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An Examination of the Oculomotor Behavior Metrics within a Suite of Digitized Eye Tracking Tests

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INTRODUCTION: Eye tracking has recently been used to examine oculomotor behavior (OMB) for visual and neurological health and wellness with promise in determining characteristics of healthy eyes and in turn a healthy brain. Recent research has demonstrated that human eye movements reflect individual and group differences, however, clinical evaluations of eye movements often lack test-retest reliability. The purpose of this study was to examine the reliability of oculomotor behavior metrics in healthy individuals, to determine the normative values through cluster analysis, and to compare oculomotor behavior metrics by age groups in a suite of digitized eye tracking tests.

METHODS: A large sample of 2993 participants completed RightEye tests.

RESULTS: These tests demonstrated acceptable or higher reliability (0.7- 0.9) on 85% of the eye movement metrics and the clustering analysis distinguished 5 distinct age group. Furthermore, group differences were found between age clusters ($p < .001$).

CONCLUSIONS: Overall, the findings represent the reliability of a computerized oculomotor behavior measure and the importance to consider individual and group characteristics for clinical applications as well as applied settings.

KEYWORDS: eye tracking; cluster analysis; smooth pursuit;
saccades; normative data