

Diagnosis of Hyperactivity Disorder in Gifted Children Depends on Observational Sources

Sylvie Tordjman, Jacques-Henri Guignard, Carolina Seligmann, Emilie Vanroye, Gregory Nevoux, Jacqueline Fagard, Andrei Gorea, Pascal Mamassian, Patrick Cavanagh and Sandra Lebreton

Abstract

Attention Deficit/Hyperactivity Disorder (AD/HD) is often reported in gifted children. Several authors, however, suggest that gifted children, in fact display AD/HD-like behaviors, especially at school due to boredom resulting from academically understimulating environments. In order to clarify this issue, a study was conducted on 37 gifted children based on four different observational assessments of hyperactivity disorder (father, mother, teacher, child), using the Conners Rating Scale - Revised. The main results show that teachers at school observe less hyperactivity disorder than parents at home, and their perception is similar to that of the children. These findings underline the importance of understanding hyperactive behavior situationally, i.e., in the context of the relational dynamics arising between a child expressing him or herself through a particular behavior and an environment that perceives this particular behavior and responds to it with different tolerance thresholds according to the observers.

Keywords: Hyperactivity, AD/HD, gifted children, environment, observational sources, assessments.

Introduction

AD/HD is often reported in gifted children (Hartnett et al., 2004), but the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR, American Psychiatric Association, 2000) provides no data with respect to the prevalence rate of AD/HD in this population.

AD/HD is defined in the DSM-IV-TR by "a persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at a comparable level of development". Without identification and proper treatment, AD/HD can have serious consequences, including school failure, depression, conduct disorder and social interaction impairments. The DSM-IV-TR classification identifies two predominant sets of symptoms observed during the past 6 months: the inattentive type and hyperactive - impulsive type. A combined type is also reported. (See notes: Table 1).

In addition, the DSM-IV-TR criteria require that symptoms be present in two or more settings and AD/HD in non-gifted children is typically pervasive across settings (Webb and Latimer,

1993). However, according to several authors, observation of AD/HD in gifted children may depend on the environment. Indeed, the common notion is that gifted children frequently display AD/HD at school, but not at home (Lind and Silverman, 1994). It suggests that, as underlined by the DSM-IV-TR and several authors (Lovecky, 1994; Gallagher, Harradine & Coleman, 1997; Hartnett, Nelson, & Rinn, 2004), AD/HD may be related to boredom resulting from unchallenging and academically understimulating classroom environments.

Webb and Latimer (1993) stated that gifted children may spend between 25 - 50% of their regular classroom time waiting for their classmates to catch up, even if they are in a heterogeneously grouped class. Lovecky (1991) considers that being so far ahead of the academic curriculum makes the child bored in class and might be one of the reasons for their AD/HD-like behaviors. According to some authors, gifted students' high activity is generally focused and goal-directed (Clark, 1992; Webb, Meckstroth & Tolan, 1982; Webb & Latimer, 1993), in contrast to the behavior of

Table 1: Diagnostic criteria for Attention-Deficit/ Hyperactivity Disorder according to DSM-IV-TR.

A. Either (1) or (2):	
<p>(1) Six (or more) of the following symptoms of inattention have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:</p> <p><i>Inattention</i></p> <p>(a) Often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities.</p> <p>(b) Often has difficulty sustaining attention in tasks or play activities.</p> <p>(c) Often does not seem to listen when spoken to directly.</p> <p>(d) Often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the in the workplace (not due to oppositional behaviour or failure to understand instructions).</p> <p>(e) Often has difficulty organizing tasks and activities.</p> <p>(f) Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as schoolwork or homework).</p> <p>(g) Often loses things necessary for tasks or activities (e.g., toys, school assignments, pencils, books, or tools).</p> <p>(h) Is often easily distracted by extraneous stimuli.</p> <p>(i) Is often forgetful in daily activities.</p>	<p>(2) Six (or more) of the following symptoms of hyperactivity-impulsivity have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:</p> <p><i>Hyperactivity</i></p> <p>(a) Often fidgets with hands or feet or squirms in seat.</p> <p>(b) Often leaves seat in classroom or in other situations in which remaining seated is expected.</p> <p>(c) Often runs about or climbs excessively in situations in which it is inappropriate (in adolescents or adults, may be limited to subjective feelings of restlessness).</p> <p>(d) Often has difficulty playing or engaging in leisure activities quietly.</p> <p>(e) Is often “on the go” or often acts as if “driven by a motor”.</p> <p>(f) Often talks excessively.</p> <p><i>Impulsivity</i></p> <p>(g) Often blurts out answers before questions have been completed.</p> <p>(h) Often has difficulty awaiting turn.</p> <p>(i) Often interrupts or intrudes on other (e.g., butts into conversations or games).</p>
B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.	
C. Some impairment from the symptoms is present in two or more settings (e.g., at school [or work] and at home).	
D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.	
E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorder and are not better accounted for by another mental disorder (e.g., Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).	

non-gifted children with AD/HD. Thus, misdiagnosis of AD/HD, in all its forms, is considered common in the gifted population (Hartnett, Nelson & Rinn, 2004; Webb, Amend, Webb, Goerss, Beljan, & Olenchak, 2006).

Given the problems of hyperactivity behaviors

displayed by the gifted children who were referred to our outpatient units, hyperactivity disorder in giftedness is the focus of this study. It is based on different observational sources, specifically, father, mother, teacher and child and the objective is to better characterize and understand this disorder in gifted children.

Method

Participants

The study was conducted on 37 French children (5 girls and 32 boys) aged from 6 to 16 years old (mean \pm standard deviation: 9.71 ± 2.83) identified as intellectually gifted with a total IQ > 130 on the Wechsler Intelligence Scale for Children-Fourth Edition (WISC-IV). The mean total IQ of the sample was 140.3 (standard deviation: 6.57) with a range from 130 to 154. All participants were referred to our unit because they had encountered difficulties at school, such as learning disabilities and/or behavioral problems such as hyperactivity behaviors and aggressive behaviors. They were referred to our resource centre that proposes clinical consultations to assess their cognitive and socio-affective functioning in order to provide mental health care, according to individual profiles that lead to individual projects.

Assessments

Intellectual Functioning Assessment : The WISC-IV

Children's cognitive functioning was assessed by one psychologist using the age-appropriate Wechsler intelligence scale, i.e. the WISC-IV validated for children aged from 6 to 16 years old (French version, Wechsler, 2005). Four composite scores can be calculated based on the WISC-IV: Verbal Comprehension, Perceptual Reasoning, Working Memory and Speed of Treatment. These scores are computed to obtain a total IQ score.

Behavioral Assessment : The Conners Rating Scales - Revised

The Conners Rating Scales - Revised (CRS-R, Conners, 1997) have been validated for children

aged from 3 to 17 years old and are based on commonly observed behavioral disturbances. The scales include two distinct self-report questionnaires, the parent form (Parent Symptom Questionnaire, PSQ) and the teacher form (Teacher Rating Scale, TRS). The rater has to score the severity of specific behaviors observed in the child during the past months on a 4-point scale (from "not at all" to "very much").

Mothers and fathers completed the questionnaire separately, without prior consultation. In addition, the children were asked to complete a questionnaire similar to the parent form. The score reported in this study is the Hyperactivity Index, which reflects a general dimension of hyperactivity disorder (HD) according to the DSM-IV criteria.

The Index score distribution is centered on a mean of 50 points, with a standard deviation of 10 points. Scores superior to 70 points (2 standard deviations from the mean) correspond to HD diagnosis.

Statistical Analysis

Descriptive and inferential analyses were conducted. Frequencies of children with HD according to the different observers were determined using a threshold of the Hyperactivity Index score equal to or above 70, i.e. at least two standard deviations (sd) above the mean.

The comparison between the different observational sources (fathers, mothers, teacher and children) for the Hyperactivity Index score was performed using an analysis of variance (ANOVA). Finally, correlations between the different evaluators for the Hyperactivity Index score were calculated by Pearson correlation analyses.

Results

Descriptive Analysis

The prevalence rates of HD diagnosis according to different observational sources are presented in Table 2.

At a descriptive level, we can see differences between evaluators. Fathers' evaluations tend to identify more HD cases (21.6%) than the other evaluators. In contrast, teachers show the lowest rate of HD diagnosis (8.1% of the whole sample). Mothers and children present slightly similar rate, respectively 10.8% and 13.5%.

Comparative Analysis of the Quantitative Scores of Hyperactivity Index Between the Different Observational Sources

Indicators of central tendency for the Hyperactivity Index scores are presented in Table 2.

At a descriptive level, fathers and mothers show similar means (respectively, $m = 60.70 \pm sd = 9.88$ and $m = 60.41 \pm sd = 11.52$). Teachers and children show the lowest mean scores (respectively, $m = 55.22 \pm sd = 13.47$

Table 2: Descriptive analysis according to four sources of evaluation: fathers, mothers, teachers and children (n=37).

Hyperactivity Index Score	<i>min</i>	<i>max</i>	<i>mean</i>	<i>sd</i>	<i>HD Diagnosis (%)*</i>
Fathers	40	78	60.70	9.88	21.6
Mothers	40	84	60.41	11.52	10.8
Teachers	33	88	55.22	13.47	8.1
Children	40	83	52.46	10.73	13.5

*Prevalence (%) of HD diagnosis (Index Hyperactivity score \geq 70)

and $m = 52.46 \pm sd = 10.73$). The Analysis of Variance (ANOVA) showed significant differences between evaluators for the Hyperactivity Index score ($F(3,108)=7.25, p<.001$).

Planned comparisons indicate no statistical differences between fathers and mothers' assessments ($F < 1, ns$).

Parents had significantly higher mean scores on the Hyperactivity Index than teachers ($F(1,36) = 7.95, p<.01$).

No statistical differences were found between teachers and children ($F(1,36) = 1.46, ns$).

Correlations Between the Different Observational Assessments

Correlations for Hyperactivity Index scores according to the different observational sources are presented in Table 3. These results indicate a relative inter-rater reliability for the Conners Rating Scale concerning the Hyperactive Index score. Thus, mothers and fathers displayed significant positive correlations with teachers ratings ($r = .49$ and $r = .41, p<.01$, respectively). In addition, correlations between fathers and mothers' ratings were significantly positive ($r = .49, p<.01$). Concerning children's rating, significant positive correlations were observed with teachers' rating ($r = .36, p<.05$) and mothers' rating ($r = .42, p<.01$). Surprisingly, the correlation between fathers and children's ratings was not significant and was very low ($r = .10, p>.05$).

Table 3: Correlations between Hyperactivity Index scores between the four sources of evaluation (fathers, mothers, children and teachers).

	Fathers	Mothers	Children
Mothers	0.49**		
Children	0.10	0.42**	
Teachers	0.41**	0.49**	0.36*

* $p<.05$ ** $p<.01$

Discussion

The main result is that teachers at school observe less HD than parents at home. Our data contradict the common idea that HD-like behaviors are frequent for gifted children at school, but not at home, due to boredom resulting from academically understimulating environments (Lovecky, 1994; Webb & Latimer, 1993; Gallagher, Harradine & Coleman, 1997; Harnett et al., 2004).

How Can We Interpret these Results?

First, it can be postulated that given the large number of students in a classroom, it is possible

for teachers to have a better critical distinction than parents between active behaviors and HD. Teachers may also feel that it is not part of their job to judge and assess a behavior, except if this behavior becomes too disturbing for the classroom and the students group. Indeed, teachers' tolerance and reactivity to a behavior are directed towards a group and not towards a subject, even if they can have expectations concerning the children. Inversely, parents developed expectations, based on family ideals, that are directed towards their child (i.e., one subject) with usually no comparison

group other than the siblings. This can lead to a parental overestimation of HD.

In addition, family problems with parent-child interaction impairments can also lead to a lower level of tolerance of the child's active behavior, and consequently to an overestimation of HD. Furthermore, recurrent motor activity in gifted children can wear down the parents with an overload effect driving them to a hypersensitivity to active behaviors, whereas the teachers, at least in middle and upper school levels, may display a higher level of tolerance of the children's behavior because they spend less time with them. However, the fact that parents spend more time with their children at home than teachers at school, may help the parents to report better the observation of HD, especially across different settings.

Our results raise the issue that anxiety at school might inhibit HD in gifted children whereas disinhibition would occur at home. Indeed, some authors emphasize the idea of a particular emotional functioning of individuals with high potential related to Dabrowski's theory of overexcitabilities in giftedness (for a review, see Guignard & Zenasni, 2004). Certain gifted children's characteristics described by some authors (Webb & Latimer, 1993), such as sensitivity, impatience and high level of motor activity, might be expressed more easily in an overstimulating environment and can be better contained in a normative environment with explicit and imposed rules, such as the school environment.

It is noteworthy that the prevalence rate for HD in gifted children according to the fathers' observation is the double of the prevalence rate reported by the mothers. In the same line, the fathers' representation of HD is not significantly correlated with their children's representation, whereas the children's representation is significantly correlated with the mothers' or the teachers' representation. The fact that the father may spend less time with the child than the mother or the teacher can be discussed. However, the following hypothesis is more probable: on the father's side, a lower

level of tolerance of hyperactive behavior might develop because the father represents an authority figure; on the child's side, hyperactive behavior associated with aggressive behavior directed against the father might occur, especially considering the high male prevalence in our sample (86.5%) which is typical of AD/HD in gifted children (Lovecky, 1994). These results suggest that, first, the children behave differently according to the observers, and secondly, the perception of the same behavior might be different according to the observers' level of tolerance. This underlines the importance of situating the analysis of hyperactivity behavior in a relational dynamics.

Implications for Practice and Future Research

Our findings have both epidemiological and therapeutic implications. An overestimation of AD/HD diagnosis might be questioned considering the different prevalence rates of HD in gifted children according to observational sources. In addition the prescription of stimulant medication, such as Ritalin which has increased over the past decade, should take into consideration the discrepancies between these different observational sources (fathers, mothers and teachers). The results of this study open new therapeutic perspectives based on a better understanding of the role of parent-children interactions in the expression of hyperactivity behavior. Finally, further study is required considering that our sample of gifted children is particular in terms of behavioral, psychological and affective difficulties. These difficulties may explain the high prevalence rates for HD observed in our sample (8.1% to 21.6%) compared to the prevalence rate for AD/HD estimated at 3 to 5% in the general population (school-age children) according to the DSM-IV-TR. Future research would be necessary to establish prevalence rates for HD in gifted children with no psychological and affective problems, and also in non-gifted children with psychological and affective problems.

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About the Authors

Sylvie Tordjman is a Professor in Child Psychiatry and head of the University-Hospital Department of Child and Adolescent Psychiatry in Rennes, France. She has a MD and PhD and has established the first National Center for Gifted Children with Difficulties in France (Unité pour Surdoués en Difficulté). She is also a researcher in the Laboratoire de la Psychologie de la Perception, Université Paris Descartes-CNRS.

Jacques-Henri Guignard has a PhD in psychology from University Paris Descartes and is a researcher at Department of Gifted Children with Difficulties. His work focuses on the cognitive, conative and affective components of giftedness.

Carolina Seligmann, Emilie Vanroye and **Gregory Nevoux** are clinical psychologists -Department of Gifted Children with Difficulties (Unité pour Surdoués en Difficulté). Their work focuses on psychotherapy, assessment and research.

Jacqueline Fagard, Andrei Gorea, Pascal Mamassian, and **Patrick Cavanagh** are researchers in the Laboratoire de la Psychologie de la Perception, Université Paris Descartes-CNRS.

Sandra Lebreton, M.D., is a Child Psychiatrist in the Department of Gifted Children with Difficulties (Unité pour Surdoués en Difficulté).

Address

Sylvie Tordjman,
Unité Surdoués en Difficulté,
154 rue de Châtillon,
35200 Rennes.
Phone: 02.99.32.91.75,
Fax: 02.99.32.46.98
e-mail: s.tordjman@ch-guillaumeregny.fr

