

ACADEMIC PERFORMANCE DIFFICULTIES: AGE AND GRADE AT FIRST REFERRAL

By

MARSHA J. HARMAN*

S. THOMAS KORDINAK**

A. JERRY BRUCE***

ABSTRACT

Archival records of 43 children referred for diagnosis and treatment for academic difficulties were examined to determine if WISC-III scores correlated with diagnosis. Results revealed a significant difference for age at first referral and diagnosis. Those with disorders such as learning disability and severe emotional disturbance tended to be older, while those with the ADHD and dysthymic disorders tended to be younger. Similarly, there was a significant difference for grade at first referral and diagnoses. Again, those with disorders of learning disability and emotional disturbance were in higher grades, whereas the ADHD and dysthymic disorders were in lower grades. There were no significant differences for WISC-III IQs or indexes. Nor was gender a significant variable.

INTRODUCTION

From the day of conception, children are frequently evaluated on some dimension, whether it is the centimeter length on the sonogram, the APGAR scale at birth, or the Scholastic Achievement Test (SAT) to enter college. Additional evaluations are necessary if the child does not perform adequately on scheduled evaluations, such as standardized achievement tests, throughout the school year. At that point, if the child has repeatedly not reached the benchmark expected, the school or parent may seek additional assessment to determine the source of dysfunction in the academic arena. This study examined an archival sample of children referred by parents at the behest of pediatricians or school personnel due to misbehavior or underachievement in the classroom.

One of the most common childhood disorders is Attention Deficit Hyperactivity Disorder (ADHD) with an estimated prevalence of three to eight percent (American Psychiatric Association (APA), 1994). It has been studied extensively, particularly in the United States, where it is diagnosed frequently. A number of factors have been researched as possible contributors to, or at least risk factors of ADHD, including tobacco smoke and environmental lead (Braun, Kahn, Froehlich, Auinger, & Lanphear, 2006). If there are environmental factors that may contribute to the development of ADHD, the

community or nation will frequently pass legislation to protect children. For instance, in the United States, communities have become aware of the detrimental effects of secondary smoke, even on the developing fetus, and have restricted smoking to certain, typically well-ventilated areas. Lead paint has been restricted even before several years; yet, recently specific toys made in China were found to have lead in the materials. A substantial recall of such toys has been instituted.

Typically, there is a family history of ADHD or ADHD-like symptoms for children diagnosed with the disorder. Thus, there is likely a genetic component (Biederman et al., 1995). Faraone (2004) maintained that ADHD is an expression of a genetic disorder that affects the neurobiology of the frontal lobes. However, recent research has questioned the idea of ADHD as a disorder or disease, referring to it rather as a developmental delay (The Associated Press, 2007; Yochman, Ornoy, & Pasrush, 2006).

Most children with ADHD develop comorbid disruptive behavior disorder (Jensen, Martin, & Cantwell, 1997). The most common disruptive behavior disorder is Oppositional Defiant Disorder (ODD), characterized by chronic argumentativeness, defiance and anger; but the more insidious Conduct Disorder (CD), involving serious violations of societal norms, is presented in a quarter to half of all cases (Barkley, DuPaul, & McMurray, 1990;

Biederman, Newcorn, & Sprich, 1991; Szatmari, Boyle, & Offord, 1989).

Pfiffner, McBurnett, Rathouz, and Judice (2005) attempted to separate family factors, such as parental practices and psychopathology, among children diagnosed with ADHD also diagnosed with CD. Comorbid CD was significantly associated with maternal negative/ineffective discipline as well as lack of maternal warmth and involvement, paternal negative/ineffective discipline, and with paternal Antisocial Personality Disorder (APD). This is not a new finding since other studies have hypothesized that impoverished attachment and affective development contribute to the development of APD. Negative/ ineffective discipline was associated with higher rates of both ODD and CD. Dysfunctional parenting can lead to failures of socialization and affective development. It can also occur when a child inherits temperamental risks from father who has APD. Children with ADHD and CD have more learning problems, neuropsychological deficits, and poorer prognosis with high rates of antisocial outcomes themselves (Jensen et al., 1997).

The combination of ADHD and CD is associated with an earlier age of onset for CD and more persistent and serious conduct problems, (Lahey, McBurnett, & Loeber, 2000). ODD is considered a milder disorder than CD; nevertheless, it is not a benevolent disorder since it is associated with functional impairment and disturbed interpersonal relations; in some cases, it progresses to CD. However, many cases of prepubescent ADHD and ODD do not progress to the prepubescent form of CD (Lahey et al., 2000).

Muris, Meesters, and Rompelberg (2007) found that lower levels of attention control was accompanied by higher levels of anxiety, aggression, depression, and ADHD. Attention control was also negatively related to distortion of threat perceptions, which suggests that children who display low levels of attention control are more prone to perceive threats where none might exist. When controlling for neuroticism, attention control remained significantly, and negatively associated with symptoms of anxiety, depression, and ADHD.

There is accumulating evidence indicating that lower levels of effortful control are related to higher levels of emotional and behavioral problems in children (Eisenberg et al., 2001). Muris and Ollendick (2005) and Rothbart and Bates (1998) have categorized children's temperament factors into reactive and regulative traits. Putnam, Ellis, and Rothbart (2002) identified three biologically based dimensions in children of various ages: neuroticism, extraversion, and effortful control. Rothbart and Bates (1998) maintained that neuroticism and extraversion are reactive traits, reflexive behavior displayed in challenging environmental situations; effortful control is a regulative trait that serves to temper reactivity.

The Associated Press reported on November 12, 2007, that a detailed study conducted by Philip Shaw and Judith Rapoport, with the National Institute of Mental Health, found that there can be as much as a three-year lag in brain development for children with ADHD. Scans of children with ADHD and those without ADHD determined that brain regions which suppress inappropriate actions and thoughts, focus attention, remember things from moment to moment, work for rewards, and control movement develop more slowly in children with ADHD. Some children outgrow the disorder; others do not.

In a typical ADHD evaluation, a clinician observes the child in the school setting, or at least during the assessment; the clinician will also take a thorough developmental history and interview the child, parents, and teachers. Standardized tests to rule out intellectual deficiencies, learning disabilities, and emotional problems are administered as well. The goal is to ensure that the proper diagnosis is assigned for any disorder. When all data are gathered, what sometimes emerge are other disorders, such as depression, learning disabilities, or suspicion of emotional disturbance.

Dysthymia is a chronic depression that is diagnosed after a period of one year in children. These children are frequently irritable, hard to please, and unhappy most of the time. Other symptoms are poor appetite or overeating, insomnia or excessive sleeping, low self-esteem, poor concentration, and feelings of

hopelessness (APA, 1994). The depressive symptoms can be situational or hereditary; either ways, these children experience very little pleasure in life. It is important, if at all possible, to determine whether lack of concentration is attributable to ADHD or the chronic depression. It is estimated that 5% of *children* and adolescents suffer from major depression, 4% from *dysthymia*, and 1% from bipolar depression (Karippot, 2006).

Emotional disturbance is the term used to describe children with emotional or behavioral disorders. This is not a DSM-IV term; instead it is a term used for the Individuals with Disabilities Education Act (IDEA) legislation. Children are considered emotionally disturbed if they are unable to learn, despite having adequate intelligence, sensory skills, and health. Other qualifying criteria include an inability to sustain satisfactory interpersonal relationships with peers and teachers, inappropriate types of behavior or feelings under normal circumstances, a pervasive depression, or a tendency to somatize or become anxious when personal or school problems occur (Code of Federal Regulation, title 34, Section 300.7(c)(4)).

Learning disabilities have traditionally been determined by demonstrating a discrepancy of greater than one standard deviation between achievement score and ability score. Children with specific learning disabilities obviously have difficulty in achieving various academic areas; Karvale and Forness (1996) conducted a comprehensive meta-analysis of 152 studies and determined that 75 percent of children with LD have significantly more social skills deficits than those without LD.

In summary, children referred for an ADHD evaluation may, in fact, meet the requirements for that diagnosis. However, other disorders sometimes emerge instead of, or in addition to, ADHD. Other individual or cormorbid disorders include dysthymia, learning disabilities, and emotional disturbance.

The purpose of the current study was to investigate whether scores from the Wechsler Intelligence Scale for Children, Third Edition (WISC-III), correlated with eventual diagnoses of children referred for academic difficulties.

Although a battery, such as the WISC-III, an achievement test, such as the Wide Range Achievement Test, Third Edition (WRAT-3), the Wechsler Individual Achievement Test (WIAT), the Woodcock-Johnson Revised (WJR), and the Behavioral Assessment System for Children (BASC) with individual, parent, and teacher forms is typically used, only the WISC-III was investigated in the present study.

Method

Participants included 43 children who had been referred to a private practitioner to determine diagnosis and treatment recommendations for academic difficulties reported in schools. Parents initiated the referral to the private practitioner, a licensed psychologist. Of the 43 children, 26 were male and 17 female. Ages ranged from six to 16 years. Each evaluation was conducted over a series of sessions lasting from 60 to 90 minutes. Table 1 displays the mean ages by sex.

Archival records of the participant children were examined. Each individual child had been administered the *Wechsler Intelligence Scale for Children, Third Edition (WISC-III; Wechsler, 1991)* as part of a general diagnostic battery. Recall that the battery consisted of the WISC-III, an achievement test, and the BASC. The WISC-III and diagnosis records of the 43 children were studied to determine correlations with childhood disorders, particularly attention deficit hyperactivity disorder (ADHD).

Results

For purposes of analyses, the diagnoses were clustered into ADHD/Dysthymia and LD/ED. Data were analyzed using a series of analyses of variance (ANOVAs). Although a number of analyses were conducted, the alpha remained at .05 since this was considered as an exploratory study. No significant variance emerged when examining the WISC-III results. However, further analysis revealed a significant difference for age (dependent variable) at first referral ($F_{(3, 39)} = 4.958, p =$

Sex	N	Age					
		Mean	SD	Minimum	Maximum	Median	Mode
Male	26	8.85	2.84	6.00	16.00	8.50	9.00
Female	17	10.29	2.82	6.00	15.00	10.00	8.00

Table 1. Descriptive Statistics for Age by Sex.

.005) and diagnoses (independent variable). Those with disorders such as learning disability and emotional disturbance tended to be older with a mean of 12.33 years while the ADHD and dysthymic disorders tended to be younger with a mean of 8.65 years. Table 2 displays the descriptive statistics for ages by diagnostic groups. Tables 3 and 4 display the intelligence quotients and indexes, respectively, for each diagnostic category.

DX Groups	N	Age					
		Mean	SD	Minimum	Maximum	Median	Mode
ADHD Inattentive	10	8.60	1.65	6.00	11.00	9.00	9.00
ADHD Mixed	19	8.68	2.85	6.00	15.00	8.00	6.00
Dysthymic	5	8.60	1.14	7.00	10.00	9.00	9.00
LD, ED, Other	9	12.33	3.12	7.00	16.00	13.00	14.00

Table 2. Descriptive Statistics for Age by Diagnostic (DX) Groups.

According to Scheffe post hoc analysis, the diagnostic categories of ADHD Inattentive, ADHD Mixed, and Dysthymic were significantly different from the LD, ED, Other category.

Similarly, there was a significant difference for grade (dependent variable) at first referral ($F_{(3,39)} = 45.341, p = .004$) and diagnoses (independent variable). Again, those with disorders of learning disability and emotional disturbance were in higher grades clustered at the seventh grade, whereas the ADHD and dysthymic disorders were clustered around third grade. There were no significant differences for WISC-III IQs or indexes. Nor was sex a significant variable. Table 5 displays the descriptive statistics for grades by diagnostic groups

Discussion

These results would seem to indicate that there is a greater tolerance for LD and emotional disturbance as compared to ADHD and dysthymia. The earlier referral of ADHD reveals that the disorder is much more disruptive

DX1	IQ	Descriptive Statistics						
		N	Mean	SD	Minimum	Maximum	Median	Mode
ADHD Inattentive	Verbal	10	87.30	11.69	69.00	101.00	89.00	69.00
	Performance	10	92.20	12.59	68.00	115.00	92.00	68.00
	Full Scale	10	88.50	10.75	77.00	107.00	86.00	78.00
ADHD Mixed	Verbal	19	89.58	12.69	59.00	106.00	91.00	101.00
	Performance	19	94.53	16.13	63.00	123.00	93.00	89.00
	Full Scale	19	90.84	13.43	59.00	112.00	93.00	84.00
Dysthymic	Verbal	5	87.80	3.96	84.00	94.00	87.00	84.00
	Performance	5	88.40	11.74	77.00	103.00	82.00	77.00
	Full Scale	5	87.00	8.03	78.00	96.00	83.00	83.00
LD, ED, Other	Verbal	9	97.11	12.21	76.00	112.00	95.00	112.00
	Performance	9	97.89	20.71	66.00	120.00	106.00	116.00
	Full Scale	9	97.00	16.95	70.00	115.00	97.00	115.00

Table 3. Descriptive Statistics for Wechsler Intelligence Scale for Children - Third Edition (WISC - III) IQ (Verbal, Performance, & Total) by Diagnostic (DX) Groups.

DX1	ISS	Descriptive Statistics						
		N	Mean	SD	Minimum	Maximum	Median	Mode
ADHD Inattentive	Verbal Comprehension	10	88.70	13.06	67.00	107.00	89.50	67.00
	Perceptual Organization	10	94.10	10.94	69.00	110.00	93.00	93.00
	Freedom from Distractibility	10	84.60	7.18	75.00	96.00	84.00	84.00
	Processing Speed	9	84.44	32.97	10.00	134.00	88.00	77.00
ADHD Mixed	Verbal Comprehension	19	90.16	12.48	63.00	106.00	93.00	72.00
	Perceptual Organization	19	95.63	17.10	65.00	130.00	94.00	94.00
	Freedom from Distractibility	19	92.16	15.77	58.00	112.00	98.00	104.00
	Processing Speed	17	92.12	24.11	10.00	124.00	99.00	99.00
Dyathymic	Verbal Comprehension	5	86.00	3.96	83.00	92.00	84.00	83.00
	Perceptual Organization	5	88.20	10.33	76.00	104.00	89.00	89.00
	Freedom from Distractibility	5	95.60	5.50	90.00	104.00	93.00	93.00
	Processing Speed	4	73.50	43.02	9.00	96.00	94.50	96.00
LD, ED, Other	Verbal Comprehension	9	97.44	10.50	79.00	111.00	100.00	92.00
	Perceptual Organization	9	102.44	25.81	57.00	128.00	111.00	126.00
	Freedom from Distractibility	9	97.11	9.37	81.00	109.00	98.00	98.00
	Processing Speed	8	94.00	5.53	83.00	101.00	94.50	93.00

Table 4. Descriptive Statistics for Wechsler Intelligence Scale for Children Third Edition (WISC-III) Index Scores Summary by Diagnostic (DX) Groups.

DX Groups	N	Grade					
		Mean	SD	Minimum	Maximum	Median	Mode
ADHD Inattentive	10	3.00	1.63	.00	5.00	3.00	3.00
ADHD Mixed	19	3.11	2.66	1.00	9.00	2.00	1.00
Dyathymic	5	3.20	.84	2.00	4.00	3.00	3.00
LD, ED, Other	9	6.78	3.19	1.00	10.00	7.00	7.00

Table 5. Descriptive statistics for Grade by Diagnostic (DX) Groups

and disconcerting to the family and school. Yet, common sense maintains that earlier intervention increases management of the symptoms and more average-like progression in school.

At times it appears that children will have comorbid ADHD and dysthymia; when those cases arise, it is difficult to ascertain which is more relevant. Perhaps children become depressed when they are unable to perform academically due to ADHD symptoms. In that case, it would be wiser to treat the ADHD first and wait to determine if the depressive symptoms abate. At other times, the depression is so severe with suicidal ideation that the depression must be addressed first and then the ADHD. Of course, the determination here is most often a clinical judgment.

The results give some validity to the DSM-IV's requirement that ADHD symptoms must have appeared at the age of seven years. Usually, hyperactivity and the inability to focus will alert teachers and parents when children are

younger because the students make little progress and may be delayed in learning to read and retain basic mathematics concepts. Typically, children must be exposed to a variety of learning techniques before being diagnosed as learning disabled.

Of course, age and grade are highly correlated. Thus, it is not surprising that similar outcomes emerged for both variables.

Limitations include a small sample. Although, the probabilities are rather robust, a larger sample would solidify confidence in the findings. Another issue was the number of analyses originally performed. More stringent control of the alpha and number of analyses would ensure the reliability of the findings.

Future research might continue to more carefully delineate the predictor aspects of ADHD. Development of early interventions could possibly lessen the probability that comorbid disorders would develop. Throughout the paper, implicit in the materials is the notion that early intervention is of paramount importance in dealing with these disorders.

References

- [1]. American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th Ed.). Washington, DC: author.
- [2]. The Associated Press. (2007, November 12). *ADHD kids' brains mature more slowly: Delayed development in regions that focus attention, study finds*. Retrieved November 28, 2007, from <http://www.msnbc.msn.com/id/21757514/>
- [3]. Barkley, R. A., DuPaul, G. J., & McMurray, M. B. (1990). Comprehensive evaluation of attention deficit disorder with and without hyperactivity as defined by research criteria. *Journal of Consulting and Clinical Psychology, 58*, 775-789.
- [4]. Biederman, J., Faraone, S. V., Mick, E., Spencer, T., Wilens, T., Kiely, K., Guite, J., Ablon, J. S., Reed, E., & Warburton, R. (1995). High risk for attention deficit hyperactivity disorder among children of parents with childhood onset of the disorder. A pilot study. *American Journal of Psychiatry, 152*, 431-435.
- [5]. Biederman, J., Newcorn, J., & Sprich, S. (1991). Comorbidity of attention deficit hyperactivity disorder with conduct, depressive, anxiety, and other disorders. *American Journal of Psychiatry, 148*, 564-577.
- [6]. Bruaun, Kahn, Froehlich, Auinger, & Lanphear (2006). Exposures to Environmental Toxicants and Attention Deficit Hyperactivity Disorder in U.S. Children. *Environmental Health Perspectives, 114*, 1904-1909
- [7]. Eisenberg, N ; Cumberland, A ; Spinrad, T L ; Fabes, R A ; Shepard, S A ; Reiser, M ; Murphy, B C ; Losoya, S H ; Guthrie, I K The relations of regulation and emotionality to children's externalizing and internalizing problem behavior. *Child Development, 72*, 1112-1134.
- [8]. Faraone, S. V. (2004). Genetics of adult attention deficit hyperactivity disorder. *Psychiatric Clinics of North American, 27*, 303-321.
- [9]. Individuals with Disabilities Education Act (2004). Code of Federal Regulation, Title 34, Section 300.7(c)(4) (1999)
- [10]. Jensen, P. L., Martin, D., & Cantwell, D. P. (1997). Comorbidity in ADHD: Implications for research, practice, and DSM-V. *Journal of the American Academy of child and Adolescent Psychiatry, 36*, 1065-1079.
- [11]. Karippot, A. (2006). Pediatric bipolar depression. In .El-Mallakh, Rif S.; Ghaemi, S. Nassir (Eds.) *Bipolar depression: A comprehensive guide*, (pp. 101-115). Washington, DC, US: American Psychiatric Publishing
- [12]. Karvane, K. A., & Forness, S. R. (1996). Social skill deficits and learning disabilities: A meta-analysis. *Journal of Learning Disabilities, 29*, 226-237.
- [13]. Lahey, B. B., McBurnett, K., & Loeber, R. (2000). Are Attention-Deficit/Hyperactivity Disorder and Oppositional Defiant Disorder developmental precursors to Conduct Disorder? In A. J. Sameroff, M. Lewis & S. M. Miller (Eds.), *Handbook of developmental psychopathology* (2nd Ed), pp. 431-446). New York: Kluwer Academic.
- [14]. Muris, P., Meesters, C., & Rempelberg, L. (2007). Attention control in middle childhood: Relations to psychopathological symptoms and threat perception distortions. *Behaviour Research and Therapy, 45*, 997-1010.

- [15]. Muris, P., & Ollendick, T. H. (2005). The role of temperament in the etiology of child psychopathology. *Clinical Child and Family Psychology Review*, 8, 271-289.
- [16]. Pfiffner, L. J., McBurnet, K., Rathouz, P. J., & Judice, S. (2005). Family correlates of oppositional and conduct disorders in children with attention deficit/hyperactivity disorder. *Journal of Abnormal Child Psychology*, 33, 551-563.
- [17]. Putnam, S. P., Ellis, L. K., & Rothbart, M. K. (2002). The structure of temperament from infancy through adolescence. In A. Elias and A. Angleitner, Editors, *Advances in research on temperament* (pp. 165-182). Germany: Pabst Science.
- [18]. Rothbart, M. K., & Bates, J. E. (2004). Temperament. In N. Eisenberg and W. Damon, Editors, *Handbook of child psychology: Volume 3. Social, Emotional, and personality development*. New York: Wiley.
- [19]. Szatmari, P., Boyle, M., & Offord, D. R. (1989). ADHD and conduct disorder: Degree of diagnostic overlap and differences among correlates. *Journal of the American Academy of Child and Adolescent Psychiatry*, 28, 865-872.
- [20]. Wadsworth, J. S., & Harper, D. C. (2007). Adults with attention-deficit/hyperactivity disorder: Assessment and treatment strategies. *Journal of Counseling & Development*, 85, 101-108.
- [21]. Wechsler, D. (1991). *The Wechsler Intelligence Scale for Children (3rd Ed)*. San Antonio, TX: Psychological Corporation.
- [22]. Yochman, A., Ornoy, A., & Parush, S. (2006). Co-occurrence of developmental delays among children with attention-deficit-hyperactivity disorder. *Developmental Medicine and Child Neurology*, 48, 483-488.

ABOUT THE AUTHOR

* Professor of Psychology, Sam Houston State University.

**Professor of Psychology, Sam Houston State University.

*** Professor, Department of Psychology, Sam Houston State University.

Dr. Marsha J. Harman is a professor of psychology in the Department of Psychology and Philosophy at Sam Houston State University (SHSU). She has degrees in elementary education, counseling education, and counseling psychology. Her primary responsibility at SHSU is training school and clinical psychology graduate students. Additionally, she does private practice in which she specializes in assessment and psychotherapy with children and families. Consultation in public schools is achieved through her private practice.



Dr. S. T. Kordinak is a professor of psychology in the Department of Psychology and Philosophy at Sam Houston State University (SHSU). He holds a B.A. & M.A. in Psychology and Ph.D. in Counseling Psychology. His primary responsibility at SHSU is teaching learning to both undergraduate and graduate students and psychometrics to graduate students. His research interest include the MMPI-2, the Rorschach, and personality and academic achievement. He has consulted with public schools and private organizations.



Dr. A Jerry Bruce is a professor of psychology in the Department of Psychology and Philosophy at Sam Houston State University (SHSU). His undergraduate work was in religion and his graduate work in developmental psychology. He has served in many capacities at SHSU including 25 years as chair of Psychology. At present he serves as coordinator of the masters programs within the Department.

