A role of BDNF polymorphism in age-related recognition memory processes?

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INTRODUCTION

Episodic memory difficulties are frequently encountered in normal aging. However, the effect of brain-derived neurotrophic factor (BDNF) genetic polymorphism on decreased memory performance remains largely unclear. BDNF has a significant involvement in synaptic growth. Consequently, we have examined the concurrent effect of BDNF genetic polymorphism on recognition performance in young and old adults.

PARTICIPANTS & METHODS

Demographics

	Young (N=51)	Old (N=60)
Sex (M/F)	29/22	29/31
Age	23.73 (3.07)	65.85 (4.47)
NSC	15,0 (1.93)	14.90 (2.67)

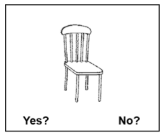
Genetic Variability

	Val/Val	Met/Met Val/Met	Total
Young (M+F)	28	22	50
Old (M+F)	32	24	56
Total	60	46	106

Our participants were selected form a larger community dwelling cohort, which completed an episodic memory task in an fMRI setting.

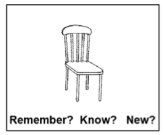
Image acquisition: fMRI, 3T Siemens and Allegra scanners

Semantic incidental encoding of picture(n=200)



« Does the object fit into a shoebox? »

Recognition task using Remember/Know paradigm (n=300)

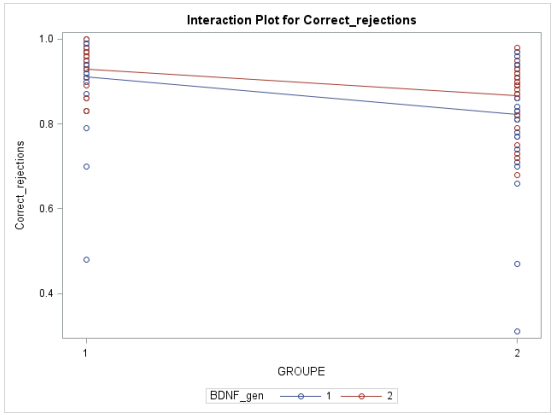


Task difficulty

- easy condition: item presented twice
- hard condition: item presented once

RESULTS

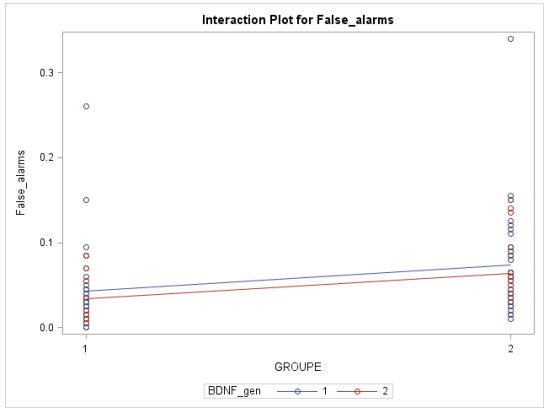
Regression analyses on correct rejections



Note. 1: Young, 2: Old

	Estimate (SD)	F (df)	P
Group (young)	**-.01 (.03)**	**0.15** (1,102)	**.0003**
BDNF (val/val)	-.04 (.02)	0.03 (1,102)	.13
Interaction effect	.06 (.04)	.01 (1,102)	.50

Regression analyses on false alarms



Note. 1: Young, 2: Old

	Estimate (SD)	F (df)	P
Group (young)	**-.03 (.01)**	**9.81 (1,102)**	**.002**
BDNF (val/val)	.01 (.01)	0.95 (1,102)	.33
Interaction effect	-.001 (.02)	.0 (1,102)	.95

DISCUSSION

The absence of main or interaction genetic effects seems to indicate that the BDNF polymorphism does not influence recognition memory performance in aging. We will next investigate if specific brain activity patterns associated to compensatory processes are specifically observed in Val or Met carriers.

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