Research has shown that the preschool years are a vital time for children to acquire the language skills necessary to succeed in school. In 1965, as part of the “war on poverty” in the United States, the Head Start program was started to help preschool children from low-income families improve their readiness for school. However, by the time a child starts the Head Start program, it may be too late for these children to catch up with children from higher income families. In a landmark study, Hart and Risley studied 42 children from diverse socioeconomic and racial backgrounds beginning when they were 7 to 9 months of age until they were 3 years old to better understand how children develop language skills. A trained observer visited the home of each of these children on a monthly basis, carefully recording all communication between a parent and a child. They found a marked difference in the quantity of words spoken to a child that correlated closely with the socioeconomic status (SES) of a family. A child from a high SES family heard on average 30 million words from age 1 to 3 years compared with only 20 million words for a child raised in a low SES family. In addition, the quality of the communication differed markedly by SES. Parents in high SES families used more affirmations and fewer prohibitions, gave their child more choices, and were more responsive to their child’s speech. As might be expected, a child raised in a high SES family had more language skills at age 3 years as evidenced by better vocabularies and at age 9 to 10 years had higher scores on standardized tests of reading comprehension.

Vision also plays an important role in children learning how to read. In the Vision in Preschoolers—Hyperopia in Preschoolers (VIP-HIP) study (see page 681), the VIP-HIP study group hypothesized that children with 3 to 6 diopters (D) of uncorrected hyperopia had significantly lower TOPEL scores, when they performed a multivariate analysis the best predictors of a low TOPEL score were ≥3 D of hyperopia coupled with reduced stereopsis (<240 arcseconds) or reduced binocular near visual acuity (≤20/40). Because the VIP-HIP study almost exclusively enrolled children participating in the Head Start program, the low TOPEL score for the children in both the control and experimental groups likely reflects their reduced exposure to language during early childhood. In the VIP-HIP study, print knowledge was reduced more than definitional vocabulary and phonological awareness in the hyperopia group, consistent with their hypothesis that children with uncorrected moderate hyperopia have more difficulty learning to read printed material. No data are provided by the VIP-HIP study group regarding the percentage of children in their study who had visual acuity ≤20/40 or stereopsis ≤240 arc/seconds. However, in an earlier report from the VIP-HIP study, it was reported that 3.7% of 4- to 5-year-old children had bilateral amblyopia that they defined as best-corrected visual acuity <20/40.5

It is generally agreed that children with high hyperopia and children with moderate hyperopia and a manifest esotropia or reduced visual acuity should be prescribed at least a partial correction of their hyperopic refractive error. Without optical correction, children with high hyperopia have been shown to develop subnormal stereopsis even in the absence of esotropia.6 If left untreated, children with moderate hyperopia and a manifest esotropia are at risk of developing amblyopia, subnormal stereopsis, and nonaccommodative esotropia.7 Optical correction also is indicated for children with moderate hyperopia and anisometropia or ≥1 D of astigmatism because of their increased risk of developing amblyopia.8 However, there is no consensus regarding the management of children with moderate hyperopia without a manifest esotropia or reduced visual acuity. The most current American Academy of Ophthalmology Preferred Practice Patterns

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**Should Glasses Be Prescribed for All Children with Moderate Hyperopia?**
Scott R. Lambert, MD - Atlanta, Georgia

There are several factors to consider when deciding whether to prescribe glasses for a child with moderate hyperopia without esotropia or reduced visual acuity.
Hyperopia is the most common refractive error in childhood. In the Multi-Ethnic Pediatric Eye Study, the prevalence of $\geq 3$ D of hyperopia in non-Hispanic whites was 13% for 3-year-olds, 7% for 4-year-olds, and 11% for 5-year-olds. Even in Asian preschool children, the prevalence of $\geq 3$ D of hyperopia was higher (5%–6%) than the prevalence of myopia. In the VIP-HIP study, 8% of the children had 3 to $<4$ D of hyperopia, 3% of the children had 4 to $<5$ D, and 5% of the children had $>5$ D. Because approximately 4 million children are born each year in the United States and assuming that 10% of them are moderate or high hyperopes when 3 to 5 years of age, it would cost $1.8$ billion to buy each of these children 1 pair of glasses ($150$/spectacles) each year.

Although spectacles should be prescribed for children with moderate hyperopia when associated with accommodative esotropia or reduced visual acuity, at this time there is insufficient evidence to recommend that all children with moderate hyperopia be prescribed spectacles. Although the VIP-HIP study suggests that children in preschool or kindergarten with moderate hyperopia and reduced binocular near visual acuity or stereopsis have worse language skills, there is no convincing evidence that prescribing glasses improves their academic performance. Furthermore, the preponderance of children in the study population from low-income families limits the generalizability of their results.

References


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