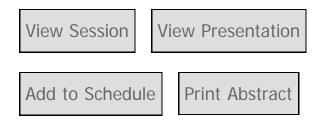
# Threshold versus intensity functions in two-color perimetry



#### Posterboard#: A0113

Abstract Number: 4386 - A0113

**AuthorBlock:** *Matthew P. Simunovic*<sup>1,2</sup>, *Neil Avery*<sup>2</sup>, *Zaid Mammo*<sup>2</sup> <sup>1</sup>Ophthalmology, University of Sydney, Sydney, New South Wales, Australia; <sup>2</sup>Vitreoretinal Unit, Sydney Eye Hospital, Sydney, New South Wales, Australia;

**DisclosureBlock:** Matthew P. Simunovic, None; Neil Avery, None; Zaid Mammo, None;

#### Purpose

To determine the adaptational state and isolation of rod- and cone-mechanisms in two-color perimetry, a technique developed for assessing visual function in inherited retinal disease.

### Methods

Seven normal subjects (aged 16-46yr), were examined using a MonCV Perimeter (MetroVision, Paris, France). Visual field tests were undertaken under scotopic conditions and then from -1.5 log cd.m<sup>-2</sup> (0.2 log td) to 2 log cd.m<sup>-2</sup> (3.7 log td; white background) in 0.5 log unit steps. Sensitivities were determined using a 4-2-2 dB staircase for 480nm and 640nm Goldmann size V targets at 17 locations within the central 60 degrees. Data were fitted with tvi functions of the form logT = logT<sub>0</sub> + log ((A+A<sub>0</sub>)/A<sub>0</sub>), where T is threshold, T<sub>0</sub> is absolute threshold, A is background intensity and A<sub>0</sub> is the 'dark-light' constant.

### Results

The minimum value for cone  $T_0$  was at the fovea (-1.7 log td, 640nm stimulus) and for rod  $T_0$  at  $\geq \pm 9, \pm 9$  (-4.2 log td, 480 nm stimulus). Cone  $A_0$  was lowest at the fovea (1.0 log td) whilst rod  $A_0$  was lowest at  $\pm 9, \pm 9$  (-0.70 log td). No clear rod-cone break was

observed for 640nm stimuli at any stimulus location. For 480nm stimuli at all test locations, there was evidence of transition from rod-detection to cone-detection at mesopic illumination levels. Detection mechanisms did not display Weber behaviour until the background luminance approached 1 log cd.m<sup>-2</sup>/ 2.7 log td (see Figures 1 and 2).

## Conclusions

640nm targets are primarily detected by cones at all intensities; 480nm targets, however, are detected by rods until mesopic illumination levels are reached. These data are in keeping with spectral sensitivity estimates at fixed background intensities (Simunovic MP *et al.*.TVST. 2016;5(3):10). Two-color perimetric tvi functions do not display Weber-like behaviour until photopic illumination levels are reached (1 log cd.m<sup>-2</sup>/ 2.7 log td). These findings suggest that two-color perimetry will be vulnerable to perturbations in ocular media and pupil size under clinical conditions, where background intensities are fixed.

