

# CONSCIENTIOUSNESS MODERATES THE RELATIONSHIP BETWEEN INTERLEUKIN-6 AND MEMORY DECLINE



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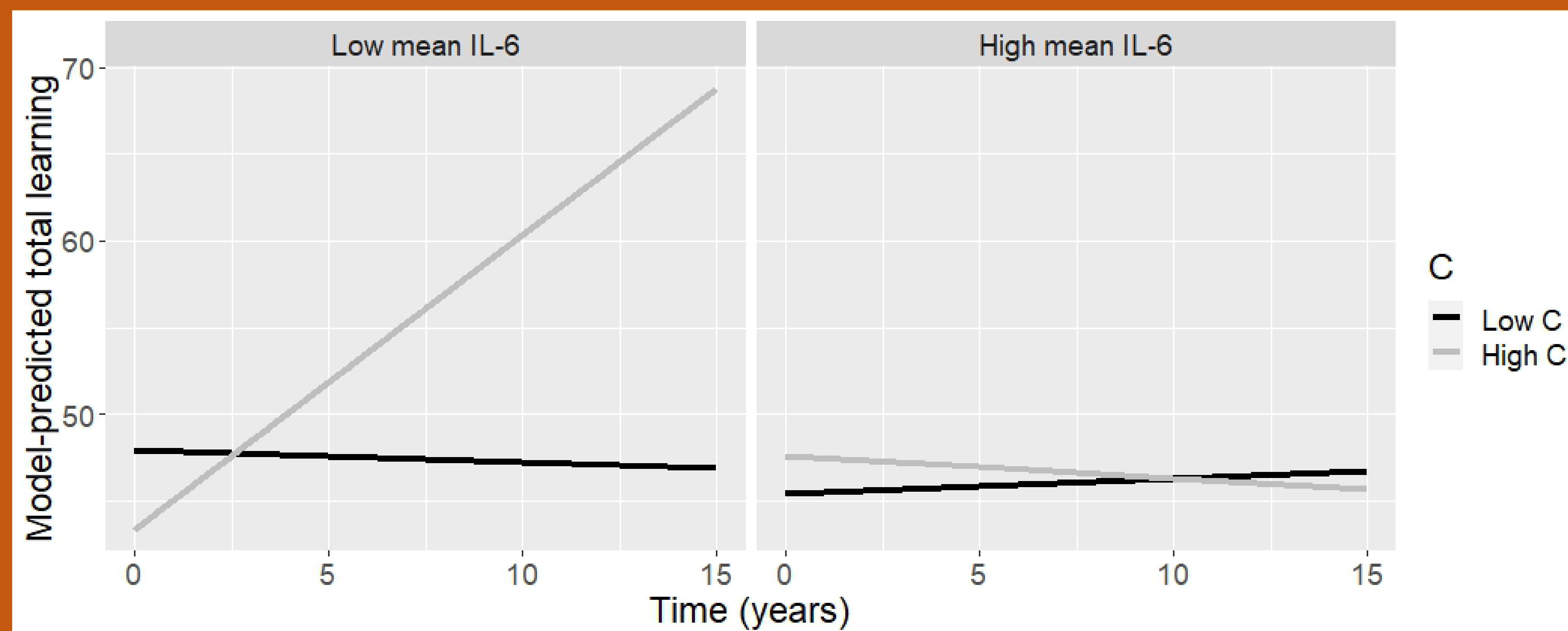
Pathoplastic models of dementia suggest that individual differences change the phenotype of the disease given a certain level of risk or pathology. For example, brain amyloid has a stronger effect on cognition for women than for men. The personality trait of **conscientiousness (C; controlled, planful, organized)** may have **pathoplastic effects on memory pathology**.

Three meta-analyses concluded that IL-6, but not other indices of systemic inflammation, was associated with cognitive decline in nondemented older adults. **The present study tested effects of C on the longitudinal relationship between IL-6 and memory acquisition and recall among healthy older adults.**

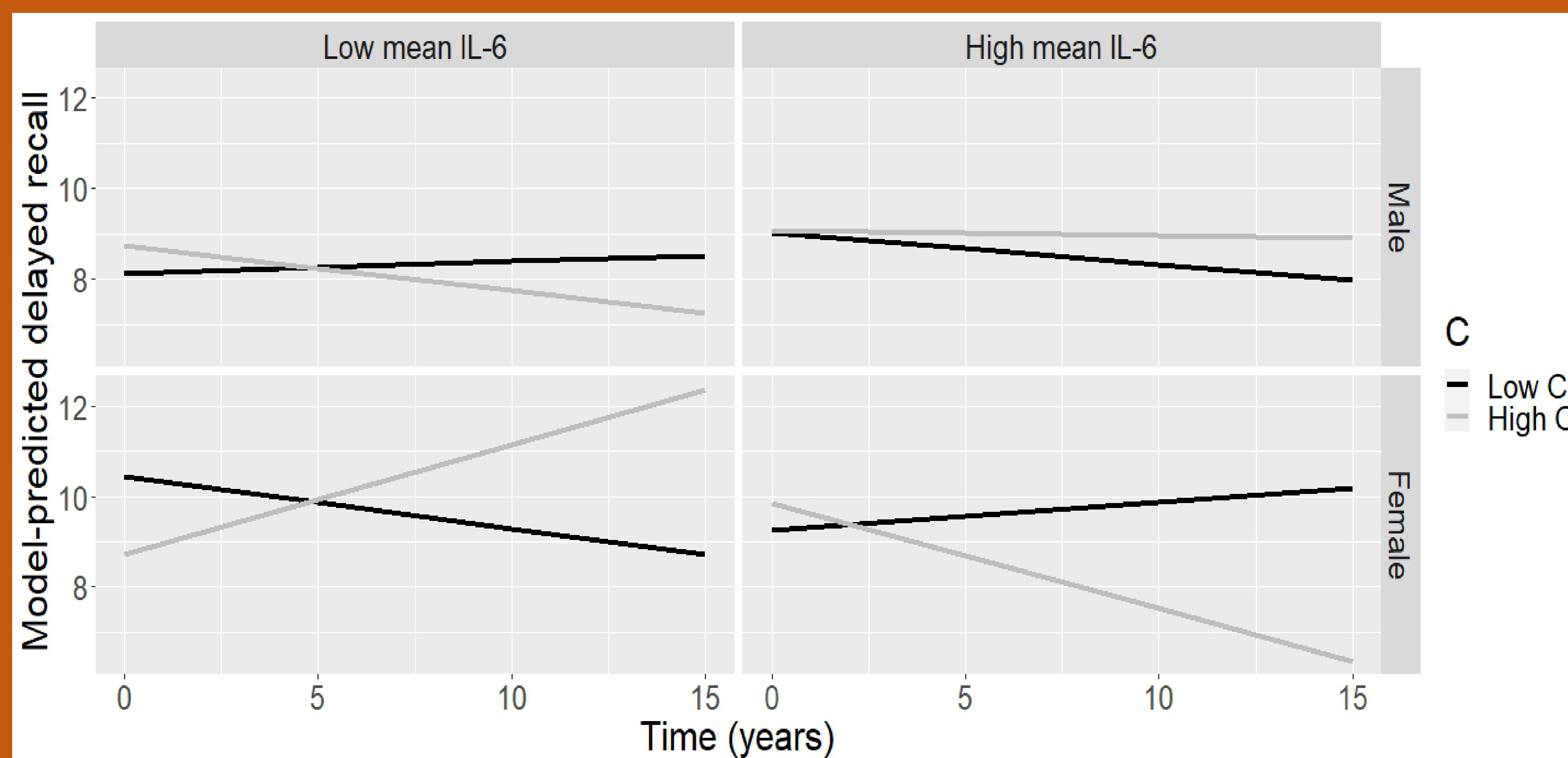
## METHODS

- N = 182 older adults (age M = 74, range = 60-94; 41% female)
- Rey Auditory Learning Test (RAVLT), a word list learning and recall test, given annually for up to 16.6 years (M = 6.5 years). Models controlled for expected learning over 5 trials and delayed recall based on age, gender, and IQ.
- C measured at baseline with the NEO-FFI personality inventory.

# People with high conscientiousness and low IL-6 increased total learning relative to age norms over time – maintaining a younger profile of memory acquisition.



# Above and beyond acquisition, women with high conscientiousness and low IL-6 maintained a younger profile of memory recall.



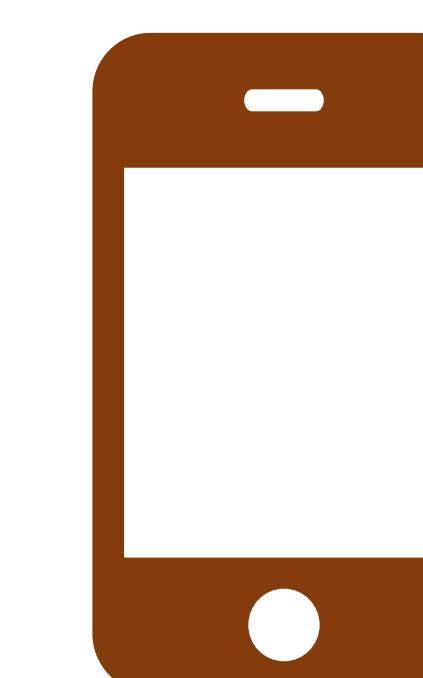
## CONCLUSION

Rather than a pathoplastic relationship, IL-6 and C had a synergistic effect on memory decline over time. Neither low IL-6 nor high C alone were sufficient to preserve memory. **The healthy habits of conscientious people may need an advantageous physical environment to influence memory and possibly other cognitive functions.**

Women experience faster cognitive decline, greater hippocampal atrophy, and higher likelihood of progression to Alzheimer's disease than men given the same genetic risk or CSF markers of brain pathology. This pathoplastic relationship also applied to the relationship between IL-6 and memory: **women's C and IL-6 were related to memory change, but effects for men were much smaller.**

## See also:

- Segerstrom SC. Personality and incident Alzheimer's Disease: Theory, evidence, and future directions. doi:10.1093/geronb/gby063
- Beck ED, Yoneda T, James B, et al. Personality predictors of dementia diagnosis and neuropathological burden: An individual participant data meta-analysis. doi:10.31234/osf.io/gbc6s
- Bradburn S, Sarginson J, Murgatroyd CA. Association of peripheral interleukin-6 with global cognitive decline in nondemented adults: A meta-analysis of prospective studies. doi:10.3389/fnagi.2017.00438
- Leonardo S, Fregni F. Association of inflammation and cognition in the elderly: A systematic review and meta-analysis. doi:10.3389/fnagi.2023.1069439
- Feng L, Wang Y, Zeng D, Wang M, Duan X. Predictors of cognitive decline in older individuals without dementia: An updated meta-analysis. doi:10.1002/acn3.51740
- Ferretti MT, Iulita MF, Cavado E, et al. Sex differences in Alzheimer disease — the gateway to precision medicine. doi:10.1038/s41582-018-0032-9



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