

Article • A Process Approach to Treatment of Vision Dysfunctions

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ABSTRACT

This paper will present a process approach to the treatment of vision dysfunctions with the use of lenses and vision therapy. The process approach views vision dysfunctions as syndromes, potentially impacting cognition, posture, balance, movement, speech-auditory, emotions, and feelings. Performance lenses can be prescribed for most daily activities. A set of office vision therapy activities is performed in free or real space, most often slowly, relying on feedback to create change. This process requires the trainer to plant questions for the patient to consider rather than informing them of what they should be seeing. Diaphragmatic breathing, “hanging onto space,” and good posture are fundamental to each activity. Balance and movement are emphasized throughout the program.

Keywords: diaphragmatic breathing, dissociating glasses, hanging onto space, multifaceted activity

Introduction

Vision is a complex activity that interacts with other processes. The intra-acting processes include eye movements and location skills (aka saccades), orientation, centering, identification, peripheral central integration, visual memory, and visualization. The interacting processes include vision and each of the following: cognition, posture, balance, movement, speech-auditory, vestibular, and emotions and feelings. The output of one process modifies or shapes another. The human brain carries on wide-ranging parallel processing, which can be impacted by contrary emotions and motivational influences.^{1,3}

Visual dysfunctions are rarely isolated to a few skills; rather, they customarily impact performance from head to toe. Inadequate centering, identification, or eye movement and location skills are symptomatic of a more complex problem. Besides impacting cognition and communication, vision dysfunctions can lead to head tilts or turns; shoulder, neck, and back tension; leg weight imbalances; locking knees; heavy-footedness; squeezing toes; toe walking; difficulty standing in place

or placing one foot over and alongside the other foot; leaning backward or forward; feet turning inward or outward; shallow breathing; holding breath; fidgetiness or motor overflow; fragmented behavior; tunneling; frustration; procrastination; and anxiety.^{1,3}

Invariably, in my vision evaluation for struggling new patients not requiring or wearing compensating lenses, cognition, posture, balance, movement, and speech-auditory patterns are compromised and need to be re-established. Performance lenses can quickly impact those patterns. Performance lenses include: low plus, reduced plus for moderate to high hyperopia, reduced or eliminated cylindrical power, small amounts of prism (often in the 0.25 Δ to 0.50 Δ range), and the use of binasal occluders, tints, and spot or sector patches. The profoundness of a performance lens evaluation is that changes in performance are usually clearly visible in most patients. These changes include static and dynamic posture (better balance, walking with increased speed, bigger steps, and light-footedness), more accurate and fluent voice projection, reduced fidgetiness, enhanced

reading fluency and resonance, and improved handwriting.^{2,4} Distance compensating lenses are usually limited to driving.

A process approach to vision therapy (VT) emphasizes the following: diaphragmatic breathing, posture, and “hanging onto space (HOS).” This includes maintaining clarity in the area surrounding the object of interest and being cognizant of surrounding space.

Posture, balance, and movement are the foundation for good vision. Deficiencies place an artificial ceiling on visual development or rehabilitation. If diaphragmatic breathing and HOS are not emphasized in most (if not all) activities, it is highly unlikely that the patient will hold the skills learned under conditions perceived as stressful. In stressful situations, breath is often held, and functional fields constrict, both of which are deleterious to functioning competently.^{5,6}

A process approach is guided by the knowledge that vision governs, impacts, or structures performance (movement and abstract thinking) and is impacted by other processes. Vision is a series of intra-dependent and interdependent processes used to accomplish an objective. The output of one process often becomes the input for another. For example, centering determines identification, vision span influences reading fluency, visual projection regulates auditory projection, centering impacts visualization, and visualization impacts centering. The interactions between these processes and their inputs and outputs are binding.^{2,6}

A process approach is structured through a set of multifaceted activities. However, just like the maxim “one size fits all” does not work in practice, there will be bridge activities and modified activities as needed. Each activity in the set employs a great deal of the visual process. For example, most practitioners are familiar with Wolff pursuits. This activity emphasizes the following: eye movements and location skills, centering skills (with

dissociating glasses keeping both targets solid, aligned, and equidistant from the plane of the wands, identification skills (keeping the wand clear and the room clear or equally blurry), diaphragmatic breathing, orientation (posture), HOS, and central-peripheral organization. In my experience, immediately following the activity, the patient often reports that space appears more three-dimensional and wider in scope, they feel more grounded, and their body is looser as they move. More advanced Wolff pursuits involve working with bent wands, which increases the challenge of alignment due to the addition of angles. Lastly, walking Wolff pursuits has the patient walking wearing the vertical doubling glasses, with the wands held so they make an inverted V.

A process approach in VT would then be a multi-faceted activity occurring primarily in free or real space; the patient is usually not told the end goal. After the basic instructions, the patient proceeds to do the activity. The following questions are then asked: What do you see? What do you feel? What is happening to your posture, balance, and movement as you do the activity? What is occurring with your breathing as you do the activity? What changes can you make as you do the activity? Can you change how you are looking? What happens after making the changes?

The process approach calls for the patient to recognize and to describe changes happening in the visible or external world and the internal world. The visible world changes include volume, length, width and height, contours of space, three-dimensionality, and spatial relationships within that space. Internal world changes include head-to-toe (body tension), breathing changes, postural shifts (more symmetrically balanced, head tilt or turn, locking knees, squeezing toes, placing more weight on one leg), nausea, or dizziness. The process approach provides the patient the freedom and necessity of reporting observations without being censured or corrected. The patient provides

the trainer feedback and feedforward to guide to a more optimum visual functioning through posing questions. Our obligation is to plant questions in the patient's mind without giving them the answers.

Development or rehabilitation of the visual process means the patient is going to have to deal with paradoxical responses and mismatches in space. In working with yoked prisms, patients can struggle with recognizing the changes externally and internally. To help patients organize feedback, it can be helpful to work in a hallway or partitioned space and then to move to a more open space. In the hallway, the patient can more easily HOS and see the ceiling, floor, and sidewalls simultaneously, allowing them to move to the expected responses. In the activity Monocular Minus Lens, the patient is standing and is asked to view a fairly large object (e.g., trampoline standing on edge) 8-10 feet away. The patient, with one eye patched, holds a -4.00 lens 16" in front of the open eye. An image is seen through the lens as the patient centers on the object. The expected response is that the image is in front of the object. As the patient brings the lens toward their face, the image should appear to move with the lens and eventually appear 6-7" beyond the lens. In the beginning, patients often have mismatches. The image can appear behind the object, or the image can appear several feet from the lens.

The patient has been forewarned that vision is a process, and the approach to treatment is a process approach. In a process approach, their observations or responses may be in conflict with logic or with what they think they have observed. The objective of the process approach is to move from latency or existing but not yet developed (located and identified) to manifest (clear or obvious). Perceiving, processing, and performance are all subject to modification through new information and new experience.

Academics use questions, silence, and other methods to engage a student's critical thinking and communication skills. Behavioral

optometry in the process approach to VT encourages the patient to develop critical thinking and communication skills through the process of examining their visible world sans logic, rationality, or subjectivity. An immediate response is sought. The VT patient is always given the option of reporting that the situation is in flux, or at least initially to report that they see it and feel it but lack the language to communicate what is happening. This is the time for the doctor/therapist to guide the patient by providing the vocabulary to help describe what is occurring.

In the process approach, the patient typically does not wear their habitual lenses in VT. A quick way to begin reorganizing the visual process is to take the patient out of their habitual world through training lenses. However, in cases of high myopia, the patient can wear performance contact lenses.

The process approach with each activity engages the patient with a question: e.g., What changes do you notice with the training lenses? What do you see? What can you change? What happens if you change how you are looking?

The process approach values observation of the visible and the patient's internal world over logic, reasoning, and rationalizing. When patients are unsure of what they are seeing, or their world is unstable, in order to make sense of their world, they often do not respond to questions immediately but put their thoughts through a filter to make sense of what is going on. Thus, they employ reasoning, logic, or rationalization. However, this may lead to a more efficient maladaptation but addresses the patient's visual dysfunction in a very limited manner.

Discussing with patients the importance of quickly responding to questions concerning what they see is an important part of the process approach. It allows the doctor/therapist to help guide the patient through questioning to a more successful outcome. Over time, trusting what is seen leads to more appropriate responses and a reduction in anxiety.²

Another complexity of the visual process is providing feedback and feedforward (anticipating what is going to happen) in the fine-tuning of the overall visual process. Patients are encouraged to do the activities slowly in order to enhance feedback.

In my experience with a process approach, the patient's approach to problem-solving becomes evident. Examples include a willingness to experiment, repeating the same behavior, wild guesses, stiffening the limbs, becoming easily frustrated, feeling powerless to make changes if they do not come immediately, or going through the motions. Teenagers and adults will often hit a wall through which they will have to pass to deal with their visual dysfunction effectively, to transcend reflexive cognitive-emotional patterns in relation to how they solve problems.

I have worked with a Feldenkrais practitioner who eventually became a psychologist. She was doing a chalkboard activity, and when I asked her to make certain changes, she got upset. She was going through the motions instead of being visually directed. She suddenly realized that when she was a high school athlete running hurdles, she would often train in the evening, and it would be very dark. She now realized that she relied more on getting into a rhythm than actually seeing the hurdles. After that recognition, she became much more engaged in the process and in using her vision more effectively.

Another patient would take almost a minute to respond to questions following activities. We talked about responding to the raw materials of what she was seeing sans logic and reasoning. It was a challenge for her. She had to let go of being a perfectionist. Though it was not easy for her, she pushed forward with activities with a more enlightened stance. Over time, she reported more confidence, poise, and reduced tension as her visual process flourished. Changes in perceiving, processing, and performance led to better management of

affectivity, including increased self-confidence, increased competency of executive functioning, and reduction or elimination of anxiety.^{2,6,7}

Additionally, patients are compelled to come to terms with recognizing lens- or prism-induced changes in space, balance, and posture. These discrepancies need to be accepted in order to achieve competency; i.e., unequal clarity in space or changes evoked with yoked prisms and dissociating glasses may be paradoxical or inconsistent in working through the activities over time to develop proficiency.

In a process approach, the patient is given four constants for all activities. First is breathing diaphragmatically. If we breathe shallowly, hold the breath, or chest breathe, it leads to tunneling and reduced three-dimensionality. The second constant is HOS, which is shorthand for centering on an object, and the rest of the room or space is the target. Patients are encouraged to be aware of not only the space around and behind them, but also the space between objects. Plus, they should have a sense of themselves in that space. This second constant increases the visible world and three-dimensionality. Performing activities slowly in order to maximize feedback is the third constant, and the fourth is posture. Less than ideal posture compromises how space is organized.^{1,5,7} When patients are struggling with activities, often one or more of these constants is diminished or missing. Patients often realize that their view of HOS is limited relative to the visible world.

To help new patients beginning and struggling in VT to grasp HOS, the Hand Game activity is employed. This activity is very powerful, demonstrating immediately to the patient if they are HOS, breathing, and being visually directed. It is equivalent to three-dimensional Harmon Circles. The doctor/therapist and the patient are facing each other at eye level, centering on each other's eyes. The doctor/therapist may be standing or sitting, and the patient is standing. Hands with palms

forward are placed in front of the body so that the doctor/therapist and the patient have 1 inch of space separating the doctor/therapist's hands from the patient's hands. The doctor/therapist asks the patient to be aware of the rest of the room as they center on the doctor's/therapist's eyes. Now the doctor/therapist moves her hands initially in the same direction and then the opposite. The patient's job is always to keep her hands 1" away from the patient's. The doctor/therapist's movements are always slow, and the hands are not moved more than 6-10 inches in each direction. The patient is asked if they are breathing as their hands are moving, and if each hand is moving simultaneously. When not HOS, there is often a delayed response by one hand.

In a process approach, patients are told at the onset and as needed that the activities that they will be doing are complex and challenging. However, even if only small changes are made, it can lead to big changes in their lives.

A process approach to vision care recognizes that patients will be subject to real and perceived physical, physiological, perceptual, and intellectual or psychological stresses because we all operate in the world in one fashion or another. The patient needs to be educated on the negative impact of the vision process in response to acute or chronic stress and things that they can do to maintain good vision functioning: e.g., visual hygiene, avoiding getting lost in the details, and being aware of the bigger picture.^{5,6}

In summary, a process approach involves the following:

1. Employs posture, balance, and movement as the foundation for developing a new space world throughout the program
2. Incorporates HOS in all activities
3. Incorporates diaphragmatic breathing in all activities
4. Employs activities that provide feedback and feedforward

5. Uses visualization
6. Works as much as possible in real or free space
7. Maximizes the use of lenses and prisms in VT
8. With each activity, asks the following general questions: What do you see? Does what you are seeing change? Can you change how you are seeing? What helped you in this activity? If the patient has worked on an activity more than a few sessions, how they are doing the activity differently?
9. After an activity, the patient walks around and is asked to report what is different about how space looks, how they are moving their body, and how their body feels
10. Activities are typically done slowly to maximize feedback

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