THE DESATURATED PANEL D-15

P. LANTHONY
(Paris, France)

The Farnsworth dichotomous test D-15 (Farnsworth, 1947) (standard panel D-15) was designed to distinguish those observers with congenital color defects accompanied by severe chromatic discrimination loss from normal observers and observers with congenital color defects who show only mild or moderate chromatic discrimination loss. The design of the panel D-15 has proved effective (Linksz, 1966). The test is easy and quick to administer and score. It can be performed by children as young as 8-9 years.

The standard panel D-15 has also proved useful for documenting severe chromatic discrimination loss in acquired color vision defects. For use in acquired color vision defects, a more sensitive test is desirable and may be obtained by use of color samples of low purity (and low apparent saturation). In this paper I describe the Desaturated Panel D-15, a test which allows rapid and easy evaluation of mild or moderate chromatic discrimination losses in congenital and acquired color vision defects.

MATERIALS AND METHODS*

The Desaturated Panel D-15 consists of 16 caps, similar to the standard Panel D-15. The hues (Munsell hue) are the same in the two tests, but the purity (Munsell chroma) and luminosity level (Munsell value) are different: in the standard test the mean chroma is about 4.20 and the mean value is about 5; in the desaturated test the chroma is 2 and the value is 8. As a result, the Desaturated Panel D-15 appears paler and lighter than the standard test. Administration of the test is identical to that of the standard test. The Desaturated Panel D-15 is performed following that of the standard Panel D-15. The results are plotted side by side on the specially designed score sheet.

RESULTS AND DISCUSSION

The Desaturated Panel D-15 has been studied by several authors. (Lagerlöf,

* Instruments available from Luneau ophthalmologie, 20 rue d'Edimbourg, 75008 Paris, France, and from the House of Vision, Chicago, Ill., USA.)
In press; Lanthony, 1973, 1974; Perdriel et al., 1975; Pinckers & Baron, in press; Pinckers et al., 1976; Verriest & Caluwaerts, in press). Results may be summarized as follows.

**Congenital color defects**

Congenital dichromats (protanopes, deuteranopes and tritanopes) or occasional anomalous trichromats with severe chromatic discrimination loss make major errors (cross-overs) on the desaturated panel with axis identical to those shown on the standard test.

Anomalous trichromats (protanomalous and deuteranomalous trichromats) show three kind of results on the Desaturated Panel D-15: (1) Anomalous trichromats with good or superior chromatic discrimination make no errors no either test, or show only minor errors (transpositions) on the Desaturated Panel D-15. (2) Anomalous trichromats with mild chromatic discrimination loss make no errors on the standard panel, but show several (three to four) major errors (cross-overs) on the desaturated panel Fig. 1 (a). (3) Anomalous trichromats with moderate chromatic discrimination loss show two or fewer major errors (cross-overs) on the standard panel and multiple major errors on the desaturated panel Fig. 1 (b).

Major errors (cross-overs) made by anomalous trichromats show an axis identical to that of the corresponding dichromat. Our data (Fig. 1) show that combined results of both tests allow classification of four levels of severity (good discrimination, mild, moderate or severe loss) of discrimination loss among observers with congenital color vision defects.

**Acquired color vision defects**

Examples of the results of the desaturated panel in acquired color vision defects appear in Fig. 2. A distinction between mild, moderate, and severe chromatic discrimination loss can be noted. In a case of central serous choroidopathy with mild discrimination loss (visual acuity, 6/12), the standard panel showed only minor errors (transpositions). There were several major errors (cross-overs) in addition to transpositions on the desaturated panel with a blue-yellow axis Fig. 2 (a) typical of the reported Type III color vision defect. In a case of optic neuritis (visual acuity, 6/15) with moderate discrimination loss there were two major errors on the standard panel and multiple major errors on the desaturated panel. Results showed the red-green axis typical of the Type II defect accompanying optic neuritis Fig. 2 (b) (Verriest, 1963). In a case of autosomal dominant optic atrophy (visual acuity, 6/12) with severe discrimination loss, there were multiple