Genetic associations with reflexive visual attention in infancy and childhood

Rebecca A. Lundwall, James L. Dannemiller and H. Hill Goldsmith

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Abstract
This study elucidates genetic influences on reflexive (as opposed to sustained) attention in children (aged 9–16 years; N = 332) who previously participated as infants in visual attention studies using orienting to a moving bar (Dannemiller, 2004). We investigated genetic associations with reflexive attention measures in infancy and childhood in the same group of children. The genetic markers (single nucleotide polymorphisms and variable number tandem repeats on the genes APOE, BDNF, CHRNA4, COMT, DRD4, HTR4, IGF2, MAOA, SLC5A7, SLC6A3, and SNAP25) are related to brain development and/or to the availability of neurotransmitters such as acetylcholine, dopamine, or serotonin. This study shows that typically developing children have differences in reflexive attention associated with their genes, as we found in adults (Lundwall, Guo & Dannemiller, 2012). This effort to extend our previous findings to outcomes in infancy and childhood was necessary because genetic influence may differ over the course of development. Although two of the genes that were tested in our adult study (Lundwall et al., 2012) were significant in either our infant study (SLC6A3) or child study (DRD4), the specific markers tested differed. Performance on the infant task was associated with SLC6A3. In addition, several genetic associations with an analogous child task occurred with markers on CHRNA4, COMT, and DRD4. Interestingly, the child version of the task involved an interaction such that which genotype group performed poorer on the child task depended on whether we were examining the higher or lower infant scoring group. These findings are discussed in terms of genetic influences on reflexive attention in infancy and childhood.