An association between a dopamine transporter gene (SLC6A3) haplotype and ADHD symptom measures in nonclinical adults

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Previous genetic studies have postulated that attention deficit hyperactivity disorder (ADHD) should be regarded as the extreme end of a set of behavioural traits that can be continuously measured in the general population. The current study adopted a quantitative trait approach to examine the relationship between dopamine gene variants and self-reported ADHD symptoms in 517 nonclinical adults. Although genetic associations with variants of both the dopamine transporter (DAT1; SLC6A3) and D4 receptor (DRD4) genes have been reliably reported in children, results in adults are less consistent. We probed two potentially functional variable number of tandem repeat (VNTR) polymorphisms in the 3′UTR and intron 8 of DAT1, the 10-repeat and 6-repeat alleles of which respectively form a haplotype (10/6 DAT1 haplotype) that is associated with childhood ADHD. We also genotyped the exon 3 VNTR of DRD4, the 7-repeat allele of which is also an established risk factor for childhood ADHD. Permutation analysis showed an influence of the 10/6 DAT1 haplotype on both CAARS-G and CAARS-H (DSM-IV ADHD Symptoms Total and ADHD Index respectively), such that ADHD symptom scores increased with each additional copy of the 10/6 DAT1 haplotype. This result survived corrections for multiple comparisons both at the level of genotype and phenotype. A nominal association with CAARS-G was also found for the 7-repeat allele of the DRD4 VNTR however this did not survive multiple comparison correction. Our results provide further support for the influence of variation in the 10/6 DAT1 haplotype and individual differences in ADHD symptoms in adults.