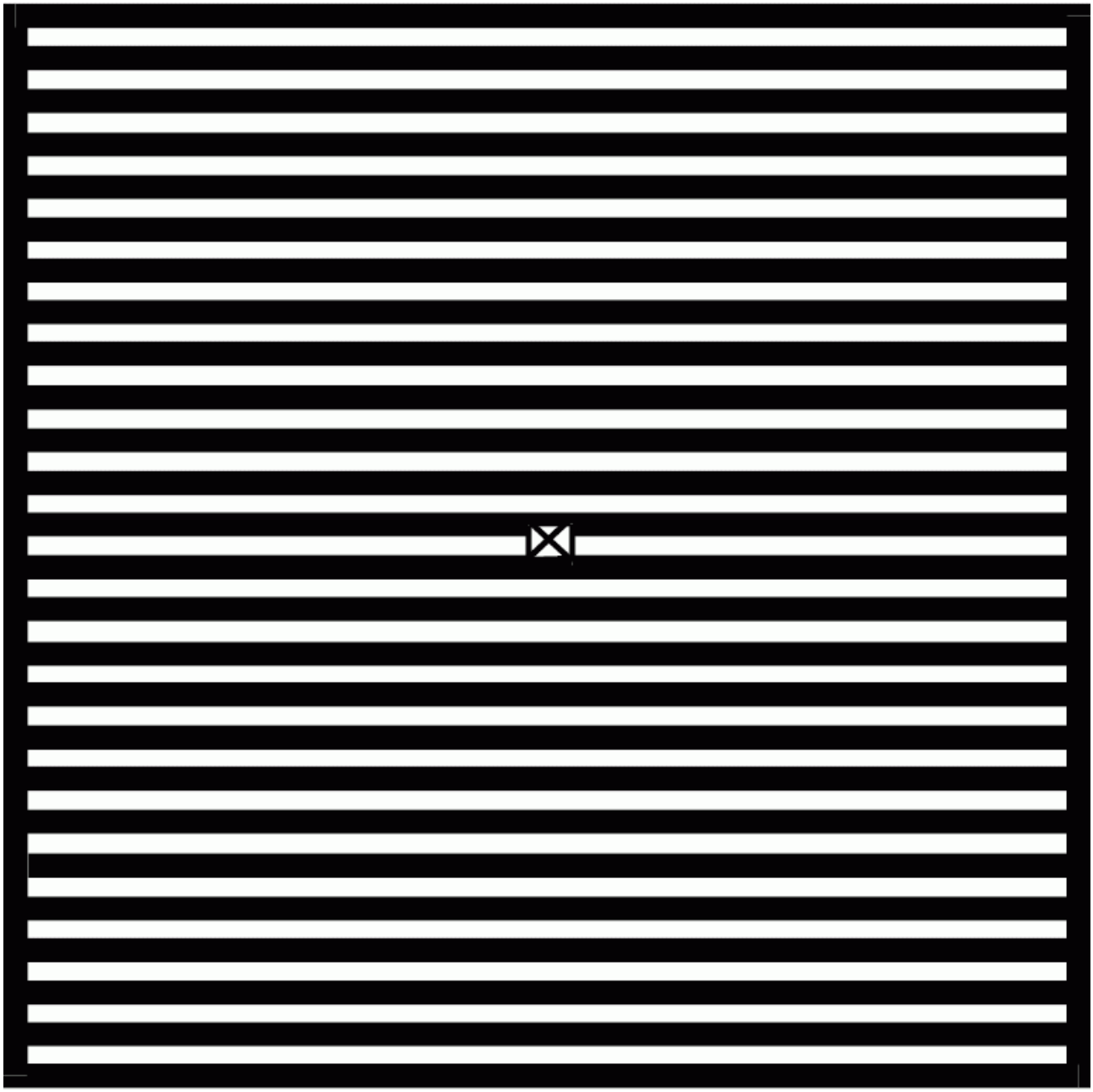
The Binocular Dissonance Test



SimplyBrainy

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VISUAL ALIASING TEST

The Bihemispheric Dissonance Test

Preface

Certain individuals—presently thought to amount to up to 40-50% of the general population and 50-60% of a clinical population—have neuro-physiological differences in the functioning of their visual cortex that results in a heightened sensitivity to striped patterns. Printed text with a 50% duty cycle (that is, the printed lines and spaces between have a 50/50 relationship) has the same effect as striped patterns of that proportion, the most mirage-provoking relationship. The central problem appears to be retinal-neural undersampling and LGB dissonance. These individuals often suffer from headaches, nausea, photophobia, and other aversive symptoms when reading.

This test helps to identify those individuals who respond either strongly, moderately, mildly, or not at all to the patterns. Those who screen out positively on the test grid should have a precision-based visual analysis to determine what, if any, performance prescription lenses might be desirable for reading, study, computing, and any and all other near work (video games, hobbycrafts, etc.).

Over almost 15 years of related clinical application, these prescriptions have proven remarkably resilient to change in the majority of cases, though individual differences occur.

Conducting The Binocular Dissonance Test

1. For use in screening, try to have the patient wear their habitual lenses; for diagnostic use, the patient's subjective prescription to best visual acuity should be assembled into a trial frame. If the patient has contact lenses for the test, the best spherical overrefraction should be in place.
2. Lighting should be as nearly daylight color temperature as possible, but can be effective (and revealing) in bright incandescent light, as well. Pink fluorescent lighting is to be avoided.

3. The patient should be comfortably seated or standing, holding the card so that there is no surface glare.
4. The tester asks: “What can you see?” (The response may be any of the following or may be “Nothing,” or “Stripes with a square in the middle.” This is fairly common.) If the answer has been less than the mirage values that occur, the tester then asks simply, “Do you see any colors?” and waits for comments. “Any movement?” – and, if needed – “Any shimmering or dancing in the pattern like snow on a TV screen?” and waits for comments. “Do you see any shadowy shapes? Any geometric forms?” and “Do you see the ink running together between the lines, like the ink ran on poor paper?” If there is strong aversive reaction as the target is presented, allow the patient to gradually expose themselves to the grid, assuring them that they can quit if they are bothered too much, or if they get nauseous or headachy. The examiner is attempting to determine (at least) the degree of disturbance and/or reduction that can be attained with closure of one eye, and even that measure of control may be enough to coax a reluctant observer to view the uncomfortable target (knowing that they can stop any distress by closing one eye).
5. The response is judged by the tester for its quality. “Strong responders show physical reactions, pulling back or pushing the target away, facial distortions, and other bodily reactions. “Moderate” responders show no overt aversive movements but easily report mirages: the movements described in the questioning, color fringes (frequently pastels of yellow, pink, blue, or green), geometric shapes (most frequently a large diamond, triangles, more rarely arcs to either side of fixation) and caliber losses in varying amounts. “Light” responders may have to have their positive signs drawn out by the questioning (being careful not to lead the patient into satisfying you with positive answers). In clinical experience, these Light responders have often started out with no mirage awareness, but may gradually attune to the types of observations being called for and can eventually observe almost all the mirage effects as the test progresses. “No response” responders show no overt awareness of the illusions, but yet some have shown dramatic response on the sample paragraphs and with long-term application of base-in prism. Thus, empirical trials may reveal great benefits to be had for even these apparently non-responsive individuals.
6. The subject is then asked to rate any amount of decrease in the mirage effects on a 10-1 scale. (This may not be possible on some adults and many children under 10 years of age or so. In these cases, graded paragraphs can be used in lieu of the grid.) With the initial response being given a quality value of 10, each lens and lens/prism combination is tried and rated for any improvement (or, rarely, a worsening – seen thus far mostly in individuals who were color deficient) of the effect. If the patient has had an S, M, or L response, ask the patient to close one eye and to note to what degree the effect changes. This is the benchmark reduction of effect that we are seeking to reproduce with the lens and prism combinations. It is often helpful to start the evaluation process by asking, “Has the disturbance gotten any better? If so, by how much? Is it down to a 5? Are we above or below a 5?” If there has been no improvement, try a different lens or lens/prism combination and repeat as necessary through all the lens/prism combinations, attempting to achieve as close an approximation with the lenses as the person sees with one eye closed. It may be helpful to ask, “Have we changed it to below a 5, is it a four? How much change has occurred? Is it above a five? Has it decreased to an eight?” (This helps the person to initiate a self-determined assessment, in terms of the quality of their comfort.) It is entirely appropriate for this to be a subjective process, for it is the person’s subjective comfort that we are assessing as far as the patient is immediately concerned, with the objective changes playing an very important, but more secondary role.

7. The best lens/prism combination is then confirmed via an oral reading task with any graded paragraphs, or one of the child's texts. First, empirically select a card of what seems to be an appropriate grade level, have them read and then adjust up or down a level or two, finally choosing the card where reading fluency seems at its peak. (It may be wise to assure a reluctant reader that this is not a reading test, but a vision test that uses reading.) Then, after the person has read two or three sentences of the last selected card, introduce the lens flipper that achieved the best result on the mirage reduction, and note any changes in fluency, word attack, inflection, speed and vocal quality changes as a positive indication of the need for a pair of performance lenses. As noted above, even "No-response" patients may demonstrate notable changes in reading with as little as 1DBI, which can be ground into their lenses, but needs to be verified closely at dispensing.

Non-Responders

Children under 10 years of age—or even some adults—may not be sensitive enough observers or have language skills to describe what they are seeing on the pattern grid. Graded paragraphs in a 50% duty cycle ratio need to be used for use in these cases. Assure the individual that though he or she will be reading aloud, that this is not a reading test but is a vision test to see if their reading can be helped with minor changes in their eye coordination. Select an appropriate paragraph (parents can be asked for the approximate grade level for a second or third grader). Allow the individual to read two or three sentences, then introduce the flippers with the lenses, prisms, lens/prism combination while they continue to read. Note any changes in reading speed, inflection, fluency, appropriate following of punctuation, word attack, inflection, accuracy of tracking and voice quality.

Prescribing:

The individuals who respond most dramatically are usually sensi-tive to all aspects of their lens needs, including small cylinders, axes, and anisometropia. Therefore, the most precise subjective lens evaluation that can be determined is used as a base for the flipper lens trials and ultimate pre-scription. This prescription should be quickly assembled in a trial lens frame and the demonstration conducted over those lenses.

The total time for this evaluation is usually less than five minutes, but is an extremely valuable contribution to the individual's reading, work, and learning experience. The final prescription may take on the form of a reading-only pair of glasses, or a bifocal (the +0.50's responders),or a Subjective to first 20/20 (in OEP parlance, the #7 value, usually a +0.25 D. or +0.50 D. difference over the BVA Rx).