

Attention-deficit/Hyperactivity Disorder (ADHD) is a chronic neurodevelopmental disorder characterized by symptoms of inattention and hyperactivity, and is associated with delays in neural development. To assess the association of genes involved in neurodevelopment with symptoms and trajectory of ADHD, saliva was collected and genotyped from 128 participants from a longitudinal study of preschoolers who were followed annually for 7 years. We examined four single nucleotide polymorphisms (SNPs) in genes associated with neurodevelopment: neuregulin-1 (*NRG-1*; SNP rs3924999), neurotrophin-3 (*NT-3*; SNP rs6489630), brain-derived neurotrophic factor (*BDNF*; rs6265), and regulator of G protein signaling 4 (*RGS4*; rs951439). Hierarchical linear modeling revealed that neuregulin-1 and neurotrophin-3 were associated with symptoms of inattention and hyperactivity at age 3-4 and throughout early childhood; however, these genes did not impact the trajectory of the inattentive and hyperactive symptoms over development. Early environmental factors such as maternal diabetes, maternal substance use (tobacco, alcohol, illicit drug) were also analyzed along with each of the genetic factors. Maternal gestational diabetes and *NRG-1* risk allele, maternal gestational diabetes and *BDNF*, alcohol and *NRG-1*, and illicit drug use and *NT-3* were all associated with greater inattentive and hyperactive symptoms. Although the sample size is small for genetics study, these findings can inform future investigations in understanding the neurodevelopment and heritability of ADHD.