

Categories: Memory Functions/Amnesia

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Correspondence: Cardinal Do, Ohio University, cd880217@ohio.edu

3 Relation of Stress and Cortisol to Primacy and Recency Performance Patterns in Older Adult Caregivers of People with Dementia

Taylor Lambertus¹, Alex Woody², Anna VanMeter³, Peggy Zoccola¹, Julie Suhr¹
¹Ohio University, Athens, OH, USA. ²Ohio State University, Columbus, OH, USA. ³Center for Balanced Living, Columbus, OH, USA

Objective: The serial position effect is the tendency to recall items at the beginning (primacy) and end (recency) of a word list best and middle items the worst, demonstrated by a 'U-shaped' profile. Individuals with memory impairment often demonstrate a 'J-shaped' profile, with a diminished primacy effect. An attenuated primacy effect could be one of the earliest indicators of cognitive decline in older adults. Chronic elevations in cortisol are related to hippocampal atrophy and decreased learning and recall. Given the rehearsal and encoding required to recall words at the beginning of a list, we hypothesized that reduced primacy would be related to higher cortisol levels, measured via hair cortisol concentration, in older adults, particularly caregivers of people with dementia (PWD), who are under increased stress.

Participants and Methods: Data were taken from a deidentified dataset of 60 community-dwelling older adults (≥ 50) with no evidence of dementia who participated in a larger study on memory and caregiving stress; 26 identified themselves as caregivers of PWD. The sample was 83% women and 98% White, with a mean age of 67.58 (SD=8.85) and 80% holding at least a college degree. Stress was measured with the Perceived Stress Scale. The List Learning and List Recall subtests from the Repeatable Battery for the Assessment of Neuropsychological Status were used to assess the serial position effect. Primacy and recency were determined by the first three and last three words on the list, respectively, and were measured for trials 1-4. Relative strength of

primacy versus recency at delayed recall was also calculated such that positive scores indicate better primacy than recency and negative scores indicate worse primacy than recency (J-shaped profile). Hair samples were collected, and the first one cm of hair was used to assay hair cortisol concentration, reflecting the past month of cortisol.

Results: Caregivers were younger than non-caregivers ($p < .001$), but groups did not differ in gender ($p = .412$). Age was controlled for in all subsequent analyses. Caregivers reported more stress ($p < .001$), but groups were not different in hair cortisol ($p = .093$). On memory tasks, caregivers showed lower list learning raw scores ($p = .002$) and lower list recall raw score ($p = .046$); groups were not different in primacy learning ($p = .114$), but caregivers showed worse recency over learning trials ($p < .001$). Caregivers were not more likely to show the J-shaped serial position profile at recall ($p = .285$). Collapsed across groups, perceived stress was not related to cortisol ($p = .124$) but was related to recency ($p = .001$) and list learning raw ($p = .004$), but not list recall raw ($p = .485$) or primacy ($p = .109$). Cortisol was not related to primacy ($p = .277$) or recency ($p = .538$).

Conclusions: Contrary to predictions, caregivers were not worse on primacy but were worse on recency. Caregivers also reported more stress; collapsed across groups, stress was associated with recency performance. This may suggest that stress is related more to poor attention and short-term memory (recency) than encoding and recall related memory problems (primacy).

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Correspondence: Taylor Lambertus, Ohio University, tl043419@ohio.edu

4 Comparing Learning Process Variables to Memory Performance and Salivary Cortisol: Is Gender a Moderator of Relationships?

Kendra Pizzonia¹, Kathi Heffner², Taylor Lambertus¹, Julie Suhr¹