Notice to Educators:

POLICY STATEMENT:

Learning Disabilities, Dyslexia, and Vision
American Academy of Ophthalmology
has made this clarification:

POLICY:

The American Academy of Pediatrics, the American Academy of Ophthalmology, and the American Association for Pediatric Ophthalmology and Strabismus support the position that a child or adult with dyslexia or a related learning disability should receive:

1. Early medical, educational, and/or psychological evaluation and diagnosis.
2. Remediation with educational procedures of proven value, demonstrated by a valid research.

BACKGROUND:

Dyslexias and related learning disabilities have become matters of increasing public attention. An inability to read with understanding is a major obstacle to school learning and may have far-reaching social and economic implications. Research shows that simple deficient *visual perception* of letters or words accounts for inability to read in only a small minority of children; the majority suffer from a variety of linguistic defects.

EVALUATION AND CONCLUSIONS:

1. Learning disabilities, including the dyslexias, as well as other forms of underachievement, often may require a multidisciplinary approach from medicine, education and psychology in evaluation, diagnosis and treatment. Certain problems may be detected during early childhood through the use of screening techniques by educational specialists. Children with potential problems include those with language defects, emotional problems, or a family history of a learning disability. These individuals should be assessed by educational and psychological specialists as *early as possible* to identify individuals at risk for learning disabilities.
2. Eye care should never be instituted in isolation when a person does have dyslexia or a related learning disability. Children identified as having such problems should be evaluated for general medical, neurologic, psychologic, visual, and hearing defects. If any problems of this nature are found, corrective and/or remedial steps should be applied as soon as possible.
3. Since the decoding of written language involves transmission of visual signals from the eye to the brain, it has, unfortunately, become common practice to attribute reading difficulties to subtle ocular abnormalities, presumed to cause faulty perception. Although eyes are necessary for vision, "*visual perception*" depends on the *interpretation of visual symbols by the brain*. Remediation directed to the eyes alone cannot be expected to alter the brain's processing of visual stimuli.
   Indeed, children with dyslexia or related learning disability have the same incidence of ocular abnormalities, e.g., refractive errors and muscle imbalances (including near point convergence and binocular fusion deficiencies), as children without.
4. Correctable ocular defects should be treated appropriately. However, no known scientific evidence supports claims for improving the academic abilities of dyslexic or learning disabled children with treatment based on: (a) visual training, including muscle exercises, ocular pursuit, or tracking exercises or glasses (with or without bifocals or prisms); (b) neurologic organizational training (laterality training, balance board, perceptual training). Furthermore, such training may result in a false sense of security, which may delay or prevent proper instruction or remediation. The expense of such procedures is unwarranted. *They cannot be substituted for appropriate remediational educational measures.* Improvement claimed for visual training or neurologic organizational training typically results when those are combined with remedial educational techniques.
5. The teaching of dyslexic and learning disabled children and adults is a problem for educational science. Proper proven, expert educational and psychological testing should be performed to identify the type of learning *disability*. Since remediation may be more effective during the early years, especially prior to the development of a pattern of failure, early diagnosis is paramount. Since deficient ability to learn to read can be the result of a variety of factors, including different neurophysiologic deficiencies, cognitive deficits, or psychological factors, no single educational approach is applicable to all children. A change in any variable may result in improved performance and reduced frustration (including placebo benefits). The American Academy of Ophthalmology, the American Association for Pediatric Ophthalmology and Strabismus, and the American Academy of Pediatrics, strongly support the early diagnosis and appropriate treatment of persons with dyslexia and related learning disabilities.

VISION TRAINING

FROM: Claude Valenti, O.D., LaJolla, California.

Dr. Valenti who works closely with San Diego County schools has been collecting data for over five years on the impact of vision training on cognitive (SOI) abilities and on achievement in children referred with learning problems. These vision functions (from Schrock's California Vision Scale) are most frequently involved in successful achievement.

P = Pursuit
S = Saccadic Fixations per line
C = Convergence point of each eye
Ac-F = Accommodative Flexibility
A = Acuity or sight at 20 feet
B-A = Binocular Alignment
F-A = Focus Alignment
F = Fusion
S-S = Stereopsis/Suppression

<u>Results:</u>

Table 1.

Increases in Stanine Growth after 6 months

M/F	GR	CFU	CMU	MSU	MSS	EFU	NFU	NST	DFU	DMU	P	S	C	ACA	ACF	A	B-A	F-A	F	S-S	RX
M	K	2	0	3		4	3	0	6	2	2	2	1	9	10	7	1.5	1	3	7	8 MONTHS
M	1	0	2	-1	5	-2	1	3	3		6	4	3	7	5	3	1.5	-1	0	3.5	4 MONTHS
M	1	1	2	-2	0	-1	0	0	0	0	8	8	10	1	7	4	4.5	-2	4.5	7	8 MONTHS
F	2	-2	+2	-3	-2	-1	-1	+2	+1	0	+3	+7	+6	+5	+6	+6	+1	-1	+2	+6	8 MONTHS
F	2	2	1	2	0	3	2	3	-2	0	4	2	3	2	0	4	.5	5	1	1	3 MONTHS
F	3	0	2	-2	+2	+2	2	0	0	0	6	7	4	5	0	0	4.5	1	0	6	6 MONTHS
F	3	0	0	0	0	3	0	0	0	0	5	3	7	8	7	2	2	2	.5	7	2 MONTHS
M	4	2	2	0	-1	0	3	2	3	0	3	4	10	8	4	2	3.5	-2	1.5	2.5	1 MONTH
M	4	3	0	1	0	1	0	3	1	7	10	9	6	7	7	3	3	0	3.5	6	3 MONTHS
F	4	3	2	2	1	0	1	-1	3	4	6	5	4	2	4	1	0	2	-.5	2	6 MONTHS
M	6	3	4	0	0	0	2	3	5	3	4	2	8	2	3	0	1.5	1	6.5	1.5	4 MONTHS
M	7	1	3	4	0	0	0	0	5	0	2	3	0	2	8	2	1.5	-1	4.5	4	2 MONTHS
M	8	0	0	0	2	0	3	2	2	0	1	1	7	3	9	5	3	-2	3.5	3	2 MONTHS
M	9	1	0	0	0	0	1	2	2	6	4	1	5	3	3	2	2.5	1	3	2.5	4 MONTHS
F	HS	2	0	0	3	0	0	2	1	0	1	4	6	7	3	3	2	8	5	1	
M	HS	1	0	1	0	1	0	0	2	1	7	7	8	3	5	4	2	0	6.5	4.5	
M	HS	1	0	0	0	0	2	2	6	6	2	2	4	3	6	0	2	-1	4.5	0	

Procedure: 45 minutes of vision therapy followed by 15 minutes of SOI Modules training

Dr. T. Wheeler, Medford, Oregon, has followed this same procedure with similar improvement:

1. Better grades
2. Higher achievement scores
3. Motivation to go to school
4. Improved work habits

“A New View of Vision”

Science News, Vol. 134, 1988:

The most widely accepted theory about how visual images are processed in the brain is called the receptive field hypothesis. The hypothesis holds that the retina is divided into many fields of vision, and in each of these fields there are “feature detectors” that trigger neurons when specific features are glimpsed. For instance, when a square shape falls on one area of the retina, an array of feature detectors sensitive to a square shape might fire one neuron; when another shape is flashed on the same region of the retina, another array might fire a different neuron. In principle, an image could be built up out of information about the presence of many such basic shapes in receptive fields all across the retina. In 1981, David Hubel and Torsten Wiesel shared the Nobel Prize in physiology and medicine for work done in the 1960’s based on this hypothesis.

Richmond, NIMH, and Optician, NEI, found the receptive field theory had “all sorts of problems.” They decided to start from scratch in testing the patterns seen in the spike train and to approach the problem as engineers, designing a completely new, unbiased testing system.

Richmond explains, “If you see a red apple, the information for red is separated and directed to the form and color areas. But how do you know that it is the apple that is red and not the background? The problem is compounded for complex scenes with, say, identical chairs, one red and one green. You have got to be able to bring that information back together at some point, but how does the brain know which colors go with which objects?”

“Computer engineers have been slow to use the kind of encoding that is the basis for the multiplex filter model,” says Kristof Koch, a computer vision researcher at the California Institute of Technology in Pasadena. “The temporal dimension is totally neglected in [neural] networks.”

The two scientists now want to decipher the neural code itself by finding the actual primary signals the brain uses to make a multiplex signal. The planes they found in the three-dimensional graphs of their data result from breaking the multiplexed signals down to their simplest possible components not to the actual components used by the brain. Optician compares this to looking at a dictionary in a foreign language: “You can see the words are there, but you don’t know what they mean.” What they are looking for now, is a Rosetta stone to show how the neural messages relate to visual perceptions.

USING SOI INDIVIDUALLY:

FIVE CASE STUDIES: DIAGNOSING AND TREATING DYSLEXIA AND LEARNING DISABLITIES

Gerry Shudde

No. 1

J.M. is a five year old who was considered nonverbal. Low achievement test scores indicated he was not ready for first grade. He scored a zero on SOI classification tests and low average in CFU and NFU. Vocabulary was above average when he could point but not say an answer. His weekly schedule was:

30 minutes of perception and sensor-motor integration activities on the Belgau board to develop memory.

10 minutes to listen to and retell short stories read to him.

10 minutes of classification (CFC and EFC).

The difficulty of work was increased as necessary. Post SOI test a year later showed CFC, CFR, CSS, and NFU in the high gifted range. CMU stayed the same and CMS was high normal. His verbal abilities improved to the point where neighbors noticed and commented about his communicating by talking.

J.M. did not need remedial help after 1st grade. The results of the CAT in this three year span is as follows in national percentiles:

	Reading	Language	Math	Word Recognition
Kdg.	14%	15%	49%	24%
1st	55%	38%	47%	61%
2nd	29%	28%	40%	NA

No. 2

G.R. was a good student until the fourth grade. His scores had been high in kindergarten, 1st and 2nd but in the third grade we suspected vision dysfunctions when a sudden drop in ability and self-confidence occurred. (Vision functions began to mature at age 8 to puberty). G.R. failed the fourth grade.

Form A of the SOI showed that he scored below average in fifteen areas. Basic reading abilities were all in the disabling range. His self-image was poor. Arithmetic concepts were good. We worked with him for two years before improved results were seen in achievement tests and class grades. His schedule was:

30 minutes of perception activities with memory modules.

30 minutes of SOI modules of CMU I, II, III, IV, V, CFC-EFC sourcebook classification drills, CMR, CMS, and CFU, Memory drills were used daily. (MFU, MSS, MSU).

It was a year before G.R. could take responsibility for his homework, school materials, cleaning and keeping his room in order. Classroom grades improved following 12 months of remediation.

The results of his CAT test are as follows in the national percentile:

	Reading	Lang.	Math	Total Battery
Kdg.			46%	78%
1st	73%		48%	63%
2nd	46%	58%	76%	55%
3rd	9%	12%	12%	11%
4th	12%	8%	20%	13%
5th	25%	66%	37%	38%

No. 3

C.A. was in 4th grade in 1984. His pre SOI L.A. showed ten abilities below average and one ability in the gifted range. Work habits were poor and he could not stay on task. We referred him for vision examination and he received lens. After a year of work he scored only four areas below average and had twelve abilities in the gifted and superior range. After a year of work he scored only four areas below average and had twelve abilities in the gifted and superior range. His therapy was one hour per week. His schedule was:

30 minutes of perception activities with memory modules.

10 minutes NFU sheets and chalkboard O & ∏. Also graph art was used for this ability.

20 minutes of S.O.I. modules CSS, ESS, NST, CFC, ESC, CMR, CMS, CMU III, IV, V.

C.A.'s Metropolitan Achievement test scores rose in one year. The results are as follow in national percentile:

	Reading	Lang.	Math	Sci.	Soc. S.	Total
4th	58%	28%	44%	38%	58%	46%
5th	88%	90%	70%	92%	80%	90%

No. 4

T.C. had extreme trouble reading in the second grade. The vision predictors on the SOI L.A. indicated poor vision function. She was referred for examination and did need therapy.

Prior to therapy, she was disabled in CMU, CMR, CMS, and limited in NST. She was highly motivated to improve, and we began remediation in February of the second grade.

30 minutes of perception activities with memory modules.

30 minutes of modules. CMU I, II, III, IV, and V, CMR and CMS.

Her achievement test scores are as follows in the national percentile:

	Reading	Lang.	Math	Total
2nd	14%	24%	48%	22%
3rd	36%	34%	67%	42%
4th	27%	55%	61%	41%

No. 5

J.V. (7th grade) had been in remedial reading for two years but did not show improvement. His SOI L.A. form A showed 9 gifted or superior areas but limited in 7 areas; CFU, CMR, NST, EFU, NFU, EFC. J.V. was athletically inclined, but failed to progress in sports. He was diagnosed as visually impaired and received vision therapy.

His schedule was:

25 minutes of perception activities with 5 minutes on the balance beam.

10 minutes of chalkboard activities on the balance board with increased angles on the board.

20 minutes of modules, CMU III, IV and V, CMR, CMS, NFU, NST I & II, CFU, EFU, EFC.

10 minutes was substituted with CSS, ESS, NSS instead of perception work after 5 months.

The results of his test are as follows in the national percentile:

	Reading	Lang.	Math	Total
6th	32%	56%	50%	44%
7th	66%	58%	86%	70%