Study identifies amblyopia as key factor for poor reading in school-age children

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Children with amblyopia, commonly known as "lazy eye," may have impaired ocular motor function. This can result in difficulties in activities for which sequential eye movements are important, such as reading. A new study conducted at the Retina Foundation of the Southwest determined that children with amblyopia read more slowly than children with normal vision or with strabismus alone. Their findings are published in the *Journal of the American Association for Pediatric Ophthalmology and Strabismus* (AAPOS).

"This study marks the first time that amblyopia, not strabismus, has been identified as the key factor in poorer reading in school-age children with amblyopia," explained lead investigator Krista R. Kelly, PhD, of the Retina Foundation of the Southwest. "Previous studies had not emulated natural reading conditions that the child would normally encounter in school, that is, binocular silent reading of grade-appropriate paragraphs at habitual reading distance. Lastly, these studies had evaluated subjects who had both amblyopia and strabismus and therefore were unable to evaluate the effect of strabismus alone on reading."

Three groups of children were studied: 29 children with amblyopia with or without strabismus, 23 children being treated for strabismus but without amblyopia, and 21 children with normal vision. The children with amblyopia and/or strabismus had been referred to the Retina Foundation of the Southwest by 18 pediatric ophthalmologists in the Dallas-Fort Worth area.

The children silently read a grade-level paragraph of text during binocular viewing while fitted with the ReadAlyzer, an eye movement recording system. The researchers measured reading rate, the number of forward and regressive eye movements (saccades) per 100 words, and the length of eye pauses (fixations). Comprehension was evaluated with a 10-item quiz. Only data from children with at least 80% correct responses were included so that it was unlikely that impaired reading in amblyopic children was due to comprehension difficulties.

Amblyopic children read significantly more slowly than strabismic children without amblyopia and normal control children. Statistically, there was not a significant difference in the reading rate between strabismic children without amblyopia and normal control children. Similarly, amblyopic children had about 35% more forward eye movements during reading than either strabismic children without amblyopia or normal children.

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