

Abstract ECVF

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Comparing stereotests: the TNO test overestimates stereoacuity

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Tests of stereoacuity may use either contour or cyclopean stereograms like random dot stereograms (RDS). In contour stereograms, disparity is defined by monocularly visible contours. In RDS, objects are defined by disparity only. Second, tests can either use polarising or anaglyph glasses. The aim of the current study is to compare stereoacuity thresholds measured with these tests. In total, 117 children aged 4 to 16 completed at least two of the following 4 stereotests: two paper-based clinical tests using different 3D technology (Randot Circles: contours, polarising glasses; and TNO: RDS, anaglyph glasses) and computer-based versions of these presented on a polarising 3D monitor. Average stereothreshold estimates were 37arcsec in the Randot Circles, 35arcsec in the computer-based contour test, 89arcsec in the TNO, and 32arcsec in the computer-based RDS. No significant differences in mean stereothreshold were found between the Randot Circles and the computer-based contour test ($p=.17$) or between the computer-based contour test and the computer-based RDS ($p=.77$). However, significant differences were found between TNO and Randot Circles ($p<.001$) and between TNO and the computer-based RDS ($p=.03$). Bland-Altman plots pointed in similar directions. We conclude that TNO overestimates stereothresholds, possibly due to its use of anaglyph (red/green) glasses.

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