

# Sex, ADHD symptoms, and CHRNA5 genotype influence reaction time but not response inhibition

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## Abstract

People showing symptoms of attention deficit hyperactivity disorder (ADHD) often present an impairment of reaction time and response inhibition. These executive functions are influenced by nicotinic acetylcholine receptors (nAChR) as mediators of cholinergic signaling, and show differences between both sexes. We examined the effects of two functional polymorphisms rs3841324 (S/L) and rs16969968 (G/A) of the cholinergic gene CHRNA5, ADHD symptoms and sex on response inhibition/reaction time in the Stop Signal Task. In the analyses, 183 participants (52.4% females) were included. In participants carrying the diplotype (SS\_GG), men with ADHD symptoms responded faster, while men without ADHD symptoms were slower than women ( $F = 5.313$ ;  $p = 0.023$ ;  $\eta p^2 = 0.034$ ). Although explorative, this threefold interaction on reaction time but not response inhibition extend previous findings, suggesting a moderating effect of ADHD symptoms in men carrying the CHRNA5 diplotype SS\_GG and might inspire research on genotype- and gender-specific ADHD medication.