

First-born in family more likely to be nearsighted; priority of education may be factor

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First-born individuals in a sample of adults in the United Kingdom were more likely to be nearsighted than later-born individuals in a family, and the association was larger before adjusting for educational exposure, suggesting that reduced parental investment in the education of children with later birth orders may be partly responsible, according to a study published online by *JAMA Ophthalmology*.

Myopia (nearsightedness) is increasing in prevalence in younger generations in many parts of the world and is an important public health issue. Major known risk factors for myopia are genetic background, time spent outdoors, and time spent doing "near" work (including educational activities). A prior analysis suggested myopia was more common in first-born children in a family compared with later-born children. One potential cause of the association between birth order and myopia is parental investment in education; on average, parents have been reported to direct more of their available resources to earlier-born children, resulting in better educational attainment in earlier-born than later-born individuals. Thus, parents may expose their earlier-born children to a more myopia-predisposing environment, according to background information in the article.

Jeremy A. Guggenheim, Ph.D., of Cardiff University, Cardiff, U.K., and colleagues conducted an analysis of UK Biobank participants who were 40 to 69 years of age, were of white ethnicity, had a vision assessment and no history of eye disorders (n = 89,120). The researchers determined the odds for myopia and by birth order, adjusting for age and sex, and education.

First-born individuals were approximately 10% more likely to be myopic or about 20% more likely to have high (more severe) myopia than later-born

individuals. After adjusting for either of 2 measures of educational exposure— highest educational qualification or age at completion of full-time education—the association between birth order and myopia was lessened (by approximately 25%) and no dose-response relationship was evident.

"Greater educational exposure in earlier-born children may expose them to a more myopiagenic [factors causing myopia] environment; for example, more time doing near work and less time spent outdoors. Our findings that statistical adjustment for indices of educational exposure partially attenuated the magnitude of the association between birth order and myopia, and completely removed the evidence for a dose-response relationship, therefore support the idea that reduced [parental investment](#) in [children's](#) education for offspring of later birth order contributed to the observed [birth order](#) vs myopia association and produced the observed dose-response relationship," the authors write.

"These results add to the extensive literature implicating a role for education in the etiology of [myopia](#), although a causal relationship cannot be confirmed using observational data."

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