COMT and DAT1 polymorphisms moderate the indirect effect of parenting behavior on youth ADHD symptoms through neurocognitive functioning.

Morgan JE, Caplan B, Tung I, Noroña AN, Baker BL, Lee SS.


Abstract

Although gene × environment interactions contribute to youth attention-deficit/hyperactivity disorder (ADHD) symptoms, the pathways mediating these influences are unknown. We tested genetic moderation of indirect effects from parenting behavior to youth ADHD symptoms through multiple neurocognitive factors. Two hundred and twenty-nine youth with and without ADHD were assessed at baseline (Wave 1; ages 5-10) and at a 2-year follow-up (Wave 2; ages 7-13). At Wave 1, youth completed a neurocognitive battery including measures of response inhibition, visuospatial working memory, and fluid reasoning, and a standardized parent-child interaction task yielding observational measures of positive and negative parenting. At Wave 2, youth psychopathology was rated by parents and teachers using multiple methods (i.e., structured interview, rating scale). We employed moderated multiple mediations and compared conditional indirect effects across youth genotypes at two biologically plausible genetic loci. Controlling for parent ADHD symptoms as well as youth demographic factors and co-occurring externalizing symptoms, these genetic factors moderated the indirect effect from Wave 1 parenting to multi-method/informant Wave 2 ADHD symptoms through Wave 1 neurocognitive functioning. This preliminary study is the first to identify genetic moderation of mediated effects underlying ADHD symptoms and suggests that specific gene × parenting interactions may underlie neurocognitive functioning deficits and subsequent ADHD.