Theme Editor’s Summary

CONTROVERSIAL THERAPIES

by Larry B. Silver, M.D.

Learning disabilities are neurologically based and must be seen as a lifetime disability. The child with a learning disability will become an adolescent with a learning disability, who will become an adult with a learning disability. Learning disabilities are also life disabilities. The same areas of neurological dysfunction that interfere with learning interfere with life skills, sports, activities, family and peer relationships. At this time, treatment involves remediation and teaching compensatory strategies along with appropriate accommodations. The earlier the interventions, the greater likelihood of improvement. Parents learn that their son or daughter may need help over many years, possibly throughout their education.

Understandably, parents of individuals with learning disabilities are susceptible to anyone offering a treatment approach that will “cure” or “correct” the problems, often in a brief period of time. Thus, even though some approaches for helping are considered by professionals as controversial, the people offering these therapies are usually quite busy.

The process from initial concept to acceptance of a particular treatment approach is slow and can take years. Research must support a particular approach and the results should be published in a peer-reviewed journal. Often replication studies are undertaken. Then there is the process of publicizing best practices and incorporating these approaches into standards of care. When research data are not available and the approach is based on an individual’s beliefs and writings, information on such treatment approaches are usually found in a popular book, the newspapers, lay magazines, or in discussions on television shows. Often parents hear of such approaches before professionals.

This issue of Perspectives focuses on these controversial approaches to treatment. Hopefully, by providing professionals and parents with information that might not be easily assessable to them, it will be easier not only to assess the validity of such approaches but to respond to questions or demands from parents.

A treatment approach can be considered controversial if: 1) the approach is proposed to the public before any research is available or before preliminary research has been replicated; 2) the proposed approach goes beyond what research data supports; or, 3) the approach is used in an isolated way when a multimodal assessment and treatment approach is needed.

Controversial therapies have been with us throughout history, from “special formulas that can cure bunions, stomachaches, and loss of hair” to ground up apricot pits that were reported to cure cancer. Professionals who study controversial therapies comment on specific themes that exist for most, whether for cancer or for learning disabilities:

1. The individual who publicizes and pushes for the treatment claims to have research to prove what is being stated. Yet, no research is provided or what is provided is not from a peer-reviewed journal.

continued on page 4
Controversial Therapies
continued from cover

2. The individual stresses that “traditional medicine or psychology” is too conservative and refuses to accept anything that does not fit what they already know.

3. Claims for cure or improvement are made with literature provided by that individual to prove these claims. One is left to wonder why, if what is claimed is accurate, the treatment is not used by most professionals in the field.

4. The person seems to be saying, “I’m a genius or I’m not.” Those who advance controversial therapies seem to “dare” the public to prove them wrong.

The papers in this issue will focus on many of the controversial approaches for treating learning disabilities. Research on etiology that might be of significance to the field but that has not yet resulted in concepts of treatment will not be reviewed. Controversial approaches for treating a related but separate disorder, attention deficit hyperactivity disorder are discussed peripherally.

I find it hard to keep up with the many proposed treatments for learning disabilities. There is a consistent pattern with these controversial therapies: One person or organization claims to have a “cure.” This person usually references his or her own studies, often found in their own publications. No scientific research data are cited. These individuals accuse any professional who questions their results with being “blind” to anything that might differ from tradition. It is not uncommon to find that these treatments are costly, payments might have to be made before treatment begins, and parents are made to feel guilty if they deprive their son or daughter of this “cure.” Not infrequently there is an “escape clause.” Parents are told that they came too late; they did not follow the full instructions; or, that the child needs another round of treatment.

Just as I finished this special section for Perspectives, I received a package of material on correcting the total body’s magnetism to treat many disorders, including Attention Deficit Hyperactivity Disorder and learning disabilities. I glance at the material sent. There are special bed sheets and inserts for shoes. The material appears to be all personal publications and claims from individuals that the treatment works. I glance further and find no supporting data. Then, there is the order form to purchase the materials.

I guess that as long as parents are desperate to help their child to be successful there will be a market for such claimed cures. To the professional, I say be informed and use good judgment when suggesting a form of treatment. To parents, I say, “Let the buyer beware.” Don’t subject your child to something without knowing as much as possible about the proposed treatment.

About the Theme Editor

Dr. Larry Silver, a Child and Adolescent Psychiatrist, is in private practice in the Washington, D.C. area. He is Clinical Professor of Psychiatry at Georgetown University Medical Center. He has served as Acting Director and Deputy Director of the National Institute of Mental Health, Director of the Division of Child, and Adolescent Psychiatry at the Robert Wood Johnson School of Medicine. He has more than 150 publications, including The Misunderstood Child: A Guide for Parents of Children with LD; Attention Deficit Hyperactivity Disorder: A Guide for Parents; Attention Deficit Hyperactivity Disorder: A Guide for Professionals. Dr. Silver’s Advice to Parents on Attention Deficit Hyperactivity Disorder.

Dr. Silver is active with the Learning Disabilities Association of America, currently serving as President. He has received numerous awards, including the IDA award for outstanding leadership in the field of LD and the American Academy of Child & Adolescent Psychiatry’s Herman Liepmann Achievement Award for his contributions to the study and treatment of LD.
AUDITORY PROCESSING: EVALUATION OF FAST FORWARD® FOR CHILDREN WITH DYSLEXIA

by Paul Macaruso, Ph.D. and Pamela E. Hook, Ph.D.

Auditory processing is critical to the development of language skills and learning skills. Excellent research on phonological awareness and on auditory processing are reviewed in this article. Over recent years there have been several controversial treatment approaches. Two approaches became popular in this country in the early 1990s. With both, the only information provided was in flyers and other advertisements offered by the provider. No research was noted. Many parents read the flyers and started their son or daughter in these treatments, usually at a not inexpensive fee.

One treatment is called auditory integration training and is based on the theory of Guy Bernard, a physician in France. The second is the listening training program based on the theory of Alfred A. Tornatis, also a physician in France. The first approach uses amplified sound and the second method focuses on proposed sensory hearing.

With both, the only information available came from flyers and other materials provided by the centers that provided such treatments. When asked for research references, none were provided. (A familiar theme in many of the articles in this special issue of Perspectives) Thus, my brief review of each is based on the materials sent to me.

Dr. Bernard’s auditory integration training is based on the theory that some individuals have auditory perception defects such that they hear distortions of sound, have unusually sensitive hearing, or have un-even patterns of auditory sensitivity that are within the range of normal hearing yet are uncomfortable. Auditory testing is done with a device called an “audiometer” to determine at what frequencies a person has hyperacusis or hypoacusis hearing. On the basis of this audiogram, various compact disks are selected containing music determined to be the best for the person receiving the training. The music is played through the audiometer, which has been set based on the individual’s audiogram to amplify some frequencies and to filter out other frequencies of the sound spectrum. During twenty, half-hour sessions (two per day), the frequencies that are hyperacusis and painful are filtered out. This approach is described as similar to the procedure of immobilizing painful joints or muscles until they heal. The flyers note that after the treatment, the audiometric curve tends to flatten and hearing is normalized. It is proposed that this treatment allows the auditory cortex to reorganize. In addition, the exercise is said to strengthen the muscles that control the three bones of the middle ear, preventing sensory overload.

The Tornatis method is based on the theory that some children lose or turn off their ability to listen to certain parts of the normal sound spectrum. Therefore, they do not effectively absorb, comprehend, and interpret what they hear. Thus, these children’s normal language development and their relationship to the world around themselves can be affected. The intervention is done through a controlled process of auditory stimulation using sophisticated electronic equipment and special control interviews with the child and the parents. Treatment typically involves a three-week set of sessions followed by a six-week rest period and then another three-week session. During the sessions, the child listens to filtered music and other sounds to “help the ear focus on the sounds he hears.” In the later phases of treatment, the child is to repeat what is heard through earpieces in order to strengthen the now sensitized ear.

Maybe because of the lack of success, neither of these interventions are popular at this time in this country. But, there is another auditory processing treatment program that is based on research and published findings. An intervention based on these research data is actively used both as a way of collecting more research data and as a treatment. Thus, Fast Forward, unlike the above noted approaches, is based on a published research findings by a respected researcher. Ongoing studies continue to analyze both the theory and the success of the intervention. What have we learned? The following article will review this area of study and the applied intervention model.

Larry B. Silver, M.D.

Numerous research studies have shown that children with developmental dyslexia often present with an underlying phonological processing disorder (Lyon, 1995; Share & Stanovich, 1995). Problems in phonological processing are reported to occur both in low-level perceptual identification/discrimination of speech sounds, and at higher levels related to phonemic awareness (e.g., segmenting, blending and manipulating speech sounds). These higher order phonological processing skills are particularly important in learning to read an alphabetic orthography where sounds map on to print in a systematic way (Brady, 1997). Some have suggested that the weaknesses in phonological processing seen in children with dyslexia reflect a more general auditory processing disturbance (e.g., Farmer & Klein, 1995). Specifically, the claim is made that these children have difficulty processing the temporal characteristics of rapidly changing acoustic signals of any sort, including speech sounds and non-verbal auditory signals (Tallal, Miller, Jenkins & Merzenich, 1997). According to Tallal (1980), disturbances in auditory processing may contribute not only to problems in speech perception but also to weaknesses in developing phonemic awareness and learning and applying phonic reading strategies as seen in children with dyslexia.

Much of the evidence for a general auditory processing disorder in children with dyslexia comes from studies that ask children to make temporal order judgments for non-verbal tones presented at rapid rates. For example, Tallal (1980) found that children with dyslexia have difficulty determining the order of two computer-generated non-speech tones

continued on page 6
presented at short interstimulus intervals (around 300 ms or less) but not at longer intervals. A general auditory processing disorder is said to underlie weaknesses seen in children with dyslexia in discriminating among consonant-vowel pairs (e.g., /ba/ and /da/) that mainly differ in the first 40 ms of the speech signal (Reed, 1989). Similar disturbances in auditory processing are reported in children with a broad range of language-learning difficulties (Tallal et al., 1997).

Based on these findings, computer programs were developed to improve the auditory processing skills of children with spoken language disorders. For instance, in a pair of studies published in Science (Merzenich et al., 1996; Tallal et al., 1996), children with spoken language disorders participated in an intensive training program (more than 20 hours per week for four weeks) in which they listened to stories and engaged in language activities using acoustically modified speech. Consonant segments were elongated and made louder than the rest of the speech signal. The language activities targeted aspects of morphology, syntax and semantics. Modifications to the speech signal were designed to enhance speech perception in the context of the language activities. Other activities included audiovisual games requiring temporal order judgments for nonverbal tones and syllables. (e.g., Does “beh” occur first or second in “deh beh”?) After the training program, children showed significant improvements on tests of auditory temporal processing, speech discrimination, and on a variety of receptive language measures. Children presented with modified speech showed greater gains than a control group of children who participated in the same language activities but with natural, unmodified speech.

Following the Science articles, Scientific Learning Corporation began publishing Fast ForWord computer programs (now called Fast ForWord Language) for children with language disorders. Although not originally designed for children with dyslexia, Scientific Learning Corporation claims on its website that Fast ForWord (FFW) improves language and reading skills (Scientific Learning Corporation, 2001). Similar claims have appeared in the popular press. For instance, Newsweek (January 1, 2000) quotes Tallal as stating that “… 90 percent of the kids who complete the program made 1.5 to two years of progress in reading skills (p. 64).” Based on the arguments of Tallal (1980), the programs should help facilitate reading acquisition because they sharpen phonological processing skills (including speech perception and phonemic awareness) which in turn benefit acquisition of phonic word attack strategies.

Contrary to previous reports, there has been a recent surge of studies suggesting that many children with dyslexia do not, in fact, show evidence of a general auditory processing disorder (Snowling, 2001). For instance, Nettelrodt (1999) examined a group of poor readers who had typical phonological processing problems including limitations in phonemic awareness and verbal working memory. However, the poor readers did not differ from normal readers in their ability to recall the temporal sequences of nonsense words even when presented at brief, 20 ms interstimulus intervals. The groups also did not differ in their ability to discriminate between syllable pairs (e.g., /da/ versus /ta/) that are distinguished by rapidly changing consonant transitions in the speech signal. Similar results were obtained by Mody, Studdert-Kennedy and Brady (1997) for the phonetic distinction between /ba/ and /da/. These findings raise questions as to whether the artificially slowed speech employed in FFW actually alters the way children process auditory information as claimed by Scientific Learning Corporation. Perhaps increases awareness of and attention to speech at the level of the phome.

In a recent study, we asked a group of children with dyslexia to participate in the FFW programs over the summer (Hook, Macaruso & Jones, in press). These programs are time intensive and involve children working at the computer for 100 minutes a day for a period of six to eight weeks. The children in our study were selected to have substantial weaknesses in phonemic awareness and word identification skills but adequate receptive language skills. Some difficulties were apparent in syntax, which is a relatively common pattern seen in developmental dyslexia (e.g., Smith, Macaruso, Shankweiler & Crain, 1989). The FFW group showed significant gains in phonemic awareness and in the spoken language areas of speaking and syntax immediately after treatment. However, gains made in spoken language were not
maintained over two years, and progress in phonemic awareness and reading mirrored gains made over two years by a longitudinal control group that did not participate in FFW. Thus, benefits of participation in FFW for reading and spoken language skills were minimal. Additionally, the FFW children were compared to a matched group of children who received Orton-Gillingham (OG) training one hour per day in a five week summer program. Both groups showed significant improvement immediately after treatment in phonemic awareness; however, only the OG group made significant progress in reading (i.e., word attack skills).

Overall, we found that participation in the FFW programs did not lead to any advantages in reading and spoken language compared to children receiving similar kinds of reading instruction (without FFW). Many established methods of reading instruction (such as Orton Gillingham) have had success in teaching children with dyslexia phonemic awareness and word attack skills. To recommend FFW as an alternative program, one needs to show that it contributes to stronger gains than established programs (Brady, Scarborough & Shankweiler, 1996). Taking into account the expense, effort and time commitment associated with the FFW program, it would seem worthwhile to participate in the program only if it leads to substantial improvements over other methods.

As we discovered, a main drawback for researchers attempting to evaluate the effectiveness of FFW is its lack of flexibility. Because FFW is sold and administered as a complete program, it is not possible to determine which specific aspects of the programs are beneficial for improving particular language skills. For instance, it is not possible to determine whether temporal order judgments for tones have any impact on phoneme awareness skills, or whether improvements on sentence comprehension tasks are tied to practice with language activities that emphasize syntactic or semantic processing. As it stands now the relative role of acoustically modified speech (e.g., lengthening the consonant transitions) in enhancing spoken language (and perhaps reading) skills in children with dyslexia cannot be established. It is certainly possible that the intensive nature of the FFW language activities combined with attention-grabbing altered speech and audiovisual games contributed to the immediate gains made by children in our study in the areas of spoken language skills including phonemic awareness. In any event, research has shown that reading programs which target phoneme awareness skills in isolation are likely not to be as effective as more traditional programs that combine work on phonemic awareness with specific training in sound/symbol correspondences and word identification skills (Ball & Blachman, 1991).

Overall, we found that participation in the FFW programs did not lead to any advantages in reading and spoken language compared to children receiving similar kinds of reading instruction (without FFW).

Another serious issue to consider in evaluating FFW is whether it is, in fact, well-suited as a form of treatment for children with reading difficulties. Although possibly effective in helping to improve spoken language skills in children with language disorders, FFW may not be particularly effective in remediation of reading difficulties related to word identification. As Miller and Tallal (1996) point out, dyslexia is often classified as a language-based learning disorder and that children with dyslexia usually have some concomitant oral language problems. Thus, they argue that children with dyslexia are likely to benefit from the types of programs found in FFW. However, Tallal et al. (1997) acknowledge that some children with dyslexia do not have significant disturbances in oral language. For instance, Tallal and Stark (1992) identified a subgroup of children with dyslexia who did not show receptive and expressive language difficulties. These children also did not display any weaknesses on a variety of verbal and non-verbal temporal processing tasks. In fact, there is a growing body of evidence (discussed above) indicating that many children with dyslexia do not show signs of general auditory processing deficits.

Therefore, caution should be taken in selecting which children might potentially benefit from participation in the FFW programs. Children who show significant limitations in phonemic awareness combined with more extensive spoken language disturbances than the children in our study might benefit from engaging in the FFW activities. Improvements in phonemic awareness are likely to occur along with perhaps some gains in reading comprehension related to enhancements in underlying spoken language skills. Whether there will be any progress in the areas of word attack skills and word identification remains to be seen.

Recently Scientific Learning Corporation has developed Fast ForWord Language to Reading which is designed to target reading skills more directly. The FFW Language to Reading programs intensify the consonant transitions but do not lengthen them. Because of this, participation in FFW Language to Reading is recommended prior to FFW Language to Reading. The latter programs contain activities tied directly to training sound/symbol correspondences. At this point the efficacy of FFW Language to Reading needs to be evaluated. In addition, it should be determined whether children experience greater gains in reading skills from participation in both FFW Language and FFW Language to Reading than from participation in FFW Language to Reading alone.
To conclude, we would like to highlight some precautions one should consider when promoting any treatment program for dyslexia. First, the program should be developed in the context of an empirically-tested theory of the processing impairments underlying the disorder. Care should be taken to specify any limitations with regards to rigorous outcomes research and, whenever possible, direct comparisons should be made to programs already validated as effective in treating the disorder. Additionally, it should be possible to reach some conclusions concerning which components of the program are truly beneficial in treating specific aspects of the disorder. Finally, it should be determined for which subgroups of individuals (with similar underlying impairments) the program is best suited.

References
Newswise (January 1, 2000). Rewiring your gray matter (pp. 63-65).

Paul Macaruso, Ph.D. is an Assistant Professor in the Psychology Department at the Community College of Rhode Island. He is also an Adjunct Faculty member at the MGH Institute of Health Professions and a Research Scientist affiliated with Haskins Laboratories. His research interests are in the areas of developmental disorders of reading and number processing. He also serves as a consultant in research design and statistical analyses.

Pamela E. Hook, Ph.D. is an Associate Professor in Communication Sciences and Disorders Program at the MGH Institute of Health Professions, a graduate level training program in speech/language pathology and reading. Her research interests include the relationship between oral and written language, auditory processing and nonverbal learning disabilities. She has been a consultant to schools, designing language arts curriculum, training teachers and working with parents. She also design computer software to teach phonemic awareness and reading skills.
The Davis Dyslexia Correction Methods

The theoretical base for the Davis Dyslexia Correction methods of diagnosis and treatment of dyslexia was developed in California by Ronald Davis. He corrected his own dyslexia through self-discovery when he was an adult. He was self-diagnosed as having dyslexia, claims that he was regarded as retarded as a child, and suggests that with current nomenclature he may have been thought of as a child with autism.

The Davis system includes primarily two components. One involves orientation and disorientation and the other symbol mastery. “Orientation corrects perception. Symbol mastery corrects dyslexia” (Davis, 1997, p. 116).

Dyslexia, defined in his book, The Gift of Dyslexia, is “a type of disorientation caused by natural cognitive ability that can replace normal sensory perceptions with conceptualizations; reading, writing, speaking or directional difficulties that stem from distortions triggered by confusions regarding symbols” (Davis, 1997, p. 250). Language derives from symbols. “Symbols are composed of three parts: what the symbol sounds like; what the symbol means; and, what the symbol looks like” (Davis, 1997, p. 10). Problems with reading, spelling, math, and attention are regarded by Mr. Davis as being dyslexia.

Orientation/Disorientation

Much of his work, as described in his book, is based on the view of disorientation. According to the theory, when disorientation occurs, the brain sees things moving that really are not. This disorientation is the same kind of disorientation that occurs when we sit motionless in a car and a car moves along side. We experience an impression of moving. When a person with dyslexia looks at print, similar disorientation occurs, according to Davis.

The theory is that “dyslexia is a result of perceptual talent” (Davis, 1997, p. 6). The talent is a strength that leads to creativity. Verbal and nonverbal conceptualizations are regarded as the two kinds of thinking. Verbal conceptualization is linear and results from “thinking with the sounds of words” (Davis, 1997, p. 9). A person “composes mental sentences one word at a time” (Davis, 1997, p. 9) at the same speed as speech, which is about 150 words a minute. In contrast, according to his theory, individuals with dyslexia think in pictures and “picture thinking is estimated to be, overall, 400 to 2000 times faster than verbal thinking” (Davis, 1997, p. 98). Picture thinking is regarded as evolutionary and superior to verbal conceptualization because it is faster and more complex. All individuals with dyslexia, according to Mr. Davis, function with intuitive leaps in managing nonverbal material.

Genius results from being both dyslexic and talented in art, music, and athletics. He claims that individuals with dyslexia have the same kinds of minds as geniuses: da Vinci, Edison, Einstein, Cher (sic), Walt Disney (sic), and Whoopi Goldberg (sic) and that, “... their genius didn’t occur in spite of their dyslexia, but because of it” (Davis, 1997, p. 3).

The “mind’s eye” is the “mind’s epicenter of perception” (Davis, 1997, p. 128). This is “that which views one’s mental images. The mind’s eye is what looks at imagination” (Davis, 1997, p.
251). An individual must first have a perceptual ability assessment where he or she is led through steps of visualizing a common object from various perspectives using his “mind’s eye.” Before beginning the orientation counseling, it must be determined that the person can re-visualize an object. If he or she cannot, then the orientation program is not done.

Once it has been determined that the individual can move the mind’s eye through the steps of the assessment, then Orientation Counseling is done. Through simple drawings of the individual’s head, he or she is led to visualize objects in and from various positions. Drawings are used to have the person understand what is to be done. Exercises are completed to move the mind’s eye, which only the individual can do. Such moving is contrasted to the coach moving the person’s arm. Voluntarily controlling the mind’s eye is the goal of the orientation sessions. After one hour of orientation counseling, some teenagers are purported to improve as much as eight grade levels in reading (Davis, 1997, p. 150). When persons confront disorientation in reading or other tasks, they are encouraged to again return to their own orientation point. Fine tuning the “mind’s eye” makes sure that the individual can easily find the optimum orientation place where he or she experiences a sense of comfort.

Symbol Mastery

For the Basic Symbol Mastery, the child (or adult) constructs the upper case alphabet from clay with a printed model present. He or she matches the clay model to the printed letter. The student must be pleased with how the clay letters look. Then tasks are done of naming the letters from A to Z and from Z to A. The coach or helper says letter names and the person points to the clay model. Twenty-two exercises are done. Then the tasks are repeated with the lower case alphabet.

Exercises are also done with making the punctuation marks from clay. The student is encouraged to learn the names and meanings of the punctuation marks and to find the marks in text. Then the marks can be used successfully when students read text.

Continuing with the Symbol Mastery, words are used. When a word cannot be read, it is looked up in a dictionary and is used in sentences. A clay model is made to illustrate the word. A special set of “trigger words,” essentially the Dolch List with additional inflected forms of those words added, are regarded as words that trigger dyslexic symptoms. So, again clay constructions are used. For words, such as “the” and “a,” students construct scenes or persons with clay arranged in certain positions. The constructions allow individuals to relate these images to the words, thus fixing them in memory. According to Davis, people with dyslexia do not have trouble reading words such as elephant because they see such words as pictures in their minds. They do have trouble with words that some of us describe as the function words of the language (prepositions, conjunctions, articles, forms of be, etc.).

“To train the student in left-right eye movement in reading” and to “enable the student to recognize letter groups as words,” Spell-Reading is used (Davis, 1997, p. 217). The students name each letter. The coach or helper then says the word. Words can be presented singly or in text. When they are embedded in text, paper or cards can be used to block all but the stimulus word on which the student should focus.

Conclusion

There does not appear to be literature to support the orientation and disorientation theories. As Davis says, the exercises can do no harm except making one a little dizzy. Available reports at this time are largely anecdotal. Research is being done with the “Davis Learning Strategies.” The results are to appear in the Reading Improvement Journal and on a web site.

This research is to be done in some classrooms, K - 3. Some will use the Davis program and others will not. Objective standardized tests will be used to study the group pre- and post-program. The concern with this research design is that the program is a developmental one and will be used before children have easily identified learning deficits. There are too many variables to compare those children using the Davis program and those using other teaching approaches. Further, according to reports from the Davis group, each person with dyslexia is different.

In Davis’ theory, the individuals considered as having dyslexia represent a wide range of deficits and the definitions go beyond generally recognized classifications. Although some mention is made of children needing to know letters before work with the Davis methods, a phonological base for reading is ignored. Widespread research supports the notion that dyslexia results from children having difficulty in associating printed letters from the sounds of speech. Understanding and using speech are important for learning to read. The Davis methods rely mostly on visual perceptual components of the learning process for reading, spelling, handwriting, and math. Actual teaching to read or even teaching to learn seems absent from the Davis methods.

Reference


Regina Cicci, Ph.D., has worked at the University of Maryland Medical Center in Baltimore, Maryland in otolaryngology, pediatrics and child psychiatry. Her interests are with children and adults and their families when one member has a language disorder or learning disability. She is an award winning author of a book titled What’s Wrong With Me? Learning Disabilities at Home and School and has written articles about aphasia, dyslexia, written language disorders, and traumatic brain injury. Dr. Cicci has served on the IDA Board of Directors and is currently a member of the Council of Advisors.
TINTED LENSES

by Eugene M. Helveston, M.D.

Theme Editor's Note

In 1983, Helen Irlen proposed the treatment of certain types of learning disabilities, specifically certain types of dyslexia, with tinted colored lenses (Irlen, 1988). She did not publish a study on her concept or treatment approach. This 1983 reference was a paper she presented at the Annual Meeting of the American Psychological Association. In this paper, she proposed a cause for specific types of dyslexia and a treatment based on this cause. No research, no data, no anything. She was simply a person presenting a paper to an audience.

She discussed a group of problems that she referred to as “scotopic sensitivity syndrome.” This concept will be discussed in detail in Dr. Helveston's paper. She proposes that treatment with tinted lenses improves the impact of this “syndrome” and improves reading.

Shortly after this presentation, she appeared on a major television show. A young teenager could not read. He tried the lenses (and colored templates) and his reading improved. With this publicity, her popularity increased dramatically before any studies verified the concept or validated the treatment. Soon, franchised facilities opened throughout the country offering testing and treatment. Since 1983, several researchers have tried to study her theory and her treatment. To date, the results are not supportive of either.

Dr. Helveston will discuss the theory and approach to treatment. The reason this Editor believes that this intervention meets the criteria for a controversial therapy is that she rapidly developed a commercial system of diagnosing and treating individuals with dyslexia using her approach before there was even preliminary findings to support her concept or treatment.

Reference:

Larry B. Silver, M.D.

Scotopic Sensitivity Syndrome and Tinted Lenses

Few medically related conditions have launched more speculation as to cause or have spawned more diversity in recommendations for treatment than the learning-reading deficit, dyslexia. Prominent in an eclectic group of proposed treatments is the use of tinted lenses. These lenses are offered to treat a condition called scotopic sensitivity syndrome (Irlen, 1983). This syndrome is said to be a visual defect which, according to its discoverer, is, “related to difficulties with light source, glare, luminance, wave length, and black/white contrast” (Irlen, 1983). These difficulties are said by Irlen to lead to reading problems that can be alleviated by the use of colored lenses that are, “not just the random selection of color but individualized color selection based on standardized diagnostic procedures” (Irlen, 1983).

Irlen reported six areas of difficulty characteristic of this syndrome: 1) photophobia; 2) eye strain; 3) poor visual resolution; 4) a reduced span of focus; 5) impaired depth perception; and, 6) poor sustained focus. She noted that this syndrome was seen in some individuals with dyslexia.

The diagnostic procedures for assessing scotopic sensitivity syndrome begins with a detailed history, including a series of direct questions to the client asking if he or she experiences any of the following: eye fatigue, blinking, blurred vision, difficulty with concentration, skipping words, words “running off the page,” etc. After these questions, the individual is asked a series of questions regarding general health problems. The individual is then asked to respond to certain visual tasks. These include interpretation of figure-ground relationships in several geometric figures, reading selected printed material for content, judgment about relative positioning of figures such as musical notes, and interpretation of a series of stylized figures. Results of these tests are used to determine if an individual has scotopic sensitivity syndrome.

Two of the staff from my department underwent training to become certified Irlen screeners. They were told that in order to maintain the program, 50 percent of those screened should be diagnosed as having scotopic sensitivity syndrome. This incidence, 50 percent, was also found in two screenings reported in a recent Irlen Institute International newsletter (Irlen, 2001).

If the individual is screened to have scotopic sensitivity syndrome, he or she is asked to read text through a series of tinted overlays used singly or in combination. There are seven tints ranging from yellow through blue to green (Helveston, 1990). After using these overlays, the client is asked to select the tint that affords the most comfortable vision. The results of this screening examination are then interpreted at an Irlen Center that is separate from the site where the screening is done. It is at this Center that the final tint is selected. This selection may not be the same tint selected by the client because the final tint can be determined only after analysis of the entire evaluation. Ultimately, the tinted glasses are fabricated at the Irlen Institute in Long Beach, California and sent to the client. After receiving the tinted glasses, clients are urged to wear them as much as possible. Clients are urged to undergo reevaluation after wearing continued on page 43
Tinted Lenses
continued from page 12.

Tinted glasses for a specific period on the basis that the tint they require may change.

In addition to helping individuals read better, tinted lenses have been credited by Irlen with helping individuals suffering from “light sensitivity, discomfort, and distortions [associated with] a wide variety of different problems” (Irlen, 2001). Some of these widely diverse problems said to be treated successfully with tinted lenses include head injuries, concussions, whiplash, perceptual problems, neurologic impairment, memory loss, language deficits, headaches (including migraine), autoimmune disease, fibromyalgia, macular degeneration, cataracts, retinitis pigmentosa, complications from LASIK and radial keratotomy, depression, chronic anxiety, and others (Irlen, 2001). A further claim is that a number of incarcerated individuals and delinquent children suffer from scotopic sensitivity syndrome and would benefit from treatment with tinted lenses. (A similar idea was considered and then discounted in the late nineteenth century when some ophthalmologists attempted to establish a cause and effect relationship between eye muscle imbalance and criminality.)

The perspective afforded by observing the evolution of the concept of scotopic sensitivity syndrome and the treatment with tinted lenses leads to the conclusion that this effort has resulted in classic group behavior. The concept has a strong charismatic personality as originator and sustained leader. The supporting evidence is almost entirely anecdotal. The syndrome is becoming associated with an even more diverse array of maladies, tinted lenses now being offered for relief of problems far removed from reading difficulty. The procedure for determining the specific tint has not been divulged and remains a type of “trade secret.” Finally, a financially rewarding franchise activity is at the basis of the Irlen Institute activity.

Traditional diagnostic and treatment methods have not yet offered sufficient answers for the alleviation of reading problems/dyslexia. This inability to find an answer to reading difficulties does not justify a scientifically unproven activity as represented by the use of tinted lenses to treat an unproven syndrome, the scotopic sensitivity syndrome (Helveston, 1990).

References:


Dr. Eugene McGillis Helveston is an Ophthalmologist and Founder of the Pediatric Ophthalmology and Strabismus Service at the Indiana University School of Medicine where he is Professor Emeritus. He wrote “Surgical Management of Strabismus,” co-authored “Pediatric Ophthalmology Practice” and “Strabismus: A Decision Making Approach.” Dr. Helveston is a founding member and Past President of the American Association of Pediatric Ophthalmology and Strabismus, past secretary/treasurer of the International Strabismological Association, and was presented a lifetime achievement award by the American Academy of Ophthalmology. His papers have been published widely in ophthalmic journals since 1967. Dr. Helveston is currently directing a volunteer telemedicine ophthalmic consulting program for under-served areas, and publishing a bi-monthly lecture “The Strabismus Minute” available on the internet.

Permission To Copy From PERSPECTIVES

Any IDA member or friend may copy or reprint articles appearing in Perspectives provided the proper credit is given in the following manner: “Reprinted with permission from The International Dyslexia Association quarterly newsletter Perspectives, date/issue number/page number/author.” Articles must be copied/reprinted in their entirety, no edits, unless specific permission has been granted. Articles cannot be reprinted for the purpose of resale.

IDA Policy for Extra Copies of Perspectives

• IDA members may order up to five extra copies of Perspectives at no charge, and without postage fees. More than five copies—up to 50—postage will be charged.

• Non-members will be charged $3.00 per issue, up to 20, without postage fees. More than 20 copies, the cost per issue will be $2.00 plus postage.
OPTOMETRIC VISUAL TRAINING

by Marshall Keys, M.D.

Theme Editor’s Note

Optometric Visual Training is a popular treatment approach for learning disabilities. However, there is no consensus on the theory or the clinical value of developmental optometric visual training for this disorder. The challenges and disagreements are often very public between optometrists who believe that this treatment approach does not work and should not be used, and many optometrists who believe that it is effective.

Both groups of professionals would agree that when evaluating a child or adolescent with learning disabilities, it is critical to clarify if there are any refractive errors, strabismus, or eye muscle tracking and pursuit difficulties. The optometrists would then consider additional education as the treatment of choice. Many optometrists would recommend optometric visual training as an appropriate treatment. The controversy relates to both the theory and the benefits from treatment. Reading is a complex task involving perception and central language processing. Each is considered to be a brain process and not a function of the eye.

Optometric visual training includes eye exercises to improve smooth pursuit, saccadic eye movements, and binocular control tasks. Often, specific glasses are prescribed with prisms to improve convergence and/or to provide magnification to enlarge the letters on the page. Core to this approach is the treatment of convergence insufficiency, hyperopia, modularity disorders, and related disorders. Ophthalmologists challenge the theory and the treatment.

Since this issue focuses on the controversial aspects of this intervention, I invited Dr. Marshall Keys, a pediatric ophthalmologist, to review the areas of controversy.

Larry R. Silver, M.D.

When a child is first discovered to have difficulties reading, it seems logical for parents and teachers to assume that there must be something wrong with the child’s eyes. Indeed, early researchers measured eye movements of individuals with reading disabilities and found that irregular motions and hesitations would frequently interrupt their eye movements across a page of text. Conclusions from these eye movement studies spawned a whole era of ocular and eye movement treatments for reading disabilities. I believe that practitioners of vision training ignored the fact that the eye movements of even skilled readers will become irregular or hesitate when the reader is stumped by a challenging word (e.g., dysdiadochokinesia). Concepts like “controlled clinical study” or “statistics” were ignored and overwhelmed by anecdotal reports and the raves of excited parents. Unfortunately, in spite of the lack of research findings and statistical support, vision training is still popular.

The role of the eyes in reading is to focus and to transmit retinal images along visual pathways to the brain. It is the brain that interprets or decodes visual stimuli (Helveston et al., 1985). Eye defects do not cause letter reversals, transpositions, or defective phonemic analysis. Although eye defects do not cause dyslexia, it is worth reviewing eye disorders that may contribute to reading difficulties. If these disorders are identified, they should be treated.

The visual system should routinely be evaluated to assure that the eyes are not contributing to a child’s learning difficulties. Evaluation may reveal treatable conditions such as an inflammatory disease (iritis, keratitis, uveitis), congenital or acquired structural defects (cataracts, glaucoma, tumors), and other problems to be discussed below. Children with untreatable disorders (optic atrophy, retinal disease) may benefit from the use of optical aids and special placement in the classroom.

Many readers of this paper have experienced difficulties focusing on near print after the age of 40. Accommodation, the eye process of near focusing, is more difficult with age and can be assisted with reading glasses or bifocals. Weakness of accommodation in childhood is rather rare, but can occur and requires optical treatment. Refractive errors (myopia, hyperopia, and astigmatism) are common in childhood and require optical correction with glasses or contact lenses in approximately 10 percent of children in the one-to-twelve year age group.

Eye movement disorders can interfere with efficient reading. While focusing at near, the eyes also converge towards the nose so that both eyes are simultaneously pointed toward the text. An abnormal mechanism may cause double or blurred vision while viewing close objects. A very small percentage of the school age population has true convergence difficulties and few of the patients with convergence problems complain of reading difficulties. Nevertheless, children with reading disabilities that demonstrate convergence problems should have appropriate treatment to alleviate any problems that the convergence mechanism may be contributing towards reading discomfort. Treatment may consist of special glasses or convergence eye exercises.

It must be emphasized that convergence exercises are a very specific form of treatment directed toward a specific disorder involving a very minor percentage of children who may or may not have reading problems. It is not a panacea for reading disorders. Generally, youngsters with a wide variety of ocular motor disorders compensate quite well without intervention and have no reading difficulties. Pediatric ophthalmologists routinely see children with significant eye movement syndromes such as strabismus, nystagmus, and

continued on page 15
malignant tumors that have no reading delays. Also, it must be understood that a significant percentage of the population does not have 100 percent eye muscle coordination, yet still fits within the bell-shaped distribution of the normal range of eye control. Conditions that are less than perfect do not necessarily require treatment. Statistical analysis of large populations reveals no increased incidence of ocular problems in children with learning disabilities. Yet, optometric visual training continues to be strongly promoted.

The American Academy of Pediatrics, the American Academy of Ophthalmology, and the American Association for Pediatric Ophthalmology and Strabismus issued a joint organizational statement on this topic (1998). It recommends:

1. All children should have vision screening according to national standards.

2. Any child who cannot pass the recommended vision screening test should be referred to an ophthalmologist who has experience in the care of children.

3. Children with educational problems and normal vision screening should be referred for educational diagnostic evaluation and appropriate special education evaluation and services.

4. Diagnostic and treatment approaches that lack objective, scientifically established efficacy should not be used.

References

Dr. Marshall Keys, a Board Certified Ophthalmologist, has a private practice of Pediatric Ophthalmology in Rockville, Maryland. He is a Clinical Associate Professor of Ophthalmology at Georgetown University and also serves on the attending staff at Children’s National Medical Center in Washington, D.C. Dr. Keys has been selected as a specialist in “Best Doctors in America-Mid Atlantic Region”, “Top Doctors - Washingtonian Magazine”; and “Outstanding Physician Specialists - Washington Checkbook.”

---

The IDA Information & Referral Department is pleased to announce that the audiotape of basic fact sheets (Basic Facts about Dyslexia, Testing for Dyslexia, and Multisensory Teaching) is again available. Each tape is $2.75 plus shipping and handling charges.

Maximum order per person is four audiotapes.

Orders can be placed by calling (410) 296-0232 or by mail using the form below.

Mail to: The International Dyslexia Association
8600 Lasalle Road
Chester Building, Suite #302
Baltimore, Maryland 21286-2044

Name ____________________________  Address ____________________________

Phone ____________________________  Fax ____________________________  E-mail ____________________________

I would like to receive ______ audiotapes at $2.75 per tape, plus total of $2.00 S&H (Maximum: four per order)

Total amount of order $ ________

Check or money order enclosed payable to The International Dyslexia Association

____ Visa  ____ MasterCard  ____ American Express  ____ Discover

Signature _______________  Number _______________  Exp. _______________
INGESTIVE TREATMENTS FOR LEARNING DISORDERS

by L. Eugene Arnold, M.Ed, M.D.

Alternative or complementary or nontraditional treatments refer to treatments other than the established treatments commonly used by traditional physicians and other mainstream professionals for the disorder in question (Arnold, 1994; 1995). Because these often lack convincing controlled evidence, they are sometimes controversial (Silver, 1995). In this article I will focus on a narrow band of the wide spectrum of alternative treatments, those concerned with diet, nutrition, and herbs; that is, ingestible things other than Food and Drug Administration (FDA)-approved drugs. Many published reports do not clearly define the population studied; thus, the boundary between Attention Deficit Hyperactivity Disorder (ADHD), dyslexia, and other learning disorders (LD) is often difficult to differentiate. What adds to this difficulty is that approximately 20-25 percent of individuals with ADHD will also have a learning disorder.

A recent literature search for alternative treatments for ADHD found more than two dozen treatments, of which ingestive treatments constituted about a third (Arnold, 1999; 2001). An additional literature search for ingestive treatment of LD turned up few additional reports and no additional treatments. In this article I will discuss elimination diets, the use of megavitamins and trace elements, essential fatty acids, deanol, amino acids, glyco-nutritional supplements, and herbs.

Elimination Diets

In 1975, Feingold wrote a book, Why Your Child is Hyperactive, in which he proposed that synthetic flavors and colors in the diet were related to hyperactivity (1975). Since then other diets that eliminate suspected foods or additives to which a child might be allergic or otherwise sensitive were proposed as treatments for ADHD and LD. In 1982, the National Institutes of Health held a consensus conference to review all of the literature to date (National Institutes of Health, 1982). This Conference on “Defined Diets and Childhood Hyperactivity,” concluded, “these studies did indicate a limited positive association between the `defined diets’ [i.e., Feingold’s diet] and a decrease in hyperactivity” (National Institutes of Health, 1982). The panel noted that there was insufficient evidence available to permit identification beforehand of this small group of individuals who may respond and to determine under what circumstances they may derive benefit. The panel believed that the defined diets should not be universally used in the treatment of childhood hyperactivity.

Since this Conference, later studies, using more careful subject selection and more restrictive approaches, have resulted in at least eight controlled positive studies (Breaker, 1997; Arnold, 1999; 2001). The effect sizes range from moderate to large in the samples. It appears that this approach does work. The question is for how many? Perhaps less than half, maybe as low as a single digit percentage responded positively.

The best descriptor of an ideal responder is a preschooler with an allergic history, irritability, sleep disturbance, and physical complaints. One preliminary report suggests a 30 percent response rate (medium effect) in three-year-olds (Bateman et al., 2001)." Restriction or elimination of simple sugars was also studied. In these related studies, simple sugar restriction alone showed no benefits (Arnold, 1999; 2001).

Megavitamins and Trace Minerals

An adequate amount of vitamins and trace minerals in one’s diet is necessary for optimal brain function and learning. Trace elements include copper, zinc, magnesium, manganese, and chromium, along with more common elements such as calcium, potassium, sodium, and iron. A placebo-controlled trial of multivitamins and trace minerals at the recommended daily allowance (RDA) in lower socioeconomic class children with poor diets showed an eight point rise in IQ as compared to the placebo group (Benton, Buts, 1990). Poor diets can also occur by choice in middle-class children. A RDA multivitamin with trace minerals may be useful for these children as well, until better data are available.

However, there is no controlled evidence for benefit from megadose multivitamins. An added concern is that at extremely high doses, these may be toxic. Individual minerals or vitamins may be indicated in cases of demonstrated deficiency; but, supplementation beyond the RDA guidelines without demonstration of frank deficiency is a hypothesis remaining to be proven for ADHD and LD.

This concept of megavitamins to treat LD was proposed in a book by Dr. Alan Cott, The Orthomolecular Approach to Learning Disabilities (1985). By his definition, many of the children in his study population were autistic or schizophrenic. He concurred that his finding that megavitamins helped “these” children had not been confirmed by others. In a report by the American Academy of Pediatrics (1976), focused on megavitamin therapy and learning disabilities, no validity of the concept nor of the proposed treatment was found.

Essential Fatty Acids

Both the n-3 and the n-6 series of essential fatty acids (EFA) have been reported to be low in children with ADHD as compared to controls. Both human and monkey infants show changes in visual attention with n-3 deficiency. Infants whose formula is supplemented with n-3 fatty acid show better cognitive abilities than those taking a regular formula. In children with dyslexia, highly unsaturated fatty acid deficiency correlated significantly with poorer reading, spelling, and auditory working memory (Richardson et al., 2000). Adults with dyslexia had significantly more signs of EFA deficiency.

continued on page 19
Ingestive Treatments for Learning Disorders
continued from page 18

than controls and the degree of EFA deficiency correlated with visual, auditory, linguistic, and motor features of dyslexia (Taylor et al., 2000). At both ages, the findings were more prominent in males. However, controlled trials of EFA for ADHD have shown equivocal results (Arnold 1999; 2001). A literature search showed no controlled study for LD. The distributor of one preparation that had been advertised for LD agreed to stop making that claim.

The failure to find significant benefit in supplementation trials thus far might result from failure to consider individual differences or from failure to consider the critical role of l-carnitine in EFA metabolism. No controlled studies of phospholipids for ADHD or LD could be found. Adequate EFAs are clearly necessary for optimal brain function; but, it remains to be shown how much supplementation beyond the ordinary diet may be useful. For those who remain concerned about deficiencies, the simple expedients of eating ocean fish a couple of times a week and baking with unhydrogenated soybean or canola oil rather than margarine or corn oil could supply adequate amounts in most cases.

**Dimethylaminoethanol (DMAE), Deanol**

DMAE has many other names, including dimethylthanolamine. It is an immediate precursor of choline and was initially believed to function by increasing the amount of the neurotransmitter, acetylcholine. More recent information suggests that dosage is critical to its mechanism of action and that at higher doses it may actually exert anti-acetylcholine effect in the brain. This product was marketed under the trade name of Deaner and proposed for learning and behavior problems during the 1950s through the 1970s. When the FDA began to require evidence of efficacy as well as safety, approval was withdrawn.

The company sponsored several controlled studies in an effort to salvage it. The best such study (Lewis, Young, 1975) showed an effect better than placebo but negligible to moderate on several measures. It is now marketed as a nutritional supplement which does not require FDA approval as effective.

**Amino Acids**

Other precursors of neurotransmitters have been proposed as treatment, including phenylalanine, tyrosine, 1-DOPA, and tryptophane. Controlled supplementation trials in ADHD suggest a mild acute benefit in some cases that dissipates in a few weeks with continued use (Arnold, 1999; 2001). Excessive metabolic loads of amino acids have some risks, especially in the presence of liver impairment. Although this approach to neurotransmission was at first hailed as safer and more natural than drugs, more recent thinking questions this assumption.

---

**Treatment with herbs (plants or parts of plants) is essentially primitive pharmacology.**

**Glyconutritional Supplements**

Basic saccharides (sugar derivatives) are necessary for cell communication and manufacture of glycolipids and glycoproteins. Two open pilot trials of glyconutritional supplementation in ADHD showed some promise. A third trial was discouraging (Arnold, 2001). Given our current state of knowledge, this treatment is probably harmless but ineffective for ADHD. No data were found for LD.

**Herbs**

Treatment with herbs (plants or parts of plants) is essentially primitive pharmacology. There is no doubt that plants contain pharmacologically active chemicals. Many, if not most, modern drugs were first derived from plants (including fungi); for example, quinine, aspirin, digitalis, antibiotics, cancer chemotherapies, atropine, opioids, ephedrine, curare, reserpine. Many of these are psychoactive substances. The purification and standardization of the active plant chemicals and their derivatives constituted a great advance in safety and effectiveness. Most pharmacologists believe that there are many more as yet unidentified useful chemicals in plants.

Though herbs may thus be effective, there are several cautions. Since most herbs have not been systematically studied in a controlled way, information on safety and efficacy is generally unsatisfactory. This problem is compounded by the wide variance in strength of the active compounds from one brand to another and even from one batch to another. A third problem is that many herbs contain more than one active substance. For example, hypericum (St. John’s Wort) has about two dozen psychoactive chemicals, and hypericin itself is probably not the most important.

There is practically no information on how the various active components interact with each other and little on how they interact with prescription or over-the-counter drugs. Polypharmacy, even with purified standardized drugs, can pose problems. New interactions are continually discovered, many of them harmful. Primitive polypharmacy is even more problematic. Therefore, if one is taking an herb, it is important to apprise any physician who may be prescribing another drug.

The concept of using herbs as a treatment for ADHD and possibly for LD has become very widespread. Since they are advertised as nutritional supplements, they are not controlled by the FDA. Most of what is known is found in flyers and advertisements distributed by the individuals selling the product. No research is presented, yet claims are made about the effectiveness of the treatment.

Children with Learning Disabilities, noted how he tried to review the use of herbs (Silver, 1998). He wrote for more information on several products he found advertised in magazines, flyers, or shown at conferences. He found that there was little information beyond what was noted in the ads or flyers. Three of the companies written to for more information offered him the opportunity to be the "exclusive" salesperson for his area. In his book, he lists these products (Silver, 1996, p. 320). For each, there was no research in the packaging to defend the claims made. Testimonials were common. Large technical words were used, often undefined. Efforts to find these words in any scientific dictionary were unsuccessful. The copy created a feeling that if parents did not get the product to their child, they were preventing him or her from making progress. Examples of products reviewed at that time were:

God's Recipe: "...a mixture of colloidal minerals, antioxidant with ginko biloba, and multienzymes."

Pediatric ADD: Noted to contain DMAE and "phosphatidylserine" and stated to be the "most advanced neuronutrients available," including a diversified combination of "other ingredients."

Kids Plex, Jr: The ingredients listed included multivitamins, amino acids, a mixture of "Ergogenes and Krebs Cycle Intermediates and Lipotropics."

Calms Kids: This is a mixture of "vitamins, minerals, and amino acids."

Pycnogenol: This is described as a "water processed extract from the bark of the French Maritime Pine Tree." It is noted to be "...(the most) potent nutritional antioxidant discovered by science."

New Vision: A mixture of "sixteen juices and eighteen fruit blends" made into a capsule.

Super Blue Green Algae: This product comes in many forms. Its benefits are stated to be based on the fact that algae is the "very basis of the entire food chain — it is largely responsible for creating and renewing all life on earth." (It contains n-3 EFAs.)

In Conclusion
When considering a new ingestive treatment, it is important for the consumer (or the professional suggesting such treatment) to:
1. Ask to see data comparing the treatment to a control condition;
2. Ask for descriptions (age, sex, IQ, diagnosis) of those who responded to see if your child fits the description;
3. Ask what risks and expenses are involved. Remember that delaying a more effective treatment or spending a lot of resources on something that probably will not work is a risk;
4. If you decide to try it, log the results. Rate the function before the treatment and after trying it in as objective a way as possible (possibly by using achievement test or by averaging homework grades for a week). If the results are not obvious in a reasonable time, move on to a better treatment; and,
5. Herbal remedies, which are essentially unrefined drugs, should be tried only under supervision of a physician, especially if other drugs are taken at the same time.

References


Dr. L. Eugene Arnold is Professor Emeritus of Psychiatry at Ohio State University, where he headed the Child Psychiatry Division and was Departmental Vice Chair. He has 150 peer-reviewed articles and chapters and eight books, the most recent "Contemporary Diagnosis and Management of ADHD." Dr. Arnold is Executive Secretary of the steering committee for the multi-site NIMH Multimodal Treatment Study of ADHD and co-investigator in the NIMH Autism Research Units in Pediatric Psychopharmacology.
Four neurophysiological approaches for treating learning disabilities are considered controversial. One, *patterning*, has been proposed since the mid-1960s. Although less noted in the United States, it is still proposed in Canada and in Europe. Another relates to the concept of *cerebellar-vestibular dysfunction*. It’s major proponent continues to actively stress his intervention. The third relates to what is called *applied kinesiology* and utilizes cranial bone manipulation. Although less advertised now, one still hears of it. The fourth relates to the use of *EEG Biofeedback* to treat learning disabilities.

**Patterning**

The theory and technique of patterning was initially developed by Doman and Delacato (1968). The underlying concept follows the principle that failure to pass properly through a certain sequence of developmental stages in mobility, language, and competence in the manual, visual auditory, and tactile areas reflects poor “neurologic organization” and may indicate “brain damage.” The proposed treatments involve repetitive activities using specific muscle patterns in the order the child should have learned if development had been normal, e.g., rolling over, sitting, crawling, standing, and walking. The method is described in their literature as reaching, “all of the stimuli normally provided by his environment but with such intensity and frequency as to draw, ultimately, a response from the corresponding motor systems.” In the more severe cases of proposed brain damage, patterns of passive movement are imposed that have as their goal, “the production of normal activities which would have been the product of the injured brain level had it not been injured.”

In addition to these methods of manipulation, other techniques used may include sensory stimulation, re-breathing of expired air with a plastic face mask (claimed to increase vital capacity and to stimulate cerebral blood flow), and restriction of fluid, salt, and sugar intake (claimed to decrease cerebrospinal fluid production and cortical irritability).

The American Academy of Pediatrics along with the American Academy for Cerebral Palsy published statements expressing concern about the effectiveness of this form of therapy (1982). This policy statement on the Doman-Delacato treatment of neurologically handicapped children reported that, after reviewing all of the relevant literature, the conclusion was that “the patterning treatment offers no special merit, that the claims of its advocates are unproven, and that the demands on families are so great that in some cases there may be harm in its use.”

---

**Figure**

Four neurophysiological approaches for treating learning disabilities are considered controversial: patterning, cerebellar-vestibular dysfunction, applied kinesiology and EEG Biofeedback.

No research has been published that supports the theory nor the interventions as a treatment for learning disabilities. Yet, interventions based on the patterning concepts remain popular in some countries.

**Cerebellar - Vestibular Dysfunction**

Several investigators have suggested that the vestibular system is important in learning. They claim that there is a causal relationship between vestibular disorders and poor academic performance involving reading and written language in children with Learning Disabilities. Ayres, (1973), Frank and Levinson (1973), and Levinson (1980) suggest that such children require a specialized therapy before they can benefit from academic input. DeQuiro (1971) and Levinson (1984) suggest that evidence of a vestibular disorder is predictive of learning disabilities and that therapy can prevent these disabilities.

In recent years, Levinson has published several books on the causative role of the vestibular and vestibular-cerebellar systems in learning disabilities. He proposes the treatment of dyslexia with anti-motion sickness medication to correct the vestibular dysfunction. No research is cited in his books to support his theory or the effectiveness of his treatment. His books refer to his clinical observations and case examples. In one book (Levinson, 1984), he proposes multiple other interventions along with the anti-motion sickness medication, including many other types of medication plus special education.

The role of the vestibular system in the higher cortical functions required for academic performance is not known. Some of the symptoms generally associated with learning disabilities (faulty eye movements, poor postural coordination, poor balance, and poor spatial orientation) could be indicative of vestibular disorder. Such symptoms, however, are only indirect evidence for vestibular dysfunction. The most prominent objective sign of vestibular involvement is nystagmus (spasmodic, rapid movement of the eyeball from side to side).

The hypothesis that there is a relationship between vestibular function and the academic learning of reading and written language comes chiefly from the authors noted. Ayres used the Southern California Postrotary Nystagmus Test. In this test, the child is rotated in a lighted room with eyes open, which provides both visual and vestibular stimulation. Thus, it may not be a valid test of vestibular function. Frank and Levinson, used “blurring speed” as evidence for abnormal vestibular function. This was described as the speed at which words passing across the visual field can no longer be recognized. But, because this involves the passing of stimuli across the subject’s visual field at varying speeds, it constitutes visual stimulation, not vestibular.

continued on page 23
Consequently, none of the work of these investigators has provided conclusive evidence for vestibular dysfunction in individuals with learning disabilities. These data could possibly be interpreted as evidence of visual dysfunction. Other studies on vestibular dysfunction in children with learning disabilities have reported negative or equivocal results as well.

A study by Polatajko (1985) investigated the relationship between children's vestibular function and academic learning using well-defined criteria for learning disabilities and exact measurements of vestibular activity. The evaluation of vestibular function consisted of examination of calibration records, search for spontaneous and gaze nystagmus, testing smooth pursuit, and vestibular and optokinetic testing. Vestibular nystagmus was induced by a rotating chair. No significant differences either in the intensity of vestibular responsiveness or in the prevalence of vestibular dysfunction were found between the normal learning children and children with learning disabilities. There was no evidence that children having low, average, or high vestibular responsiveness differed significantly on measures of academic performance. There was no significant correlation between measures of vestibular function and measures of academic performance.

In summary, there is no current evidence supporting the theory of vestibular dysfunction nor supporting the proposed treatment approaches. Yet, the primary proponent of this treatment for learning disabilities remains extremely busy evaluating and treating these children.

Applied Kinesiology

There are fewer clinicians proposing this form of therapy. However, variations on the original treatments continue to be used. The movement began when some chiropractors in the United States advertised that they could cure dyslexia and learning disabilities. The literature that was distributed referred to the use of "applied kinesiology" and to the work of Dr. Carl A. Ferreri (Ferreri, Wainwright, 1984). The claim was that his treatment could result in an astounding reversal of all dyslexia and learning disability conditions. Often, it was stated that this technique produced measurable results immediately, often after one treatment.

The basis for the theory and proposed treatment was a book written by Dr. Ferreri and Dr. Richard Wainwright, *Breakthrough for Dyslexia and Learning Disabilities* (1984). This book was produced by a small publishing group and distributed by Dr. Ferreri's own center. The book offers no research data. There is one reference cited over and over to a study done by Dr. Ferreri (1983). It was difficult to get a copy of this reference. It was published as a one-page article in a non-professional magazine and described the concepts and proposed treatment. There was no data or references to research.

In this book the authors theorize that learning disabilities are caused by damage to two specific cranial bones, the sphenoid and the temporal, by what they call "cloacal reflexes," and by an ocular muscle imbalance they term an "ocular lock." They report that, "the learning disabled will exhibit one or two sphenoid faults in combination with a positive cloacal reflex and a probable ocular muscle lock. The dyslexic... will show three or four sphenoidal faults, at least one temporal fault, as well as a collection of other reflex failings." (Ferreri, Wainwright, 1984)

The Cranial Faults

The authors speculate that the learning disabilities occur because the displacement of the sphenoid and temporal bones causes neurologic problems by creating unequal pressure areas on the brain. If this is true, then, they assert, then "an almost infinitesimal bony manipulation" will correct the disability and the symptoms will disappear.

These authors claim that the cranial bones do move and that these changes can apply pressure through the various protective layers between the brain and the skull and impact the brain. They also believe that the diaphragm is connected to the vertebras, pelvis, and skull through bands. They speculate that these bands extend through the opening at the base of the skull, wrap around the vessels and nerves, and join the lining (dura) that surrounds the brain and the spinal cord, affecting the reception of stimuli and the reflexes, balance, and neuronal functions. Because of these anatomic connections, such movements of the cranium adversely affect brain functions, resulting in learning disabilities. They claim that their technique for restoring the cranial bones to their proper positions through skull manipulations will correct the brain malfunctions.

The Cloacal Reflexes

These authors describe cloacal reflexes, which they believe are located in the anterior and posterior surfaces of the pelvis. They report that these reflexes center the pelvis and coordinate with "visual righting," "labyrinthine righting reflexes," and "tonic neck receptors" to center the head and neck with the lower part of the body. They speculate that if all these reflexes are not synchronized, the mechanical and/or chemical integrity of the body will be thrown out of balance. Again, they claim that manipulating these sites results in disappearance of symptoms.

The Ocular Lock

This term is used to describe a neural problem created when the eyes move in certain directions. Muscles weaken and the eyes get heavy; thus, motion is hard to follow and it becomes difficult to coordinate lines of print and to read. Because the eye muscles attach to the cranial bones, if these bones have been out of position for a long time, the authors reason that the eye muscles may become shorter and function inadequately. Once again, they propose that the eyes will function well when the cranial bones are manipulated into the correct position.

Ferreri and Wainwright propose a treatment that involves specific body
Neurophysiological Approaches

continued from page 23

manipulations to correct the difficulty with cranial faults, cloacal reflex functioning, and ocular muscle imbalance. They report in their book that, "most learning disabled have responded in a positive way in one to three treatments and have remained clear of symptoms on a schedule of reinforcement visits."

Once the neurologic and structural corrections are made, the person is cured and able to learn what he or she was not able to learn before. The next phase of treatment is referred to as "catch up." That is, the individual must learn all that he or she did not learn before the correction. Remedial tutoring is necessary. If the child does not make progress with tutoring, the authors suggest that the cranial bones may have slipped back out of position and further treatment is required.

The proposed theory and interventions are not based on any known research. Some of the views are based on anatomic and functional concepts not held by the majority of anatomists. There is no research on outcome. A professional organization of chiropractors has stated a disclaimer to this approach. Parents should be encouraged not to consider using it.

EEG Biofeedback

It is difficult to do a comprehensive review of this proposed treatment approach. Much, if not most of the literature on EEG Biofeedback as a treatment for learning disabilities is found in flyers and other literature provided by Dr. Siegfried Othmer, Susan Othmer, and others. This literature focuses on training courses for professionals or information for parents. In these materials one reads, "EEG Biofeedback is currently the fastest growing and most effective biofeedback modality. It gives mental health and educational professionals a powerful tool for effectively changing the physiological basis of behavior, mood, attention, and learning problems."

Listed among the disorders that can be treated with this approach are ADD/ADHD and Specific Learning Disabilities. Many other disorders are often listed: conduct disorders, sleep disorders, PMS & menopause, stroke, epilepsy, to name a few.

Studies are often published in EEG Spectrum, a newsletter format paper published by Dr. Othmer. A research bibliography is often handed out at conferences. Many of the references are old, predating the proposed treatment. Some have interesting titles but, when read, do not relate to the topic; and some are in non-edited publications. Thus, it is difficult to find the references helpful in assessing this treatment approach.

At best, I can say that the theory has not been scientifically documented. There is no body of research literature supporting the treatment approach nor showing outcome studies. The primary spokesperson, Dr. Siegfried Othmer, provides his literature and training in the use of this treatment. I mentioned the limitations noted above at a conference. Shortly after this conference, I received a letter from Dr. Othmer (1994). He agreed that there was a lack of research and suggested that the reason was that "the research community" will not participate. He defended his courses by saying, "The course is intended to teach professionals how to apply the technique, and is not intended to dwell for three days on the fundamental case for efficacy of this technique."

In summary, the use of EEG Biofeedback to treat learning disabilities has not, to date, been shown to be effective nor has the theory behind the treatment been found to be correct. Yet, this approach, which is time consuming and expensive, continues to be sought after by parents looking for a faster treatment for their child's disability.

References


Dr. Larry Silver is the Theme Editor for this issue of Perspectives and his bio can be found on page four.

Articles, advertising, book reviews, etc. that appear in Perspectives are not necessarily recommended or endorsed by IDA. Any interested person is entitled to submit for publication in Perspectives. However, IDA does reserve the right to reject any article or ad.