

Strabismus Vision Perimetry

The three pillars of orthoptic practice are presented in this edition of the AOJ. Strabismus is being investigated as it never has before, with an oral tissue swab. The Strabismus Inheritance Study in Tasmania, lead by Robin Wilkinson, is currently divining the genetic DNA mysteries of families with hereditary strabismus. This work has received the mantle of The Patricia Lance Lecture and is printed in full, following presentation at the 54th Annual Scientific Conference of the OAA in Sydney, 1997. This very exciting study has been designed to answer questions on the sequence of motor or sensory defects in the evolution of strabismus and quandaries such as seemingly opposite types of strabismus, convergent and divergent, occurring as a result of a common genetic anomaly in a controller such as the vergence system. This research will be invaluable to our understanding of the mechanism of binocular vision. Santamaria reminds us of the embryological approach to strabismic syndromes in an atypical case of vertical retraction syndrome (without retraction!). An extensive review on vergence eye movements by Luu et al brings the reader in line with current neurophysiological findings concerning the location and behaviour of the vergence control centre. An exhaustive population study by Cornell et al of almost 2000 normals and their accommodative responses to the RAF rule reaffirms the normative data attributed to this instrument nearly a century ago. These authors remind us though, that an average is an average is an average! When determining if accommodative ability is deficient, the range (1-4D) around the average needs to be considered as well as the stated age related near point.

Vision and its relevant assessment features predominantly in this edition. Spirited dialogue is seen in the Letters to the Editor. In the last

edition, Duyshart commented on the article by Williams et al, Comparison of crowded single optotypes with linear acuities in amblyopes. 1995; 31:21-27. Issues were raised as to the screening tests that detect different types of amblyopia and the most applicable tests for three and a half year olds. The authors have taken the opportunity to respond to these comments, reminding the reader that the limitations of research are clearly outlined and that composite parts of a research question need often to be considered in isolation before they can be orchestrated in combination. This is a continuing problem in ocular research as psychophysical tests have effects in their separate components and then in interactions. Whitton provides us with statistical confirmation of clinically known entities that SGS elicits a greater VA response than SGL and that four year olds give a better VA level than three and a half year olds. The temptation to embrace such results unequivocally is almost irresistible. Whitton achieved these results by converting VA measures to a ratio scale and applying parametric analyses. She has made many assumptions in the treatment of the data and has even averaged the VA responses for each eye into one score. As this will become a much quoted and landmark study, we need to consider if these assumptions are valid. The possible differing treatments of VA as a variable in analysis are demonstrated in three papers. While Whitton converted VA to a ratio scale, Haynes et al compared their VA data to questionnaire data by treating VA as an ordinal scale and Fitzmaurice et al utilized both parametric and non-parametric analyses. Researchers must outline their assumptions and justify their decisions to embrace such assumptions, while readers need to query this constantly.

Haynes et al raise the question as to whether visual acuity testing pre-operatively in cataract

patients serves any useful purpose when compared to subjective assessment of visual (dis)ability in daily activities. What needs to be considered is, is VA testing a valid method of assessment of visual function in the ageing population with progressive cataract formation? Is the VF 14 a valid measure of visual function? Do we need to design a better questionnaire and query patients on their responses to monocular and not binocular vision? The implications for public health care expenditure based on these results are significant. Judgements on such resource allocations are also raised by Jones who looks at predictors in stroke rehabilitation and this provides useful information for clinicians attending this population. The appropriate use of VA as a measure is also raised by Fitzmaurice et al in the population of intellectually and physically handicapped children. These authors conducted a multicentre international collaborative study using computer generated visual objects and assessed subjects' abilities to respond. The importance of pursuits such as this is clearly outlined by the extensive survey of Tosswill et al which showed that the incidence of visual impairment in the multihandicapped population is 100 times greater than in the general Australian population.

The issues in perimetry that are presented are all significant. Jolly describes three cases with retinitis pigmentosa and illustrates the effect of arbitrary standards in VA and perimetry for driving licencing. She provides a range of non standard tests of visual function and remediation for raising an individual's awareness of the vision sense during driving. Rota-Bartelink provides a review on the perimetric literature in relation to glaucoma. This is a most useful summary which describes the variables; static, kinetic, achromatic, short wavelength, and flicker. Discourse is also given on the role of motion detection, colour vision and the influence of the ageing lens.

Vassar et al investigated the relationship of colour vision sensitivity to contrast sensitivity and discovered that contrary to their hypothesis, diminished function of one ability was related to a diminished, rather than a compensatory increase in the other ability. This appears to hold a key to closely associated neurophysiological substrates. This is akin to the comments of Pollock regarding thresholds in red perimetry included in the Letters to the Editor in this edition. Pollock comments on the article by Piraino and Goodacre, Normal threshold values for red targets in the central 10 degree visual field. 1996:32:19-25. The issue is raised as to the values generated by the Humphrey Visual Field Analyser when comparing chromatic and

achromatic targets. A case is presented that shows higher dB thresholds for white over red targets, but a greater field loss for a red target in the graytone field. This testing has incorporated white light sensitivity, selective spectral sensitivity, form detection and on/off motion detectors. Pollock advances possible neurophysiological substrates. The authors reply to this comment choosing to focus on the bases of the HVFA calculations and the importance of the interpretation of dB values as being relative or absolute. There will be inherent measurement variability, as well as differences across quadrants. These comments remind us that the majority of our research needs to focus on validation of our clinical tools. Are we measuring what we want to measure? How are changes quantified? How does pathology influence these measurements?

Whitton et al provide a report on the recent glaucoma detection device, the nerve fibre analyser. Nerve fibre layer and ganglion cell loss attributed to glaucoma are deduced by interpretation of deviations in parallel light ray paths. Early detection and early intervention are the aims in the treatment of this disease. We are reminded that this applies to amblyopia as well, in a review with an historical perspective presented by Shippman. Thought processes over the centuries on this disease are revisited and we are mainly reassured of the occlusion rationale but not necessarily the regime. Life goes on.