

Article • Visual Hygiene – An Under-Used Concept in Optometric Care

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ABSTRACT

Visual hygiene should be an essential part of our overall treatment plan. As our visual demands and activities have become more near-oriented, our visual systems have had to make appropriate adaptations. A personalized visual hygiene list will help our patients take a more active role in the management of their eyes and their visual functioning.

Key Words: visual hygiene, visual stress, maladaptive changes, myopia

In our culture, dental hygiene has long been considered an essential component of any dental health program. Hygiene techniques, in general, have been an integral part of our health care systems for centuries. Hand washing has been considered one of the most significant discoveries in the history of medicine. On the other hand, visual hygiene is a term that has not been part of our mainstream optometric vernacular.

The importance of any hygiene concept is its impact from an environmental perspective. The controversy regarding nature versus nurture or genetics versus environment has been debated since the beginning of time. For some, our destiny has been solely determined by our genetic make-up, while others have been over-focused on environmental factors. Since nothing is black or white, in my opinion, but shades of gray/grey, there is a critical interplay between these two variables.

From a personal viewpoint, a lecture by Dr. Edward Goldstein regarding myopia control early in my career changed my clinical approach forever. Besides his optometric clinical findings, he presented a list of behaviors that need modifications in our daily lives.

His astute observations of human behavioral patterns were an impetus for developing my visual hygiene lists (Appendices A & B). After each examination, I outlined my specific visual concerns and highlighted key behavioral changes on each patient's hygiene list. Over time, I also developed a list for preschoolers. Parents within this age group have minimal knowledge regarding genetic or environmental factors in their children's visual development. Dr. Martin H. Birnbaum reinforced the need for this philosophical position in a brilliant article, "The Use of Stress Reduction Concepts and Techniques in Vision Therapy,"¹ published in the 1990s before the turn of the century.

In a past conversation with a pediatric resident from a different optometric institution regarding the value of her rotation at the NECO Binocular Vision/Vision Therapy Clinic, she focused on the importance of the concept of visual hygiene. In her opinion, it had never been addressed during her previous educational experiences. Ironically, many students at our institution at that time were also not exposed to this thought process during their clinical training.

With the epidemic of myopia becoming a significant concern in eye care, visual hygiene is one variable that has been largely ignored. The evolving concept of epigenetics has altered the nature-versus-nurture argument. In simple terms, our genetic make-up is not fixed from birth. In a parallel dilemma, the field of education has faced a similar concern regarding the actual impact of the environment versus genetics on a child's IQ and/or academic achievement. From the pre-myopic to the myopic patient, visual hygiene is often a key variable in delaying the onset of myopia or controlling the degree of its progression over a patient's lifetime. Many myopic patients believe that their myopia has been pre-programmed, without any hope for appropriate intervention. In truth, we are not informing our patients of some basic behavioral strategies, which can give them both helpful insight and a degree of control over their ultimate refractive status. Many different approaches to myopia, including ortho K, bifocal contact lenses, conventional bifocals, pharmaceuticals, vision therapy, or a combination of these recommendations, have been advocated within the eye care professions. Ironically, visual hygiene is rarely included in these treatment protocols and rarely brought up by general practitioners.

The current 20-20-20 rule is a step in the right direction. The rule says that for every 20 minutes spent looking at a screen, a person should look at something 20 feet away for 20 seconds. The logistics and time frames of complying with this rule are not realistic for most age groups. Also, in my opinion, it is too limited in its mandate to alter changes in a patient's behavior or their visual status. As work demands have become more and more near-centered, our visual system has needed to adapt to these new stressors. In an early proposed near point stress theory, Dr. AM Skeffington postulated that the problem was caused by "socially compulsive, near-centered visual tasks" created by the act of reading, which was unique to his generation.² In expanding this concept, Dr. Martin Birnbaum proposed a physiological mechanism,³ while Dr. Elliot Forrest added a psychological factor to this underlying theory.⁴ These constructs have become the focus of many animal studies. Clearly, they have not addressed all of the other potential unknown causes of myopia, nor have they successfully identified a solution for the current myopia epidemic.

It should be noted that myopia is not the only maladaptive change or behavior that may have been caused by this evolutionary change in our lifestyles. Other refractive changes, including anisometropia, antimetropia, or astigmatism, may also negatively affect this shift to a more near-oriented world. A range of binocular dysfunctions, from convergence excess and insufficiency to accommodative dysfunctions, including accommodative excess, insufficiency, infacility, and ill-sustained accommodation, could also be considered maladaptive. Avoidance is another option, which is often overlooked, as individuals try to cope with this unrelenting type of visual stress. By eliminating any prolonged visual attention tasks or activities, an individual's symptoms and/or potential maladaptive changes can be minimized or significantly reduced.

The basics of the visual hygiene paradigm begin with posture. Dr. Darrell Boyd Harmon, a psychologist, proposed an appropriate reading distance, which has become known as Harmon's distance. It is measured from the point of the elbow to the second knuckle on the middle finger. In real-life and clinical situations, children tend to hold reading material closer than Harmon's distance, adding more stressors to their visual systems.⁵ Obviously, there are exceptions to all rules. It should also be noted that Harmon's insight occurred in the 1950s before the creation of computers, smart phones, and tablets. A mismatch between

an individual's Harmon's distance and their viewing distance can indicate a potential vision problem from a clinical perspective. For this reason, patients should learn to monitor their postural relationships regularly.

A simple strategy is for a patient to shift their focus quickly from any near-centered activity to a distance target and then back, while being cognizant of their actual postural orientation. Any blur at distance could indicate an accommodative spasm or accommodative dysfunction that tends to become worse over time. The onset of intermittent blurring is a warning sign that it is critical for a patient to change their task or situation. Strategic time-outs from extended visually oriented activities, including physical movements, should be implemented to counteract these potential degenerative maladaptive responses.

Dr. Darrell Boyd Harmon's insights and early visual hygiene techniques were based in a world dominated by books. This recommendation has become more relevant with the advent of electronic devices, especially with young children. Beyond the tendency to become over-focused on near tasks, the amount of time spent on these devices is also problematic. For this reason, time limitations should be an essential component of any hygiene list.

The importance of movement or physical activity to the visual system, beyond the hygiene recommendations presented thus far, cannot be understated. Sitting has become one of the significant adverse lifestyle changes in our evolving workplace. It has been considered by some authorities to have many health consequences, such as heart disease, diabetes, and premature death. It has been referred to as society's new smoking dilemma. For this reason, appropriate breaks should be scheduled on the hour to reset an individual's posture and body chemistry. Planned and deliberate exercise is essential in dealing with many innovations that have minimized physical activity and have maximized our sedentary alternatives.

Since the eye and visual system are not isolated from the brain and the body, the concept of relaxation therapy should be considered in a clinical setting. Many practitioners may consider this outside their sphere of comfort and influence; however, Dr. Henry Benson had already popularized this concept in the 1970s. He focused on the impact of meditation on physiological changes and stress management. His approach to eliciting a relaxation response as a means for lowering stress levels has survived decades of scrutiny.⁶ Dr. Martin Birnbaum, in his classic article,³ included this concept from both a visual and a total

health perspective. A newer progression of this thinking is mindfulness. From a clinical perspective, it is essential to discuss this option with specific patients or even to make an appropriate referral in particular cases.

Visual hygiene (and its associated techniques) is not a panacea that can resolve the multitude of maladaptive visual problems, many of which may be caused by stress. It simply represents a vital adjunct treatment option, reducing our natural stress levels and hopefully minimizing our negative responses to these stressors. Our behavioral reactions to our environment are an important and overlooked variable that is undoubtedly within one's control. As bad habits develop, so can good habits be learned. After addressing a patient's chief visual complaint, clinical concerns, and treatment options, visual hygiene becomes a critical discussion point. Most patients and/or parents want to take a more active role in dealing with their specific problem(s). A personalized list after an examination helps reinforce or modify key behavioral recommendations. As an important entry point into our health system, it is critical for us, as primary care practitioners, to communicate this

insight to our patients to improve their overall visual performance and quality of life.

References

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Laudon R. Visual hygiene – An under-used concept in optometric care. *Optom Vis Perf* 2020;8(4):XXX.

FOR: _____

DATE: _____

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VISUAL HYGIENE LIST: A GUIDE FOR YOUNGER CHILDREN

DO'S

1. **DO** observe your child's behavior during any visual task. Please record any unusual responses that are increasing in frequency.
2. **DO** encourage the proper working distance during all near point tasks. A rule of thumb is the distance from the child's middle knuckle to his/her elbow. What is it? _____ Inches.
3. **DO** monitor your child's visual posture periodically. A shortening in working distance can indicate a breakdown in a child's visual functioning.
4. **DO** provide adequate illumination for all activities.
5. **DO** become more aware of signs that could indicate a potential visual problem. Examples include:
 - a. Squinting
 - b. Rubbing eyes
 - c. Closing one eye
 - d. Crossing or turning of one eye
 - e. Tilting their head
6. **DO** learn about your family's previous eye problems. Families with a history of visual problems should have their children evaluated by the first year of life. Examples include:
 - a. Turned eyes
 - b. Blindness in childhood
 - c. Lazy eye
 - d. High degrees of farsightedness, nearsightedness and/or astigmatism
7. **DO** interrupt sustained visual activities with some physical activities.
8. **DO** STRESS THE IMPORTANCE OF PROPER VISUAL HYGIENE TODAY, TOMORROW AND EVERYDAY.

DON'TS

1. **DON'T** allow your child to sustain any near point task for long periods of time. Frequent breaks are important. A rule of thumb is to periodically interrupt their cycle of concentration. This approach can vary from child to child. Hypothetical examples:

- a. 2 years old – 5 minutes per task
- b. 3 years old – 8 minutes per task
- c. 4 years old – 12 minutes per task
- d. 5 years old – 15 minutes per task

2. **DON'T** allow your child to read in bed or use an I-Phone in bed in dim illumination.

3. **DON'T** allow your child to spend extended periods of time on electronic devices. They can be harmful to your child's eyes.

4. **DON'T** expect your child to complain about his/her eyes. Most young children **DON'T COMPLAIN**.

5. **DON'T** allow a child to avoid eye-hand coordination tasks such as sports and writing. After all, practice makes perfect.

6. **DON'T** become frustrated by the time and effort required to alter a negative behavior. In the final analysis, it will have been worth your time.

7. **DON'T WAIT FOR THE PROBLEM TO BECOME MORE AND MORE OBVIOUS. EARLY INTERVENTION IS ALWAYS A BETTER SOLUTION THAN CRISIS CARE.**

Space for other visual reminders:

***** WHENEVER IN DOUBT YOU SHOULD CONSULT YOUR EYE DOCTOR *****

Date: _____

Name: _____

VISUAL HYGIENE LIST

Dr. Richard C. Laudon New England College of Optometry

A Short Commentary: Environmental Issues in Vision

Our visual system is affected by hereditary and environmental factors. Since genetic issues are currently beyond our control, we must concentrate on the external stressors which can create interference or adaptations in our visual capabilities. For this reason, we need to be aware of these conditions and to work aggressively to modify these negative influences.

KEY ITEMS

1. Reading material should be held no closer than _____ inches. (Stress intensifies if book is held closer.)
2. Adequate lighting for all visual tasks, especially reading, is essential.
3. Good posture is critical for efficient reading. (Decreasing reading distance is a sign of stress and/or fatigue.)
4. The reading material should be tilted so it is nearly parallel to your eyes. (Book should not lie flat on the desk.)
5. A book should be held in front of both eyes. (Don't hold book off to one side. This position encourages using one eye only.)
6. After every two paragraphs of reading you should look up from the book and focus on a distant target for at least three seconds (relax your eyes) before resuming reading. (Intermittent blurred vision at near and/or distance can indicate a spasm which requires a break from your current near point task.)
7. Take strategic breaks from prolonged reading whenever possible. Everyone with diagnosed visual problems should learn to pace themselves. (After thirty minutes of concentrated reading you should rest for five to ten minutes. A longer break is needed after one hour of concentrated nearpoint activities.)
8. Electronic devices from I-Phones to I-Pads to tablets should be used in moderation. Extended use can be harmful to your eyes.

9. Outdoor activities are encouraged and have been considered to have a positive impact on preventing myopia.
10. Avoid squinting, straining, or staring at objects which you may not see clearly. Try to become more aware of our peripheral vision (side vision) and glance at the distance target. (It gets clearer this way!)
11. Whenever possible, avoid reading in a moving automobile.
12. Wear your glasses as they have been prescribed. (Any changes in your visual status should be addressed with your doctor.)

SPECIAL INSTRUCTIONS FOR THE PATIENT

1. _____

2. _____

3. _____

Vision is one of our most precious senses. Your ability to attain and to maintain your highest level of visual performance requires a concentrated effort on your part and the part of your eye care professional.