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

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KEYWORDS: heritability, longitudinal, episodic memory, aging

ABSTRACT:

Episodic memory (EM) decline/impairment is a salient feature of cognitive aging and neurodegenerative conditions, such as amnestic 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 [0.37,0.60], 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.

GRANT SUPPORT: We acknowledge the contribution of the OATS research team (https://cheba.unsw.edu.au/project/older-australian-twins-study) to this study. The OATS study has been funded by a National Health & Medical Research Council (NHMRC) and Australian Research Council (ARC) Strategic Award Grant of the Ageing Well, Ageing Productively Program (ID No. 401162); NHMRC Project (seed) Grants (ID No. 1024224 and 1025243); NHMRC Project Grants (ID No. 1045325 and 1085606); and NHMRC Program Grants (ID No. 568969 and 1093083). We thank the participants for their time and generosity in contributing to this research. This research was facilitated through access to Twins Research Australia, a national resource supported by a Centre of Research Excellence Grant (ID No. 1079102) from the National Health and Medical Research Council.