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Testability of refraction, stereopsis, and other ocular measures in preschool children: the Sydney Paediatric Eye Disease Study.

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Source

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Abstract

PURPOSE:

To determine the testability and lower age limits for applying common eye tests to preschool children.

METHODS:

Investigators from the Sydney Paediatric Eye Disease Study examined 2,461 children aged 6 to 72 months between 2007 and 2009. Cycloplegic autorefraction was measured with Retinomax and Canon autorefractors. Ocular biometry was measured by the use of IOLMaster in children aged >30 months. The Randot Preschool Stereoacuity test, Lang-Stereotest II, and the Stereo Smile II test were administered to assess stereoacuity. Fundus photography was performed with the subjects' pupils dilated. Testability was defined as the ability to successfully complete tests in both eyes.

RESULTS:

There were 2,189 children with complete data. Most were testable with the Retinomax (71.8%) and Canon (66.0%) autorefractors. Testability improved with age (P for trend <0.0001) for both, and Retinomax achieved >70% testability when a subject was 24 months of age, half the age limit (48 months) found for Canon. IOLMaster was mostly testable in children aged 48+ months. Lang-Stereotest II could be used in children aged 6 months and achieved the greatest testability (94.4%) of all stereotests. White children performed better than children of some other ethnicities on Randot (P = 0.007), with girls performing better than boys (P = 0.01). Bilateral photography was achieved in >70% of preschool children 48 months of age.

CONCLUSIONS:

The testability of all measures was strongly age related, with mostly no sex or ethnicity effects found. The handheld Retinomax could be tested in >70% of children aged 24 months,

younger than that found for the stationary Canon autorefractor (48 months). Testability measures for most eye tests in this preschool sample are comparable to other preschool studies.