

Eye Screening with the Lang Stereotest

Joseph I. Lang, M.D.
Thomas J. Lang

ABSTRACT

The Lang Stereotest is based on a random-dot pattern and cylinder gratings. Cylinder gratings provide a haploscopic testing device which does not require glasses. The youngest child to pass the test was 6 months old. Experimental studies were done on artificial anisometropia, monolateral impairment of vision and heterophoria. Eight hundred fourteen patients with motility disorders were analysed. No patient with large constant strabismus passed the test. It can be stated that no patient with significant monocular or binocular defects has been able to pass the Lang Stereotest.

INTRODUCTION

Two main problems arise when dealing with eye screening. In young children it is not easy to differentiate between pseudostrabismus and microtropia. Also it is not easy to put small children on a haploscopic device or to give them polarized or red-green goggles. It has, however, been demonstrated that young children from the age of 3-4 months on show stereopsis potentials on the EEG with random dots.¹ Therefore, we looked for a haplo-

scopic device suitable for young children and found it in the form of cylinder gratings (Figure 1), first developed in 1912 by a Swiss ophthalmologist,² Walter Rudolf Hess, who is known for his coordimeter screen for the diagnosis of eye muscle palsies. He later became a physiologist and was awarded the Nobel Prize in 1949 for his work on the diencephalon.

PATIENTS AND METHOD

We have combined cylinder gratings with a random dot picture, which shows three objects familiar to children, namely a cat, a star, and a car (Figure 2). Even preverbal children may be examined, since they shift their gaze from one object to another or may try to grasp the objects.³

The youngest child to pass the test was 6 months old. She suffered at birth from a

From the Eye Clinic, University Hospital, Zürich, Switzerland.

Requests for reprints should be addressed to: Prof. J. Lang, M.D., Freiestr. 47, CH-8032 Zurich, Switzerland.

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6th nerve palsy of the left eye and recovered slowly, the eyes becoming aligned. At the age of six months the child reacted positively to the Lang Stereotest, to ours and the parents satisfaction.

Small children should be carefully prepared for the test. First we show them a fixation cube⁴ to acquaint them with the figures and then a fixation stick, on which they can point at the car or at the cat. Then we proceed to the Stereotest, and only afterwards we perform the cover test, retinoscopy, etc.

RESULTS

Of 193 children with pseudostrabismus (Figure 3) from age 6 months to 4 years, 42% of those aged 6-12 months, 75% of those aged 12-18 months, and around 90% of those older than 18 months passed the test.^{4,6}

Of 106 children from 5-6 years 93.5% passed the test, as did 91.5% of 295 army recruits and 97.6% of 252 pilot aspirants.

Experimental studies were done on artificial anisometropia, monolateral impairment of vision and heterophoria and extensive clinical studies were done on

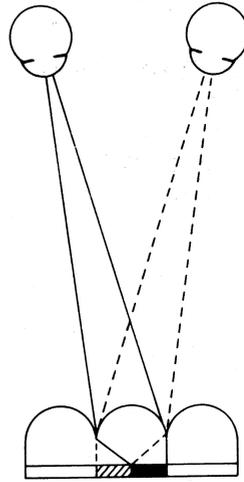


FIGURE 1: Principle of cylinder gratings.

patients with motility disorders. No patient with large constant strabismus passed the test. Patients with moderate anisometropia and intermittent exotropia, however, may pass the test. Of 114 microtropias, 88.5% did not pass, 2.6% passed and 8.7% passed only partially. Of 23 patients with anisometropic

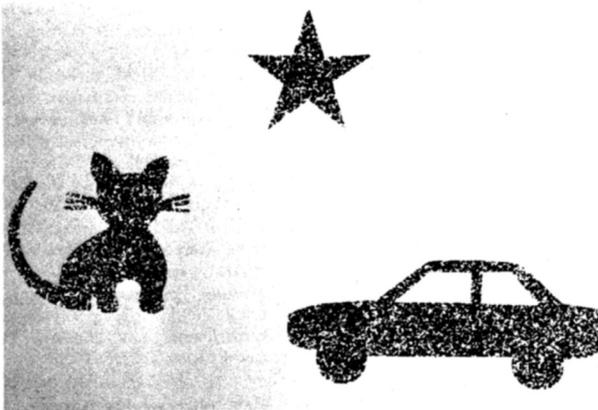


FIGURE 2: The three objects on the test.

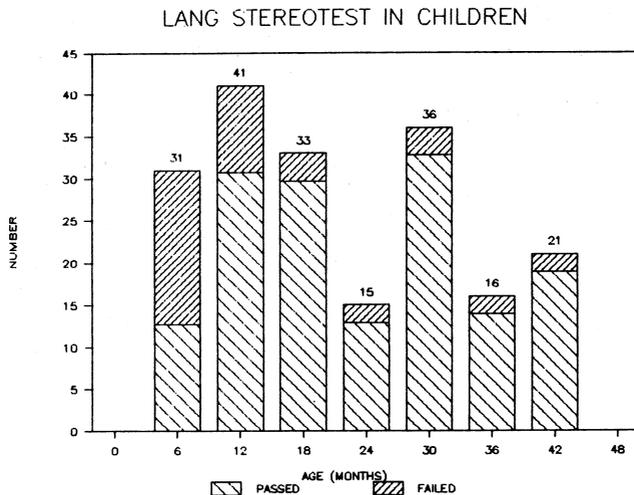


FIGURE 3: Results in 193 children from age 6 to 48 months.

amblyopia, 65.2% passed, 21.7% failed and 13% passed only partially. This test has a high predictive value for stereopositivity, since no patient with either a significant monocular or binocular defect has been able to pass the test.

DISCUSSION

There are two main possibilities in organizing screening for young children. One is a governmentally organized screening at a certain age, e.g. 3 years. The other is a continual screening by ophthalmologists, by pediatricians, and by general practitioners of all children seen in their offices. The former possibility does not necessarily exclude the latter. The results are most probably better when combining these. We should be open to new methods.

CONCLUSION

There is still a lot to be learned about stereopositive and stereonegative conditions in children as well as their treatability and curability. New methods, such as

the Lang Stereotest, will in the near future lead to better knowledge of binocular vision in children under three years of age.

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