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Longitudinal change in heritability of verbal episodic memory: Preliminary findings from the Older Australian Twins Study (OATS)

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ABSTRACT:

Episodic memory (EM) decline/impairment is a salient feature of cognitive aging and neurodegenerative conditions, such as amnesic Mild Cognitive Impairment and Alzheimer's disease. While longitudinal EM changes in cognitive aging have been frequently studied, longitudinal change in the heritability of EM has not been fully explored. We used a subsample of 148 MZ and 116 DZ twin pairs (mean age 71 at baseline, 65% female) from OATS to examine change in heritability of four measures of EM (immediate story recall, delayed story recall, word-list total learning over repetitions, and delayed word-list recall) at baseline and at a mean follow-up assessment of 5.3 years. Residuals of EM measures were obtained after adjusting for age, sex, education, mood (Geriatric Depression Scale), global cognition and practice effects. A saturated Cholesky ACE model was fitted using the residuals. Preliminary results suggested moderate increase in heritability for immediate story recall (0.35, 95% CI [0.25,0.44]) and delayed story recall (0.40 [0.30,0.49] at baseline to follow-up (0.52 [0.41,0.63] and 0.48 [0.37,60], respectively). A decreased trend was observed for word-list total learning (0.41 [0.28,0.49]) and delayed word-list recall (0.44 [0.31,0.54] at baseline to follow-up (0.37 [0.19,0.50] and 0.37 [0.24,0.47], respectively). However, overlapping confidence intervals suggest that changes in heritability may not be statistically significant. Latent change model will be fitted to examine the degree of change in EM between two time-points, to assess change in heritability, and to assess if the change is associated with the general EM domain or test specific.

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