

FREQUENTLY ASKED QUESTIONS ABOUT VISION THERAPY

By Paul Harris, OD | www.paulharrisod.com

Many parents ask me to make a series of formal recommendations to teachers to help their child, once I have identified a visual development problem that is affecting their child's ability to learn. I resist this for several reasons. First and foremost is that the professional educator is the best person to make decisions that directly impact the instructional approach to the child. Secondly, so many of the visual development problems that I encounter respond quickly to treatment. Often by the time a compensatory procedure or supportive activity is implemented, it may already need to be modified.

NOTE: For any given child only a portion of this FAQ may be applicable. However, I feel that by sharing this general knowledge with you, the professional educator, it may empower you to help your students in new ways.

1. What is the visual process and how do we use it?

The visual process is the ability to derive meaning and direct action as triggered by light. The behavioral optometric use of the word *vision* or *visual* is very different than is seen by the majority of eye-care professionals and the public. Most people, when they think of what they do visually, think only of the clarity with which they see. They think of a trip to the eye doctor as a time to be reassured that their eyes are healthy and to allow for optical corrections in the form of glasses and/or contact lenses to be identified, prescribed and dispensed.

As a behavioral optometrist I do all this, but I also look at much more! From moment to moment we have things we are doing and things we want to accomplish. To do this we scan our environment with all of our senses, but the visual process leads this search and is responsible for building the spatial map of where we are in space, where our body parts are one relative to another and where the object or objects we are looking at, listening to or feeling are relative to us and relative to other things.

We then use this updated construction of reality to direct our actions. As seen from the perspective of a behavioral optometrist, when a clumsy movement or an inaccurate movement is made, it generally is not the fault of the motor system but is the fault of the guidance and control system, and is seen as a visual problem.

It has been said that most visual problems are problems of omission. This means that the information needed to properly identify and locate objects in space was there but it wasn't taken in and used by the person. Due to a lack of inclusion of the necessary information, an error in the instructions sent to the motor systems results.

To do this well requires several fundamental visual abilities which include:

- o The ability to move one's eyes free of the rest of the body.
- o The ability to easily shift fixation from one place to another.
- o The ability to accurately point both eyes to the same place in space without excess effort and with a stable alignment. Unstable alignment often leads to the complaint of words moving on the page or momentary jumbling of the letters, or misalignment of numbers in math problems.
- o The ability to sustain near-centered visual attention.

2. How do children acquire skill in the use of their visual abilities?

We learn to use the visual process over time. Visual abilities develop as a result of life experiences that children have prior to entering school. We are a product of the environment we grow up in. Many of the skills and abilities we have began with meaningful life experiences as children. Visual skills and abilities are learned primarily through movement and interaction with our three-dimensional world. Novelty is critical for the emergence of a diverse set of skills and abilities.

A child with a limited set of experiences should not be expected to acquire skill merely as a result of surviving a certain number of years on this earth. Time alone does not cause development. Good development is the result of the appropriate meaningful experiences occurring at opportune times in a person's life. Physiological maturity alone is not sufficient to guarantee proper development.

We cannot expect children who have never heard classical music to identify an oboe or a trumpet by their distinctive sounds. To do so they need the life experience of listening to these instruments in isolation and having someone properly identify the instruments for them. This needs to be repeated more than once to become a lasting skill.

Learning how to fixate on an object, shift visual attention from one point in the visual array to another, precisely align both eyes with ease for sustained periods of time, and shift attention from distance to near and back again are all developed skills. A child who has not had appropriate life experiences in meaningful ways may come to school without these requisite skills.

A behavioral optometric evaluation can be compared to taking an inventory of these visual abilities and skills and finding which are present and which may not yet have emerged. The lack of the emergence of these visual abilities no more represents a physical or physiological or mental deficit than it does in the music example above. In this situation, no one

would diagnose a neurological music processing brain center in need of medication. There would be recognition that the life experiences necessary had not been encountered. (Of course there are isolated instances of such problems but these are few and far between.) The vast majority of what we see in clinical practice are visual development problems.

3. Why aren't they getting the appropriate experiences at the right time?

There is no simple answer to this vital question. Parts of it will be found in many areas and blaming one exclusively will not lead to a resolution of the problem for large numbers of children. The following is a list of some of the potential culprits and a bit about what types of problems they may be causing.

- o Not enough self-directed movement while young: In our modern fast-paced society, families seem to always be on the go. So we transfer our young child from the baby carrier to the car seat to the stroller and we move them around for much of the day, rather than having them exploring the world around them with their own visually directed mobility.

- o Attention demands too short: So many of today's television shows geared for children are so fast-paced that they seem to flit from one thing to another almost like an MTV video, barely giving the child the opportunity to learn to sustain attention. Thus, they seem to come to school needing a "USA Today" version of school.

- o Too many pictures supplied rather than constructed by the child: When a child gets to listen to a reader who orates in an interesting manner, using descriptive prose, the child gets the chance to learn to make, modify and recall visualizations and visual imagery, which will become the basis for spelling and reading later in life. When a child is given a steady diet of graphics and cartoons they become passive viewers of "interesting" content but they don't get the opportunity to develop the necessary mental imagery skills.

4. What percentages of school children have these problems?

The answer to this question certainly depends on a number of variables, including what groups of children we are talking about and at which aspects of visual development we are looking. A study was done by the New York State Department of Education in conjunction with the New York State Optometric Association, in which they did testing on random samples of children in all socioeconomic groups throughout New York State. It was found that around 23% of the general school population had visual development problems that were affecting learning in a significant way.

In this study, when you looked only at those children identified under

public law 94-142 as needing extra help in school, the percentage climbed to 93%. In a study done in Baltimore with juvenile delinquents at the Hickey School in the late 1980's, I found the number of these 14-18-year-old boys with visual development problems to be in the mid-90's percentage wise. In another study in the late 1990's in several Baltimore City public schools, it was found that over 80 percent of the children had primary visual development problems. Without the visual problems being addressed, simply reducing class size, getting better text books, finding better teachers, or changing the pay system to a merit system will not result in significant gains. The visual problems need to be addressed so that the children can then benefit from their education.

5. Now that the problem has been identified what will happen?

The primary method of treating a visual development problem is to arrange conditions to provide the person with the necessary meaningful experiences to acquire these needed skills and abilities. The method whereby this is done is called vision therapy.

During the early phase we will be building foundation skills and abilities, which may not translate immediately into observable changes in the classroom. I view the course of a therapy program to consist of three phases. The first third of the therapy program helps the child acquire the fundamental visual skills and abilities. During the first third most symptoms such as headaches or blurred distance sight after doing close work are reduced or eliminated.

The middle third elaborates on those skills and abilities, so that when different life demands are encountered that may be similar but actually require slightly different skill sets, the child has the ability to shift from one application to another with ease.

The final third of treatment has two major purposes. The first is to automate the newly acquired skills and abilities so that the new skills are simply called on when needed without any conscious thought. The second is to help the child generalize the new skills so that as life throws new challenges, they can immediately call on what they have learned and make the necessary adjustments, again almost without conscious awareness of having done so.

6. What is Visual Therapy?

Visual therapy is a step-by-step developmental program designed to provide patients with the necessary meaningful experiences to acquire full use of their visual process. Visual therapy is based on Piagetian principles of learning, in which a series of graded problems are presented to a child under very controlled circumstances and then practiced for reinforcement.

Therapy in my office is done on a one-on-one basis for 50 minutes. Each session consists of four to five activities which are done for 8-10 minutes each. Then two to three of them are assigned for home practice. The most difficult aspect of being a therapist, as well as being a teacher, is to know exactly how demanding a particular activity should be. Too intense and the child may go into a "flight" pattern and avoid the activity or go passive and not fully engage in the activity. Too little intensity, where a child is asked to do something that they can already do, is a formula that simply wastes everyone's time, effort and energy. My therapists are trained to adjust the demands of the activities to maximize the speed of improvement, but not at the cost of putting the child under too much stress.

A key aspect of therapy is the involvement of the parents as home therapists. We require from 15-20 minutes of practice or drill a day under the direct supervision of a home helper, who is most often the child's parent.

7. Where do glasses fit into this?

In some instances your student is under a great deal of stress trying to perform sustained near-centered visual tasks such as reading. Besides the difficulty of the actual work you are assigning, one of the factors contributing to this stress may be an inability to focus their visual system at near. As we shift focus of our eyes from distance to near we have to supply about 2.50 diopters of accommodation ("focusing power"), a bit more so at the closer working distances that are representative of most children. Stress-relieving lenses are glasses designed to take some of the load off of the accommodative system. On average, these lenses reduce the amount the eye has to change focus by about 40%. This has the dual effect of helping the child stay on task for a longer period of time before their visual concentration begins to deteriorate as well as allowing them to stay further away from their close work, thus reducing the on-going demand on the accommodative mechanism.

During the course of treatment the role of the lenses often changes. Whereas at first they helped to maintain a good working distance and helped the child concentrate better, later on they take on more of a role in the prevention of the development of nearsightedness. You may have noticed that more of your excellent students are nearsighted and wear glasses or contact lenses to see clearly at distance. There are links between doing large amounts of sustained close work in people who are goal-oriented and detail-oriented and the development of nearsightedness or myopia. You may have also noticed fewer of those children with learning problems wearing glasses. Once the vision therapy has helped the child acquire the visual abilities necessary to learn and once they begin applying themselves in school they become at-risk to development

of nearsightedness. The stress-relieving lenses help to prevent this.

8. Within what kind of time frame should I expect to see change?

The time-frame for seeing change will vary with the degree of the problem, the age of the child, the intensity and regularity with which the home practice sessions are done , and many other factors. Generally, by the eighth week of visual therapy changes are beginning to be noticed by all. At first, these may only be that the child is staying on task a bit longer or doesn't have to be restarted on homework assignments so many times. Often the child is beginning to notice things in their environment, many of which may have been there all the time but are just being recognized.

A major visual development step is the ability to track and fixate with eyes only. In cases where this was not present, I see this emerging by the 8-week progress evaluation. The visual therapy begins in free space with real physical objects and moves to working in the two-dimensional plane of paper or a blackboard at about this time. Since visual development follows this course one of the early signs of change is often in sports. The child with emerging spatial competency is more aware of where they are in space in relation to others and to objects and as a result of this they interact with these things more accurately and more consistently.

9. How long until reading changes and what types of changes may I see?

Reading is a complex process that is dependent on many visual abilities as well as a host of other skills. Much of the early emphasis in the visual therapy programs is aimed at the fundamental visual abilities. These foundational skills are necessary to build on, but often do not have an immediate effect on improving reading performance. Early on, the major effects might be that the child can stay on task for a longer period of time before tiring.

A major developmental hurdle, already discussed, is learning to move the eyes only when shifting visual attention from one place in space to another. Once this has been achieved we often see renewed interest in near tasks that involve sustained use of vision for deriving meaning. The fact that the child can now do this kind of task often helps them feel better about themselves, and early changes in reading may not be directly from the actual visual therapy, but indirectly from the changes in the child's self-image and feeling that they are not dumb, that a real problem had been found and that it is being addressed.

As the therapy progresses we often see a pick up in the fluency of reading at their current instructional level. Mechanically we see the child begin to take in a larger perceptual chunk, resulting in them not needing to stop so

many times with their eyes per unit of text. Because less effort is needed to keep their place, to keep the print clear, and to plan where to go next, as well as keeping both eyes directed accurately so that their inputs are complementary, more of the child is left to learn from the experience.

Over time we see a consolidation of gains at a level of reading material followed by a non-linear jump to a new demand level. When that happens there is a short period of time when the mechanics seem to make a downturn. This is because it takes more thought, reflection and some conscious effort to decode new words and to find the appropriate meaning in more complex contexts at the new level. Over time this too becomes consolidated, with a commensurate period of time of improvement in the mechanics again. This continues cyclically during the course of treatment as well as continuing for many months after treatment has been completed. This can also be seen in normally developing readers at the appropriate developmental time.

To recap, we first often see improvements that are more secondary to attitude differences than to actual treatment effects. Once the "eye movement free of the rest of the body" target has been achieved there is often a new ability to sustain near centered visual attention, which can be seen in renewed interest in close work. Then begins a cycle of change; beginning with improved mechanics at the current demand level and followed by a jump in the demand level that can be understood. During the early part of the jump to the new level the mechanics typically suffer for a finite period of time.

10. Do I need to move the child to the front of the room?

Generally this is not necessary although some children benefit from this if you stay fairly stationary in the front of your room. This is because with fewer children between you and the child there are less possible distractions for the child. As well, the volume of your voice and the size of your movements and gestures are larger, which helps the child in question attend better. If for any reason there is an optical reason that is causing a decrease in visual acuity, most frequently lenses will be prescribed to improve visual acuity to at least the 20/40 level, which should allow a child to see anything of import from any place in your classroom.

11. When might I see changes in attention?

Some children show this right away, but this is not to be expected. Typically the first change in the ability to sustain visual attention on near tasks begins around the 8th to 10th session of their treatment. Certainly by the 16th session or about four months into treatment I would expect the child to be attending much better than before, assuming of course that

this was a problem before.

12. Are timed tests a problem and if so, when should I expect this to cease being a problem?

Many children with learning related visual problems fall apart when put in timed situations. The added pressure of having to work fast may be the straw that breaks the camel's back, causing many of these children to "melt down". During the first 8-10 weeks we are working to build fundamental visual abilities. From that point on, although more skill building and elaboration are being done, we shift emphasis to being able to multitask and to perform under pressure.

This aspect of treatment is aided by the use of a stop watch. A number of activities are timed and emphasis on some activities is shifted away from perfection to speed. Some errors are accepted in order to get the child moving. Once moving, then the emphasis shifts back to increased accuracy and then back to faster speeds. These cycles are built into many of the visual therapy activities all the way to using guided reading in the last 8-10 weeks of treatment. Here a moving window flies over text to be read about 20-30 words per minute faster than the speed at which the child is currently reading. These sessions of being pulled over text a bit faster than is comfortable pay great dividends. It also reduces the number of regressions in text (going back to the left within a line of text to reread a section) because the window only moves forward and does not allow for regressions to be of any help when reading.

So the bottom line here is that many of these children have trouble with completing work on time and when time pressures are added they may crumble. However, vision therapy specifically targets this and most children make very quick changes here. Generally from 4-6 months into treatment timing issues are no longer a concern.

13. When will problems copying from the blackboard get better?

Difficulties in copying from the blackboard come in two flavors. The first is problems secondary to clarity problems. A child who is nearsighted sitting in the back of the room without glasses or contact lenses may not be able to see the letters and differentiate them well and therefore may make lots of mistakes or copy the wrong thing entirely. Generally no amount of treatment will address this. Some form of eyewear, glasses or contacts, are needed to address this problem.

The second and more common problem affecting copying from the blackboard is the problem with fixation and tracking already noted. The child may be incapable of remembering where they were as they shift from one place to another. So when they return to the blackboard after writing down the last portion seen, they may be unable to relocate where

they were. This ability to leave a mental marker from the last fixation point is taught in therapy and often comes in between the 8th and 10th week of treatment and certainly should be present by the 16th week. So problems related to fixation and tracking respond to treatment rather quickly. In the meantime it might be helpful to give a child with this type of problem a copy of their assignments so that they can have it at their desk and they are not penalized for making copying mistakes.

14. Will your work address posture at all?

Many children with binocular problems (problems coordinating the use of both eyes together) are constantly shifting postures (squirming in their seats, etc.) in hope of either (1) reducing tension in the body coming from excess effort going into trying to keep the eyes working together or (2) hoping (subconsciously of course), to find a posture that physically blocks one of the eyes thereby greatly reducing the amount of effort needed to work.

As the child's binocular problems are addressed the need to keep changing postures or to block an eye is reduced or eliminated. Thus, the range of postures assumed and the frequency of changes of posture are both reduced without directly attempting to work on posture. These changes are often noted to occur in the same time frame as the fixation and tracking changes.

15. Will your work specifically address pencil grip and writing posture?

If the only problem a child presents with is a pencil grip and writing posture, we will often make a referral for occupational therapy. However, many children that require visual therapy also present with pencil grip and writing posture problems. If the parent wants us to address this we will deal with the sensory motor aspects of holding a pencil and sitting at a table early in the therapy. Towards the end of therapy we then address how to apply these new sensory motor skills to handwriting. In most instances the sensory motor skills need to be practiced at a fundamental level for several months before they can be applied directly to handwriting.

16. Can we help by doing any of the visual therapy in the classroom?

Our program includes a once-weekly in-office 50-minute session of treatment with 15-20 minutes of home practice on the days that the child does not come to the office. Of course some more home practice may be helpful but we find that the 15-20 minutes assigned is adequate. We don't see a need to use your valuable class time to address these concerns for an individual child.

Now if you should want to look for group activities, particularly in the

early grades (K-3) to do with your children, I can highly recommend the book, "Thinking Goes to School" by Furth and Wachs. This is published by Oxford Press and is available at www.oep.org. This book details an educational curriculum and program for the early grades based on the Piagetian principles of learning.