ISSN: 3068-1774
Review Article
Journal of Medical Images and Medical Education Research

How Snellen is Making People "Blinder"

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Submitted: 26 July 2025 **Accepted:** 02 August 2025 **Published:** 09 August 2025

https://doi.org/10.63620/MKJMMRR.2025.

Citation: *Hytowitz, A. (2025). How Snellen is Making People "Blinder". J of Med Ima & Med Edu Res 2(4)., 01-04.*

Abstract

This article critiques the Snellen visual acuity test, arguing that it contributes to visual fatigue, over-prescription of minus lenses, and the global rise in myopia. The author, Allan Hytowitz, shares a personal journey of vision degradation and recovery, culminating in the development of the Dyop (Dynamic Optotype) test. The Dyop test utilizes a spinning ring with optimized rotation speed and stroke width to more precisely measure acuity by stimulating the foveal photoreceptors in a way that static Snellen letters do not. Hytowitz introduces the concept of Chromatic Triangulation, proposing that acuity is regulated by photoreceptors in the retina rather than solely processed in the brain. He warns that the high-contrast white backgrounds of digital Snellen tests overstimulate photoreceptors, leading to inaccurate prescriptions and visual discomfort. The article presents alternative Dyop-based self-tests for detecting overminused prescriptions, photoreceptor fatigue, and early cognitive issues, advocating for wider adoption of the Dyop method in clinical and educational settings. The author emphasizes the importance of early dyslexia screening and cognitive health monitoring using these more accurate visual tools.

Keywords: Blinder, Eye, Eye Stroke, Myopia, Dyop Test

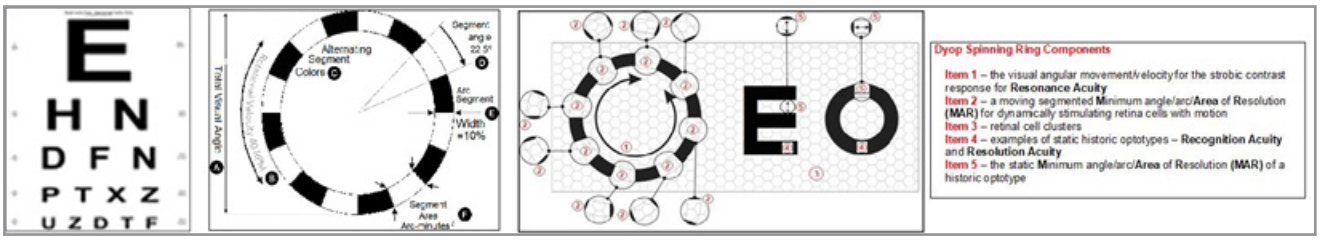
Introduction

After 15 years of mental, physical, and financial exhaustion, I FINALLY figured out how and why I was blinded by an Optometrist for four years starting in 2002, as well as why Dyop testing is superior to Snellen testing. Most of the details are in the recent paper on "Induced Dyslexia [1].

However, I was taught "Everything in life is simultaneously both a Blessing and a Curse." I have taken the Curse of my vision problems, and the 2010 discovery of the Dyop concept, and turned it into a Blessing.

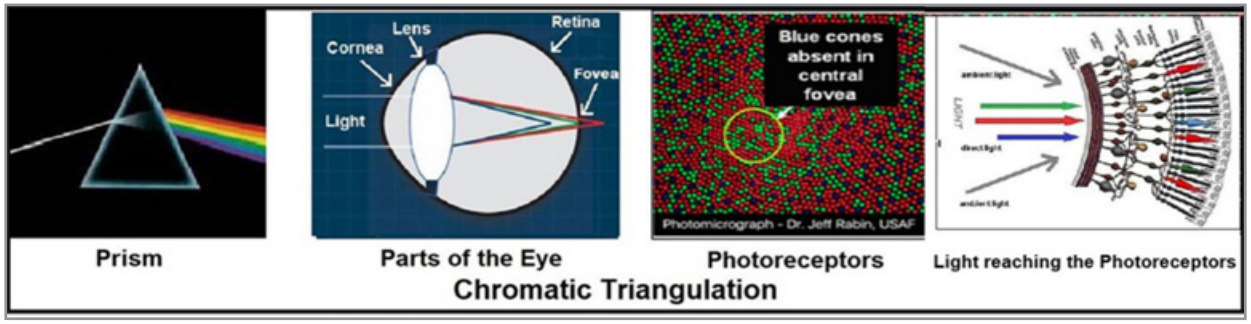
The Four Vision Science Discoveries with the Dyop Test

The Snellen test, as a benchmark for acuity and refractions, is inherently imprecise, inconsistent, and inefficient due to its reliance on identifying (or guessing) three of the five letters per line in the final steps of the test. Nearing 20/20 acuity (or 6/6 in the metric world), the rows become five letters of decreasing size. Except we don't "see" the letters or "see" the Black areas. Instead, we perceive the irregular White areas around culturally dependent Black shapes (e.g., letters) which do NOT stimulate your photoreceptors. With Snellen testing we see only White, which is a combination of the computer pixel Red, Green, and Blue light stimuli.



I discovered that the optimal Dyop rotation speed was 40 rpm, with an optimum 10% ring stroke width. This specific Dyop gaps size and motion is crucial to acuity precision. The Snellen gap AREA (such as the spacing in the "E" or the gap in the "C") is nearly twice the size of the Dyop's stimulus gap AREA. The optimum Dyop rotation rate matches the optimum photoreceptor refresh rate, thus making strobic Dyop optotypes significantly more precise than static optotypes [2].

The optimal Dyop rotation speed of 40 rpm matches the refresh rate of the retina fovea's photoreceptors which in turn relay their signals to neuroganglia cells in front of the retina. The neuroganglia sends its composite signal to the cilia to control the shape of the lens as well as a composite signal to the brain (via the optic nerve) where the image is stored and interpreted. Contrary to conventional belief, acuity is NOT regulated by the brain but by the foveal photoreceptors through a process called Chromatic Triangulation which allows the shape of the lens to adjust the focal depth colors of Red, Green, and Blue and the response of the color receptive photoreceptors in the fovea [3].

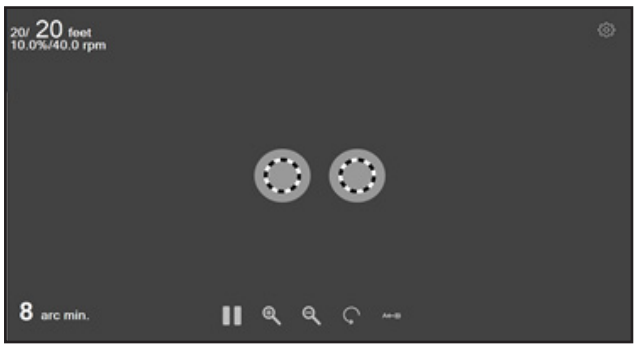


Vision testing that utilizes (static) white gaps around Snellen letters (or shapes) depletes the foveal photoreceptors' response and refresh rate, promoting a preference for excess minus power in prescriptions. That in turn contributes to eyeball elongation and increasing myopia.

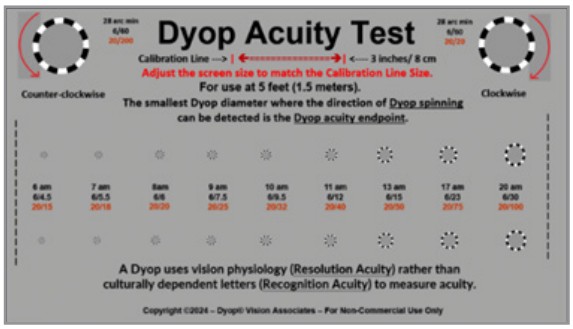
A Dyop test with White gaps and Black segments on a gray background demonstrates how, as the Dyop shrinks, the White area becomes too small to stimulate the fovea sufficiently, causing the motion perception to vanish. At this sub-acuity threshold, the Dyop ring appears to be a static undifferentiated gray ring.

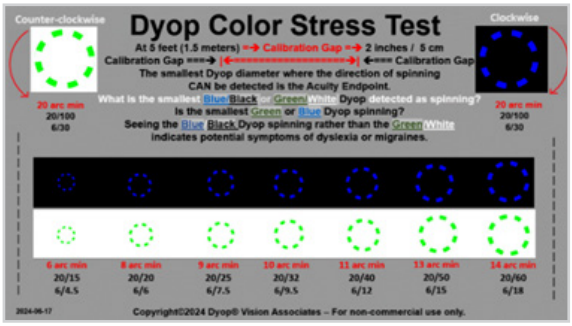
Professional Dyop Windows Test

Online Dyop Acuity Test

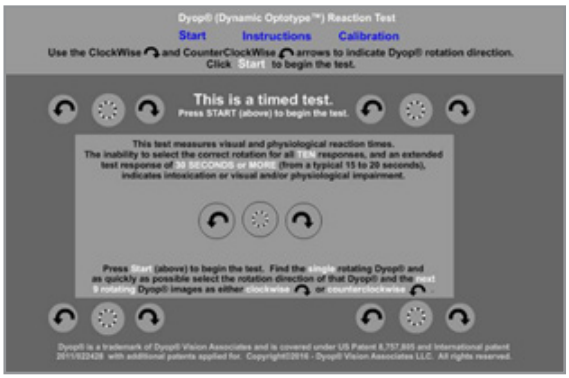


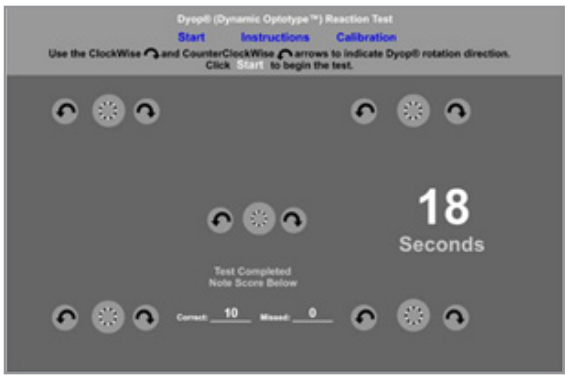
Online Dyop Color Stress Test





Online Dyop Cognition Test





Fifteen years into this journey, I realized the true harm of Snellen type testing wasn't just the imprecise gaps or temporary photoreceptor fatigue. In 1862, Snellen's letter chart was advanced for its time—akin to the telegraph. But Snellen's mistake was thinking we "see" the Black letters when we actually "see" the irregular White gaps defining them.

The modern-day damage stems from computerized Snellen tests. It's not just the gaps but the bright, dominant white backgrounds of digital displays—often comprising 90% of the screen area—that overstimulates the photoreceptors, similar to how looking at a lightbulb leaves a residual image when you close your eyes.

The light gray Dyop background was chosen so that as the spinning ring shrinks, the black/white contrast fades into a seemingly gray, static ring. But it turns out that the white screen backgrounds of modern Snellen tests play a significant role in overminusing prescriptions, inducing myopia, and possibly contributing to the global epidemic of myopia [4].

After my cataract surgery, I began experiencing headaches and mental fatigue. Reducing screen brightness and contrast from 100% to 50% resolved these symptoms—highlighting the damage caused by high-contrast white screens.

Without the curse of my cataracts, I may never have uncovered the blessings of understanding Snellen's 21st-century harm. The high contrast white areas versus the black letters on my screen were unintentionally inducing dyslexia, similar to the outdated testing technology and a lack of awareness by the optical profession.

Vision Self-Tests

• Chromatic Triangulation Demonstration: Close one eye and look around. You will still perceive depth perception and relative distance—suggesting acuity is regulated by the retina and not the brain as a binocular image.
• Excess Minus Power Test: If you wear glasses, push them about 0.5 inch forward away from your face. If the text appears clearer, your lenses are likely overminused by 0.25 to 0.50 diopters—enough to reduce cognition and potentially your IQ by 10 points.
• Overstimulation Test: Stare at a white light bulb briefly, then close your eyes. You'll likely see a white afterimage. The same hyper-stimulus from computer-based Snellen tests using bright white contrast damages the foveal photoreceptors' perception and refresh rate [5].

Moving Forward

I'm working on simplifying the Dyop explanation for non-scientist [6]. Feedback is welcome.

The www.dyop.org website offers:
• A 10-second acuity screening test
• A 5-second dyslexia screening test
• A timed cognition screening test

Early identification of children with reading difficulties, especially those from difficult home environments, can prevent social and educational marginalization. In extreme cases, these unmet challenges can contribute to school violence. The Dyop dyslexia color screening test may help identify students needing intervention and support. The timed cognition screening test may enable early diagnosis of perception difficulties associated with symptoms of Alzheimer's, Parkinson's, PTSD, or concussion injuries.

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