

## **System mechanisms of attention: Toward the nature of hypnotizability**

### **ABSTRACT:**

A great body of data evidences that hypnotizability correlates with sustained and selected attentional abilities. The study of several auditory event-related measures and the continuous performance test (CPT) might be useful to assess the attentional resources in high (HH) and low (LH) hypnotizable subjects. Val158Met polymorphism of catechol-o-methyltransferase (COMT) gene impact dopamine (DA) signaling in prefrontal cortex and may participate in mechanisms of attention and hypnotizability.

The aim of the study was to investigate neurophysiological and genetic underpinnings of attentional abilities in subjects with high (HH) and low (LH) hypnotizability.

The study involved 19 HH (10 women and 9 men) and 17 LH (4 women and 13 men) subjects. Val158Met COMT polymorphism was detected using real-time polymerase chain reaction (PCR). The prepulse inhibition (PPI) of the acoustic startle response (ASR) was used to estimate involuntary attentive processes; the odd-ball task performance with concurrent estimation of P300 amplitude and latency were determined as voluntary attention measures. The Immediate Memory Task (IMT - the CPT adaptation) was used to test the sustained voluntary attention and its selectivity.

Met/Met homozygosity of COMT was associated with high hypnotizability. In the ASR model HHs displayed greater baseline response amplitude (excitability) and decreased PPI (i.e., decreased efficacy of sensorimotor gating). In the oddball task HH subjects displayed significantly less error responses to target stimuli and greater P300 amplitude at fronto-central area than LH ones. Hypnotizability x Gender interaction was significant for IMT performance: HH males displayed more liberal strategy (with higher number of commission errors) than LH men; HH women displayed higher number of correct responses than LH ones. Besides, after ASR testing the cortisol level in HH women was higher than in LH women, HH and LH men.

Our results evidenced the differences in the cognitive strategy and organization of attentional processes in HH and LH persons.

### **Keywords**

Hypnotizability, COMT Val158Met polymorphism, Prepulse inhibition of startle response, P300 evoked potentials, Immediate memory task

### **Published Work:**

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