

Chapter 3



The Clinical Spectrum of Developmental, Learning and Behavioral Disorders in Children

Whats In a Label? - Working Definitions in Evolution

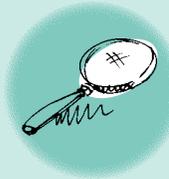
The disorders of learning, behavior and development cover a wide spectrum of disability, ranging from subtle to devastating. Distinguishing among the various syndromes, and the “normal” from the “abnormal” is a subject of considerable discussion and uncertainty.¹ The lack of consensus on these issues is reflected in the large number of alternate approaches to diagnosis and classification, and in the frequency with which old syndromes are redefined² and new ones appear. As a result, these disorders may be best characterized as works in progress, rather than rigid diagnostic entities.

The difficulties in diagnosis are not surprising, since learning, behavior, and developmental disorders lack specific markers - such as unique symptoms, blood tests or physical attributes. The limits of current scientific knowledge also prevent an understanding of biological underpinnings of these disorders. While gross brain structure usually appears normal, it is widely assumed that underlying problems exist at the level of

neural circuitry, cellular and subcellular structure and function.^{3 4 5 6} Since most of these details lie beyond the current limits of science, the biological basis of these disorders remains poorly understood. Consequently, the developmental syndromes are defined by clinical symptoms, such as how children appear or behave. Since these defining symptoms are nonspecific, each symptom may occur as a part of many developmental, medical and psychiatric conditions, as well as in normal children.^{7 8}

Developmental disorders are most often diagnosed according to a system of classification known as the DSM-IV, (The Diagnostic and Statistical Manual of Mental Disorders, Edition IV). As a categorical system of classification, the DSM-IV uses “clinically derived categories of classification based mostly on subjective consensus.”⁹ The DSM-IV enumerates criteria for diagnosing generally recognized mental health disorders. These criteria typically include

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DIAGNOSTIC DILEMMAS

Consider the question of whether a fidgety, forgetful child has ADHD.

According to the most recent, widely used definition, set by DSM IV in 1994, a child has ADHD if she/he exhibits at least six maladaptive, age-inappropriate symptoms in the areas of inattention or hyperactivity/impulsivity, with the added condition that these symptoms have been present for at least six months. The criteria symptoms, however, lack both specific definitions and thresholds for determining when a symptomatic behavior is occurring. Consider one of the DSM IV criteria symptoms: “fails to give close attention to details.” How close is close, and at what level of detail? A 10 year old might fail to notice the name of the 5th president from the complete list of US presidents, the color of the teacher’s shoes, or today’s homework assignment written on the blackboard. And how often should the child have failed to pay close attention, 1%, 5%, or 50% of the time? Is a child failing to pay close attention to detail if s/he neglects to bring in his homework one, two, three or eight times a month? Clearly the conclusion that a child is “inattentive” is subjective and depends on the expectations and judgment of the observer.

DEFINITION - *Empirical*:

Derived from experience, observation or experiment.

symptoms, their durations, and exclusions. For a partial list of diagnostic criteria for development, learning and behavioral disorders, see the chart on page 35.

Observers have identified a number of drawbacks with this system of diagnosis, problems which are often associated with categorical classification. They include ¹⁰ :

1. Lack of empirical foundations;
2. Reliance on subjective-impressionistic criteria to derive individual categories;
3. Unsubstantiated assumptions regarding etiology;
4. Lack of objective, validated criteria for assigning diagnostic labels;
5. Failure to integrate the influence of context into diagnostic criteria;
6. Lack of demonstrated relevance to treatment;

The lack of a unifying, empirically-derived classification framework has several important consequences. The considerable impact on clinical practice was summarized by one observer as follows: “Looked at realistically, what this means is that after the elaborate procedures used in most clinics are completed, the child is placed in a category, which says exactly what we knew about him in the first place, that he has a problem.”¹¹ In addition, as a result of the reliance on subjective diagnostic criteria, up to 30% of parents report their children have been labeled with three or more different diagnoses.¹²

The lack of a unifying framework also makes communication difficult among professionals, who may call similar disabilities by different names, or different disabilities by the same name. Research is also impaired when terms are ambiguous, since data from diverse sources cannot be readily compared. These concerns were summarized by two noted researchers, Achenbach and Edelbrock, in their observation that “the study of psychopathology in children has long lacked a coherent taxonomic framework within which training, treatment, epidemiology, and research could be integrated.”¹³

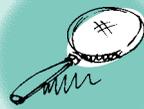
Fortunately, much of the current research in learning and developmental disorders focuses on improving diagnosis and classification of childhood disabilities.¹⁴ This will establish a more meaningful use of diagnostic labels. In addition, there is increasing recognition of the importance of integrating methods, vocabulary, concepts and knowledge across disciplines.^{15 16} This will ultimately improve research on underlying mechanisms, causes, treatments and prevention.

A Brief Overview of the Disorders of Learning, Behavior and Development

In spite of the limits to the current system of classification, the clinical syndromes commonly used to label children with developmental disabilities provide a set of management strategies. These strategies address the practical concerns of managing dysfunctional or inappropriate behavior in various

settings.¹⁷ In some cases labels also provide access to supportive services. These syndromes are described in detail in the appendix. As an introduction for readers not already familiar with them, we present here an abbreviated, admittedly oversimplified account of these disorders as currently defined. To organize this discussion, we use a pragmatic framework representing a composite of Wolraich, author of a widely used text in child development,¹⁸ and the DSM-IV. While this framework differs slightly from the traditional DSM-IV, this approach is suited to the brief discussion offered here.

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OVERLAPPING SYNDROMES:

Percent of kids with ADHD that also have other developmental and social/psychiatric disorders²⁴

- 10-30% have learning disabilities.
- 30-50% have language disability (a core symptom of autism when expressed in its extreme form.)
- 30-80% have oppositional disorder or conduct disorder.
- Frequently associated with other neurodevelopmental disorders: Asperger's, obsessive compulsive disorder, tic disorders, and mental retardation.
- May accompany social and psychiatric disorders: anxiety, depression, schizophrenia. (In the presence of a mental disorder, the diagnosis of ADHD cannot be made if the symptoms can be better accounted for by the accompanying social/psychiatric condition.)



1. Academic Disorders

Disorders predominantly expressed in the learning environment can be classified as “academic disorders.” These include learning disabilities, such as the disorders of reading, math, and written expression. Attention deficit hyperactivity disorder, or ADHD, can also be considered an “academic

disorder.” Although problems must occur in more than one setting in order to meet diagnostic criteria, for most children the strongest expression of ADHD occurs in the school setting. ADHD consists of a mix of attentional problems, which are considered cognitive disabilities, and impaired impulse control. Impulse control is thought to be an expression of the ability to self-regulate, a trait technically referred to as “executive function.”¹⁹ Impairment in the ability to self-regulate is increasingly recognized as a unifying feature of ADHD. In the domain of motor activity, this is expressed as hyperactivity, for example by frequent fidgeting or the inability to sit still. In the domain of social behavior, impaired self-regulation is expressed in intrusive actions such as the inability to await one’s turn, or recurrently intruding into conversations and games.

As the scope of disability increases, problems tend to extend beyond the classroom setting. If several functions are impaired, a child is considered to have a “pervasive developmental disorder,” or PDD.

2. Pervasive Developmental Disorders

As the scope of disability increases, problems tend to extend beyond the classroom setting. If several functions are impaired, a child is considered to have a “pervasive developmental disorder,” or PDD. The mildest pervasive developmental disorder, Asperger’s syndrome, is characterized by impaired social interactions and restricted behavior and interests. Social impairment is characterized by lack of emotional reciprocity, impaired nonverbal exchanges such as eye-to-eye gaze and facial expressions, and disinterest in shared experience. Restricted, repetitive behaviors and interests are characterized by encompassing preoccupations, adherence to nonfunctional routines or rituals, or repetitive motor mannerisms such as hand flapping or finger twisting.

When language deficits compound social impairments and restricted/repetitive behaviors, a child is considered to have a more serious pervasive developmental disorder. Autism is the prototype of these serious PDDs, which in most cases are marked by loss of the capacity for self care as well. The serious PDDs may be characterized by more extreme restricted/repetitive behaviors, such as spinning, hand flapping, or head or body rocking. Interests are severely restricted in autism, as exemplified by the relative absence of pretend play. This is illustrated, for example, in the observation that autistic children, compared to control children, are more

likely to arrange objects into patterns or lines, or to shake or twirl toys rather than play imaginatively with them.²⁰

Mental retardation and PDD's are both characterized by severe functional impairment, and many children with PDD's will also meet test criteria for mental retardation. PDD's are distinguished from mental retardation by the presence of repetitive, restricted behaviors, and social and communication impairments that are disproportionately impaired for a given IQ level.²¹

3. Behavioral Disorders

Behavioral disorders are also prominently expressed well beyond the classroom setting. Children are labeled with these disorders when their behavior is marked by the predominance of disruptive or aggressive features. When this behavior is directed mainly towards authority figures, the disorder is typically labeled as Oppositional Defiant Disorder (ODD). When disruptive/aggressive behavior is more broadly directed, and of sufficient intensity to violate social norms and the rights of others, the problem is likely to be labeled Conduct Disorder (CD).²² These disorders are distinguished from PDD's by the prominence of disruptive/aggressive behavior, by relatively normal verbal and nonverbal communication skills, and by the absence of repetitive/restricted behaviors and interests.

The clinical descriptions of behavioral disorders notably overlap with that of ADHD. This is not

surprising considering the fine line between impaired impulse control and disruptive or aggressive behavior. The close relationship of these disorders is reflected in the fact that 30-80% of children diagnosed with ADHD are also

EXAMPLE OF SYMPTOM OVERLAP (OR NONSPECIFICITY): "STEREOTYPIES":

Restricted, repetitive patterns of behavior and interests, which characterize pervasive developmental disorders, are referred to as "stereotypies." Although stereotypies are a necessary condition for making the diagnosis of a pervasive developmental disorder, they are not unique to pervasive developmental disorders. They are also present in mental retardation, schizophrenia, Parkinson's Disease and obsessive-compulsive disorder.²⁵

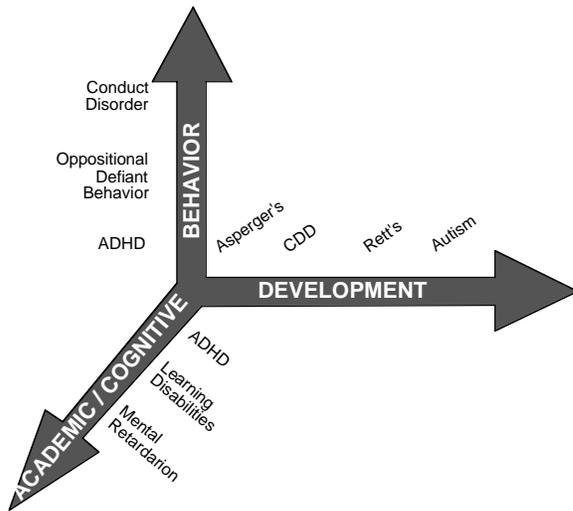


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felt to have ODD or CD²³. The similarities of ADHD, ODD and CD are further reflected in the fact that ADHD is commonly classified not as an academic disorder, but rather as the mildest of the behavioral disorders.

For the sake of discussion in this report, learning and developmental disabilities can be organized in an admittedly oversimplified framework using three intersecting arrays of related disorders. Each array can be thought of

Spectrum of Developmental Disorders



as a different dimension of function, along which the syndromes represent various degrees of disability. From this perspective, Asperger's and autism represent increasing impairment along a developmental axis including social dysfunction, restricted behaviors, and impaired communication. On a second axis, ADHD, ODD and CD can be seen as progressive expressions of disruptive/aggressive behavior. On a third axis, ADHD, LD, and MR can be considered progressive expressions of cognitive dysfunction. ☺

For the purpose of discussion, developmental disorders can be organized using a framework of intersecting arrays. Each array represents a different dimension of function, along which the syndromes represent varying degrees of disability. Each dimension can be seen as a spectrum of disability, in which there is considerable overlap between the various disorders.

DEFINITION - Cognitive:

Pertaining to the process of the mind, such as perceiving, thinking, or remembering.



Developmental Syndromes: Conventional Clinical Classifications

SYNDROME	DEFINITION	POSSIBLE COGNITIVE/ BEHAVIORAL EXPRESSIONS
“Academic” Disorders		
Learning Disorders - Including Disorders of Reading, Mathematics, Written Expression; and also Communication Disorders, including Disorders of Expressive Language, Mixed-Receptive Expressive Language, Phonological, Stuttering	Disorder in one or more of basic processes involved in understanding or using language including reading, writing and mathematical skills. Achievement on standardized tests significantly lower than expected for age, schooling and level of intelligence (2 standard deviations). Interfere with academic achievement or activities of daily life that require those skills.	Cognitive processing deficits Communication deficits
“Academic” and Behavioral Disorders		
Attention Deficit Hyperactivity Disorder (ADHD)	Persistent pattern of at least 6 symptoms of inattention and/or hyperactivity-impulsivity for at least 6 months that were present prior to age 7, that impair normal functioning, and that appear in 2 or more settings. Impairment in social, academic or occupational functioning.	Hyperactivity Impulsivity Inattention
Types:		
<ul style="list-style-type: none"> • Combined • Predominately Hyperactive • Predominately Inattentive 		
Behavioral Disorders		
Conduct Disorders including those that are Mild, Moderate and Severe	A repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated. At least three (or more) of following criteria (in past 12 months with one criterion in last 6 months): Aggression to people and animals, destruction of property, deceitfulness, theft, serious violation of rules. Little empathy/concern for well being of others. Childhood Onset Type and Adolescent Onset Type.	Aggression Fighting Stealing Vandalism Blaming others Low self-esteem Poor tolerance irritability, temper tantrums Lying Truancy Substance abuse

Developmental Syndromes: Conventional Clinical Classifications continued

SYNDROME	DEFINITION	POSSIBLE COGNITIVE/ BEHAVIORAL EXPRESSIONS
Behavioral Disorders		
Oppositional Defiant Disorder	Pattern of negativistic, defiant, disobedient and hostile behavior toward authority figures for at least 6 months. Onset usually prior to age 8, not later than early adolescence, with symptoms increasing with age. Must exhibit at least 4 of the following behaviors –loses temper, argues with adults, defies rules, deliberately annoys, blames others, angry, resentful, spiteful, overreactive.	Hostility Verbal aggression Anger
Developmental Delays		
Mental Retardation – Including Mild, Moderate, Severe, Profound, Unspecified	Significantly sub-average intellectual functioning (I.Q. 70 or below—at least 2 standard deviations below the mean) WITH significant limitation in adaptive functioning. Onset prior to age 18.	Mental retardation Deficits in a range of cognitive/behavior traits
Pervasive Developmental Disorders		
Asperger's Syndrome	Severe and sustained impairment in social interaction with restricted, repetitive patterns of behavior, interest and activities.	Motor delays, motor clumsiness Idiosyncratic or circumscribed interests Problems with empathy and modulation of social interaction
Autism	Impaired social interaction, impaired communications skills, restricted and stereotyped repertoire of activity and interests. Must have total of six characteristics in above 3 categories. Onset prior to age 3.	Abnormal non-verbal gestures Delay in or lack of spoken language with no other form of compensation Hyperactivity Attention deficit Aggression Violence to self Repetitive motor mannerisms

Developmental Syndromes: Conventional Clinical Classifications continued

SYNDROME	DEFINITION	POSSIBLE COGNITIVE/ BEHAVIORAL EXPRESSIONS
Pervasive Developmental Disorders		
Rett's Disorder	Regressive development physically and mentally after normal development in first-second year of life. Usually associated with severe or profound mental retardation. Onset usually prior to age 4. Reported only in females.	Deceleration of head growth Severe psychomotor retardation Cognitive deficits Motor dysfunction Impaired social interaction Stereotyped hand movements
Childhood Disintegrative Disorder	Regression in multiple areas of functioning after at least 2 years of apparently normal development. Loss of previously acquired skills in expressive or receptive language, social skills or adaptive behavior, bowel or bladder control, play, or motor skills. Usually associated with severe mental retardation. Onset between ages 3-4. More common in males.	Delay or lack of speech Repetitive and stereotyped behavior Cognitive deficits Motor dysfunction Impaired social interaction

Notes:

1. Definitions are those from the Diagnostic and Statistical Manual of Mental Disorders IV (DSM IV), although definitions of learning disabilities as a general category may change from state to state and also as classified for funding for treatment purposes. See Appendix for references.

2. Many of the syndromes have overlapping traits with others. These have not been detailed.

Public Health Impact

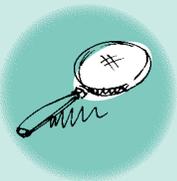
Behavioral problems, learning disabilities and developmental delays have important public health effects in the United States, as demonstrated by the following statistics:

- It is estimated that 5% - 10% of the school age population have learning disabilities. ^{1 2} 52% of all students in special education in public schools have learning disabilities. This equals about 2.25 million children. ³

Nearly 40% of adults with learning disabilities have significant difficulties with employment or social adjustment.

- unemployed one year after graduating high school. ⁶
- 35% of all students identified as learning disabled drop out of high school. This is twice the rate of their peers without disabilities. ⁷
- 50% of females with learning disabilities will be mothers (many of them single) within 3-5 years after leaving high school. ⁸
- Up to 60% of adolescents in treatment for substance abuse have undetected learning disabilities. ⁹
- Learning disabilities and substance abuse are the most common impediments to the employment of welfare clients. ¹⁰
- 31% of adolescents with learning disabilities will be arrested 3-5 years after leaving high school. ¹¹ The only adolescents with a higher arrest rate were those with emotional disturbance (57.6%). ¹²
- Adolescents with learning disabilities are disproportionately involved with the juvenile justice system. 50% of juvenile delinquents tested were found to have undetected learning disabilities. The cost of juvenile incarceration is between \$35,000 to \$60,000 per year per person. ¹³

READING DISABILITY MAY HAVE CONSEQUENCES BEYOND SCHOOL¹⁷



"The eager third graders experiencing reading difficulties become, in turn, the frustrated ninth graders who drop out of school, the barely literate 25-year-olds who read at a fourth or fifth grade level, the thirty-something generation who are unemployed, and the defeated adults now raising families and needing public assistance."

- Nearly 40% of adults with learning disabilities have significant difficulties with employment or social adjustment. ⁴
- Individuals with ADHD obtain less schooling and have poorer vocational achievement than their peers. ⁵ 62% of students with learning disabilities were



- Learning disabled individuals are more likely to be found delinquent in juvenile court, to be taken into custody by the police, and to receive more severe penalties because of their inability to effectively communicate or understand their situation. ^{14 15}

- It is estimated that 42% of adults in correctional institutions were eligible for special education. ¹⁶

Significant public funds and resources are spent each year on diagnosis, treatment and the study of these disorders. Implementation, design and adequate funding of appropriate treatment and prevention programs to best serve the children and public will require coordinated efforts on the part of parents, teachers, policy makers, researchers, and the government.

Social Impact

Children with learning disabilities, developmental delays, and behavioral disorders encounter a wide range of difficulties in learning, speaking, reading, writing, mathematics, attention, and behavior that put them at substantial risk

LEARNING DISABILITIES WERE RECOGNIZED AS A FEDERALLY DESIGNATED HANDICAPPING CONDITION IN 1968



Public Law 94-142, the Education for all Handicapped Children Act of 1975, was reauthorized and amended several times and reenacted as the Individuals with Disabilities Education Act of 1990 (IDEA) (PL-476) and the Americans with Disabilities Act of 1990 (ADA) (PL101-336).¹⁸

Ever since the first effort to define learning disabilities in 1962 there has been controversy surrounding the diagnosis, interventions, and educational policies regarding learning disabilities. Some of the controversy can be attributed to the fact that definitions used by educators are not always the same as those used by mental health (psychological) professionals and/or those engaged in neurological research. Establishing a definition for a learning disability is important because governmental research, policy and funding, such as the number of children eligible for special education services and what these services will be, are based on the individual meeting the appropriate criteria. For example, it is not unusual for a learning disability condition or diagnosis to change when an individual moves from one state to another. *Definitions of Learning Disabilities are described in further detail in the Appendix.*

for failure in the classroom or the workplace.¹⁹ For many, these difficulties are lifelong and continue to cause hardships in adulthood. For example, according to employers, individuals with learning disabilities have a harder time keeping a job, learning new occupational skills, and getting along with co-workers.²⁰

Children with these disorders may encounter a number of social, inter- personal, and emotional difficulties that are associated with their disability/ disabilities. For example, students with learning disabilities are often alienated,

isolated, and misunderstood, which can lead to difficulties with social adjustment and life goal attainment. ²¹ They also are more likely to engage in substance abuse, become delinquent, commit crimes as adults, and have higher rates of suicide and mental illness than are other students. ²² The risk of these difficulties is enhanced if the individual is from a lower social economic status. Many of these same difficulties are associated with those children diagnosed with ADHD, as they are more likely to obtain less schooling, have poorer vocational achievement, and have a higher prevalence of mood disorders and anxiety disorders. ²³

There is also likely to be additional stress placed on the family of a child diagnosed with a learning, developmental, and/or behavioral disorder. Even if a developmentally delayed child lives at home, the

additional costs of adequately caring for such a child can be staggering for the family. Depending on the level of disability, the child may need additional psychological, medical, and/or educational services, which may not be completely covered by medical insurance and/or other funding sources. In addition, parents or caretakers of developmentally delayed children may encounter difficulties such as a lack of programs to sustain their children in appropriate educational environments and/or supported living situations. Other difficulties, including lack of respite care and other support services, may occur in terms of funding and/or finding adequate living and work situations when their children become adults. Many quality of life issues are raised for children with the aforementioned disorders. Adequate funding of appropriate services is a public health concern that needs to be addressed. ☺

Footnotes, Part 1

- 1 Mash EJ, Terdal LG. Assessment of child and family disturbance: a behavioral-system approach. In: *Assessment of Childhood Disorders*. Third Edition. Eds. Mash EM, Terdal LG. New York: Guilford Press, 1997, p.3.
- 2 Mann CC. Behavioral genetics in transition. *Science* 264:1686-1689, 1994.
- 3 Stone WL, Ousley OY. Pervasive developmental disorders: autism. In: *Disorders of Development and Learning*. Second Edition. Ed. Wolraich ML. St. Louis: Mosby, 1996, p.381.
- 4 Baumgaertel A, Copeland L, Wolraich ML. Attention deficit hyperactivity disorder. In: *Disorders of Development and Learning*. Second Edition. Ed. Wolraich ML. St. Louis: Mosby, 1996, p.432.
- 5 Coyle J. Foreward. *Handbook of Developmental Neurotoxicology*. Eds. Slikker W, Chang LW. San Diego: Academic Press, 1998, p. xv.
- 6 Taylor HG. Critical issues and future directions in the development of theories, models, and measurements for attention, memory, and executive function. In: *Attention, Memory and Executive Function*. Eds. Lyon GR, Krasnegor NA. Baltimore: Paul H. Brookes Publishing Co, 1996, p.405.
- 7 Stone WL, Ousley OY. Pervasive developmental disorders: autism. In: *Disorders of Development and Learning*. Second Edition. Ed. Wolraich ML. St. Louis: Mosby, 1996.
- 8 Baumgaertel A, Copeland L, Wolraich ML. Attention deficit hyperactivity disorder. In: *Disorders of Development and Learning*. Second Edition. Ed. Wolraich ML. St. Louis: Mosby, 1996.
- 9 Mash EJ, Terdal LG. Assessment of child and family disturbance: a behavioral-system approach. In: *Assessment of Childhood Disorders*. Third Edition. Eds. Mash EM, Terdal LG. New York: Guilford Press, 1997, p.17.
- 10 Mash EJ, Terdal LG *ibid*, p.16.
- 11 Dreger RM, Lewis PM, Rich TA et al. Behavioral classification project. *Journal of Consulting Psychology* 28:1-13, 1968. Cited in *Assessment of Childhood Disorders*. Third Edition. Eds. Mash EM, Terdal LG. New York: Guilford Press, 1997, p.16.
- 12 Gorham KA, DesJardins C, Page R. et al. Effect on parents. In: *Issues in the Classification of Children*, Ed. Hobbs N, Vol. 2, p. 154-188. San Francisco: Jossey-Bass, 1974. Cited in *Assessment of Childhood Disorders*. Third Edition. Eds. Mash EM, Terdal LG. New York: Guilford Press, 1997, p.16.
- 13 Achenbach TM, Edelbrock CS. The classification of child psychology: A review and analysis of empirical efforts. *Psychological Bulletin* 85:1275-1301. 1978. Cited in Mash *ibid*, p.16.
- 14 Mash EJ, Terdal LG. Assessment of child and family disturbance: a behavioral-system approach. In: *Assessment of Childhood Disorders*. Third Edition. Eds. Mash EM, Terdal LG. New York: Guilford Press, 1997.
- 15 Lyon GR. Preface. *Attention, Memory and Executive Function*. Eds. Lyon GR, Krasnegor NA. Baltimore: Paul H. Brookes Publishing Co, 1996
- 16 Taylor HG. Critical issues and future directions in the development of theories, models, and measurements for attention, memory, and executive function. In: *Attention, Memory and Executive Function*. Eds. Lyon GR, Krasnegor NA. Baltimore: Paul H. Brookes Publishing Co, 1996.
- 17 Wolraich ML. Ed. *Disorders of Development and Learning*. Second Edition. Ed. St. Louis: Mosby, 1996.
- 18 Wolraich ML. *Ibid*.
- 19 Barkley RA. Attention-deficit/hyperactivity disorder. In: *Assessment of Childhood Disorders*. Third Edition. Eds. Mash EM, Terdal LG. New York: Guilford Press, 1997, p.77.

- 20 Stone WL, Ousley OY. Pervasive developmental disorders: autism. In: *Disorders of Development and Learning*. Second Edition. Ed. Wolraich ML. St. Louis: Mosby, 1996, p.389.
- 21 American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. Fourth Edition. Washington: American Psychiatric Association. 1994.
- 22 McMahon RJ, Estes AM. Conduct problems. In: *Assessment of Childhood Disorders*. Third Edition. Eds. Mash EM, Terdal LG. New York: Guilford Press, 1997.
- 23 Baumgaertel A, Copeland L, Wolraich ML. Attention deficit hyperactivity disorder. In: *Disorders of Development and Learning*. Second Edition. Ed. Wolraich ML. St. Louis: Mosby, 1996, p.428.
- 24 Baumgaertel A, Copeland L, Wolraich ML. *ibid*.
- 25 Ridley RM. The psychology of perseverative and stereotyped behavior. *Prog Neurobiol* Oct:44(2):221-31, 1994.

Footnotes, Part 2

- 1 American Psychiatric Association. *Diagnostic and Statistical Manual*, Fourth Edition. Washington, DC. 1994.
- 2 Parrill M. Research Implications for health and human services. In Cramer SC, Ellis E. *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc, Baltimore, 1996. Pgs. 277-293.
- 3 U.S. Department of Education. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. P.xxx (introduction).
- 4 American Psychiatric Association. *Diagnostic and Statistical Manual*, Fourth Edition. Washington, DC. 1994.
- 5 American Psychiatric Association, *Diagnostic and Statistical Manual*. Fourth Edition. Washington, DC. 1994.
- 6 Wagner M, Newman L et al. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996.
- 7 Wagner M, Newman L et al. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc, Baltimore; 1996. p.xxx (introduction).
- 8 Wagner M, Newman L et al. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. p.xxx (introduction).
- 9 Wagner M, Newman L et al. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. p.xxx (introduction).
- 10 Office of the Inspector General. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. p.xxx (introduction).
- 11 Wagner M, Newman L et al. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. p.xxx (introduction).
- 12 Parrill M. Research Implications for health and human services. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 277- 293.
- 13 McGee TP. Reducing school behavior and preventing criminal behavior. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 229-233.
- 14 Eggleston CR. The justice system. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 197-201.
- 15 Dickman GE. The link between learning disabilities and behavior. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 215-228.
- 16 Eggleston CR. The justice system. In Cramer SC, Ellis E (eds). *Learning disabilities: Lifelong issues*. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 197-201.

- 17 Shaywitz SA, Shaywitz B. Unlocking learning disabilities: The neurological basis. In Cramer SC, Ellis E (eds). Learning disabilities: Lifelong issues. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 255-260.
- 18 Lyon GR. The state of research. In Cramer SC, Ellis E (eds). Learning disabilities: Lifelong issues. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 3-61.
- 19 Alexander D. Learning disabilities as a public health concern. In Cramer SC, Ellis E (eds). Learning disabilities: Lifelong issues. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs.249-253.
- 20 Alexander D. Learning disabilities as a public health concern. In Cramer SC, Ellis E (eds). Learning disabilities: Lifelong issues. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs.249-253.
- 21 Eggleston CR. The justice system. In Cramer SC, Ellis E (eds). Learning disabilities: Lifelong issues. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 197-201.
- 22 Dickman GE. The link between learning disabilities and behavior. In Cramer SC, Ellis E (eds). Learning disabilities: Lifelong issues. Paul H. Brookes Publishing Company, Inc., Baltimore; 1996. Pgs. 215-228.
- 23 American Psychiatric Association. Diagnostic and Statistical Manual, Fourth Edition. Washington, DC. 1994.