

ABSTRACTS OF STUDENTS PAPERS

N.S.W.

The following are abstracts of research papers by third year orthoptic students at Cumberland College of Health Sciences, N.S.W. Copies of particular papers of interest may be obtained by writing to:

The School of Orthoptics,
Cumberland College of Health Sciences,
P.O. Box 170,
Lidcombe, N.S.W. 2141. Tel. (02) 646 6444.

THE EFFECT OF HETEROPHORIA ON STEREOACUITY — **Colette McGee**

Fifty three normal subjects' stereoacuity was tested with the TNO test in the conventional manner (crossed disparity) and with the book inverted (uncrossed disparity). Thirty perceived a difference; these were mainly orthophoric and esophoric. Generally the esophorias were better with uncrossed disparity and the orthophorias with crossed disparity. Therefore, esophorias should have stereoacuity tested with both crossed and uncrossed disparity, particularly if reduced stereoacuity is found with conventional stereoacuity testing.

FIXATION — WHAT IS ECCENTRIC? — **Tonia Harrison**

Forty subjects with equal 6/5 acuity, no demonstrable squint and positive Four Dioptre test each eye, were examined by visuscope.

This study found two subjects (5%) did not appear to fixate on the foveal reflex in either eye, probably due to an abnormal foveal reflex.

This study concludes that there is a small number of people in the population who, due to an atypical foveal reflex, appear to have a slight degree of eccentric fixation combined with excellent vision and full stereoacuity.

THE EFFECT OF CEREBRO VASCULAR ACCIDENT ON CONTRAST SENSITIVITY — **Jacqueline Lawes**

Twenty five patients who had suffered a cerebrovascular accident (CVA), were compared with 25 normal subjects matched for age, to determine if the CVA had any detrimental effects on the detection of contrast sensitivity.

All patients were tested with Arden gratings, enabling various grades of contrast sensitivity to be tested over a range of spatial frequencies.

It was found that contrast sensitivity was affected by CVA. A general reduction in contrast sensitivity

across the wide range of spatial frequencies was found, with the greatest difference occurring in the higher spatial frequencies. Snellens visual acuity remained normal in all subjects.

The reasons for this decreased sensitivity are unknown, but may be due to selective effects of the CVA on channels in the visual pathway tuned to high spatial frequency.

THE INCIDENCE OF OCULAR ANOMALIES IN METHADONE MAINTAINED SUBJECTS — **Robert Sparkes**

Twenty one subjects on a methadone maintenance programme were orthoptically screened to determine whether they had specific visual problems.

Reduced convergence and accommodation were particularly evident and were possibly the cause of any aesthenopic symptoms.

Visual field defects were also evident. This is possibly due to the toxic effects many drugs have with long term usage, or from a slow response which may be attributed to the methadone.

These defects may inhibit orthoptic treatment of an affected subject. The importance of thus recognising such factors when carrying out treatment is stressed.

CEREBROVASCULAR ACCIDENT AND IT'S EFFECTS ON STEREOACUITY LEVELS — **Judith Huntley**

This study was undertaken to compare stereoacuity levels as measured with the Titmus Stereo Test in subjects who had suffered a cerebrovascular accident, with normal stereoacuity levels, and also to determine whether there is any significant association with reduced stereoacuity and the lesioned hemisphere.

One hundred and one case histories of cerebrovascular patients from Lidcombe Hospital were studied to extract relevant information. Equal numbers of patients had suffered right versus left hemisphere lesions.

Results showed no significant reduction in stereoacuity levels when cerebrovascular accident patients were compared to normal individuals of the same age. There was also no significant difference in stereoacuity levels between subjects with lesions of the right or left hemisphere.

VISUAL IMPROVEMENT IN THE CORTICALLY BLIND CHILD — **Lynda Hodgson**

At the Child and Adolescent Services Unit of the Royal Blind Society, 22 patients with "pure" cortical blindness were selected from an original sample of 63, to determine whether or not visual improvement

occurs. The children were cortically blind from birth and had no optic nerve or retinal pathology. They ranged in age from six months to six years eleven months.

All but five of the sample improved. Of these, 12 did so within their first year, five within the second year, and none afterwards. Children tended to improve most significantly between three to six months of age. In three children improvement was reported within one month.

Present theories as to why this improvement occurs are discussed, along with other features of this condition and difficulties involved with the diagnosis and assessment of these children.

COLOUR VISION ANOMALIES: IMPLICATIONS FOR THE ELDERLY DIABETIC — Anne Stuart

The Farnsworth Munsell 100 Hue Test and the City University Colour Vision Test were used to assess the colour vision of twenty five diabetic patients between 60 and 80 years of age. The diabetics showed a significantly higher Farnsworth Munsell 100 Hue Score than the published age normals, the majority demonstrating a generalised loss.

The diabetics' performance of various colour dependent blood and urine glucose tests was assessed in good and bad lighting. Although 56% of the group showed errors in good light, the performance did not appear to be affected by age or colour vision.

NEAR POINT OF ACCOMMODATION AND DIRECTION OF GAZE — Gregory Hayes

This study investigates the effect of the position of gaze on the near point of accommodation. Sixty two normals were tested and it was found that there was a significant improvement in near point of accommodation in depression and in the reading position, but no significant improvement on adduction compared to abduction. This finding only partially supports previous studies, but has implications for orthoptic treatment for accommodative linked disorders.

SACCADIC EYE MOVEMENTS AND CEREBRAL PALSY — Carolyn Harris

In cerebral palsy, the neuromotor pathways are damaged, possibly also affecting saccadic movements. As precise saccadic movements are required for accurate fixation, it is suggested that poor vision in those with cerebral palsy may be due in part to defects of the saccadic pathways.

Visual acuity and saccades were tested in 50 cerebral palsied children. Twenty six subjects had normal vision and eight had reduced vision, unable to be attributed to any pathological cause. The remaining 16 subjects had either a peripheral ocular motility problem that

influenced their saccadic result or reduced visual acuity due to a known cause.

A majority of cerebral palsied children were found to have abnormal saccades (62%), while only a minority had normal saccades (38%).

A significant relationship was found between abnormal vision of less than 6 and normal saccades that were not caused by a peripheral defect in the motor pathway.

THE EFFECT OF AGE ON ABSOLUTE AND RELATIVE FUSION RANGES — Stacey Cannington

Absolute and relative fusional amplitudes are important in the treatment of symptom producing heterophoria, convergence insufficiency and intermittent squint.

To investigate the effect of age on these net total and fusional reserves, three different emmetropic and orthoptically sound age groups were compared. Norms were established in a previous study of 92 young school children (Group 1). Group 2 and 3 were examined and consisted of 50 young adults and 20 presbyopes wearing their first near correction.

It was established that age plays a significant role in affecting these amplitudes. From childhood to adulthood absolute convergent (33 cm and 6 m) and divergent (6 m) amplitudes increased, as did positive relative fusion (33 cm and 6 m) and negative relative fusion (6 m). The absolute divergent and negative relative fusional amplitudes decreased slightly at 33 cm.

From adulthood to the onset of presbyopia, absolute convergence at 33 cm and absolute divergence at 6 m decreased slightly. For the remainder of the net total and fusional reserves no significant differences were found.

VISUAL ACUITY: A QUANTITATIVE ASSESSMENT USING CAKE DECORATIONS — Katherine Mack, Katrina Bourne

The aim of this study was to provide reliable estimates of visual acuity levels for certain colour combinations of cake decorations and backgrounds. Nineteen normal adult subjects were artificially blurred to varying visual acuity levels by means of graded filters. Coloured cake decorations of 1 mm and 3 mm in diameter were presented to the subjects against five different backgrounds. A time limit was imposed upon the subjects all of whom were asked to point to whatever they could see for each visual acuity level on each background. The testing distance and room illumination were kept constant. The results allowed guidelines for the estimation of visual acuity levels to be established. It is suggested that clinicians note these guidelines when using the cake decoration test.

**SQUINT IN HYPERACTIVE CHILDREN —
Gabrielle Moreland**

A study of 15 hyperactive children from the Child Development Unit of the Royal Alexandra Hospital for Children was carried out to determine whether there is a higher incidence of squint among these children and if it is of a specific type. The types of deviations found differed significantly from the norm. It is suggested that this is a result of a modulatory defect of the brain which also causes the range and variability of behavioural and physical disorders associated with the hyperactive syndrome.

**CAN AN ABNORMAL HEAD POSTURE
COMPENSATE FOR A VISUAL FIELD
DEFECT? — Andrew Jolly**

Visual field (VF) defects are generally accepted as a possible cause of an abnormal head posture (AHP). However, there is little information to be found that explains this occurrence. This study sets out to clinically observe whether there are patients who do overcome any of their lost field of vision by adopting an AHP.

Seven patients with both VF defect (all homonymous hemianopia), and an AHP were selected. When the head was straight, none of the patients could respond when any part of their lost area was stimulated. However, while the AHP was present, four patients could respond when some parts of this 'lost' area were stimulated. These four patients had slight and intermittent head turns towards the field loss.

Three theories which may have some relevance to this occurrence or its underlying mechanism are discussed.

**THE DEVELOPMENT OF OPTOKINETIC
NYSTAGMUS IN INFANTS BORN
PREMATURELY — Despina Marias**

The development of both symmetrical horizontal and vertical optokinetic nystagmus (OKN) was compared between 23 normal, full term and nine premature infants.

A delay in development was found for both horizontal and vertical OKN in the premature infants. However, when compared with conceptional age, this delay was slightly present only for the development of vertical OKN.

**SUPPRESSION AND THE LEES SCREEN —
Karen Anderson**

Four constant esotropic subjects and four constant exotropic subjects were examined using the Lees

Screen, to assess the site of retinal suppression in relation to the direction and size of the deviation.

It was found that the suppression area extended from the fovea to the contralateral image point and two to five prism dioptres beyond this point in all cases.

**CHARACTERISTICS OF NASAL TEMPORAL
OPTOKINETIC NYSTAGMUS IN
DISSOCIATED VERTICAL DEVIATION —
Mary Stylianou**

Monocular horizontal optokinetic nystagmus has been reported to be asymmetrical in both infants younger than nineteen weeks of age and in those with dissociated vertical deviation (DVD). The eyes respond to nasalward image movement but not to a temporally moving image. One theory is that if a child develops a strabismus before this critical period of development, then this symmetry may never develop. The first aim of this study was to determine what proportion DVD patients first squinted prior to the development of symmetrical OKN. Thirty three patients' files were studied to find the age of squint onset. Twenty one (63.6%) of these patients developed the turn before normal development of the nasal temporal (N/T) OKN response, while 12 (36.4%) acquired the squint after 19 weeks.

The second aim of this paper was to determine the component at fault in the OKN response. Thirty one eyes that demonstrated DVD characteristic movements were examined, with the saccadic and smooth pursuit components tested separately. Twenty one (63.3%) showed abnormal pursuit movements temporally and 87.1% normal saccadic movement nasally. This suggests that the abnormal component of N/T OKN in DVD patients is pursuit.

**AMBLYOPIA — DOES IT AFFECT
THE TITMUS RESULT? — Maria Paterakis**

Three groups of amblyopes was studied to determine whether amblyopia affects the Titmus stereoacuity test.

The amblyopes consisted of 60 anisometropes, 43 intermittent squints and 42 microsquints. All had uniocular or binocular amblyopia. The subjects were required to have visual acuity of at least 6/9 in their better eye.

The results of this study show that as the difference in visual acuity becomes greater between the two eyes, the stereoacuity of the patient decreases. The optimum standard of stereoacuity is reached when the visual acuity is equal in both eyes or if the difference between the two eyes is one or two lines. These results were consistent in all three groups.

Thus, in order for one to have a high standard of stereoacuity, one must have equal vision or no more than two lines of difference between the two eyes.

The following is an abstract of a research paper by the third year orthoptics' students at Lincoln Institute of Health Sciences, Victoria.

Copies of the paper may be obtained by writing to
School of Orthoptics,
Lincoln Institute of Health Sciences,
625 Swanston Street,
Carlton, Victoria 3053.

COMPARISON OF THREE STEREOACUITY TESTS — FRISBY, TITMUS AND T.N.O. —
Lisa Biggs, Elizabeth Crommy, Helen Gawler, Susan Hardy, Aysil Hudaverdi, Trudy Irwin, Fiona Jesse, Donna Miller, Tanya Phillips, Maria Stamos, Kathyrie Strassnick, Julie White

A study comparing the stereoacuity results of the Frisby, Titmus and T.N.O. stereo tests was performed on students attending the Carlton campus, Lincoln Institute of Health Sciences. Using the Kendalls coefficient of Concordance Statistical tests it was found that each subject obtained a similar result in each test.

BRITISH ORTHOPTIC JOURNAL

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Price: — £15.00 including postage

UK ISSN 0068-2314