Behavioral Vision Care

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Behavioral optometry is an emerging clinical care system based on the understanding that vision is the dominant process in the human species and develops throughout one's life. Behavioral optometrists use powerful tools to facilitate the development of a more efficient and complete visual process in their patients. This enhanced visual process allows these patients to meet greater and greater visual and life demands with less effort and less stress. The patients of behavioral optometrists perform better in the work place, in recreational activities, and in their personal lives.

Behavioral optometrists define vision as the ability to derive meaning and to direct actions as triggered by light. Vision is much more that simply seeing clearly. It is the entire process whereby an individual understand what he or she sees. Here the word "see" is used in a broad context. Not only is vision the understanding of that which is seen, but it is also the ability to use this information to direct one's own actions and motor activities accurately and efficiently with a minimum expenditure of effort and energy.

For example, in a person driving a car, vision is much more than reading license plates clearly at two hundred feet: it is the total process whereby the spatial relationships between the cars and trucks and other things around are taken in and processed by the driver to guide the car properly to its destination without an accident and with minimum stress on the driver. Vision judges the relative speeds of the other cars, and alerts the driver to a pedestrian or another car in an intersection, or a door opening from a parked car. Vision is what directs the baseball player to swing the bat at exactly the right moment at exactly the right place in space to make contact and hit a home run. Vision is what is used by students to understand what they read and to direct the pencil across the page to answer an essay test or fill in the blanks on a quiz. It has been said that more than 85% of all learning is done through vision, which is the dominant process in the human species. Fortunately, it is also the most accessible to alteration through the use of behavioral treatment or stress-relieving lenses and through a process called vision therapy.

Origins of Vision: Writing the "Software"

The key to understanding how vision can be enhanced by behavioral optometric care is in knowing how one acquires vision in the first place. Except in rare cases, most babies are born with the necessary hardware to allow the development of normal vision. They are born with eyes, nerves, a brain, a head and neck, a torso, arms and legs, etc. They are also born with certain basic visual reflexes such as the startle reflex (The baby while in the delivery room will startle in response to the ringing of a bell.) or the pupillary reflex (The baby's pupil will constrict to a light shined at it as soon as the eyes open.). The experiences that children have over the first few years of life set the stage for their educational and adult lives. Vision is learned and developed through these experiences. As children encounter problems to solve in the course of their development, they "write" mental software that allows them to utilize the hidden potential of their hardware. As an example, let's look at a child learning to ride a bicycle.

Let's assume we are watching a physiologically mature 6 year old boy who has never ridden a two-wheeled bicycle before. We see that the child has normal hardware (body, arms, legs, muscles, tendons, etc.) that has

the potential to be utilized to ride the bike. However, the boy has yet to have the meaningful experiences to have written the software to learn to ride the bike successfully. He mounts the bicycle, begins to ride for the first time, and he falls. We do not jump to the conclusion that there is something wrong with his legs or that he needs to work out in a gym. We just see that he has not yet learned to ride the bike correctly. Once the boy learns to ride the bike, the change that occurs is not in his legs or arms or in the hardware at all. The change that takes place is in the software in the brain.

Vision is normally acquired through life experiences. To develop a well-functioning, efficient visual process capable of meeting a myriad of demands requires the individual to have had many, many different developmental opportunities throughout his or her life. In practice, no one has developed the ultimate visual process; however, many have developed exceptional visual abilities beyond the normal range. Elite athletes are excellent examples. The difference between the average athlete and the elite athlete most often is the difference in their visual abilities. Sports superstars frequently report that the ball seems to look larger or move slower to them. This is because their excellent visual process derives meaning from the environment so rapidly and efficiently that events seem to unfold in slow motion for that individual. Thus, their performance is increased well beyond the abilities of those around them and they become recognized as superstars.

As with the child learning to ride the bicycle, the differences in the athletes are not in the hardware. Some exceptional athletes have not been exceptional physical specimens. Football defensive superstar Lawrence Taylor had the vision to make the game unfold as if in slow motion. He always found the hole between players, even one open only for a second, because he saw it open as if in slow motion. Wayne Gretsky of the National Hockey League seems like any normal guy in street clothes, but his exceptional vision, not his sight, is what places him at the top of his game. Earvin "Magic" Johnson, who played basketball with the L.A. Lakers, has the same type of enhanced vision that allowed him to spark the team, make the assist, and find the open man, or break open the defense with a remarkable drive to the basket through a seemingly airtight defensive. Baseball great Ted Williams felt he could at times see the bat hit the ball before he made the hit. Golf legend Jack Nicklaus in his book, "Golf My Way" states that he "goes to the movies" before he hits each shot. He explains by saying, "In my case, visualizing the ball's ultimate resting place forms the opening scene. This is followed by a travelogue in which I imagine how it will get there. The finale in my mind's eye features the setup and swing I'll need to effect a happy ending."

Diagnosing the Difficulty -- The Visual Inventory

Behavioral optometrists examine the entire visual process of their patients. The examination is a way of taking an inventory. A situation is set up in which the patient is asked to take in and to process visual information and then to take some action, which the optometrist then observes. These tasks begin at low levels of development in many areas and work to higher and more demanding abilities. The testing usually pushes patients to their limits in many areas so that the behavioral optometrist can obtain a profile of their overall visual abilities. This profile reveals areas of good or even exceptional development. It also reveals areas of inadequate or even nonexistent abilities. From this profile of abilities the behavioral optometrist can recommend to the patient several alternative treatment plans.

Hardware vs. Software

It is important to note that most of the visual difficulties discovered by the behavioral optometrist will not be due to the patient having "hardware" difficulties. They will be related to the lack of development of "software" to perform the task being asked. Of course the behavioral optometrist, like all other optometrists, is responsible for recognizing the existence of actual hardware problems (for example, disease or injury) and making the

appropriate diagnosis and treatment options available to the patient. However, it is understood that the vast majority of problems are software related, even those that at times seem to be confused by non-behavioral practitioners as having to do with hardware. For example, most eye turns are viewed by non-behavioral practitioners as muscle problems (hardware), whereas behavioral optometrists know that they are a software problem that can be corrected. In general, a problem found does not imply a damaged person.

Typically, I might ask a parent of a patient if they themselves can speak a foreign language such as Urdu or Swahili. The parent nearly always answers no. I then ask them if that means that there is something wrong with them. They also answer no to this question. This generally imparts the idea that just because they or their child cannot do something does not mean that there is something permanently wrong with them that cannot be fixed. They all agree that under the right circumstances they could learn the foreign language.

Treatment Alternatives

The three treatment alternatives available to the behavioral optometrist are compensatory lenses, treatment lenses, and vision therapy.

Compensatory Lenses

Behavioral optometrists take a series of measurements that reveal the current refractive status of the patient. Some patients simply want to see clearly, despite the information that prescriptions provided merely to help the person see most clearly generally decrease overall visual efficiency and promote future deterioration of both the visual process and the refractive condition. These patients are provided with compensatory lenses only.

Treatment Lenses

In well over 90% of the patients who seek the services of behavioral optometrists, lenses are prescribed, but for a different purpose. The lens treatment alternative is derived from the understanding of the development of progressive refractive conditions and the fact that sustained near-point activity is stressful to all humans. Special lenses are prescribed that reduce the stresses of the near-centered tasks, such as working on video display terminals or reading, to reduce the forces creating the nearsightedness (myopia), astigmatism, farsightedness (hyperopia), strabismus (eye-turn), or amblyopia (lazy eye). Distance prescriptions may be modified from the lens that is merely the "clearest" to guide the future development of the person to a less adapted condition. Only behavioral optometrists utilize small amounts of yoked prisms (prisms placed in the patient's prescription lenses so that the prism bases are the same direction in each eye, such as both base up or both base right) to develop more desirable and efficient vision. Lenses are the most powerful tool available to alter human behavior. Lenses provide the opportunity for people to immediately alter their perception of the world around them and immediately change how they function in their environment. Behavioral optometric tests provide the information necessary for creating these special lenses. Patients are provided with these lenses to alter their behavior and allow them to process more information more efficiently, with less stress, and in a shorter period of time and to come away from that stressful act less altered by it. The lens treatment alternative provides the patient with a tool to help them perform their visual tasks.

To demonstrate how this type of lens treatment works, consider the following analogy. Many children over the years have played with erector sets: sets of steel girders, nuts and bolts, and other assorted pieces, which can be put together to create all kinds of objects. With every erector set the owner is given a set of tools, (usually a screwdriver and a wrench) that matches the size of the nuts and bolts. When the proper tools are used, the

object made from the pieces generally goes up more quickly and is more sturdy, and the people building the object have less wear and tear on their fingers than if they tried to build the same structure without using the tools. Many adults try to help their children build the erector sets using just their fingers. This takes more time than if they used the proper tools, the finished building is wobbly, and everyone's fingertips are sore for a day or two. Stress-relieving lenses work in the same manner. They are the proper tool to use when working in today's demanding visual environment, which is filled with sustained, near-point visual demands done indoors with artificial lighting and within restricted environs.

Vision Therapy

The final treatment alternative available to the behavioral optometrist is vision therapy. This is an exciting treatment program in which the optometrist provides the patient the opportunity to learn and develop those abilities that either were not present or were poorly developed in the patient's overall profile of visual abilities. Vision therapy is a step-by-step, development-based series of activities and procedures that the patient practices over time. The therapy is designed to facilitate the development of a more efficient and comprehensive visual process.

Types of Visual Problems Treated

For Learning Related Visual Problems: Approximately 25% of all patients entering a behavioral optometric practice elect to enroll into a program of vision therapy. Of this population, nearly one-third are children with reading and learning difficulties, most of whom have 20/20 sight acuity but who have a primary visual difficulty. A primary visual difficulty is most often found to be the cause of the child's learning disability. The most common problems seen in this group are tracking difficulties (inability to keep one's place when reading), eye-teaming difficulties (inability to keep both eyes pointed to the same place in space), and visual focusing difficulties (inability to keep attention on a particular object in space). Vision therapy has been shown to have cure rates in the high 90th percentile for these types of visual difficulties. Once the visual difficulty has been eliminated, the student learns much more easily. On average, treatment for these difficulties involves 6-9 months of 40-50-minute treatment sessions 1-2 times a week.

Strabismus and Amblyopia Another third of patients going into vision therapy includes patients with eye turns (strabismus) and lazy eyes (amblyopia). Vision therapy in these cases is far more effective than the surgical alternative. On average, when surgery is done for the treatment of these difficulties, the patient will undergo three separate operations! Functional cure rates of vision therapy for strabismus and amblyopia are from 2 to 5 times more effective than surgery, even for people who have undergone all three surgeries. On average, treatment for these problems lasts 9-12 months.

For Performance and/or Stress-Related Visual Disabilities. The final third of patients in vision therapy comprises children and adults suffering from stress-related visual difficulties or whose visual abilities are inadequate for the rigorous demands of their lives. These patients may suffer from attention difficulties, reading comprehension difficulties, or slow reading speeds. They may be experiencing headaches, double vision, or general eye strain or fatigue. They may be athletes who want to develop their visual abilities to their maximum potential to allow them to excel in their sport. Vision therapy for these patients usually lasts 4-6 months.

Preventive Care

After the successful completion of vision therapy and for those patients for whom vision therapy was not

necessary, behavioral optometry is also involved in programmed preventive care. Only behavioral optometrists recognize their role in helping all their patients maintain a complete efficient visual process. To do this, behavioral optometrists will see their patients frequently. The longest time between visits may be one year. At each visit the patient's entire visual process is surveyed so that treatment alternatives can be updated as necessary. The behavioral optometrist wants to see the patient before a problem becomes noticeable, because early detection can lead to early intervention and the elimination of the problem before it can have a negative impact on the patient's life.

New Opportunities for Enhanced Vision

Behavioral optometry offers many new and exciting treatment alternatives to the public. These different levels of care are unique and are based on the simple idea of understanding the role of vision in relation to the total organism. The developmental nature of most visual problems leads to the understanding of the expanded examination routines and the unique service of vision therapy to remedy those problems found. The role of lenses not only as a tool to make the world clear but to alter perception and reduce stress is of paramount importance in this emerging discipline. Behavioral optometry is the key to a more productive and happy life.
