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Remember this: Harmonization of episodic memory measures across twin studies of aging

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Episodic memory impairment is a hallmark symptom of dementia and concern among individuals as they grow older. In the Interplay of Genes and Environment in Multiple Studies (IGEMS) consortium, most studies measured episodic memory by giving the participant a list of words to learn. However, different studies used different numbers of words, unrelated words or words within categories, different numbers of learning trials, different wait times before delayed recall, and face-to-face or telephone administration.

Data are from 12 IGEMS studies, from Sweden, Denmark, Australia, and the U.S. (N = 37,808 individuals; 11,995 complete twin pairs; mean age = 63.6, 95% between 45 and 80). We selected the only variable consistent across studies: the first time that the participant repeated back the list of words. From raw scores, within each IGEMS study, we calculated percent of words correctly recalled, then created a T score standardized to mean = 50, SD = 10 for non-cognitively impaired individuals aged 65–69.9. We applied this formula to all individuals in the respective study at all waves.

Cross-sectional phenotypic analyses found expected age differences, with lower scores at older ages. Heritability of memory was higher in younger aged twins compared to older ages (a^2_{40} = .29; a^2_{70} .12).

Discussion: This report adds episodic memory to available harmonized cognitive variables in IGEMS. Compared to previous results for other cognitive abilities in IGEMS studies, the findings are similar to the pattern reported for digit span, but differs from verbal abilities where heritability increased with age.

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