

*Practitioner Commentary*  
*by William B. Carey, M.D.*

## INTRODUCTION

The accompanying essay on attention deficit disorder by Drs. Esther K. Sleator and William E. Pelham, Jr. (Chapters 2 and 3) is an excellent "state of the art" review of the subject. They describe the phenomenon along familiar contemporary lines, they tell us how to manage it, and they stress the importance of trying to help such children. One must agree that children with these behavioral characteristics are hard to manage, that the methods of treatment are comprehensively and fairly presented, and that the importance of doing our best for such children is incontrovertible.

However, this review has a perplexing inconsistency found in most discussions of this subject. Both authors affirm that the diagnosis of attention deficit disorder is vague and unsatisfactory, but then they go on to discuss management as if they were describing a single, clearly defined condition. Dr. Pelham in Chapter 3 acknowledges that "a homogeneous syndrome . . . has not been identified" and that there is a "lack of construct validity." In Chapter 2, Dr. Sleator uses more picturesque language when she says, "even in the research community, the diagnostic process and subject selection in ADD or ADD-H can be called, with some understatement, a shambles." These devastating disclaimers would seem to leave no clear central theme to discuss. Yet, as their essay moves into the later chapters, these reservations seem to be largely forgotten. One finds ADD and hyperactivity referred to as if they were homogeneous phenomena. This incongruity leaves the critical reader very confused.

As a pediatrician who has been in private practice for over 25 years and involved in temperament research in my practice for 17

years, I find much to discuss in this interesting paper by Sleator and Pelham. I should like, however, to confine my remarks to one aspect of their presentation, this conceptual confusion as to just what they are describing.

## THE PROBLEM

Despite recent efforts at redefinition, the phenomenon of hyperactivity or minimal brain dysfunction or attention deficit disorder (MBD/H/ADD) remains undoubtedly the most confused area of diagnosis in medicine, psychology, and education today. The main problem from the point of view of pediatric practitioners and temperament researchers is the fact that MBD/H/ADD shares with temperament the same variables of low attention span and high activity (and sometimes other traits such as impulsivity) and no effort has yet been made by proponents of MBD/H/ADD to separate these presumed signs of brain malfunction from variations of normal temperament or behavioral style. Two theoretical systems appear to be competing as explanations of roughly the same areas of human behavior, but the two factions are largely ignoring each other and going their separate ways.

McDevitt (a clinical psychologist) and I made two previous efforts to resolve this problem. In the first paper, "Differentiating Minimal Brain Dysfunction and Temperament,"<sup>1</sup> we showed that there is an overlap between what has been called MBD and temperament, and argued that neurological malfunction should not be diagnosed on the basis of behavior alone. In the second paper, an editorial called "Minimal Brain Dysfunction and Hyperkinesis. A Clinical Viewpoint,"<sup>2</sup> we pointed out how the original definition was rather vague and that the current definition as used in research and practice was no better, to the detriment of clinicians, parents, and especially children. We recommended that the terms MBD/H/ADD be abandoned and replaced by a neurobehavioral or comprehensive diagnostic profile, which has separate ratings of the child's (1) physical health, including neurological status; (2) developmental status or capacities; and (3) behavioral style (temperament) and behavioral adjustment. This would facilitate the adjustment of the plan of management to the child's specific strengths and deficits.

Perhaps we were naive to think that we could slay a dragon with pen and ink. The diagnostic confusion now is just as great as ever and possibly even worse. We can sympathize with Hercules, who, as his second labor, was obliged to kill the many-headed hydra. Each time he cut off one head, two new ones would grow back in its place. A measure of the modest impact of our two papers can be taken by inspecting a recent anthology entitled *Developmental Neu-*

*ropsychiatry*. The editorial commentary by Rutter<sup>3</sup> contains his usual wisdom but all three chapters by others making reference to our 1979 paper<sup>1</sup> misquote it. The accompanying presentation by Sleator and Pelham does not even mention our papers.

Clearly we must restate and reissue our message. Hercules eventually got rid of the hydra by getting a confederate to sear the beast's necks with a hot brand after he cut them (thought by some to be cheating) and then burying the one immortal head under a stone. Such drastic measures are not at my disposal; I can only try again to plead for some good sense. I shall review the historical background of the present problem, elaborate on the weaknesses of the claims for MBD/H/ADD as a clinical syndrome, and offer a solution for the present confusion. Although this perspective is affected by my experience in temperament research, it is derived primarily from my extensive familiarity with problems and needs of children as seen by a primary-care practitioner.

## HISTORICAL BACKGROUND

In the first half of the twentieth century and up through the 1950s, theorists concerned with development and behavior generally promoted the view that environment is almost completely responsible for behavioral outcome in children. There were exceptions, such as Pavlov and Gesell, but their ideas of innate differences were not widely accepted, at least in the United States. As the inadequacies of this exclusive environmentalism became clearer, two main theories of intrinsic differences have evolved to explain the origins of problems in behavior and learning. One view has held that subtle brain malfunction is responsible; the other says that variations of normal temperamental traits in neurologically intact individuals could cause similar problems due to conflict, or "poor fit," between these behaviors and the requirements of the environment. Let us examine both positions more closely.

Histories of MBD/H/ADD usually mention early studies dating back to the 1920s through the 1950s.<sup>3</sup> By the 1960s the diagnostic entity was firmly established by the report of the special task force of the U.S. Public Health Service under Clements<sup>4</sup> and by the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders* (DSM-II)<sup>5</sup>. The phenomenon received its most recent formulation in the DSM-III,<sup>6</sup> with its name changed from "hyperkinetic reaction of childhood" to "attention deficit disorder."

Pediatricians were recently told in *Pediatrics in Review* that ADD is "the most common neurobehavioral disorder in the pediatric age group; it affects 5% to 10% of the school age population. . . ." The "diagnostic criteria" offered to pediatricians by that paper are inat-

tention, impulsivity, and hyperactivity, which had their onset before age 7 and have been present for at least 6 months. (This appears to be more or less consistent with the view of Sleator and Pelham.) Neurological "soft signs" are said to accompany the syndrome frequently but are not necessary for the diagnosis. An interrelationship with specific learning disabilities is commonly mentioned although not as a diagnostic criterion in this most recent version.

Thus ADD is thought to be an abnormal set of behaviors caused by brain injury or more commonly by a genetically determined malfunction of the brain. The child with this syndrome can be expected to develop problems of behavior and learning in almost any setting. In fact, it has been blamed by some for most of these problems in children.<sup>8</sup> It now seems that the pendulum has swung too far "with neuromythologies replacing psychomythologies."<sup>3</sup> Meanwhile, this vast body of literature has had little to say about the fact that some children with these behavioral traits seem to do well in the social and educational spheres.

The background of the concept of temperament is more ancient, going back at least to Hippocrates and Galen in classical Greece and Rome. This earlier formulation stated that a person's temperament is a reflection of the mixture of four bodily humors. This constitutionalist view prevailed among scientists and philosophers (but not necessarily with the great literary writers) until almost 100 years ago, when the pendulum started to swing in the opposite direction in favor of environmentalism. During the early twentieth century, as mentioned earlier, Pavlov and Gesell were exceptions in the era when environmentalism dominated. The development of temperament research in the last 30 years and the central role of Thomas and Chess<sup>9</sup> are too familiar to most pediatricians to require extensive elaboration here.

At present, temperament in children is seen as a set of behavioral style characteristics found in all individuals. The description of the characteristics and their number has varied to some extent with the investigator. Studies have shown that problems in behavior and learning are likely to occur when the child's behavioral style does not fit well with the values and expectations of the social environment. In particular the "difficult" cluster of characteristics (irregularity, low approach and adaptability, intensity and negative mood) makes behavior problems in the area of social competence more likely,<sup>9</sup> while in the educational setting low persistence/attention span and low adaptability are especially important.<sup>10</sup> No study to date has established a substantial relationship between any of these characteristics and the child's neurological status, whether one considers the major neurological signs such as reflex or sensorimotor findings or the minimal or "soft signs." A possible exception is the survey by Hertzog,<sup>3</sup> finding no difference between neurologically im-

paired prematurely born children and controls as to any of the nine temperamental characteristics but a significant relationship of neurological status to the "index of difficulty."

The curious state of affairs in which we find ourselves today is that two theoretical systems are differently describing the same areas of behavior. Moreover, instead of confrontation or cooperation the policy of the two parties seems to have been one of disengagement. If the proponents of MBD/H/ADD speak of temperament at all, it is to say that high activity or low attention span are "abnormal temperament." A possible bridging of the gap is found in the recent paper by Lambert and Hartsough.<sup>11</sup> Most temperament researchers apparently prefer to ignore the whole confusion, as if it would just go away.

An extremely important point here is that we are not playing simply with semantics. It makes a big difference where one believes the behavioral traits arise from. Whether we are dealing with brain malfunction or a "poor fit" from a variation of behavioral style makes a substantial difference to clinicians, parents, and above all children. Our Hippocratic oath requires that we first of all do no harm; diagnosing brain malfunction when it is unproven is serious mislabeling—what has been referred to as "pediatric pathogenesis."<sup>12</sup> Furthermore, the use of medical therapy is less acceptable if one is treating temperament. The frequent efficacy of cerebral stimulants in enhancing attention is not being questioned here; it is our understanding of why we are giving it that requires clarification.

## CRITIQUE OF MBD/H/ADD

Although MBD/H/ADD is generally described by its proponents as a syndrome, there is little evidence that this is true.<sup>3</sup> Sleator and Pelham have agreed with this point. There is neither sufficient concurrence of the supposed elements nor sufficient difference of them from other phenomena to justify the use of the term.

The word "syndrome" comes from the Greek meaning "running together," and is used in our era to indicate a group of concurrent symptoms and signs characterizing a disease, such as the three days of cough, fever, and conjunctivitis, followed by Koplik spots and maculopapular rash, that justify the diagnosis of measles. A syndrome typically has a specific etiology, pathologic physiology, clinical course, treatment, prognosis, and prophylaxis.

There is a tendency of the behavioral traits of MBD/H/ADD to cluster together,<sup>1</sup> but they can occur in a variety of other groupings; low or high activity can be found with low or high attention and with low or high distractibility or impulsivity. There is limited reliability for the diagnosis of MBD/H/ADD, whether it is interrater, retest, or cross-situational.<sup>3,13</sup>

Furthermore, one looks in vain for evidence that the behaviors of MBD/H/ADD are clearly distinguishable from those from other causes. As Rutter puts it,<sup>3</sup> a valid syndrome must be shown to be different in some feature other than the behaviors that define it. One cannot determine cause by behavior alone.

Moreover, the behavioral characteristic most commonly found in a group of children diagnosed with MBD<sup>1</sup> was not one of those typically listed but rather low adaptability. Thus, children who were referred to a neurologist for problems in behavior and learning had low attention span and high activity, but their most salient quality was a reduced ability to modify their behavior in ways prescribed by the classroom situation. This theme has recently been taken up elsewhere.<sup>3</sup>

To illustrate the inadequacies of the MBD/H/ADD diagnosis it may be helpful to invent a comparable example we could call the "rash syndrome." Such a condition would normally consist of fever and rash and might or might not be accompanied by a cough, sore throat, nausea, itch, diarrhea, and so on. Cause, courses, and outcomes would be varied. There would even be some cases in which there was no rash but only fever and cough (like the inactive "hyperactives"). Ridiculous as this fantasy sounds, it is not unlike the situation today with MBD/H/ADD.

To find our way out of the confusion of MBD/H/ADD we need something better than the cunning and brute strength of Hercules; we need meticulous observation and consummate wisdom. Perhaps we may profit by the example of the eminent tenth-century Persian physician Rhazes, who wrote a remarkable treatise helping his contemporary and subsequent physicians to understand that measles and smallpox are different diseases and should no longer be part of some medieval "rash syndrome." We desperately need an individual or group of his stature to demonstrate unequivocally that MBD/H/ADD is not a single syndrome but rather a variety of conditions muddled together due to the primitive state of our psychological sciences.

## CLEARING UP THE CONFUSION

Much of what is needed to clear up the confusion of MBD/H/ADD has already been stated.<sup>2,3,14</sup> Presented briefly, these suggestions are:

1. In the absence of proof of a syndrome of MBD/H/ADD it is not logical to continue to refer to it.<sup>3</sup> If the "hyperkinetic reaction of childhood" of DSM-II could be redefined as "attention deficit disorder" in DSM-III, this phenomenon could just as easily be defined out of existence when DSM-IV is written.

It should come as a surprise to nobody that when two theories

are competing a person clearly identified with one of them, as I am with temperament research, would suggest that the way out of this contention is for the opposition to dissolve itself and make way for our point of view. I have the courage to do this only because clearer heads than mine have proposed it.<sup>3</sup>

2. Getting rid of the diagnosis of MBD/H/ADD would in no way deny that children with high activity or low attention span are likely to run into problems in behavior and learning or that these behavioral characteristics sometimes overlap with learning disabilities and neurological "soft signs." A true syndrome may yet emerge from all of this confusion. However, it is more likely to take the form of temperamental traits including low adaptability and persistence/attention span and probably some others, with little or no evidence of malfunction of the brain. Keogh<sup>15</sup> has found school children's performance problems to be related to normal temperament factors of low task orientation (high activity, low persistence, and high distractibility) and low personal-social flexibility (low approach, adaptability, and mood) without any recourse to the popular ADD terminology. These behaviors, with or without clumsiness, learning disabilities, and psychosocial behavior problems would certainly put a child at risk for problems in school adjustment and academic performance.

3. Using instead a comprehensive diagnostic formulation,<sup>16</sup> as shown in Table 1, allows and requires the clinician to record in separate places the observations about the child's physical health, development, and behavior. Findings in one area, such as temperament or information processing, would not lead automatically to unsupported conclusions in other areas, such as neurological status. Attention may have to be classified under two topics since it is considered to be an aspect both of information-processing or cognitive capacities and of temperament. Perhaps the kind of selective attention required for specific learning tasks is different from the persistence attention involved in the task-orientation aspect of the child's behavioral style.

4. It appears that the initiative for clarifying the confusion of MBD/H/ADD and temperament may have to be assumed by researchers in the temperament field. Most of the people writing about MBD/H/ADD seem to be convinced that there is not enough of a problem with the conceptualization to require a drastic revision.

Studies likely to be enlightening must involve not only children who have come to clinical attention. A more profitable approach would be to take a cohort of the general population and assess the individuals as to neurological status, cognitive skills, and temperament, the interrelationship of these factors, and their consequences for behavior and learning in school.

We should try to learn more about the interactions of temperament and clinical conditions, in particular the impact on tempera-

TABLE 1. COMPREHENSIVE DIAGNOSTIC FORMULATION

		Relevant Findings (Strengths and Deficits)	Service Needs
CHILD			
Physical health	General somatic state		
	Organic and functional		
Development	Nutrition, growth, and physical maturation		
	Neurological status		
Behavior	Sensory, reflex, motor, coordination		
	Capacities		
Interaction with Environment	Motor		
	Language		
Input	Information processing		
	Attention and organization		
Outcome	Social Skills		
	Intelligence		
Temperament (style)	Clusters (e.g., difficult, easy)		
	Traits (e.g., adaptability, attention)		
Performance (adjustment)	Social competence		
	Task performance (especially school)		
Self-direction, care, esteem	Coping style		
	General mental and emotional state (e.g., anxiety, depression)		
Parental care (e.g., attitudes and expectations, feelings, management)	Sociocultural situation		
	Nonhuman environment		
Effect of child on parents and other caretakers	Complaints by caretakers		

## SUMMARY OF FINDINGS:

## PLANS:

To meet needs

For follow-up



ment of various prenatal, perinatal and postnatal insults and confirmed abnormalities.<sup>10</sup>

We should study in greater detail children who have been given the clinical diagnosis of MBD/H/ADD in order to find out what truly is wrong with them.

The temperamental characteristics and cognitive skills themselves need to be comprehended better. Especially important is a clearer understanding of the complex phenomenon of attention.

Academicians, practitioners, and parents agree that treatment must be improved. As diagnostic procedures are bettered, the indications for use of cerebral stimulants should be refined, producing a higher success rate. When primary temperament patterns are more clearly distinguished from secondary behavior disorders, the greater usefulness of behavior modification in the latter should become apparent.

We may lack the strength of Hercules and the wisdom of Rhazes, but we should devote to these matters the best we have to offer. Academicians and practitioners can work together fruitfully in this endeavor.

## SUMMARY

Despite the thoroughness of this review by Sleator and Pelham, the critical practitioner is left confused as to which children are being discussed and what is wrong with them. In the behavioral science literature of today two different but overlapping phenomena have been proposed to describe the intrinsic factors leading to conflict of the individual with the environment and thus to problems in behavior and learning. MBD/H/ADD is described by its proponents as a "neurobehavioral disorder" affecting 5 to 10 percent of the child population and as having the principal "diagnostic criteria" of high activity and low attention span (and sometimes impulsivity). On the other hand, temperament researchers see all individuals as having varying expressions of roughly nine behavioral style characteristics, with some neurologically intact individuals developing problems in behavioral and scholastic function when there is a "poor fit" between these traits and the situation. Both systems include low attention span and high activity (and sometimes impulsivity), yet the proponents of MBD/H/ADD have not clarified how to determine when they are caused by the brain injury or genetic abnormality suspected by them. The resulting confusion requires resolution. The explanation appears to be that MBD/H/ADD is really not a syndrome in that the proposed components are neither sufficiently concurrent with themselves nor sufficiently different from other conditions. An answer to the confusion appears to be to stop using the term until a

valid syndrome is demonstrated. In the meanwhile, children can be described in terms of a comprehensive diagnostic formulation consisting of separate evaluations of: (1) their physical health, including objective neurological status; (2) their development, or capacities; (3) their behavioral style or temperament; and (4) their behavioral adjustment, including social competence and task performance. Such a procedure would greatly enhance the diagnosis and management of children both in practice and research.

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