

Return To Childhood: Loss Of Autobiographical Memory Recency In Alzheimer's Disease

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INTRODUCTION

Often, relatives of patients with mild cognitive impairment (MCI) due to Alzheimer's disease (AD) describe that these patients show preserved childhood memories and impaired recent recall of personal events (i.e., autobiographical memory, AM). However, experimental data are missing. Here, we examined this temporal gradient of AM in healthy older adults (CTL) and patients with MCI due to AD with state-of-the-art AM tasks and functional MRI.

METHODS

Demographics of the study sample.

	CTL	AD
Number of Participants	26	21
Age, years	68.1 ± 7.5	69.8 ± 6.0
Education, years	16.2 ± 2.7	13.5 ± 2.3 *
BDI-V Sum (/100)	16.0 ± 10.3	15.8 ± 10.5
MMSE (/30)	29.7 ± 0.8	25.7 ± 1.9 ***
pTau-217 (pg/ml)	0.50 ± 0.25	1.39 ± 0.47 ***
Female, n(%)	12 (46%)	11 (52%)

Note. *p <.01 *** p<.001

- **7T task-based fMRI:** activation during AM recall, cued by previously selected personal photographs. Statistical analysis comprised One- and Two-Sample T-Contrasts.
- **Parametric Modulation:** of the 7T task-based fMRI data by memory age (based on the year of the events in the photos).
- **Autobiographical Interview¹:** quantifies the amount of internal (episodic) vs. external (semantic/other events) details across five predefined lifetime periods.
- **Autobiographical Memory Sampling²:** assesses memory specificity (episodic, extended, categoric, semantic, omission) and temporal recency (recent = <1 year vs. remote = >1 year) of spontaneously cue-word elicited memories.

REFERENCES & CONTACT

¹Levine et al. 2002, ²McNally et al. 1995

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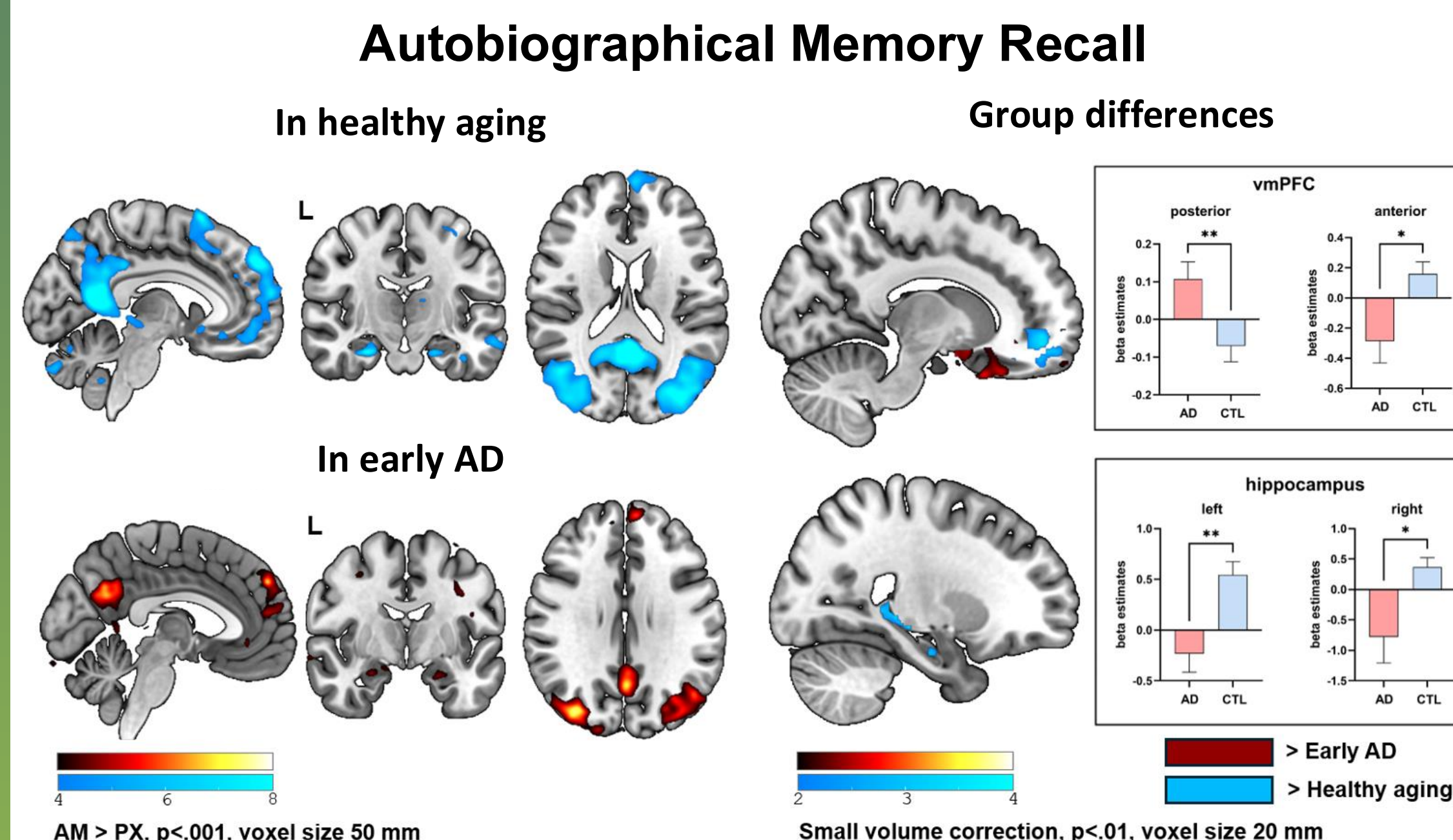
AG Memory & Imagination



RESULTS

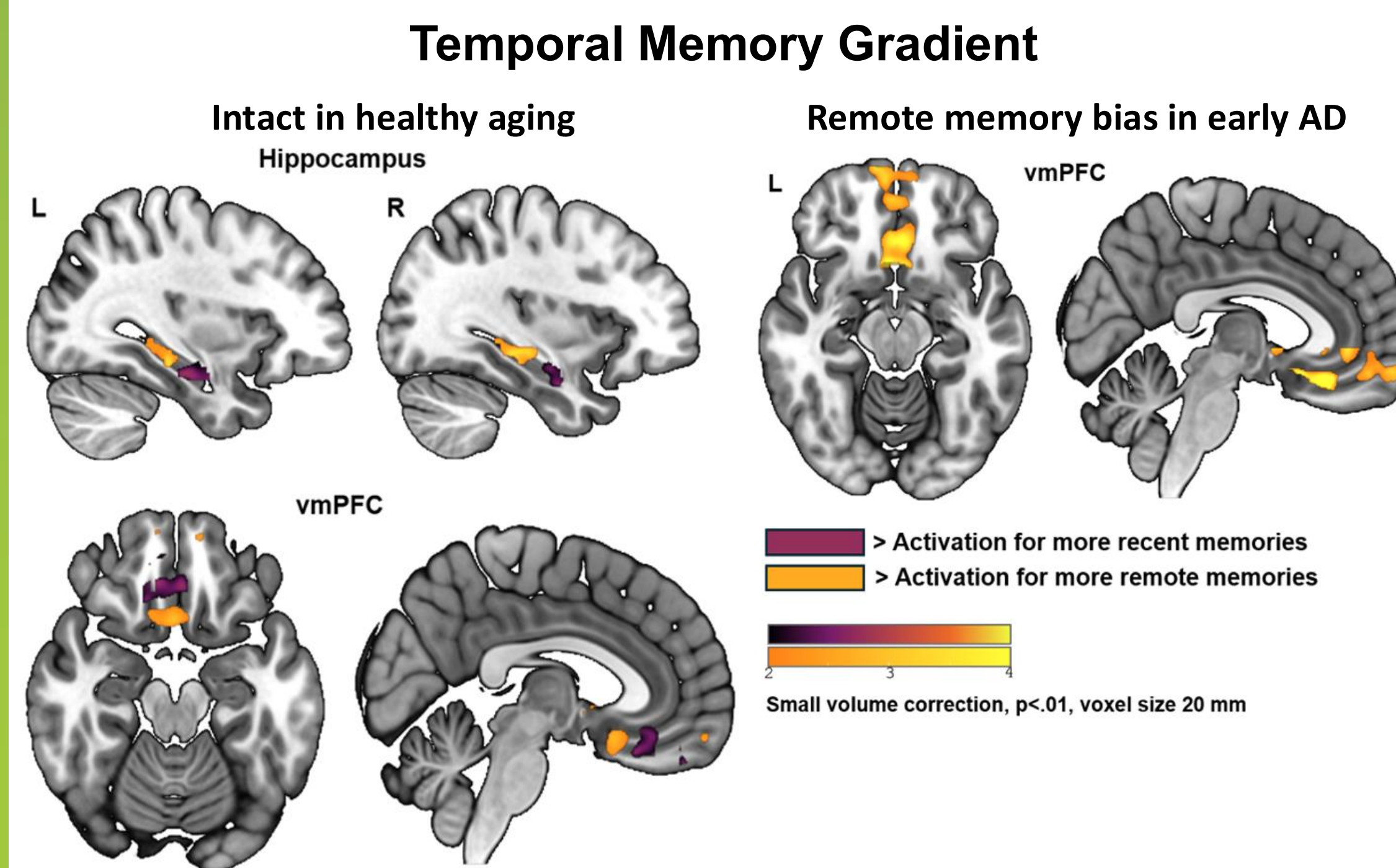
7T task-based fMRI

- Early AD showed reduced AM network recruitment and altered anterior-posterior vmPFC engagement compared to CTL.



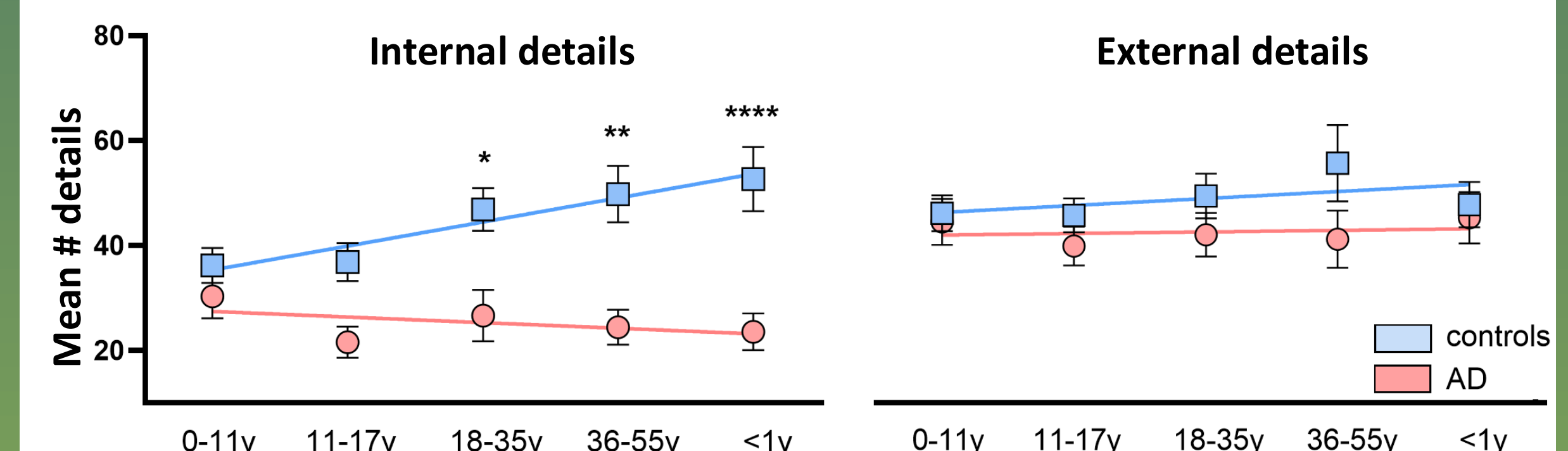
Parametric Modulation

- CTLs preserved vmPFC/hippocampal memory-age gradients, while early AD showed attenuation and remote-shifted vmPFC activity.



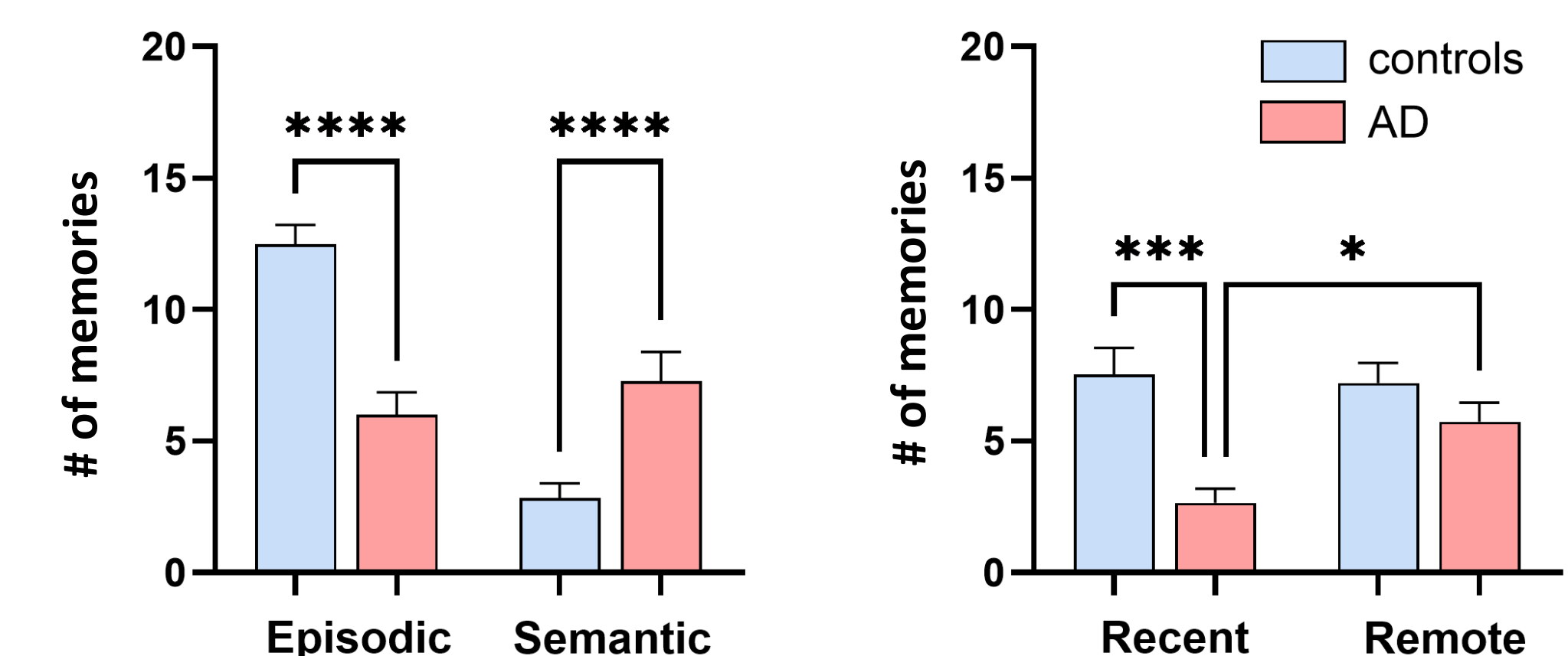
Autobiographical Interview

- Early AD selectively impaired episodic recollection, with reduced recent memory detail and a loss of the temporal memory gradient observed in CTL.



Autobiographical Memory Sampling

- AM in early AD became increasingly biased toward semantic associations rather than episodic memories as well as remote rather than recent events.



CONCLUSION

In healthy aging, recent memories became more enriched with episodic (internal) details. A striking anterior-posterior temporal gradient represented memory age within the hippocampus and vmPFC (anterior = recent, posterior = remote memories). No such recency effect was found in early AD. During spontaneous AM Sampling, early AD patients preferred remote memories. Remote memories were supported by the vmPFC, moreso than the hippocampus. The clinical anecdote of preserved childhood memories in early AD can be explained by the lack of increased detailness of recent memories.