ADHD, i.e. inattentiveness, hyperactivity and impulsivity.

Method

Participants

Participants were 52 primary-school non-referred students aged 6 years 2 months to 8 years 2 months (mean 7 years 6 months). This sample came from the sample of a previous study, which aimed at screening for the possibility of ADHD in preschoolers (Kakouros and Maniadaki, 2000).

The original study took place in a provincial town in the Peloponnese with a population of 15,232. Participants were the total numbers of children attending public nursery schools (N = 140) aged 4 years 2 months to 6 years 2 months (mean 4 years 7 months). For the screening, a questionnaire was used which comprised 18 items that describe the DSM-IV criteria for ADHD. The questionnaires were completed by the nursery school teachers 6 months after the beginning of the school year. The teachers had to indicate with a 'yes' or 'no' answer whether the child displayed persistently a particular behaviour for the time he/she had been to the nursery school. A child was considered as possibly manifesting ADHD if, according to the teacher, he/she exhibited at least six of the behaviours described in the questionnaire. In that study it was found that 31 of 140 (22.14%) children (23 boys and 8 girls) possibly showed ADHD.

The children in the original study were followed up 2 years later when they were students of the first or the second grade of primary school. Five of the children with the possibility of ADHD had left the town. Thus, the present sample includes 26 pupils with the possibility of ADHD and 26 pupils who were selected to form the control group (Table 1).

Procedure

For each child the teachers completed the following questionnaires.

Table 1 **Composition of the sample**

Gender	ADHD		Totals
	Yes	No	
Boys	19	19	38
Girls	7	7	14
Totals	26	26	52

Attention Deficit/Hyperactivity Disorder Test (ADHDT) (Gilliam, 1995) The ADHDT tests for the possibility of ADHD. It consists of 36 items that describe behaviours characteristic of individuals with ADHD according to the DSM-IV. It is divided into three subscales: hyperactivity (13 items), impulsivity (10 items) and inattentiveness (13 items). A three-point scale (0, 1, 2) indicates the degree to which each of the described behaviours constitutes a problem for the child. The test gives a total quotient of the possibility for ADHD as well as a separate score for each subscale. The scores are also qualitatively described in terms of a seven-point scale. For facilitating statistical treatment, in this study the seven-point scale was changed into a five-point scale by combining the two extremes of each pole. The correlation between the measures obtained by the questionnaire used for screening for the possibility of ADHD in preschoolers and the measures obtained by the ADHDT was calculated using the biserial correlation coefficient. The result showed that the correlation between these measures was 0.525, which is significant at the 0.01 level.

Behavioural Academic Self-Esteem (BASE) inventory (Coopersmith and Gilberts, 1982) This inventory evaluates the child's level of self-esteem related to academic skills and adaptability to school. The BASE inventory includes 16 items, which are scored on a five-point scale.

Teacher questionnaire Due to lack of standardized tools in the Greek language for assessing children's performance in the basic academic domains, a questionnaire regarding teachers' subjective assessments of pupils' difficulties was constructed. Teachers were asked to indicate how well a child functions in each of the following domains. A five-point scale was used with the anchors 'very well/much' and 'not good at all/very little'. The questionnaire consisted of four parts:

1 *Assessment of reading skills* (based on American Psychiatric Association, 1994; US Office of Education, 1977).
   (a) Two items assessing reading accuracy (e.g. 'How accurately does the child usually read what is written in a text?').
   (b) Two items assessing reading comprehension (e.g. 'How well does the child usually understand what he/she reads in a text?').
   (c) Two items assessing reading speed (e.g. 'How well does the child perform regarding reading speed when he/she reads a text?').
2 *Assessment of writing skills* (based on American Psychiatric Association, 1994; Hooper et al., 1994).

(a) Two items assessing handwriting quality (e.g. 'How easy to read is the child's handwriting?').
(b) Two items assessing spelling accuracy (including grammatical and punctuation errors).
(c) Two items assessing written syntax (including vocabulary and paragraph organization).

3 *Assessment of arithmetic skills* (based on American Psychiatric Association, 1994; Lyon, 1996).
(a) Three items assessing abilities in arithmetic calculation (including ability to name mathematical amounts or numbers and ability to enumerate, compare and mathematically manipulate objects).
(b) Three items assessing math reasoning abilities (including ability to understand mathematical concepts and perform calculations mentally, and ability to perform computational operations).

4 *Assessment of general school functioning.*
(a) Four items assessing difficulties in school adaptation, cooperativeness in classroom, motivation for learning and general school performance.

Items composing each one of the first three subscales were combined to produce a global score on reading, writing and arithmetic skills. Cronbach's alpha coefficients were calculated for each subscale and revealed high internal consistency (0.79 for reading skills; 0.82 for writing skills; 0.77 for arithmetic skills).

Dependent (criterion) variables were defined as the three scores on reading, writing and arithmetic skills; the four ratings on general school functioning; and the self-esteem level as measured by the BASE inventory. Independent (predictor) variables were defined as inattentiveness, hyperactivity and impulsivity. The prediction of each dependent variable from the independent variable 'inattentiveness', which corresponds to the IA type, was identified using linear regression analysis. In addition, the effect of certain combinations of independent variables on each dependent variable were examined using multiple linear regression analysis. Two sets of independent variables were formed, namely: inattentiveness, hyperactivity and impulsivity; and hyperactivity and impulsivity. These sets correspond to C type and HI type, respectively. Multiple linear regression analysis not only predicts a criterion variable from combinations of independent variables, but also calculates the effect of each independent variable on the criterion variable.

Results

Results obtained from the statistical analyses are presented in Tables 2, 3 and 4. In Tables 2 and 4 R^2 is used, instead of R, to represent the amount of variance in a dependent variable, which is explained from a combination of independent variables. The coefficient R is a regular correlation coefficient and can be treated just like any other Pearson correlation. However, in multiple correlation we are more interested in R^2 than in R, because it can be directly interpreted in terms of percentage of accountable variation (Howell, 1992). Standardized regression coefficients (ß) indicate the extent to which each independent variable predicts scores on a dependent variable in multiple regression procedures.

Table 2 **Correlation between inattentiveness, hyperactivity and impulsivity (C type) and dependent variables of academic functioning**

Dependent variables	R^2	Standardized regression coefficients (β) (IA/HYP/IMP)	*p*
Difficulties in school adaptation	0.588	0.513	0.000***
		0.430	0.000***
		–0.038	0.808
Cooperativeness in classroom	0.578	–0.773	0.000***
		0.228	0.120
		–0.122	0.438
Motivation for learning	0.441	–0.706	0.000***
		0.218	0.196
		–0.049	0.786
General school performance	0.677	–0.880	0.000***
		0.191	0.136
		–0.012	0.929
Reading	0.518	–0.684	0.000***
		0.473	0.004**
		–0.300	0.078
Writing	0.651	–0.755	0.000***
		0.149	0.262
		–0.194	0.179
Arithmetic	0.665	–0.802	0.000***
		–0.085	0.512
		0.044	0.755
Level of self-esteem	0.199	–0.525	0.001**
		0.019	0.923
		0.199	0.359

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Table 3 **Correlation between inattentiveness (IA type) and dependent variables of academic functioning**

Dependent variables	Inattentiveness		
	β	*t*	*p*
Difficulties in school adaptation	0.672	6.42	0.000***
Cooperativeness in classroom	−0.744	−7.88	0.000***
Motivation for learning	−0.641	−5.91	0.000***
General school performance	−0.806	−9.63	0.000***
Reading	−0.649	−6.04	0.000***
Writing	−0.798	−9.37	0.000***
Arithmetic	−0.813	−9.89	0.000***
Level of self-esteem	−0.408	−3.16	0.003**

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

According to teachers' assessments, both C type and IA type are associated with the same pattern of deficiencies in school functioning, which appears more impaired than the respective pattern attributed to HI type (Tables 2, 3 and 4). Specifically, C type and IA type were significantly positively correlated with ratings on difficulties in school adaptation, and significantly negatively correlated with ratings on cooperativeness in classroom, motivation for learning, performance in reading, writing and arithmetic as well as general school performance, and level of self-esteem (Tables 2 and 3).

HI type was also significantly positively correlated with ratings on difficulties in school adaptation, and significantly negatively correlated with ratings on cooperativeness in classroom, performance in reading, writing and arithmetic as well as general school performance. Nevertheless, unlike C type and IA type, HI type was not significantly correlated with motivation for learning and level of self-esteem (Table 4).

Standardized regression coefficients (ß), presented in Table 2, reveal that in the set of symptoms corresponding to the C type the best predictor variable for all dependent variables is inattentiveness. In fact, inattentiveness appears to be the only predictor variable for cooperativeness in classroom, motivation for learning, general school performance, performance in writing and arithmetic, and level of self-esteem. As for the set of symptoms corresponding to HI type, for most of the dependent variables that showed significant correlation with cooperativeness in classroom, performance in reading, writing and arithmetic and general school performance, the main predictor variable was impulsivity. However, hyperactivity was shown to be the only predictor variable for difficulties in school adaptation (Table 4).

Table 4 **Correlation between hyperactivity and impulsivity (HI type) and dependent variables of academic functioning**

Dependent variables	R^2	Standardized regression coefficients (β) (HYP/IMP)	*p*
Difficulties in school adaptation	0.403	0.436	0.013*
		0.237	0.169
Cooperativeness in classroom	0.157	0.218	0.284
		−0.536	0.011*
Motivation for learning	0.090	0.209	0.324
		−0.427	0.051
General school performance	0.134	0.180	0.383
		−0.483	0.022*
Reading	0.190	0.464	0.023*
		−0.666	0.001**
Writing	0.250	0.139	0.468
		−0.598	0.003**
Arithmetic	0.213	−0.095	0.628
		−0.385	0.048*
Level of self-esteem	0.005	0.013	0.954
		−0.082	0.710

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Discussion

The present study focused on how teachers in Greece perceive school functioning of young pupils with symptoms of ADHD. The findings indicate that inattentiveness (IA type), as well as inattentiveness, hyperactivity and impulsivity in combination (C type), are correlated with a rather pervasive pattern of deficiencies in all measured domains of school adaptability and academic performance. In particular, IA and C pupils are perceived by their teachers as displaying low motivation for learning, difficulties in school adaptation and cooperation in classroom, poor performance in reading, writing and arithmetic, poor general school performance, and low self-esteem. On the other hand, the concurrent manifestation of hyperactivity and impulsivity (HI type) was associated with a somewhat less impaired pattern of difficulties. HI pupils were considered as experiencing difficulties in all academic tasks (i.e. reading, writing and arithmetic), in school adaptation and in collaboration with their fellow students; however, they were not attributed low motivation for learning or low self-esteem. Our findings are consistent with those of existing research, which shows that C and IA

pupils are rated as less hard working and with lower motivation for learning than HI pupils (Baumgaertel et al., 1995; Lahey et al., 1994; McBurnett et al., 1995; Wolraich et al., 1996). However, unlike ours, these studies have not examined more specific aspects of school performance such as reading, writing and arithmetic.

In the case of C pupils, the attribution of impairments in school adaptability and academic performance was demonstrated to be strongly – if not solely – affected by the symptom of inattentiveness; as for HI pupils, this attribution appeared to be mainly influenced by the symptom of impulsivity. These findings may be explained by the currently held view that the extent and the robustness of ADHD symptoms as well as the behaviours associated with them depend strongly on the cultural norms predominating in the educational environment (Armstrong, 1996; Brown, 1995; Conrad, 1975; Glass and Wegar, 2000; Hartmann, 1996). In other words, teachers assess ADHD symptoms as more or less problematic according to their culture-linked values. For instance, symptoms of hyperactivity are viewed as more problematic in cultures that value reserved and inhibited patterns of child behaviour such as Thai, than in other cultures such as the United States of America (Weisz et al., 1995).

In Greek society academic success is highly valued and behaviours that facilitate it are systematically reinforced. In contrast, disobedience, distraction from school activities, avoidance of homework, or failure to follow teacher's instructions, which are major symptoms of inattention, are usually interpreted as indices of unconcern and are punished. Also, symptoms of impulsivity, i.e. difficulty awaiting turn and interrupting or intruding on others, are believed to characterize a spoiled child. On the other hand, behaviours exhibited by hyperactive children, such as running about or engaging in risky activities, are often regarded as indices of cleverness and braveness – especially for boys. Thus, it is possible that in the first and second grade, when the demands for school conformity are still relatively low, hyperactive children are simply considered as 'lively' children that will comply with the school rules as they grow older, while inattentive children are regarded simply as indifferent to school. Then a self-fulfilling prophesy may operate, such that inattentive and impulsive children exhibit difficulties in academic functioning and low self-esteem as a byproduct of their teachers' attitudes towards the primary symptoms.

The present study demonstrated that teachers' assessments of the academic performance displayed by pupils with ADHD do not primarily depend on the actual problems that the symptoms of the disorder may cause. Rather, teachers' assessments are strongly influenced by their perception of each particular symptom of ADHD as an obstacle to academic progress. This inference carries certain implications for the Greek

educational system. First, there is an urgent need for teachers to be trained to recognize the primary symptoms of ADHD in their pupils and understand these and associated difficulties (like learning disabilities) in a coherent way. Teachers should also be able to understand how secondary academic and behavioural problems develop on the basis of the primary symptoms of ADHD and how their own behaviour might contribute to the exacerbation or attenuation of such problems. Second, training needs to provide teachers with the basic principles that should govern their interactions with pupils with ADHD and the discipline and educational practices they choose for them. It has been shown that perceptions of the effectiveness of certain coping strategies predict teachers' use of these strategies (Poulou and Norwich, 2002). Finally, teachers should be encouraged to refer children with the above difficulties to Child Mental Health Services and closely cooperate with specialists on the planning and application of any intervention programme. Thus, continuing education and training may aid teachers to eliminate their stereotypes related to the symptoms of ADHD and enhance their capacity to help ADHD pupils to achieve their best given their potential.

Further research should explore to what extent the academic and social behaviours related to different ADHD symptoms are a social construct or a direct effect of the underlying neurological abnormalities.

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