

BABO NEWS

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Consultation Corner

by: *Robert A. Hohendorf, O.D.*

Thanks for the email responses and your suggested prescription options. Two of you hit the nail almost on the head (got it almost exactly as I prescribed). That shows you were paying attention in the BVC course. My prescription alternatives were:

- | | |
|---|--|
| 1. Compensatory lens only option:
Rx OD -0.50 D Sphere
OS -0.50 D Sphere
Prognosis: Progressive myopia
Continued reading problems | 2. Lens Treatment Alternative Option:
Rx OD -0.25 D sphere with +1.00 Add
OS -0.25 D Sphere with +1.00 Add
Prognosis: Stabilize myopia at a low level
Minimally help eye
movement problem |
| 3. Lens treatment with vision therapy option:
Rx: OD plano with +0.75 Add
OS plano with +0.75 Add
Prognosis: Best chance to reverse myopia measurement
Improved eye movements | |

Option 1: I did not and rarely ever prescribe the full minus of the 7A. He had 20/25 visual acuity unaided at far. -0.75 would be too strong and accelerate the myopia progression in my opinion. I figured the -0.50 is enough to satisfy the chief complaint of blur at far.

Option 2: I used a little minus in the distance. He is 9 years old. If I did nothing to address his chief complaint do you really think he would wear a plano upper with any add? I used a +1.00 add based on the unfused (14A) and fused cross cylinder findings at near associated with his near phorias. I did not do stress point retinoscopy. I felt I found what was meaningful to me with the two tests just mentioned. I did not need to know the maximum plus he could accept at near. The cross cylinder and amount of exophoria meant to me there was enough room for a low amount of plus, but not to exceed +0.75. This thinking is based upon the old Skeffington type of case analysis.

Option 3: Reflected the increased flexibility of prescribing that a therapy program would allow. The add might have been squeezed to a +1.00 D sphere; but, without a stress point finding, I played it safe.

The parent and patient chose option #2. I recommended a two month re-evaluation visit to see if the option chosen had done the job. I also always find it interesting to see if it did more than I anticipated.

VISIT NUMBER TWO

AJT returned on 3/15/02 as recommended. He stated his distance vision was better with the glasses. Mom stated he wore his glasses without reminders about 90% of the time. Academically his handwriting and concentration skills were still a concern.

My new findings were:

VISUAL ACUITY: Unaided at far: OU 20/30 +2
Aided at far: OD 20/20-1, OS 20/40, OU 20/30-3
Aided at near: OD 20/10, OS 20/20, OU 20/20.

STEREOPSIS: 5 of 5 gross, 3 of 3 medium, 8 of 8 small.

DEM TEST OF EYE MOVEMENTS: Vertical score: 22nd percentile for age 9
Horizontal score: 21st percentile for age 9
Accuracy: 35th percentile for age 9
Ratio: 36th percentile for age 9
Occasional head bobbing noted.

MONROE VISUAL 3: Test of short-term visual memory for symbols. Age 8 ½ No obvious tactile or verbal strategies noted. Pencil grip was tight and with a four finger grip.

SPHERICAL REFRACTION: To First 20/20 OD -0.25 D Sphere
OS -0.50 D Sphere
To best 20/20 OD -0.75 D Sphere
OS -1.00 D Sphere

What would you recommend now? E-mail your responses to Theresa at TheresaBABO.OEP@verizon.net.

Treasures From the Vault

“Treasures From the Vault” is where we will drag out *oldies but goodies* from past newsletters that are as important now as when they were first printed. From the August 2000 BABO Newsletter comes this treasure:

Question: There seem to be different ways to perform static retinoscopy (#4). I have talked with several of the teachers at our school and we each seem to have learned slightly different methods. I’ve checked Borish, Bennett & Rabbetts and some OEP publications, but can’t find anywhere in exact steps, what I should be doing. My understanding is that you can either: (1) Use a large target with +1.50 diopter lenses in front of each eye and scope like this to reveal any hyperopia or the least amount of myopia, by relaxing the accommodative system, or (2) Use one line bigger than their best visual acuity, remove the +1.50 diopter lens on the first eye, scope the other eye with the +1.50 in place. When you scope the second eye then the lens situation is reversed. Please help me understand your views and let me know your preferred way to do the #4 finding.

Answer Paul Harris: You are very right in your perception that there is no clear single method for doing retinoscopy. We have modified the basic procedure to give us more insights into how the person actually performs.

On a conceptual basis we view fogging (the use of plus on the eye that is not being scoped) as a non-medicinal form of cycloplegia. Since we want the patient to be more actively involved or “connected” to the distance target, we want them to do this with the possibility that they may be able to see the target clearly. As they select the distance target to be that from which they are deriving meaning, we do not want them fogged. Fogging causes them to go passive and we want to see them actively involved in seeing.

Yes, with fogging it is possible in some situations to get more plus or less minus to be revealed. However, the feeling is that this has been artificially produced and is not the type of insight that has lots of use clinically.

Now let’s consider the type of target we use for retinoscopy. Since I would like the person to be dynamically and actively involved with the target I want something that is near threshold visual acuity. If the visual acuity is 20/20 (6/6) then 20/30 (6/9) or 20/40 (6/12) is all right to use as a target. In Behavioral Vision Care (BVC) we talked about how poor most of our retinoscopy targets really are. Having some type of dynamic changing target that required sustained attention would be better. How long does a person of average intelligence need to look at 5 letters to know them? A film, television, or a slide projector where the person was given the controls so that they could change the slide when ready to view another would be best.

I hope this clarifies the procedure. To be clear, here is an example. Let's assume a person who reads 20/20 (6/6) and is about +1.00 on the #7 finding. I use the 20/40 (6/12) line with full room illumination. I start the procedure with plano in each eye. I find my neutral in the right eye with +2.50. I remove my working lens in the right eye, leaving + 1.00 in the right eye. I now move over to the left eye. Again, while doing the left eye the right eye has the + 1.00, not the +2.50 which would include the fog. I now find neutral on the left at +2.50. I then take out the + 1.50 working lens and record + 1.00 OU on the number 4 finding.

If I end up with any lens greater than the "rules of throw out", which are related to the refractive finding, then I may come back and re-scope the right eye. For example, if the person has +6.00 refraction with both eyes, I start with nothing in the phoropter. I scope the right eye and get neutral at +7.50. I take out the working lens and leave +6.00 in the right eye while I go do the left. I may then decide to come back to redo the right eye after I have done the left eye. This time I will be scoping the right eye with +6.00 over the left.

Done this way the finding is a dynamic, not a static distance retinoscopy. Most of what you will find in the literature is about static retinoscopy. I hope that this answers your questions.

Additional Insights Rob Lewis: I remember my days as a student quite well. One of the most baffling things for me was the way in which I was taught about retinoscopy. It seemed to be a route to a thing called the *prescription*. This was especially true when it came to the #4 finding (called static retinoscopy). At the time, it seemed to me that the retinoscopy must match the subjective and when it did, the examiner had done a good job of retinoscopy because it agreed with what the patient told me was the clearest lens, and two *tests* had produced consistent data.

My undergraduate experience was in physics. I learned to believe my data and I learned to trust in my ability to observe. As I began to see my own patients, my data and the patient’s subjective did not always agree well. If what I saw with my retinoscope was correct, either the patient was wrong about his or her own vision or what I understood about the relationship of the retinoscopy findings to the other

findings was in error. As time passed, I began to realize that retinoscopy did not depend on other findings for its validity. It was not a measure of the *refraction*, but seemed to be an indicator of what the patient's visual system was doing. It was at this time that I began to be aware that *static* was an unusual word to use to describe what seemed to be a dynamic process. This was true, even though I was still using a streak retinoscope and a plus fogging technique for the #4 finding, both of which tend to obscure a good deal of available information.

John Streff, O.D., one of my mentors, told me that in retinoscopy (and the rest of the exam as well) the examiner brings his or her visual system to bear on the visual system of the patient. This is what all forms of retinoscopy have in common. The patient's response that we observe through retinoscopy evokes an answering response in the examiner. It is possible to observe this response in the examiner even when the examiner has little awareness that it occurs. As each examiner becomes more in tune with their own visual system, they will be increasingly aware of the patient as well. This continues to happen in my case. Each technique of retinoscopy offers an avenue through which the examiner can gain insight into the vision of a patient. In this sense, it could be said that there is one retinoscopy technique applied at differing distances with differing targets to gain insight into the patient's responses to the differing situations. For example:

- 1) Does the patient remain engaged with the task or let it go (fight or flight)?
- 2) Where does the patient place identification to deal with the target?
- 3) What is the symmetry and stability of the visual response?

I do not believe it is reasonable for a person learning the techniques and theories of our profession to be asked to learn and understand all of the subtlety of every retinoscopy technique at first. As a clinician becomes more skillful and improves his or her understanding, each probe of the visual system becomes integrated into a developing understanding of the needs for each individual patient. It is interesting to me that Paul and I developed our general approach in isolation from each other, and yet there is almost no difference in the way we do retinoscopy. Distance retinoscopy provides the starting point of the *analytical* sequence we both use. It is an anchor point for me.

I believe the best way to begin to learn retinoscopy is as a part of the exam sequence, related to the other findings. Paul described an excellent approach in his note to you. Both he and I use it. With retinoscopy seen in this perspective, the entire examination sequence becomes a natural way of looking at where the patient is and developing an understanding of where they can be.

Book Reports

By: Paul A. Harris, O.D.

Dr. Greg Kitchener recommended that I read **Conversations with Neil's Brain – The Neural Nature of Thought and Language**, by William H. Calvin and George A. Ojemann. The book had a key reference about the changes in reflectance of neural tissue in response to how active the neural tissue was. This gave me a better understanding of the changes in the brightness in the retinoscopic reflexes. The book itself was about Neil, an epileptic whose illness was secondary to a car accident. Doctors were not able to control his seizures with any medications and decided to surgically remove most of his temporal lobe on one side. The author takes you step by step through the testing and evaluations as well as the surgery. The writing is informative, yet easy to understand. It helped reinforce much of what I already understood about the neurology of the human brain. I can't say that I agree with his opinions about the neurological underpinnings of learning disabilities, dyslexia, and attention deficit disorder, but

I do highly recommend this book. It's published by Addison-Wesley. The ISBN of the paperback edition is 0-201-48337-8.

Some Quotes for a Section on Laterality:

- “About 5 percent of all people have language in the right brain and another 5 to 6 percent have significant language function in both halves.” (Page 43)
- “Dichotomies make researchers happy, they ease the burden of overworked students, they sell books and shortcut study guides – but in reality, things are usually more complicated, and therefore harder to remember.” (Page 45)
- “Stimulation of Broca's area or Wernicke's area does not cause speech. If the patient is already speaking, the electricity merely causes errors. If not, nothing seems to happen. The anatomy doesn't come with labels and, unless the brain happens to be speaking at the same time, the functions of the cortical language areas aren't obvious” (Page 45)
- “Many patients with strongly lateralized language do not necessarily have strongly lateralized visual-spatial functions. Visual-spatial functions are more strongly lateralized in males than in females.” (Page 66)
- “Damage to the underside of the temporal lobe tends to interfere with object recognition, but damage to the parietal lobe tends to impair awareness that objects are even there – and, of course, making movement toward them.” (Page 67)
- “The parietal lobes are probably what keep our visual experiences from looking like an amateur videotape, jerking from here to there. Our eyes do indeed jerk from here to there, even faster than a camera, but we don't perceive it that way. The seeming stability of our perceived world is probably because it is, in large part, actually a mental model of our visual world – that we update from all those jerky images we get.” (Page 68)
- “Nearly two-thirds of the neurons recorded from the human temporal lobe seemed to be interested in faces.” “We like to talk about areas of the brain having specialties, but the information is usually stored redundantly over a wide area.” (page 71)
- “Disturbance of musical abilities in professional musicians usually takes left-brain damage. It's been suggested that as you gain proficiency in music, it is increasingly organized like a language, dependent on your left brain. But not on exactly the same areas as spoken language.” (Page 73)

All of this talk of laterality and change in brain as it is used triggered in me a number of discussions I have been involved in over the years:

- Humor in strabismics
- Space – time problems: lost in space = lost in time
- Spatial and temporal mismatches or disconnects in strabismics
- Lack of subtlety and nuance in the use of language in strabismics

All of this suggests that it MIGHT be interesting to have a series of fMRI or fPET scans done before and after VT with strabismics.

Next comes a section on paying attention:

Defective function of these circuits seems to be the basis for attention deficit syndrome and minimal learning disorders, situations in which a child has difficulty sustaining attention. These might well involve those selective-attention circuits passing through the left thalamus that focus attention on verbal information such as object names.

More severe malfunctions in these circuits are probably a part of autism, in which there is an overall limitation in attending to the external environment, especially in attending to the presence of other people and perhaps to verbal information. (Page 87)

I wrote in the margins: Maybe yoked prisms in autism works by altering blood flow to the thalamus?

There is a section later in the book where they are talking about the underlying neurology that may be involved in amblyopia.

Now you've got to know at what level in the visual pathway the neurons begin comparing the slightly different view from the two eyes. It's not until the sixth-order neuron. The fifth-order neurons – the ones in cortical layer IVc which receive the lateral geniculate inputs – are still "monocular". (Page 180)

There is a section where the authors are discussing deprivation amblyopia in monkeys. In response to the statement, "So the bad eye had been disconnected?" they state:

That's probably too strong a way of expressing it, since drugs that block inhibitory synapses can temporarily reveal some underlying connections from both eyes. (Page 181)

In a section on sequencing and learning new skills, there is a quote about which I feel very positive. Indeed it should be the basis for changing how we approach training many activities in society. For example, many musicians when young are in groups that spend nearly all their time preparing for a concert. They spend most of their time working to perfect a single thing. I have always felt that it would be better to do lots and lots of different things and to be exposed to many different ways to do things. In my own musical practice I will work on a piece for performance but in small pieces over time. I prefer to read new material or to spend 10-15 minutes on one thing and to then switch to something else. Here is the quote:

The cortical-subcortical division between novel associations and skilled routine suggests, however, that it may be discovering the rules of the game which is more important to developing cortical sequencing abilities than accomplished performance. Learning many new songs might be better than learning to sing one song well, at least for exercising sequencing cortex. (Page 250)

In this section the authors end with an admonition that we should all keep in mind:

....giving names to things can be dangerous, even when the specialization seems as obvious as that for language. "Language cortex" is only cortex that appears to support language function, among other functions. Defining its function by what stops working in its absence confuses a correlation with a cause. (Page 251)

Mind Candy

By: Rob Lewis, O.D.

In our practice we are often asked about dyslexia. Many parents are quite anxious to find out if their child has dyslexia. This may be a part of the tendency we humans have to want to label (identify) things in order to better understand them. A label is supposed to help communicate the totality of the problem, but in many cases of learning difficulties, it may obscure the issue. My old brown Webster's seventh says that dyslexia is "a disturbance of the ability to read." Fortunately it doesn't say anything about seeing things backwards nor any of the other mythology that surrounds the term.

It is the mythology of dyslexia and it's connection with the idea that dyslexia implies a broken person that makes the term a barrier to successfully treating the actual difficulties the person has. Too often, clinicians run test after test until they find something they don't treat. In order to help people, we look for things we do treat. When people ask us if we treat dyslexia we might even say, "No, we treat people who have problems with reading and learning...The dyslexia will just have to get better on it's own." With proper vision care most people, including those diagnosed with dyslexia, will perform at a much higher level.

The point of this is that there are terms such as dyslexia we need to fully understand so that we do not let them stand in the way of our helping patients. Dyslexia does not connote some mysterious insoluble problem that a person must somehow adapt to, but rather is simply a word that specifies a syndrome that is poorly understood by both the public and those who seek to treat the syndrome. Let us not spend our time and energy centered on the problem but rather let us put our efforts into helping the person with the problems.

Origins of Autism

By: Paul Harris, O.D.

I thought you might be interested in an article on autism in the February issue of *Scientific American* by Patricia Rodier entitled "The Early Origins of Autism". It turned upside down for me the causes of autism. I had always felt that there was something that happened to a basically normal child at between 14 and 18 months of age that caused the change. Most of these kids are fine until that time and then may have a regression in speech and then go into some of the characteristic behaviors.

This researcher is looking at possible chemical or toxic causes very early in utero causing malformations to the facial nucleus and the superior olive. It was noticed that of a subpopulation of thalidamide babies that have grown up there was a 30 times higher concentration of autism than in non-thalidamide children.

According to the article, "When we examined the woman's brain stem, we were struck by the near absence of two structures: The facial nucleus, which controls the muscles of facial expression, and the superior olive, which is a relay station for auditory information."

When working with mice that were induced to be autistic-like, they also noticed, "that they had ear malformations and lacked one of the brain structures controlling eye movement." She did not elaborate on which brain structure was absent. She also emphasized a number of physical traits about the ears and the formation of the mouth in autism. The researcher then looked at non-thalidamide autistics and

found several anomalies specifically in the HOXA1 gene which were very specific but which did not account fully for autism.

In the inset on page 62, "A Simpler Symptom of Autism", they talk about a visual test to confirm autism which related to an almost preferential looking type of task. It involved three panels with the center being on. With normal children if you extinguish the center and either side panel comes on they move to the side panel. If you leave the center on with the same stimuli and then add a new one to the side the normal child looks to the new novel stimuli. However in the second paradigm where the center stays on and stays the same and a novel one comes on one of the side panels, the autistic person continues looking at the center panel, not at the new novel stimuli. I recommend the article for your reading.

Editorial

By: Robert Hohendorf, O.D.

After a recent discussion about sight and vision on the VT ListServ, I thought a quote from the 8/26/02 AOA News was interesting. It was embedded in the article on page 5 about the retirement of our staff counsel Thomas Eichorst. It was stated by Jerald F. Combs O.D., chair of the AOA State Government Relations Center Executive Committee, "Eichorst was central to Optometry's evolution from vision care to eye care".

It tells us we need to change the stress we have placed on the use of the word vision or we are indeed our own worst enemy. I personally don't feel we need to build more barriers within optometry. The "us vs. them" attitude is part of the reason we have isolated ourselves from the optometric mainstream. As Glen Steele, president of the OEPPF, has stressed so often, we need to join with mainstream optometry. We need to be inclusive. What we do should be an elemental part of Optometry not a fringe element. The change in the mainstream will not occur from without, it will only happen from within.

I sense a passing generation of current AOA leadership that is still somewhat sympathetic to behavioral concepts of vision care. Within the next two generations I fear that will not be the case unless something is done from within, and soon. The current climate of infant, toddler and preschool eye exams is a vehicle we should all take advantage of to get involved outside our clique. It scares me to hear the medical model of infant vision and preschool screenings that is being espoused. When I examine a pre-schooler and I tell the parents; "all looks OK", I want to have some degree of certainty that visual development and the visual skills critical to reaching their academic potential are present. It should not be just a screening for eye health, strabismus and amblyopia.

The state laws for mandatory vision screenings before entry into school or special education have come about because the governor's or other political VIP's grandson or immediate family member had academic difficulty that optometric vision therapy helped to turn around. Mainstream optometry has jumped on the bandwagon, thank goodness; but, they are currently on the eye care not vision care bandwagon. There are three reasons behavioral vision care must be stressed:

1. It is to the benefit of the child.
2. OMDs and other health care professionals are trying to take financial advantage of doing autorefractions and billing for full exams or opposing the legislation.

3. The opposition we are facing is based upon supplying standard eye screenings that MDs and/or their delegates already provide.

They have a point. If legislation mandates the same evaluations MD's, their delegates and now optometrist's are currently doing, we will be missing the type of vision problems that interfere with reaching one's academic potential. We will not be solving the problem the legislation is designed to detect. We will only include our profession in perpetuating the "hidden" vision problems in children and having the parents and schools feel safe that their is no vision problem present. The argument will be: There can't be any vision problems present. The law says they have to have a thorough eye exam, they did, so they have no vision problem now or later in the 3rd grade, etc, etc, etc. Passing laws in their current form will cause detection and delivery of proper care for learning related vision problems to be more difficult!

We need to get involved to ensure that new laws passed to protect our children are indeed protecting what they set out to protect. We need to now, more than ever, educate our profession, from within, and the legislatures that pass laws of the importance of proper detection and treatment of the very problems that cause learning problems in schools. The importance of properly written laws to detect all the problems they are looking for will not be an easy educational task on our parts but; but, if not us, who? If not now, when?

If, after all, the OMDs, ODs and pediatric MDs are currently doing such an adequate job, why do we need new laws? We should turn their major objections back upon them. If they were doing such a good job why do the problems still exist? We all need to take a more active roll on the local level to try to influence the language of the laws being passed throughout the country.