demonstrated that, within a sample of 338 older adults (228 women) with no diagnosis of MCI or dementia, men and women did not differ in primacy, but men did worse on recency. While 23% of the sample showed a J-curve pattern, this did not differ by gender, and the pattern was highly predictive of memory performance for both men and women. Thus, at least for the RBANS, these two studies suggest LR and primacy avoid gender confounds seen in traditional memory measures.
The last two papers included assessment of cortisol. Lambertus et al. found that, in a sample of 60 older adults, 26 of whom were caregivers for persons with dementia, caregivers performed worse on recency, but not primacy. They also reported more stress but were not different in hair cortisol concentration. Within the full sample, perceived stress was related to recency, but not primacy; hair cortisol was not related to either perceived stress or primacy/recency. Finally, Pizzonia and colleagues report AVLT learning process findings from a sample of 100 healthy older adults (44 men). They found that women were better on both LR and primacy, but not recency. However, LR and primacy were not differentially related to memory outcomes in men and women, although there were differential relationships of recency to AVLT. Potential gender moderation of relationships between cortisol and LR/primacy performance were also observed. Overall, findings suggest that there may be gender differences in AVLT-related learning process tests, but that their relationship to memory outcome variables may be similar across genders. Implications of these findings for assessment will be discussed.
Keyword 1: aging (normal)
Keyword 2: learning

Keyword 3: memory: normal

1 Examining Gender Invariance in Repeatable Battery for the Assessment of Neuropsychological Status Learning Ratio

Claire Alexander, Cardinal Do, Julie Suhr
Ohio University, Athens, OH, USA

Objective: Process-based measures of verbal learning, such as the recently described learning ratio (LR; Hammers et al., 2022) may add valuable data to neuropsychological assessment. Women tend to have higher episodic verbal memory ability compared to men at all ages, including older adulthood (Golchert et al., 2019; Maitland et al., 2004). However, it is unclear whether gender is related to the process of learning, as quantified through measures of learning slope and ratio. To date only one study has examined this, with Hammers et al. (2021) finding no gender differences on LR in the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS); therefore, further study is necessary. We examined whether men and women differed in LR, learning over time (LOT), and raw learning slope (RLS) in a healthy older adult sample, as well as whether these learning process variables predicted delayed memory equally for men and women.
Participants and Methods: 203 cognitively healthy community-dwelling adults aged 50 and above (mean age 67.7; 133 women) were taken from a larger archival database; all were administered the RBANS in the context of other studies. LR, LOT, and RLS were calculated from the List Learning task. We examined whether men and women differed in these learning process measures. We then examined whether process measures differentially predicted performance on list recall and delayed memory index (DMI) of the RBANS for men and women.
Results: Men and women did not differ in age or years of education. After accounting for age and education, there were no gender differences on LR ($p=.455$) or RLS ($p=.502$) but LOT was lower in women ($p=.013$).
LR was equally predictive of list recall across genders ($p<.001$ for LR; $p=.21$ for gender). Correlations between LR and list recall were $r=.65$ ($p<.001$) for men and $r=.56$ ($p<.001$) for women. Both LR ($p<.001$) and gender ($p=.008$) predicted DMI but the interaction was nonsignificant. Correlations between LR and DMI were $r=.52$ for men ($p<.001$) and $r=.46$ for women ($p<.001$).
RLS predicted list recall equally across genders ($p<.001$ for RLS; $p=.07$ for gender; $p=.18$ for interaction). Correlations between RLS and list recall were $r=.43$ for men ($p<.001$) and $r=.23$ for women ($p=.008$). RLS ($p<.001$) and gender ($p=.002$; $p=.19$ for interaction) predicted DMI scores. Correlations between RLS and DMI were $r=.31$ for men ($p=.008$) and $r=.21$ for women ($p=.015$).

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LOT predicted list recall equally across genders (p<.001; p=.97 for gender; p=.80 for interaction). Correlations between LOT and list recall were r=-.50 for men (p<.001) and r=-.60 for women (p<.001). LOT also predicted DMI equally across genders (p<.001; p=.084 for gender; p=.159 for interaction). Correlations between LOT and DMI were r=-.46 for men (p<.001) and r=-.49 for women (p<.001).
Conclusions: Of the three process variables, LR was the only one that did not show gender differences and was related to delayed memory outcomes with medium to large effect across both genders. Results suggest that LR can be used consistently across genders. As this sample consisted of healthy, independently-living older adults, future study should examine LR by gender in MCI and dementia samples.

Categories: Memory Functions/Amnesia
Keyword 1: aging (normal)
Keyword 2: learning
Keyword 3: memory: normal
Correspondence: Claire Alexander, Ohio University, ca630517@ohio.edu

2 Examining Gender Differences in the Serial Position Effect and its Relationship to Memory Outcomes

Cardinal Do, Julie Suhr
Ohio University, Athens, OH, USA

Objective: There are gender-related disparities in age of diagnosis of Mild Cognitive Impairment (MCI) or dementia, with women often receiving delayed diagnoses compared to men. These delays may be related to the general female advantage in episodic verbal memory across aging. Thus, it is important to identify methods of examining memory performance that can help to reduce disparities in diagnosis. The serial position effect, a pattern where individuals tend to remember more words at the beginning (primacy) and end (recency) of a list, is predictive of dementia and may provide an avenue for this endeavor. Whereas healthy adults tend to exhibit a prototypical U-shaped serial position profile, those with MCI or dementia tend to show reduced primacy relative to recency (i.e., a J-shaped profile). To date, few studies have examined gender differences in the serial position effect. There is some evidence to suggest that older, cognitively healthy women perform better than men on middle and recency, but more research is needed to clarify the relationship between gender and the serial position effect, which was the focus of this study.
Participants and Methods: We utilized data across three archival datasets, which included a total of 338 participants (67.5% female; Mage=66.9, SDage=9.4) divided into three age groups (50-64, 65-75, 76+). Scores on the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) immediate and delayed memory indices (IMI and DMI, respectively) were used to assess verbal episodic memory abilities. Performances across learning trials of the List Learning task were utilized to examine the serial position effect. ANCOVA analyses were conducted and utilized regional scoring of list learning performance, which examined the percentage of correctly recalled words in each portion of the list (primacy, middle, and recency). We also calculated the relative strength of primacy to list learning to examine the relationship between J-curve performance and gender. Years of education was included as a covariate in all analyses.
Results: Consistent with prior literature, men performed worse performance on both IMI F(1, 331)=17.20, p<.001, and DMI, F(1, 331)=6.87, p=.009, across aging. Repeated measured GLM showed that the serial position effect was seen across the full sample, F(1.93, 639.874)=5.66, p=.004, and interacted with gender, F(1.933, 639.874)=5.70, p=.004, and education, F(1.933, 639.874)=6.13, p = .003. Although men and women did not differ in primacy, p = .67, women performed better in middle, p < .001, and recency, p = .03, performance. Higher education was associated with better primacy, but not middle or recency, performance. Additionally, 23.1% of the sample exhibited a J-curve pattern, and there was a main effect of J-curve pattern for both IMI, F(1, 334)=12.33, p<.001, and DMI, F(1, 334)=15.62, p<.001, with those showing a J=curve having worse memory performance.
Conclusions: Our finding of no gender difference in primacy suggests that focusing on primacy performance in verbal list learning may help to address gender-related disparities in MCI or dementia diagnosis. Additionally, given evidence of education being associated with primacy, but not middle or recency, performance, future research should investigate the development of education-based normative data for primacy performance.

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