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BDNF Val66Met polymorphism and memory performance in older adults: the Met carrier effect is more complex than previously thought

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Brain-derived neurotrophic factor (BDNF) is an important nerve growth factor linked with development and neural plasticity. The Val66Met polymorphism in the *BDNF* gene has been associated with a significant impact on episodic memory in adults. Azeredo et al.[1] investigated effects of the *BDNF* Val66Met polymorphism on memory performance. Their conclusion was that, in a sample of elderly adults, *BDNF* Met allele carriers had impaired episodic memory performance as compared to Val/Val homozygotes.[1] However, conflicting evidence to this report exists, and the correlation between memory and Met allele carrier status is quite complex. One previous report focusing on older adults suggested that the *BDNF* Met allele is associated with higher memory performance,[2] whereas other studies found no effect of *BDNF* Val66Met variant on memory in older[3] or young adults.[4] It is important to note that the effects of the Val66Met polymorphism are due to modification of BDNF synthesis. Azeredo et al. measured *BDNF* genotype, but not BDNF concentrations. Interestingly, Val66Met polymorphism has been shown to be associated with increased BDNF levels by Zhang et al.,[5] vs. the BDNF reduction presumed by Azeredo et al., where aging-related memory decline is possibly explained by reduced neurotrophin synthesis. Another limitation of this study was the failure to exclude psychiatric patients.[1] The BDNF increase noted in the study by Zhang et al. was demonstrated in patients with posttraumatic stress disorder, a condition known to have significant impact on memory.

In conclusion, we believe further research into the impact of *BDNF* genotype on memory should include measurement of BDNF levels as well as psychiatric screening for conditions likely to impact memory function.

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Disclosure

The authors report no conflicts of interest.

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BDNF Val66Met polymorphism and memory performance in older adults: the Met carrier effect is more complex than previously thought: Authors' reply

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Genetic association studies have presented inconsistent findings regarding the effects of the functional *BDNF* Val66Met polymorphism and cognitive function in healthy subjects and psychiatric patients, with heterogeneity in effect sizes across studies.[1-4] As these candidate gene studies have employed relatively small samples, it is difficult to interpret discrepant findings, which are the norm in genetic association research. By aggregating data across studies, meta-analyses provide a systematic method of evaluating such discrepant findings, as regarding the association between *BDNF* Val66Met polymorphism and memory function. In this context, a recently published meta-analysis estimated the effect of the *BDNF* Val66Met polymorphism on declarative memory tasks in 5,922 subjects, as well as on hippocampal grey matter volume in 2,985 subjects and on task-related change in hippocampal response measured by functional magnetic resonance imaging (fMRI) in 362 subjects.[5] The authors of this meta-analysis found evidence that declarative memory performance, hippocampal volume, and hippocampal activation are all reduced in *BDNF Met* allele carriers in comparison to *Val/Val* homozygotes. In our study, we examined the effect of the *BDNF* Val66Met polymorphism on declarative memory performance in a sample of 87 older adults recruited by convenience among community-based elders in Porto Alegre, Brazil. Our analysis yielded further evidence on the genetic contribution of the *BDNF* Val66Met polymorphism in memory performance, demonstrating that *BDNF Met* allele carriers had lower delayed verbal recall and a decline in memory retention as compared to *Val/Val* homozygotes. Although our findings provided additional evidence of an