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TITLE: Remember This: Harmonization of Episodic Memory Measures across Twin Studies of Aging

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ABSTRACT:

Background: Episodic memory 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 of twin studies, 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.

Method: Data are from 12 IGEMS studies, from Sweden, Denmark, Australia, and the U.S. (N = 37,808 individuals; 11,995 complete pairs; mean age = 63.6). We selected the

only variable consistent across studies: the first time that the participant repeated back the list of words. From raw scores, 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 in each IGEMS study. We applied this formula to all individuals in the respective study at all waves.

Results: Cross-sectional phenotypic analyses found expected age differences, with lower scores at older ages. Heritability of memory was higher in those under age 50 compared to older ages ( $a^2_{<50} = .44$ ;  $a^2_{70+} = .18$ ).

Discussion: This report adds episodic memory to the 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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