Parent and Teacher's Guide

to understanding and treating children with
puzzling school learning problems:
Dyslexia, ADD, Learning Disabilities

What to do and why

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The Development Center is a patient care-teaching-research unit in the University Eye Institute at the University of Houston's College of Optometry. It is staffed by faculty and students from the College of Optometry and from the UH Department of Communication Disorders. We serve individuals who are experiencing learning difficulties that are attributable – at least in part -– to a delay in the development of those basic learning aptitudes called perceptual skills and related language abilities.

Most of our patients are school-aged children (but some are adults). Many of them have already been (or are soon likely to be) 'diagnosed' elsewhere, some as having an *attention deficit disorder* (ADD or ADHD), some as *dyslexic*, and some as *learning disabled* (LD). Although their individual diagnoses may differ, most of our patients appear to be more alike than different. In large part, they are normal children who, although bright enough, are having trouble in school, either in getting off to a good start in learning how to read, write, spell and/or do arithmetic or, if they have finally learned those basic processes, in using them for acquiring and expressing information in an age-appropriate way.

Our main goal is to provide advice and specific treatment recommendations to the parents and teachers of these children. We do not offer 'quick fixes,' – we know of no 'miracle cures' -- but we often do provide real help. The purpose of this booklet is to describe and explain what we do and why it is helpful.

Focus of this book

This booklet was written for:

- parents and teachers of children we have tested and who are now in the process of interpreting our reports and considering our recommendations.
- parents and teachers who are thinking about using our services and want to know more about what we do and why we do it.
- persons who live too far away from Houston to visit us directly, but who would like to know what we do and why, so that they might seek out (or themselves provide) similar services closer to home. To this group, we pledge our help.

To meet these objectives, we start off with a preface that addresses the validity and the potential advantages and disadvantages of the so-called 'diagnostic' labels that have become so popular in our schools. This is followed by an overview of the rationale that shapes our testing and treatment decisions. Then a description of the different treatment options we consider, and -- finally -- a Frequently Asked Questions (FAQ) section consisting of queries that we listen to and answer almost daily.

Preface

We believe -- on the basis of published research data and lots of empirical evidence accumulated over years of clinical practice -- that many of those individuals who have been or are likely to be 'officially' identified (or unofficially suspected) as LD, dyslexic, ADD, or what-have-you, are really the victims of a mismatch between certain aspects of their development when they entered school and the design of the instructional programs/conditions they encountered in their school. Specifically, they had not yet developed the so-called 'readiness skills' -- the learning aptitudes -- that their chronological age predicted and that their school programs had anticipated. (The aptitudes referred to here -- *perceptual skills and related language abilities* -- are discussed later in this booklet.) They were old enough and bright enough to learn what their teachers wanted them to learn, but they were not developmentally ready to learn *under the conditions that were used to teach them*. As a result, they did not make expected progress. Subsequently, they were (or soon will be) singled out (*identified*), tested and *diagnosed*; i.e., labeled in a way that implied some kind of permanent, peculiar brain problem.

In our view, these labels are neither valid nor useful, for at least two reasons:

One, they do not identify the child's needs; they merely *describe* the child in a way that places all the blame on him and fully exonerates the instructional program he was asked to learn from. It is *his* condition, *his* problem. (In a very real sense, it is like 'diagnosing' someone who has unknowingly followed an out-of-date map and ended up on the wrong road as *lost*, and leaving it at that. It may be an accurate descriptor, but it certainly does not offer any help to the person who is in this situation; he remains lost.

Although the learning problems discussed in this book are not limited to males, we will use the male designation exclusively, simply to avoid the cumbersome 'his/her' reference.

Second, these labels often function in the classroom as *self-fulfilling prophecies.* Teachers understandably accept them as scientifically valid diagnoses; they believe that the child has a firmly established medically-caused learning problem, something they have not been prepared to deal with. And sadly, their beliefs usually turn into realities. (Why shouldn't they believe it? Dyslexia is defined in standard medical dictionaries as a neurologically-based condition and by Texas law -- and presumably by other states as well -- as a *constitutional* condition, a condition that is *innate, inborn, permanent.*)

Our work has convinced us that it is far more accurate and productive to describe -- and think of -- these children in pragmatic terms: as children who entered formal schooling before they should have, children who were not yet prepared for standard -- group -- instruction. They would have been far better served if they had been placed in a good 'readiness program' for a while longer or -- if it was essential to get formal instruction started at once (goodness knows why) -- they should have been taught in a way that was consistent with their existing rather than their presumed levels of development.

We recognize that there are subtle, neurologically-based reasons for developmental differences, but we object strongly to the conclusion that a moderate developmental delay during the preschool years predicts a life-long, immutable defect, especially when that decision is based upon a limited, superficial, highly subjective behavioral inventory.

One of our chief testing objectives, therefore, is to determine the child's developmental and academic strengths and weakness. From this, we can design and help parents and teachers implement a treatment program that improves the child's developmental status and/or defines instructional conditions and strategies that accommodate the child's current status.

Rationale

Humans are, by nature, *system-inducers.* We have an innate drive to find order – explanation, predictability – in what we encounter in our world; to search for the salient information in a given situation, information that enables us to 'make sense' out of what we perceive; to reason that *if this… , then that.* And we get better at it as we develop and acquire knowledge.

Some systems we encounter in our daily lives are relatively simple; they consist of very few elements and these elements and their interrelationships are very apparent and unambiguous. Think, for example, of our traffic control system. The salient information is obvious and unvarying. Red *always* means stop, amber *always* means caution, and green *always* means go. It does not take very long to teach the principles of this system, even to very young children. For that matter, many young children, given the opportunity to watch the system in action, can figure it out for themselves; they easily identify its salient elements and how these function.

On the other hand, some systems are very complex; they consist of many remotely situated elements that interact in complicated, often obscure ways. Our system for measuring space-time (clock-calendar) is a good example of this. Many persons -- adults as well as children -- have marked difficulty understanding the connections between the calendar and the clock, and the predictability of the earth spinning on its axis as it rotates around the sun, the tilting of that axis, the changes in the length of day and night and the relationships of all of those other elements in our solar system that mark the passage of time.

This ability to analyze-organize a situation effectively -- to identify the salient features, to 'figure out' things, to 'size up' a situation, to determine what to pay attention to and why in some logical way -- begins to emerge very early in life. The healthy newborn child, whose prenatal development was normal and whose birth was free of significant trauma, can be

expected to display his good physical status in a number of ways: for example, skin color, breathing effort, heart rate, muscle tone and the presence of certain reflexes, the latter triggered automatically by certain physical stimuli.

Among these reflexes are a *rooting reflex* and a *sucking reflex*. When the newborn's cheek is stroked, he automatically *roots* -- turns his face in the direction of that cheek and opens his mouth. And when he comes into contact with his mother's breast (or the nipple on a feeding bottle), he automatically *sucks*, thereby gaining nourishment and experiencing satisfaction. He did not have to think, to figure out anything; these were completely innate, automatic behaviors that contribute to his survival. But he learned something from this event; he acquired some knowledge and that learning soon becomes evident. Within relatively few days, the sight/smell/sound of his mother, in combination with some internal somatic signal (i.e., hunger), sponsors these actions. His response is no longer purely reflexive; it is also somewhat rational and self-directed. Normal development led to some learning which, in turn contributes to further development.

Learning and development go on from this neonatal stage, the two interacting in a spiral-like fashion. As the child's analyzing-organizing skills develop -- as they get more differentiated, more precise -- he acquires more knowledge from his environment. He gains the ability to figure out more complex situations which leads, in turn, to his becoming even better informed, and so on.

By ages two to three, the average child exhibits normal development by his inclination to adopt certain routines (patterns of actions triggered by specific circumstances/events), by his play -- how he approaches simple puzzles (his eyes start to lead his hands rather than the reverse) -- and by his receptive and expressive language abilities: how he responds to spoken words that share many, but not all, of the same sounds (e.g., *no, toe, go*), and how he tells you his observations and thoughts. Indeed, it is not unusual for a three year old to show an appreciation of rhymes, even though he has no idea of just

what a rhyme is. He is well on the way to becoming a competent *analyzer*.

By age four to five, the average, normally developing child is able to solve more demanding puzzles, copy simple geometric designs, and demonstrate an awareness of the fact that spoken multisyllable words consist of phonological 'parts,' syllables that are made up of clusters of sounds. He is becoming an *organized analyzer;* he is starting to recognize the connections between the whole and its parts.

By age six -- the age when children in the United States have traditionally been thought to be 'ready' for formal school instruction; that age is now dropping because society has gotten impatient -- this developmental process usually reaches the stage where the child can perceive a pattern of sensations -- what he sees, hears, feels -- as an arrangement of component parts that fit together in an identifiable, logical way. He uses the nature of the task at hand to determine the salient units of analyses -- what he is to pay attention to in the context of that situation -- and how those units combine into a single entity which, in time, will itself become a unit of analysis embedded in a larger entity. He has become a more competent *organized analyzer*.

Consider, for example, the letter **b**. By age five, the average child is making the transition from perceiving it as an arrangement of separate elements -- a vertical line positioned adjacent to (on one side or the other; he is often uncertain about which) and extending higher than an oval -- to a single unit that has a name: the letter **b**. Later on, after he has learned to read, the letter **b,** through repeated exposures**,** will become but a single unit within a larger unit -- a sequence of printed letters. He will no longer pay attention to the spatial pattern that the **b** represents. (Just as you do not; think for a moment about what you would do in order to answer the question: "*On which side of the oval is the vertical line in the lowercase, manuscript b?*" Unless there was a **b** in view, practically all of us would have to 'construct' the **b**, either overtly or covertly -- print it on paper, in the air, 'in our head' -

- before we could respond.) This reflects the development of a set of abilities we call *visual perceptual* (or spatial awareness) *skills*; skills that, when sufficiently developed, will enable the child to make sense out of mathematics and to devise strategies for identifying and remembering those segments in printed words that are not spelled the way they sound, as well as for reading comprehension.

Similarly, the average six-year-old is able to demonstrate a beginning understanding of the fact that spoken words consist of organized sound patterns -- sequences of spoken sounds that occur in a specific order. One example, he understands the concept of rhyming, how to substitute one initial sound for another in the context. This is indicative of the development of *auditory perceptual* (phonological awareness) *skills*; skills that when sufficiently developed enable the child to make sense out of spelling and that fundamental aspect of reading known as decoding.

Other developmental phenomena begin to become apparent around this same time. The child displays an ever-improving ability to look at – perceive – a collection of parts and devise a strategy for organizing them mentally. Picture, for example, the pre-kindergartner playing with nesting blocks, or plastic rings of graduated size that he is to stack on a vertical rod -- materials that, though different in one way are the same in another. When he was younger, he used a trial and error process to solve the problems these materials posed. But by age six, he can solve these kinds of problems with his eyes alone. He is becoming an *analytical organizer*; he is getting to the stage where he can *induce a system*, take notice of how elements work together on the basis of analytical observations rather than direct instruction.

And most wondrous of all (although we take it completely for granted because of its ubiquity), at about this same age, the child begins to employ *language* as an effective organizer of spatial information, thereby enabling him to replace actions with words. He begins to *think* of the elements in events/circumstances as having spatial characteristics such as

over, first, before, larger than, closer to, next, and so on. He starts to sort and order concrete information with words rather than having to work through the process motorically -- step-by-step, action by action. And ultimately he learns to do the same with abstract data, to recognize that not only are there situations when one block, one line, one whatever, needs to be placed in front of another, but also that one thought should be positioned ahead of, or after, or held-aside, or subsumed, or what-have-you, in respect to another. (This is what you are doing as you read this document. Clearly, you are not trying to memorize the text, word for word. Rather, you are gathering information, sorting it, identifying redundant facts and novel, relevant facts, evidence of your ability to organize information in a way that enables you to retain it.)

These abilities continue to improve naturally as the child progresses through the elementary school years. He gains the capacity to summarize: to identify main and subordinate ideas, pivotal and overarching events, and so on; and typically, by ages ten to twelve, he has reached the stage where he can infer from abstract conditions: he can figure out -- perhaps even invent -- systems on the basis of minimal information; he can understand concepts based on abstract rather than concrete information. In short, he can 'catch on' to and apply central principles on the basis of what he perceives in concert with what he knows.

This remarkable progression of physical-cognitive development is interconnected hierarchically. The child whose spatial awareness skills develop behind schedule is apt to exhibit the effects of this when he gets to the age where he is expected to be able to exercise language-driven reasoning processes for analyzing and organizing information. He will be an inept 'comprehender,' regardless of whether the information is read, heard and/or seen. Said more succinctly: if a child's basic (concrete) analyzing-organizing skills do not develop properly, his higher order organizing skills will suffer.

As already indicated, this developmental process continues under natural forces until about age ten to twelve. Then it

stops, just as physical growth comes to a stopping point sometime during adolescence. From then on, improvement in one's system-inducing skills derives from applying these same basic analyzing and organizing abilities in conjunction with an ever-growing store of acquired knowledge. Thus, the commercial airline pilot, the surgeon, and the automobile mechanic may all have the same systems-inducing skills, but their education -- what they know and what they can do -- will have equipped them to use those basic skills more effectively under specific conditions.

We have stressed the fact that chronological age alone is not a dependable predictor of a child's developmental status and that overestimating a child's developmental status solely on the basis of his age can cause significant school learning difficulties. Fortunately, most six-year-old children do not fall into this category; most six-year-old children's developed skills are at the expected level when they enter school. They encounter little difficulty.

But that's *most* six year olds -- *not all*. Mother Nature is predictable, but she does not provide the same schedule for every child. Some children develop these skills behind schedule simply because they are 'late bloomers;' there does not appear to be any identifiable reason for the delay. Some children's development is slowed because of an event/condition -- perhaps documented; perhaps not -- that occurred earlier in their life (e.g., a significantly traumatic birth, a central nervous insult during the first year or two of life).

Whatever the cause, it is an absolute fact that children entering first grade -- despite having already passed their sixth birthday and having average IQ's -- vary widely in how capable they are in *getting it*, especially when *getting it* involves linking graphic symbols with concrete sensations; and that is precisely what learning to read, write, spell and do arithmetic requires. (Many studies show clearly that almost 20 percent of all entering first graders in our middle-class neighborhoods are 'not ready' -- developmentally -- for what awaits them in the classroom. The percentage is higher in poorer neighborhoods.)

Little wonder that so many children have difficulty staying 'focused' in the classroom. It's difficult to stay focused when you can't truly understand what is 'going on,' and that's true whether you're watching a game or watching your classmates learn.

What does this say about the prospects of the current movement to introduce formal reading instruction in kindergarten? And, perhaps even more important, how should this affect our understanding of ADD? In our view, the ADD label is misleading and very often applied incorrectly. It characterizes the child as being unable to pay attention, to stay focused on an activity, even when he understands it. That is simply not true for most children who have been so labeled. Check for yourself: observe a so-called ADD child as he engages in a video game. Distractible? Inattentive? Most aren't. We would argue that if a label is necessary, then most of today's ADD children should be called *SADD* -- they have a *selective attention deficit that manifests mainly in the classroom*; and even in the classroom, they perform much better when they are engaged in activities where they know what to look at, *what to pay attention to*. Science class, for example. That curriculum is usually structured – well organized in advance -- and the activities are clearly defined; they make sense. Why the difference in reading class? Simple: they do not know what to pay attention to and, as a consequence, they just don't get it.

Reading, spelling, writing and arithmetic are systems. They were invented so as to enable us to communicate verbal and spatial information with graphic symbols, letters representing sounds in spoken words, the spatial arrangement of those letters representing the temporal order of the spoken sounds; and numerals representing such temporal-spatial features as absolute and relative quantity (how many, or how many more or less), magnitude (how big, or how much bigger or smaller) and position (where, specifically and in regard to other objects near, far, nearer, farther, to the right, the left, etc.).

Most mainstream beginning reading, writing, spelling and arithmetic programs are designed on the assumption that the students will have developed the system-inducing (*organized analysis*) abilities required to understand the logic of these classroom programs, even when the coding processes are taught in a standard school setting – that is, one teacher with twenty or more children who vary in entering knowledge and development, using materials that are designed to be effective with the average child, materials that do not make explicit every step and every salient detail in the learning process.

As already noted, about 20 percent of our middle-class six-year-olds enter first grade not yet 'ready' for what awaits them, even though they have average or above-average IQ's, are well motivated, and have parents and teachers who care. They usually look as though they are prepared for the experience. Many of them are good talkers; most already know the symbols – the letters and numerals (although some may still be confusing the reversible letters, the *b* and *d* for example) -- but they do not adequately understand what it is that these symbols are to represent: the separate sounds in words, the key features of space and time.

Said differently, their visual and/or auditory perceptual skills are not at the level assumed by standard instructional conditions. The outcome of this: *they don't get it.* They do not intuitively recognize that if the letters s-i-t represent the spoken word *sit*, and f-i-t the spoken word *fit*, then b-i-t **must** say *bit*; or, in another context, knowing that 4 + 4 equals 8, does not automatically lead them to understand that 5 + 4 **must** equal 9. This inability to understand how to connect what they already know with what they are to learn next, gets in the way of their being able to *learn by association.* The usual outcome of this unfortunate situation: they try to keep up with their classmates by memorizing information – a method that may work for a while, but ultimately has to fail. There is simply too much to learn; human memory cannot meet that challenge.

By the end of first grade, these children are behind academically. They have learned less than their classmates even though their systems-inducing skills have continued to develop somewhat during that first grade year. They enter second grade not quite prepared academically, and perhaps developmentally, for what they are expected to be able to do, and this is very evident by the end of second grade. The educational gap between them and their more fortunate classmates has widened, again even though their basic learning aptitudes (systems-inducing skills) have continued to improve.

This pattern continues, with the educational deficit increasing as the developmental deficits diminish. In other words, the child *grows out of* the initial problem (delayed development) but not quickly enough to prevent the secondary problem (inept academic skills) from becoming established. Worse yet, the secondary problem will not be outgrown through natural development. The only way to overcome an educational deficit is through expert teaching and hard work on the part of the student.

This is why we don't see as high an incidence of perceptual skills deficits among junior and senior high school students as we do in the younger groups. Most of the older children have outgrown their original perceptual skills deficit. What remains is their academic deficits – and that's enough.

To summarize (and repeat what we stated at the beginning of this section): we believe that most children who have significant learning difficulties in school (but not outside the classroom) are the victims of a mismatch between what their school instructional programs expected them to be able to do when they entered first grade and what they were actually able to do. Why they were not 'ready' -- why this aspect of their development was delayed -- is another question, one that we often cannot answer. But fortunately, the question does not have to be answered in order to help the child. That is the fundamental principle that should govern testing and treatment decisions.

Evaluation: what we test

Representatives from Optometry and Speech-Language Pathology usually participate in the testing process. There are times when other disciplines may be consulted: pediatric medicine, neurology, psychiatry, educational psychology, special education, and occupational therapy, for example -- but these are exceptions rather than the rule.

Children differ, as do the specific problems they experience in school. We design our testing batteries in accord with those individual differences, but almost invariably our evaluation begins with:

- **Determine chief concern**. This is usually accomplished through a discussion with the adult who accompanied the child. It may also include information provided by other sources, most often, the child's teachers or other school personnel.

- **Case history**. An inquiry about the child's developmental and health during the pre-, peri-, and post-natal periods. This takes two forms: a written questionnaire completed by a parent prior to their visit, and a personal interview with the adult who accompanies the child.

- **A review of records**. A look at the outcomes from previously administered testing (including school-administered, standardized achievement tests). This often yields very useful background information.

If feasible, we ask that these reports be sent to us in advance of the child's evaluation visit so that we have time to review the information properly.

We then conduct a formal assessment of the following four factors: (a) the child's vision and hearing; (b) the developmental status of the child's spatial awareness, phonological awareness and related language skills; (c) the child's academic status -- not only his per-

formance level (what he can do) but, of greater import, his deficiencies (what he cannot but should be able to do); and (d) the child's general ability to learn from experiences outside the classroom (experiences that are independent of being able to read, write, spell and do arithmetic).

There are many tests available that provide this kind of information, but there is no justification (or benefit) in over-testing. We administer only those tests that we believe will provide the most useful information in the shortest amount of time, and that are the least discomforting for the child. Indeed, we may even eliminate – or reduce -- parts of our testing if the child has had similar testing within the past few months and if that information is made available to us.

Ordinarily, we administer:

- **A comprehensive vision evaluation**. This goes well beyond the eye-chart screening test conducted at school and at the pediatrician's office. In most cases, it consists of a thorough health assessment of the external and internal eye, a refraction (i.e., a determination of the eye's optical status, first without, then with the assistance of eye drops that dilate the pupils and temporarily prevent the eyes from being able to adjust focus for near viewing; see FAQ **#7** for an explanation of this), and an evaluation of oculomotor (eye movement) skills, binocular coordination skills, and other functions that affect efficiency (i.e., skills that enable us to engage in visual tasks for extended periods of time without getting fatigued).

- **A hearing screening test**. This involves the use of an audiometer.

- An assessment of speech articulation and other oral-motor functions (i.e., how well the child coordinates the actions of tongue, lips, tongue, etc. in the production of spoken words, as compared to other children his age. See FAQ #24 for a fuller discussion about these processes.)

Most of the tests mentioned from this point on are 'standardized' and 'norm-referenced.' This means that they are administered and scored in a prescribed manner, and that test outcomes are often reported as *age equivalents*, *standard scores* and *percentile ranks*. The first converts the child's performance into the age when that kind of performance would be judged as 'expected.' The second – a *standard score* -- represents a comparison between what the child's age 'predicted' and how

he actually performed. A standard score of 100 represents precisely the performance the child's age predicted; a standard score above 100 indicates 'better than expected' performance (the higher the better), and a standard score below 100 indicates just the opposite – a worse than expected performance. And the third -- *percentile rank* -- indicates the level of the child's performance in relation to other children of the same age. For example, a ranking at the 50th percentile means that half the children of his age would typically perform better and half would perform worse than the child who was tested; hence, a standard score of 100 ranks at the 50th percentile. A ranking at the 75th percentile means that only 25 percent of the children this age could be expected to perform better while 75 percent would perform worse than the child who was tested. Obviously, then, a ranking at the 25th percentile would indicate just the opposite: 75 percent of children his age could be expected to perform better and only 25 percent worse than the child who was tested.

- **Visual and auditory perceptual (spatial and phonological awareness) skills tests**, especially as they relate to specific aspects of school performance. This almost always includes two geometric design copying tests (such as the Spatial Awareness Skills Program [SASP] test and the Rutgers Drawing Test [RDT], and at least one word-segmentation-deletion test (such as the Phonological Awareness Skills Program [PASP] test, and often involves other relevant tests as well.

Geometric design copying tests are used because the ability to reproduce geometric designs (a) is developed; it improves with age and is not dependent upon formal instruction; (b) is not influenced by knowing how to read or write -- it is 'culture free;' (c) has been shown to be highly predictive of a child's ability to organize information (as in reading comprehension, following multistep directions, etc.) and the ability to understand the basic principles of arithmetic -- the use of numbers to represent absolute and relative quantity, magnitude and position. A word segmentation-deletion test is used because this ability has been shown to be highly predictive of a child's ability to understand the letter-sound concepts that underlie reading and spelling.. For more details, see Treatment Programs section, below.

- **A comprehensive language evaluation**. An assortment of tests, including a determination of how well the child has developed/acquired the ability to use language as an effective learning device. This latter involves an assessment of expressive and receptive language and, perhaps of even greater importance, an investigation of how well the child recognizes the system of language that is used in the school culture, language that dictates particular ways of talking, acting and understanding. This is called "discourse." (The Porch Index of Communicative Ability in Children (PICAC) is one example of this kind of test.)

- **Reading, spelling and arithmetic achievement tests** to determine the child's current instructional level and certainly of greater relevance, the nature of his difficulties; i.e., an analysis of the kinds of errors made during this testing; *what he cannot -- but should be able-- to d*o. Towards this end, we usually administer the Wide Range Achievement Test (WRAT), the Test of Written Spelling (TWS), the Woodcock-Johnson Reading Mastery Test, and a number of informal 'inventory' test items that center on the kinds of difficulties the child displayed in formal achievement testing.

- **Two IQ tests**: one that provides evidence of the child's general ability to acquire and express information from experiences outside the classroom, i.e., knowledge that is independent of his ability to read and write -- ordinarily, we use the Slosson Intelligence Test (SIT) for this; and one 'nonverbal' test in which the child is asked to demonstrate his 'spatial reasoning skills.' We may administer the Test of Nonverbal Intelligence (TONI) or the Matrix Analogies Test (MAT) -- and sometimes both -- for this purpose.

We do not consider the IQ score to be a measure of one's learning 'potential.' There is no such test; no one can predict how well another person (or maybe even they themselves) can learn under as yet unforeseen conditions. We agree that today's behavior is a good predictor of tomorrow's behavior, but not at all times, with all persons, under all circumstances; and It is true that IQ scores tend to correlate fairly well with school performance – but certainly not perfectly, or even close to that. Many other factors also have impact on classroom performance, not the least of which is the status of the child's basic learning aptitudes (i.e., analyzing-organizing skills) when he begins formal schooling and the design of the instructional program he encounters.

Treatment options

Ordinarily, we consider four treatment options for children whose school learning difficulties appear to be related to a delay in the development of spatial and/or phonological awareness skills and related language abilities rather than to a

general cognitive deficit -- i.e., children whose learning difficulties are classroom-centered, children who learn well from day-to-day experiences outside the school building. These are:

Option 1: Referral. If, during our evaluation, we observe potentially relevant deficits that go beyond our professional scope, we will make appropriate referral. This may be to a psychiatrist, a clinical psychologist, a pediatrician, and/or other specialists.

Option 2: Retention. Give the child extra time at his present grade level in which to develop the basic learning aptitudes -- *system-inducing skills* -- that he needs if he is to succeed in a standard instructional setting. This works best with very young children – children who are not yet in the educational mainstream, children who are not yet really 'behind' in school. However, the option should not be ruled out for older children as well; children who are significantly behind in school often fare much better if given an extra year in which to close the gap between where they are and where they should be.

But *that extra year has to be used productively.* Devoting that year to inappropriate treatment will not help very much. Granted, retention in grade is very upsetting to many children (and their parents), but on the other hand the stigma attached to it evaporates rapidly and the practical benefits – under the proper circumstances — are great. (Keep in mind the pain of chronic school failure that is virtually guaranteed by advancing the child to a grade level that is far beyond his instructional level and offering nothing to make satisfactory performance a feasible outcome. See FAQ #12 for more discussion about the possible good and bad features of retention.)

Option 3: Improve the child's perceptual (basic analyzing-organizing) skills. Engage the child in a training program: activities that have been shown to be effective in stimulating the development of the spatial, phonological, and related language skills that he should have by now but doesn't;

skills that will enable the child to perform more satisfactorily in a standard instructional program. (*Remember: improving these skills will not automatically eliminate any existing academic deficits. It will make him easier to teach, but he will still have to be taught and he will still have to exert the effort needed to learn.*)

Ordinarily, these activities call for the use of workbooks, computer software and other materials organized as 'programs,' comprising a number of specific behavioral goals that are arranged hierarchically. This design provides a well-defined path that leads to desired outcomes, a path that parents can follow in implementing a home-based program and use as a means for monitoring and reporting the child's progress to us. (See Treatment Programs section, below. for a fuller discussion about this topic. Also, as examples of two published perceptual skills training programs, see the *Spatial Awareness Skills Program* -- SASP -- and the *Phonological Awareness Skills Program* -- PASP -- published by Pro-ed, Austin, TX.)

The term *training* in this context applies to skills -- aptitudes -- that facilitate classroom learning; e.g., the general ability to analyze and organize information -- be it heard, seen, felt, etc. -- in an efficient manner. The term *teaching* refers to skills/knowledge that link directly with school-based behaviors such as reading, writing, spelling and arithmetic. Sometimes we recommend training only, with the intention of improving the child's ability to learn in a standard classroom; sometimes we recommend training and teaching at the same time, thereby seeking to establish a general skill in the context of an educational activity. Our choice depends on a number of factors, including the child's age, grade level current academic status, and so on.

Option 4 Modify instruction in accord with child's individual needs. This may involve making changes in one or more of the components of standard classroom environment -- that is, the teacher, the instructional conditions and/or the instructional program/material itself. (See Treatment Programs section, below, for a fuller discussion about this topic. Also, see *Helping Children Overcome Learning Difficulties;* 3rd edition, published by Walker Publishing Co., Inc., New York.)

Treatment programs

In those cases where we identify a reason for making treatment recommendations (which means in most cases), we prepare an individualized program that depends almost completely on home and school implementation. We usually meet with the parent a week or so following the evaluation visit in order to answer questions and explain the treatment program. Most often, we organize the program into two parts: activities that are to be done at home and activities and adaptations that can and should be carried out in school. We leave it to the parent to communicate -- share our report and treatment recommendations -- with the child's teachers, but we do assure them that we are available for telephone consultations if the teachers (or other adults who are involved) have questions and/or want more information.

Perceptual Skills Training

The ultimate goal of a perceptual skills training program is to improve the child's ability to recognize how the coding systems of the classroom work; to become fully aware of the sensations (spoken sounds, spatial features) that letters and numerals represent in reading, spelling, writing and arithmetic.

Spatial skills. A measurable goal of our spatial awareness skills training programs is to improve the child's ability to copy geometric designs. Clearly, this is not because it is important to be a good geometric design copier but, rather, because as the child improvement in this skill it indicates a better understanding of the strategies that copying designs calls for -- strategies that are also exercised in analyzing-organizing information in general. His information processing skills will be better organized. His paper work will look neater. His understanding of the logic of arithmetic will improve as will his reading/listening comprehension skills.

He will start to display the kind of *systems inducing skills* that are needed in a standard classroom; he will start to 'get it.'

Our training program will emphasize *spatial reasoning skills*, employing concrete information/materials at lower levels and abstract (verbal) information as the child progresses.

We conceptualize our spatial awareness training program as guiding the child through as many as three stages, depending upon his age, grade placement and present status. The first: if needed, teach the child to be an *analyzer*, an identifier of separate parts; don't worry about the organization of what he is analyzing, the sum of the parts. The second (a bit more advanced): if not yet attained, teach the child to be an *organized-analyzer*, to recognize the relationship between what he is identifying and the whole from which it comes. The third (higher yet): teach the child to be an *analytical-organizer,* to recognize other ways in which information can be perceived, including ways that make it but a component part of an even larger organization. (For more discussion about this topic, see FAQ 13 and 14.)

Phonological skills. A measurable goal of our phonological awareness skills training programs is to improve the child's ability to identify the separate sounds and their relative positions in spoken words. Clearly, this is not because it is important to be a segmenter of spoken words but, rather, because as the child improves in this skill it indicates a better understanding of the logic on which reading and spelling are based. As the child's phonological awareness skills improve, these coding systems will make sense. He will be far less dependent on rote memorization and much more capable of learning by association.

Basic principles we apply when designing a perceptual skills training program.

1. Set aside the proposition that because perceptual skills are developed, any effort to improve these abilities should begin at the lowest developmental (i.e., global) level and move up to higher level activities only after these lower level ones have been fully mastered.

- Acceptance of this proposition is why some phonological awareness skills training programs start at the non-verbal sounds level, with the child identifying lots of different kinds of sounds -- low-high, loud-soft, etc.-- coming from different

directions, and why some visual perceptual skills training programs start off with lots of gross motor activities before moving into those that require more refined, visually-directed actions. Although this kind of hierarchy is valid when *describing* development, it falls short -- and is impractical -- when designing a perceptual skills training program. There is a better, more efficient way to address the problem.

- In other words, don't concentrate your efforts on the 'motor' aspect of the training, unless the child really does have motor (oral or digital) deficits that do hamper his performance -- and this concern can usually be addressed fairly easily.

This does not mean that motor training is without merit. It can, in fact, be very helpful -- if it is designed so that it teaches the child general organizing-analyzing skills. However, starting at a lower-than-necessary level, albeit potentially helpful, often wastes time, and time is a very precious commodity for the child being discussed here; it should not be wasted. Each unsuccessful day in school means more disappointment, more frustration and, to make matters even worse, an increase in the gap that exists between what this child can do and what he is expected to be able to do in that classroom.

2. Accordingly, the training program should start at the highest level the child can manage. That usually means activities that involve refined hand-eye and/or voice-ear coordination in school-learning related tasks.

3. In training phonological awareness skills, emphasize the importance of the child paying attention to how his mouth *feels* as he says the words in the training activities; allow the speech production mechanism to *teach* the ear; over time, the ear will become the leader of the process.

4. Apply this same principle when training spatial skills: link the hand and eye. In early life, the hand teaches the eye; later, their roles are reversed. This is the only way the ear and the eye can obtain tangible information; the ear can detect different sounds, the eye, different visual data, but neither organ is sensitive to concrete, tangible information.)

5. Apply the concept of *synthesis through analysis* in the training program. (Take advantage of the fact that it is easier

to assemble something if you have first taken it apart. Teach the child to be an *organized analyzer* before attempting to teach him to be an *analytical organizer.*)

6. At all stages of training, do not hesitate to demonstrate and explain. Put aside worries about offering too much help and impeding his progress towards being an independent learner.. The goal is to teach skills. That means showing the child what to do and how to do it (not unlike how you would teach him to play baseball or the piano). It will not make him life-time dependent. On the contrary, it will hasten his journey towards becoming an independent learner.

7. Introduce the child to the various systems that have been devised for organizing space-time and phonological information. Some are listed below. (Think of them as ways of arranging information so that it can be processed efficiently; i.e., stored, recovered, talked and thought about, and linked with other kinds of information that share some of the same key features.)

Systems pertaining to spoken sounds

- Dashes, musical tones, or other methods that illustrate the relative length of a spoken word, or the number of syllables or phonemes in a spoken word.
- Alliteration
- Rhyming
- Synonyms, antonyms and other related words

Systems pertaining to space-time information

- Lined paper, graph paper, shelves, cabinet drawers, boxes, etc.
- Numbers and letters that indicate ordinal position; e.g., page numbers, alphabetizing, etc.
- Maps that provide latitude and longitude data
- Lists that may (or may not) be subdivided into sections according to a feature (e.g., function, color, etc.).
- Charts showing different configurations.

- Pie charts, two and three dimensional bar charts, concentric circles, Venn diagrams (overlapping circles), etc.
- Calendars, clock dials, sun dials, and other organizers of time, (i.e., devices that illustrate the connection between seconds, minutes, hours, days, weeks, months, seasons, decades, etc.)
- Linear distance measures: inch, foot, yard, mile, millemeter, meter, kilometer, etc.
- Thermometers and other organizers of relative and absolute heat/cold.
- Scales and other organizers of weight.
- Measuring vessels and other organizers of volume.
- Flow charts that represent how one works through a decision making process.

Instructional Adaptations

Adapting instruction means providing conditions that are not usually available in a mainstream classroom. This could mean a *teacher with certain unique qualifications* (e.g,, patience, an understanding of the child's instructional needs and confidence in her/his ability to meet those needs), a *reduced student-teacher ratio* during certain parts of the school day, and/or *specifically designed instructional materials/methods*.

The aim of all these should be to teach the child in a way that enables him to comprehend the logic -- make sense -- of what he is to learn, so that he can ultimately keep up with his classmates in a mainstream setting. *It does not mean reducing academic standards or excusing the child from learning all that he should*. Unfortunately, this is what is often done, the object being to lighten the demands on the child. But, although the intent is kindly in spirit, the real outcome is not. Inevitably, the child will not learn what he is not taught yet what society at large expects him to learn. Obviously, this will have long-term negative effects. So, do not lower standards, do not limit long-term expectations. Rather, provide instruction that makes learning possible, in the same way that providing a ramp for a wheel-chair bound individual does not

excuse him from having to get to a higher level, it simply makes that higher level accessible.

Basic principles we apply when designing an adaptive instructional environment.

1. The child whose *systems-inducing skills* are emerging more slowly than is expected needs a *structured* instructional program; a program that makes apparent -- in as clear-cut and unambiguous a way as possible -- those aspects of a lesson that are important in respect to connecting what the child already knows to what he has to learn next; what he should pay attention to and how that helps form the link with other things that he already knows.

2. The best way of accomplishing this is -- once again -- to use a *synthesis through analysis* approach; to teach by first presenting and identifying a whole unit of information (e.g., an entire word or a portion of that word, such as a syllable), a number fact, a spelling word, a letter construction, whatever level the child is at. Then by pointing out to the child the salient component parts of that unit -- the parts he should pay specific attention to and how those components organize -- combine -- into the whole unit; and most important, how some of those components are also present in other, related units of information and can thereby serve to help the child use what he already knows in learning new things without depending on rote memorization strategies; i.e., enabling him *to learn by association.* The ultimate goal is to teach the child to identify increasingly larger units of analysis.

For example, already knowing that the letters **at** represent the spoken sound /*at*/ in the printed word **cat** should be taken advantage of when presenting the printed words **fat**, **slat**, and so on; and subsequently that being able to identify the word **cat** as a unit should be taken advantage of when presenting such words as **scatter**, **caterpillar**, and so on. And as another example, already knowing that 4 + 4 = 8 should make the

answers to 4 + 5 = ?, and 40 + 50 = ?, and even 400 + 500 = ? more available.

3. Avoid (real and potential) ambiguities. Demonstrate as you explain by 'thinking out loud.' Just as when teaching perceptual skills, do not depend on Socratic-like prompting and leading questions. Teach in a direct, step-by-step fashion, leaving little to chance. Use examples to illustrate what your words mean and provide enough practice at each level of learning to ensure that the lessons already taught were securely learned and linked together. For example, it is not enough that a child can decode a word by 'sounding it out'; he should practice to the level where he can read it fluently, without a great deal of conscious effort.

4. Encourage (urge, perhaps even require) the child to 'think out loud,' emphasizing the fact that spoken language is a very good device for analyzing and organizing information, and that looking, listening, saying and, when appropriate, manipulating is far better than just looking and listening.

5. Where possible and presumably useful, identify mnemonic strategies for the child, but keep them simple; e.g., *'i before e except after c.'* and *'u follows q.'* (Don't worry if the 'rule' is not fool-proof -- i doesn't always come before e except after c. Obviously, if you can come up with a rule that always works, then use it; if not, then settle for something that works most of the time.

6. Provide a calculator for the child who cannot do calculations, but do not view the device as 'the solution;' try to teach him how to calculate in a way that makes sense to him, and eliminates the need for a calculator. Similarly, provide a keyboard for the child whose penmanship is very poor, but again, do not consider this to be 'the solution;' it is merely a crutch that should be eliminated as quickly as possible.

7. Instruct at the child's ability level. If needed, transfer him to a lower-level class in school for those subjects where he cannot meet the requirements of his grade level.

8. The same principle applies to home work. If the child cannot do something in school, he will not be able to do it at home. That means that a parent is going to have to do it for him or it will not get done. The inevitable outcome: the child learns very little, if anything, unless the parent is a better instructor than the classroom teacher, and that is not very likely. Try to assign homework that is instructive or, more sensibly, homework that provides practice for what was taught (*and understood*) at school.

9. Ask the child to repeat instructions immediately after receiving them (show/encourage him how to paraphrase rather than repeat the same words); if he cannot recall instructions, repeat them in smaller segments and simpler terms; i.e., organize it.

10. Try to be as consistent as possible, both in actions and attitude; i.e., establish a daily routine, and avoid 'mood swings' that vary from extreme empathy (accepting whatever the child contributes as satisfactory) to extreme rigidity (accepting only that which is precisely and fully correct). The child dwe are discussing here is not good at generating the 'rules' that he can apply in the classroom; he is best served by being told the rules that should guide his behavior and then by showing him how to comply.

11. Teach the child how to organize information; for example, how making lists of things he has to do -- first on paper; later 'in his head' -- helps.

12. Review the vocabulary in a story, making sure that the child knows the meaning of the words. Teach him (or show him) how to use a dictionary); encourage the use of age-appropriate crossword puzzles, etc. And remember that words are remarkably effective organizers of information.

Reprise

At the risk of boring the reader, certain points are worth reiterating, but we will be more succinct this time around.

- The child who can learn information outside the classroom as well as other children his age can also learn inside the classroom, but he imay need more direct instruction.

- This child is often (incorrectly) 'diagnosed' as having a permanent medical condition on nothing more substantial than a brief observation and personal opinion.

- Therefore, it is best to avoid 'diagnostic' labels and inferred conditions. They rarely if ever help in determining what to do in order to help the child and that should be the chief goal.

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- In addressing that goal (i.e., what to do in order to help the child), start off by getting valid information about the child's:

  - vision and hearing. Obviously, problems with either of these can significantly impede classroom learning.

  - spatial and phonological. (perceptual) skills. Deficits in either of these prevents the child from understanding the logic on which the coding systems of reading, spelling, writing, and/or arithmetic are based. He just won't 'get it.'

  - classroom instructional level in those subjects where he is experiencing difficulty. Find out what he needs to be able to do but can't, and start instruction at the necessary level.

- general learning ability; i.e., 'verbal' IQ. This is not really essential, but it often helps in documenting what your intuition tells you about the child's ability to learn outside the classroom and it might reveal some evidence of a language deficit.

- Don't over-test. You don't need three tests to tell you that the child is behind in reading; indeed, you probably don't even need one. What you do need is insight into where instruction should begin in the hierarchy of skills he needs to master.

- Design a treatment plan based on test outcomes.

  - Decide whether to train perceptual skills, or introduce adaptive instruction, or both. And do not categorically reject the notion of retaining a child in his present grade for an additional year when it is obvious that he has yet to master the material from the grade he is in currently. But, if you decide on retention, make certain that full advantage is taken of the extra time it provides.

  - Having decided on a treatment program, define an ultimate goal of this effort and map out the intermediate steps for getting there.

  - Define also the conditions under which the intermediate steps can be taught; i.e., time per day, at home, in school (small group/individual), with a private tutor, etc.

- Implement the treatment plan; monitor progress; adjust treatment program as needed.

- Keep at it! Learning curves are never smooth and unidirectional. Expect bad days as well as good ones, but be assured that, in time, the good days will outnumber the bad ones.

Sounds too simple, too attainable? Perhaps, but it certainly is possible. However, recognize that the farther behind in school

the child is, the more difficult it will be to achieve a successful treatment outcome.

Therefore, one of our basic messages is *act early*! Do not place your faith in reassuring platitudes and wishful thinking from well-meaning individuals. Trust your intuitions. Being unnecessarily overanxious is far better than being neglectful.

Frequently asked questions (FAQ)

Question 1: My child is having trouble in school. Everyone agrees that he's very bright (in fact, we had him tested by a psychologist who told us that his IQ is above average), and he really does try, but no matter how hard he tries (and how much we help), he still is a very poor reader and speller. His teacher thinks he might have dyslexia or ADD, or maybe a learning disability. Should I have him tested?

Answer: If your child is capable of learning outside the classroom – that is, from activities that do not depend on his ability to read, write, spell and/or do arithmetic – then, by all means, have him tested. (As stated in the preface, we don't spend a lot of time worrying about what to call the condition because naming it doesn't automatically lead to a specific, effective treatment. Good treatments depends on valid behavioral information: what the child cannot but should be able to do and how to teach him to do those things.)

Question 2: My third grade child is having trouble getting information down on paper, copying from the chalkboard, following directions, orienting letters-numerals correctly (he often prints them backwards), completing multistep tasks, understanding math principles (he still has to count on his fingers when doing simple calculations) and remembering his spelling words beyond the 'Friday spelling test.' Should he be tested?

Answer: Same as above: if the child's learning difficulties seem to be confined to the classroom, if he can learn from experiences that don't require him to read or write, have him tested. And don't put it off too long; the older the child, the more likely it is that he'll figure out inefficient ways to deal with his problems and these, in time, will turn into 'bad habits;' and, as you know, habits are hard to eliminate.

Question 3. My child is not really behind in school. He's in kindergarten, but his teacher has expressed some concern about whether he'll be ready for first grade next year. She doesn't think there's any real problem, just that he's immature and – in her view -- his fine motor skills are not good. Should I have him tested now, or wait and see if he grows out of the problem?

Answer. Have him tested now. We agree that he may very well 'grow out of'' whatever it is that is worrying his teacher, but the important question is *when*? If he enters first grade with inadequately developed visual and auditory perceptual skills, he will experience difficulties. (Also, read the previous question-answer.)

Most five and six year old children have decent fine-motor skills, even those with very poor printing skills. In most cases, the problem lies in their inability to have the eye (the brain, to be more accurate) make good decisions about where to guide the hand, not in controlling the hand itself. In other words, their fine motor skills are not bad, but the same is not true of their ability to exercise the kind of analysis and organization strategies that neat paper-pencil work requires.)

Question 4. I have been told that my eight year old child is retarded, his IQ is 70. He has been placed in special classes, but I am very concerned because he doesn't seem to be getting the kind of instruction he needs. His teacher is very kind, and engages him and his classmates in 'interesting' activities -- coloring, making things, watching videos, and so on -- but she seems to avoid trying to teach reading, writing, spelling or arithmetic. I think he can learn more if he is taught properly. Should I have him tested?

Answer. Yes, have him tested, but first, read the following qualifying comments: As we stated at the very

beginning of this booklet, we have no miracle cures and no quick fixes. But, having made that clear, it is still worth doing some tests to get specific answers to the following questions:

One, is his IQ score really valid in respect to predicting his ability to make satisfactory progress in school, or is it a reflection of a communication problem? (In other words, does he know more than he can demonstrate under standard test conditions?

Second, even if his basic cognitive skills are somewhat impaired (for whatever reason), how much can he learn if he is taught properly? In other words, assuming that he will never be a rocket scientist, what level of basic literacy can he achieve if properly instructed?

The first question can be answered more easily than the second. Simply test him informally by posing 'multiple choice' questions rather than questions that require him to generate the answer. (Clearly, this is an oversimplification, but the gist of it is true. If he demonstrates, in conversation and other behaviors, that he knows more than he can demonstrate, push on. Trust your instincts. You won't harm him unless you punish him for not meeting hoped-for goals.)

The second question cannot be answered quickly. You have to get him placed in an optimal educational setting and watch what happens. We know that truly educationally-retarded children can learn -- often to about the fourth or even fifth grade level. (They can be taught the fundamental processes of reading, spelling, writing and arithmetic, even if they don't ever acquire the ability to reason abstractly. And that level of ability, in combination with a pleasant personality and a willing nature, can open up all kinds of opportunities for an adult in this society. (He will be able to read most newspapers, fill out forms, do routine jobs that require some differentiated behaviors, and so on. That's far better than remaining completely illiterate just because no one thought he could learn.) So, to repeat, have him tested, and use the information we offer in as productive a way as possible.

Question 5. My ten year old has the kind of learning problems you've describe. He has a five year old brother who isn't having any trouble so far, but he's just begun kindergarten. Should he be tested too, and, if so, to what extent?

Answer: At the risk of sounding like we have only one answer to questions like this: Yes, he should be tested. But the good news is that the he doesn't need as much testing. He needs a thorough eye examination, an assessment of perceptual skills (spatial and phonological), and some evaluation of his speech/language abilities. For the eye examination, select an optometrist or ophthalmologist who is accustomed to examining pre-school aged children and tell him/her what you want to know and why. (See Evaluation section, above.) If you're lucky, the doctor who does the eye examination will also be able to do the perceptual skills assessment, but that isn't always the case. Who else then? Your pediatrician, perhaps. (But again, that's not always the case.) And if not the pediatrician, then an occupational therapist, an educational diagnostician or, sometimes, a good, up-to-date preschool teacher. The speech-language screening? A speech pathologist would be best, obviously; but, if you want to avoid that expense, perhaps your pediatrician or preschool teacher can tell you what you want to know, which is *"has this child developed the oral-motor and other language communication skills that are appropriate for his age?"*

Question 6. How long is the testing session and who should administer the tests?

Answer: We can't give you an exact answer to the 'how long' question. Children differ, one from another and so do tests. Some tests take longer to administer than do others and some tests may be called for with some children but not with others. Some children test quickly, some quite slowly. Ordinarily, we schedule a full day for testing – with a break at lunch time, but we don't over-test. If we can learn what we have to know with just a few tests, we will stop there. If we have to administer an extensive battery, so be it.

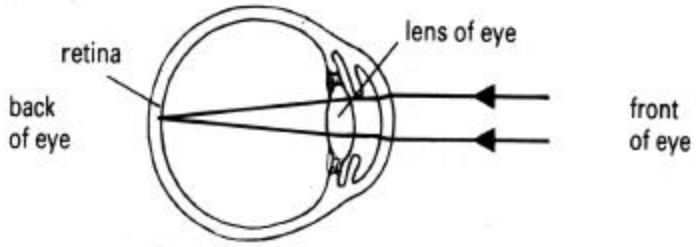
As to the 'who should administer' query, in this Center, representatives from two disciplines --: Optometry and Speech Pathology -- do the testing in most cases. However, there are times when testing is more limited; for example, when the child presents with a very up-to-date, thorough record from a recent evaluation conducted elsewhere. There are also times when other disciplines may be consulted, but these are exceptions, not the rule.

Question 7. You recently evaluated my neighbor's child and as one of your recommendations, you said that he should wear glasses because he's farsighted. He's gotten them and says that he doesn't see any better when he wears them than he does without. So why should he wear them?

Answer. Farsighted children usually do see clearly without glasses, but their vision is *inefficient*; they have to work harder than they should -- exercise too much extra focusing power -- in order to see as well as they do. But that doesn't answer your question; more explaining is needed.

The following explanation may not satisfy the technically-minded reader, but it is accurate. We've simplified some things in order to avoid confusing the reader who is not schooled in vision science.)

Look at the drawing (below) that is labeled *emmetropia*. The term *emmetropia* describes an eye that is neither nearsighted (myopic), farsighted (hyperopic) nor astigmatic. The diagram shows that when the emmetropic eye looks at a distant object (e.g., 20 feet away or beyond), the image of that object is precisely focused on the retina; it is seen very clearly simply because the optical elements of the eye -- the cornea, the crystalline lens (located just behind the pupil), and axial (front to back) length are exactly coordinated. No adjustment in optical power is needed.

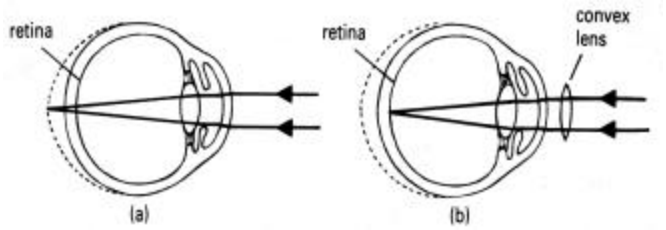


An emmetropic eye looking at a distant object. Object will be in focus. No additional focusing power is needed.

However, this would not be true for an object located closer to that emmetropic eye. It would be seen as blurred, unless the eye adjusted -- increased its focusing power -- for the shorter viewing distance. The normal, young eye can make this adjustment. It is called *accommodation.* It is accomplished by activating the ciliary muscles in the eye which then changes the thickness (surface curves) of the crystalline lens. All of this happens automatically; no conscious thought or effort is required. When the young emmetropic eye looks at a near object, it immediately and automatically accommodates; then, when it shifts gaze to a distant object, it relaxes accommodation, allowing it to have clear vision in both circumstances.

The young emmetropic eye can exercise lots of accommodation. This ability erodes gradually over time so that by age 40 or so, even the normal emmetropic eye has difficulty seeing near objects clearly. (This is when you start to see your friends showing up with bifocals or 'half-eye' reading glasses.) The lower portion of the bifocal lens is powered so as to substitute for the loss in the ability to accommodate -- a gift from nature for having lived that long.)

Now look at the two drawings of hyperopic -- farsighted -- eyes.



Two hyperopic eyes looking at a distant object. (a) The image will not be in focus on the retina. (b) The object will be in focus because there is a convex lens in front of the eye. It would also be in focus even without the convex lens if the eye was capable of accommodating adequately-- increasing the focusing power of the crystalline lens within the eye.

Notice that, in effect, the hyperopic eye is too short for its optical elements. Because of this, when it looks at a distant object, the image of that object is not sharply focused on the retina. There are two ways out of this predicament: either the eye must accommodate or a convex lens must be placed in front of the eye. As noted, the young eye automatically accommodates -- it adds effective power to the eye by activating its ciliary muscles, thereby increasing the focusing power of the crystalline lens. (This response occurs in reflex fashion; no conscious thought is needed. That is why we must use drops that inactivate the ciliary muscles when determining the refractive state of the young eye. The drops eliminate the child's ability to accommodate. This enables us to get a true measure of the refractive state of the eyes.)

In other words, the hyperopic eye may have to work as hard or harder (depending on how much hyperopia) to see clearly at distance as the emmetropic eye does to see clearly at near. Obviously, then, when the hyperopic eye engages in close work, it has to work even harder than is normal.

The young hyperope can do all of this, but it is at a cost -- he sees clearly by working harder than he should have to. In a very real sense, his situation can be compared to how you would feel if you had to carry a 20 pound back pack all day. You could probably do it and still do your job reasonably well, but it certainly would feel good to take it off; the day would

have been more stressful, it would have cost you energy that you could have devoted to something more important.

Another analogy that we sometimes offer: the young hyperope without glasses is in a situation comparable to driving a car on the freeway in second gear. The car continues to move, but very inefficiently. The motor has to work harder and consume much more fuel than it should.)

That is one reason why we prescribe lenses for the hyperopic child and recommend that he wear them most of the time, not only when doing close work (so that he doesn't have to accommodate when looking at distance and accommodates only the normal amount when doing close work). There is another reason, but it goes beyond the scope of this booklet.

Reduced to a few simple statements, if we prescribe glasses for a farsighted child, it is not likely that we are trying to improve his eyesight -- chances are that he already sees clearly and his glasses will not make it any better. Rather, glasses will enable him to see clearly *at a lower cost in energy.* The potential benefit: he will be able to stay focused on visual tasks -- be they situated at near or far -- in a more efficient (less stressful) manner.

while we're on the subject, we should advise you that *all children* – not just those with enigmatic learning problems -- should begin having regularly scheduled, comprehensive vision evaluation – *not just an eye-chart vision screening* – well before they enter school, with the first occurring when they are only about six months old. Certain undesirable ocular conditions can be eliminated if detected at an early age, whereas these same conditions can only be compensated for if nothing is done until the child is older. And be aware that valid and reliable information can be obtained from a six-month-old, if the proper procedures are used. In saying this, we acknowledge and accept the fact that not all eye doctors welcome six-month old babies as patients. But there are some that do, and the number is growing. Find one; ask your own eye doctor, your pediatrician, a friend, a pre-school or nursery teacher to identify one for you.

Question 8. My second grade child has always -- and still -- confuses the **b** and the **d**, and the **5** and **2**. Sometimes he prints them (and reads them) correctly, sometimes not. His teacher thinks he might have 'mirror vision.' What is that? Does he really see backwards, and why -- and what should I do?

Answer. First of all, forget about mirror vision. There is no such thing. But there is no doubt that some children have a very difficult time remembering which is the **d** and which is the **b**, and which is the **5** and which the **2**.

Why? Because they haven't yet developed the spatial organization strategies that will enable them to eliminate the confusion which, in time, leads to an automatic recognition of which letter/numeral is which. In other words, your child still lacks the 'system' for keeping those ambiguous facts 'straight in his head.'

What should you do about it? Be assured that he will grow out of the problem. There will come a time when he no longer confuses those ambiguous symbols. But the important question -- as is often the case with developmental delays -- is *when?*. Reversals cause confusion, they disrupt; they get in the way of taking meaning out of what's being read. A fraction of a second pause while the child decides *'Is this is **d** or a **b**?*' gets in the way of comprehension. So, the best approach is to do something about it now. What should you do? Have him tested. Persistent reversals are usually a product of a delay in spatial awareness skills and this can be addressed -- directly and indirectly -- by appropriately designed, uncomplicated treatment techniques.

Question 9. What do you do with the information obtained during your examination?

Answer: In addition to reporting the test scores themselves to the parent, we translate these scores – in combination with our clinical observations -- into a profile of the child's strengths and weaknesses and, most important, we then devise a treatment plan to help the child overcome his academic difficulties. (Remember, scores alone are not a great help; they are like labels -- like telling a person who is lost that he is *lost*.)

Question 10. Will I understand all of this information?

Answer. We will meet with you at the end of the testing session in order to give you an overview of what we've learned, what we suggest, and why. This will be followed up with a written report that provides all the information in an organized form. And, when indicated, we will ask you to return for a (much shorter) follow-up visit, without the child, at which time we will explain thoroughly how you (and others) can help him overcome his difficulties.

Question 11. Do you do the treating? Does he come back to you for 'exercises?'

Answer: We rarely administer the treatment. Rather, we design the treatment program so that it can be implemented by the child's parents and/or other adults who are more readily available -- including his teachers and/or a private tutor. We also build into the treatment program a 'reporting scheme that enables the parent to keep us advised of the child's progress without requiring his presence very often.

Questions 12. We have a dilemma. Our second grade son has had the kinds of difficulties described here since he entered kindergarten. His birthday is in July, which makes him one of the youngest in his class, and we have always speculated that this was the cause of his problems in school. We wanted to have him repeat kindergarten, but we were told that "*he young, but he's very bright and tall;" "he'll grow out of it." "Don't hold him back. Not only will it upset him, but there is research that shows that retaining a child causes more problems than it does good."* So far, he hasn't grown out of it; second grade has been a terrible struggle for him and us. We're inclined to have him repeat second grade, but we don't want to do him harm. What should we do?

Answer. We can't advise you about your son because we've never evaluated him. But we can tell you our general

feelings about the potential benefits and harm of having a child repeat a grade.

We'll start off by telling your that we often recommend that a child repeat a year, but we try hard to reassure the child that this is not because he has 'failed,' but rather because he needs the extra time during which to 'catch up.' If anyone has failed it is us -- parents, teachers, the system that says, *"Go to school when you're six years old, ready or not."* That rule just doesn't work for all children, but we make the 'unready ones' suffer the consequences.

As to doing harm, obviously, most children are unhappy about leaving their classmates and dealing with the stigma that retention produces. But it's a temporary unhappiness, hardly comparable to the constant unhappiness that is caused by being placed in a higher grade where the work is even harder than what he had great trouble with this year.

And as to the research that argues against retention, the studies we have seen are faulty, poorly conceived. They looked at high-school drop-outs and counted how many of them had repeated a year while in elementary school. (These children got off to a bad start and the remedial efforts they received were not adequate.) It should have looked at the number of children who repeated a year in elementary school and what happened to them in high-school: how many dropped out and how many made satisfactory progress later on. We have accumulated a great deal of evidence which shows that -- when needed -- putting off advancement in school for a year can produce remarkably desirable results if that time is used effectively.

Back to your question. Stick to your guns! You care more about your child than anyone else does. And have him tested. If he's going to repeat, *the time must be put to good use.* An appropriate evaluation can help determine his educational plan for the repeat year.

Question 13. What does your treatment plan look like?

Answer. The design of the treatment plan depends on whether we decide that it is best to try to train (i.e., change the child's information processing skills -- the way he analyzes-organizes information) and/or teach (change the instructional conditions in ways that take the child's existing analyzing-organizing strengths and weaknesses into account). Sometimes we select just one of these; sometimes both.

In most instances, we identify activities that the parents are taught to implement at home along with specific suggestions for the classroom teacher, speech and occupational therapists, and other educational specialists. We do not provide in-clinic treatment services, primarily because most of our treatment recommendations ask for daily participation and traveling to our Center every day would impose an almost insurmountable burdens on both child and parent. Simply stated, we are not against providing services, but neither do we believe that we are a necessary daily ingredient in that effort. It is far more practical – and manageable – to teach others what to do and why.

Question 14. Can you describe a typical training program? What does the child do?

Answer. First of all, our training programs are always designed to begin with an activity that the child can perform (and that leads to activities that he cannot perform but that we want him to be able to do because it represents a step in helping him overcome his school difficulties). Therefore, the design of a child's training program depends on what we learned about him from our testing: specifically, how far along the developmental continuum is he and where should we begin?

In general terms, that continuum -- in terms of what we discussed in the preceding sections of this booklet -- ranges from a very basic *analysis-without-organization level*, (usually rep-

resentative of three olds) to an *organized-analyzing level* (which commences at about age four or five), to an *analytical-organizing* level which ordinarily begins to be apparent (with relatively simple activities) at about age six or seven.

These are not precisely defined, discrete stages. They overlap. Each extends over a broad range, depending on how those skills are put to use. It is one thing to exercise analytical organizing skills to figure out the letter-sound rules in decoding regularly spelled, CVC (e.g., *cat*, *bet*) words and another to organize the information derived from printed text to the point where an underlying principle can be inferred.

At the *analysis-without-organization level*, we will focus on the child's ability to *discriminate* -- to sort or match objects, pictures, sounds, etc., one-step-at-a-time, on the basis of one or more features, such as size and/or shape and/or color and/or tone.

At the next (*organized-analysis level*, we will introduce activities that teach the child how to analyze multi-element, spatial information that has been presented in an organized format. Reproducing drawn patterns with rubber bands on a geoboard is one activity we use a lot, but we employ many other procedures as well.

At the *analytical-organizing level*, we focus on teaching the child to use verbal language to guide others (and himself, of course) in how to assemble a group of elements (i.e., in thoughts as well as actions). This might involve telling someone how to assemble a block-design patterns, or how to travel from one location to another, to how to interpret a complex situation in a way that 'makes sense.' --

In most cases, we teach the parent how to administer our treatment program at home, bringing in school-based support when it is available. At all levels, we provide printed directions that guide in the use of workbooks and computer programs along with activities that we, ourselves, have developed over the years. Some of our patients are also receiving treatment from speech pathologists and occupational and physical therapists. When this is the case, we seek their collaboration.

So, we guess the best answer we can offer for your question is that our training programs are based on reason but they are not mechanistic; we adjust as needed, based on how the child responds in the short term.

Question 15. My son's reading teacher tells me that his eye movements are very erratic when he reads. Do you investigate and treat that problem?

Answer: We will test the child's 'oculo-motor' (eye-movement) abilities as part of our examination. But you should be advised that *poor reading skills are rarely due to erratic eye movements.* Actually, it is usually the other way around: poor eye movements while reading are usually caused by poor reading skills. You can informally test this for yourself by watching your child's eye movements as he engages in a video game as compared to when he reads. The difference is usually very apparent, as are the implications.

Question 16. My son was tested a while ago by someone who found him to be behind in visual memory. Do you test and treat this?

Answer: We will probably administer a test that includes a look at both (so-called) visual and auditory memory, but we usually don't talk a lot about these when we go over test outcomes because (1) we don't think of memory as an isolated -- 'departmental' -- function, we don't make a distinction between visual and auditory memory under ordinary living conditions with individuals who have intact brains; (2) we don't treat memory deficits; we treat to improve a child's organizing-analyzing skills. When these are at an appropriate level, all else being equal, so will his memory. (Your mother knew what she was talking about when she told you: *If you put something away in the right place, you'll be able to find it when you want it.* The same is true of information: if you analyze-organize it properly, you'll find a good storage place for it in your memory -- nearby other information that has some link with it; if you don't analyze-organize the information

properly, it will be very hard to retrieve. Just think of the problem a librarian would have in finding specific books if he/she didn't use a well-designed system for storing books. Or, how hard a job you'd have finding eggs in the supermarket if they weren't always in the same location.)

By the way, we view many other psychological constructs -- such as figure-ground discrimination, visual closure, and so on, in the same way. They are interesting functions, there are tests to measure them, but they do not add any information that contributes to our treatment efforts. We know that children who don't score well in tests of those functions almost invariably also exhibit inept analyzing-organizing skills. We also know that if we treat figure-ground discrimination and the other processes, children will do better in tests of those functions, but not really any better in school, whereas if we are successful in improving a child's analyzing-organizing skills, his figure-ground, visual closure, etc. skills will improve and, of much greater importance, so will his academic abilities.

Question 17. I've heard about a condition called an 'auditory processing deficit.' I think my child might have that because he doesn't seem to remember what I've asked him to do. Do you test and treat that?

Answer: The preceding answer almost answers this question as well. We see many children who have a very difficult time remembering spoken instructions -- many of them have been diagnosed as having an auditory processing deficit -- but we have seen very few who have had this problem and not had a similar problem in processing spatial-temporal information. In other words, we have no evidence to support the concept that persons process – i.e., manage: listen to, interpret, store – information better if it's received through the eye as compared to the ear, or vice versa, if both sensory functions are operating normally. In our view, it still comes down to being a competent analyzer-organizer.

Question 18. Will the testing reveal *why* the child has this learning problem; will you be able to tell me if he has dyslexia, or ADD, or a learning disability?

Answer. Perhaps, but**.** in any event – as we've already admitted -- we do not view this as a major concern. What is important is identifying *how to help the child* ***now***. The cause of his problem is usually history. It is not like having an active infection that can be overcome with a specific medicine, thereby restoring the child to a normal state. In other words, the so-called diagnosis – the 'label' – is of no help in determining a specific treatment plan; it is only a descriptor. Indeed, as we pointed out earlier, it can be a detriment; it may suggest to the child's teacher that he has an deeply-rooted, immutable learning problem caused by some brain disorder. As such, it may very well generate a self-fulfilling prophecy. Admittedly, a label may also serve a useful purpose in that it could qualify the child for special school services. Keeping all of this in mind, we will use appropriate diagnostic labels when we see them as helpful, and we will avoid using them when we conclude that it is best to do so.

Question 19. Will you see my child again at some future date?

Answer. Probably, but not too soon, nor too often. As stated above, we will design the child's treatment program around a sequence of short term goals that the parent will use as landmarks -- 'milestones' -- for reporting progress to us via telephone. This will markedly reduce the need for repeat visits. Ordinarily, if all has gone according to plan, we see our patients for a relatively brief follow-up assessment about four to six months after their initial visit.

Question 20. What about medication? Lots of children with this kind of problem take Ritalin or some other drug. Should he?

Answer. It is true that some drugs, including Ritalin, seem to help some children stay 'focused' in the classroom, but the drug does not eliminate the learning problem. Don't expect the drug to be a 'cure;' at best, it is a help. (We are inclined to dissuade use of drugs. We believe that the vast majority of these children would respond well to an environment that is structured -- organized, predictable; an environment that makes fully evident just what it is that they are to pay attention to and do -- and that keeps performance demands limited to their individual performance level. (We meant what we said before: we think of most ADD children as having SADD: a *selective attention deficit disorder*.

Question 21. What about colored transparencies and/or lenses?

Answer. Although this method has had lots of publicity, there is very little -- if any -- scientific (or clinical) evidence that allows us to expect any real help from this method. Insofar as we have been able to determine, the only effective way to help most of these children is by addressing their educational needs, by treating them as children who require help in developing certain critical skills and instructional methods/conditions that are tailored in accord with their current academic status. Thus, the basic message is *caveat emptor*, **let the buyer beware**; *if it sounds too good to be true, then it probably isn't true.*

Question 22. How long will it take before I see results, before my child catches up with his classmates?

Answer. Good question! Actually, two good questions! Let's take the last one first: how long before he has caught up and is making at least average progress in school. We can't answer that; in fact, we can't even speculate because our primary treatment goal is to make him *easier to teach.* If our treatment is successful – and, more often than not, it is – the child will display better organizing-analyzing skills. He will have a better memory, he will be able to link new infor-

mation with facts he already has stored in long-term memory, he will recognize order in situations where he never did before – he will show evidence of being able to 'get it,' to 'make sense' out of conditions that used to evade him.

Now, the extent to which all of that affects his classroom performance depends on how far behind he is academically, how much help he's getting in overcoming his academic deficits, and how hard he's trying to change his status. If he's in fifth grade but functioning at a second or third grade level and getting no academic help, then his problem will persist because he won't have the knowledge base needed to take full advantage of his newly acquired organizing-analyzing skills. On the other hand, if he is in one of the lower grades and not too far behind his classmates, then our treatment will help significantly; he won't need that much academic assistance. And, best circumstance of all, if he is in kindergarten and not really behind in academics, then our treatment should be fully sufficient. Worst case: the high school student who is significantly behind academically and 'burned out,' fed up with trying but not gaining. We are not very successful with those children.

Long answer to a short question. Time now to address the first of your questions: How long will it take before you see results? You can re-read the preceding paragraphs for most of the answer but we can add that you should start to see changes in organizing-analyzing skills within a couple of months of treatment. Now keep in mind that this does not imply that these changes will translate into good report card grades; only to general information processing skills. The report card topic was discussed above.

Question 23. My child speaks just fine. Why are you interested in assessing his speech and language?

Answer. Speech is the verbal production of language. Language is a very sophisticated symbol system that allows people to use words to organize and express their ideas, wants and needs, and exchange these with other people. We learn

everyday language in our homes and communities. We use special kinds of words and relationships between words to teach children to read, write and do math. Some children who have good everyday language, so they speak just fine, but they do not understand that language is being used in a very particular way in school. Many times these children are simply not as analytical (a developed skill) as their age mates. Therefore, they don't follow directions well in class because the teacher's words don't mean the same thing to them that they do to others who understand the language code of the classroom. Our assessment is designed to identify children who have good everyday language but are not *getting* the language code of the classroom.

Question 24. I can understand my child's speech but others have a hard time. Will my child have difficulty learning to read and write well?

Answer. It depends on why your child's speech sounds different than that of other children. There are three basic kinds of speech problems. Some children *mispronounce particular sounds* like /r/ or /th/. This is usually a developmental issue in that the articulation of speech sounds gets better as a child gets older, and may not be completely correct until about eight years of age. These children may understand what they read, and only have difficulty correctly spelling words that have the misarticulated sounds in them.

Some children have *inconsistent speech sound errors*, leave out parts of words, and have mushy or imprecise speech. These speech differences are usually due to motor control/integration. The mouth, tongue, lips, back of the throat, and larynx all have to be precisely coordinated to produce clear speech (referred to before as oral-motor skills). The more complex the words or words in sentences, the faster and smoother this motor movement has to be. Inconsistent speech sound errors usually vary with the complexity of what the child is trying to say (e.g., the number of syllables in a word, the number of words with similar sounds that are being put together in a sentence). As children mature, their mouths

become more coordinated, but some children just have more difficulty integrating the oral-motor movements involved in speech production. These children may have difficulty sequencing sounds in words; always including the little parts of words like –ing, -ed, -s; organizing words in sentences; and arranging in an organized way what they have to say during conversations or story telling. These errors can make learning to read and write more difficult. Because the errors will usually be inconsistent, teachers may fail to see that your child is having difficulty with motor planning, and simply think he isn't always trying.

The third kind of speech problem is related to *language*. All speech sounds have features that make them "look" like other sounds in the same *language family*. Rather than having single sounds errors, children with this kind of speech problem are missing a feature that causes all sounds in the same family to be pronounced incorrectly. For example, the child may not understand that some sounds are produced at the back of the mouth *(/k/, /g/*') versus at the front of the mouth *(/t/, /d/)*. These children would say *titty tat* for "kitty cat," and *dot* for "got." This kind of speech problem indicates that the child has not understood an implicit part of language that children usually just pick up as they develop everyday talk. This has implications for reading and writing in that learning these depends on understanding an implicit system that is language based. Children with this kind of speech problem are at high-risk for reading and writing difficulties.

All of this is assessed by our Communication Disorder team in order to determine if and what kind of problem your child may have. The implications for reading and writing can then be addressed, and the most efficient interventions planned.

Question 25. My husband had a learning problem when he was in school. Is this an inherited condition?

Answer: Can't say. There is no doubt that some families have more than their share of 'late bloomers,' so perhaps there is a genetic factor at work here. But our position is pretty simplistic. Namely, be aware of the importance of making sure that the child's developmental status matches what his

school program is going to expect of him -- *before he enters school* -- and proceed accordingly.

Attention reader: The above is but a sampling of the kind of questions we are frequently asked. Please feel free to contact us if you have a question that is not addressed here.)