

Poster Abstract

## **Effects of BDNF Genotype on Autonomic Nervous System Functioning**

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Brain-derived neurotrophic factor (BDNF) is a protein that plays a role in growth, regulation, and plasticity of nervous systems. A single-nucleotide polymorphism (SNP) results in several isoforms of BDNF – Val/Val, Val/Met, and Met/Met. The valine wild-type allele is linked to positive health effects, such as improved heart-rate variability (HRV) and synapse maintenance, while the methionine polymorphism is associated with health and cognitive risks, including Alzheimer's disease (AD). The current study assessed the relationship between BDNF and autonomic functioning under cognitive stress in older adults. HRV (via SDNN) was measured with and without cognitive stress (via mental arithmetic). Buccal cell DNA was genotyped for the Val66Met SNP (Val/Val:  $n=16$  Val/Met:  $n=8$ ). As HRV reliably declines during increased cognitive stress, we hypothesized that methionine allele carriers would exhibit greater reductions in HRV during stress than valine-only carriers, reflecting greater cardiovascular risk. Contrarily, while HRV during stress declined in Val/Val carriers, no difference was exhibited by Val/Met carriers, possibly suggesting poorer overall autonomic function or poorer task engagement. These findings showing differences in autonomic functioning under cognitive stress by BDNF isoform, suggests future study is warranted as a candidate biomarker for the early detection of risks associated with AD