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towers, 6 of which were painted gray (GB) and intended to assess visuospatial memory, while the other 6 were multi-colored (CB) and intended to assess more verbal than visuospatial memory. Participants were instructed to encode stimuli by naming the colors (CB) or taking a mental picture (GB). A recognition memory test was given immediately after trials 1 and 4, and after a 20-minute delay. Participants were also administered the CVLT-II and Taylor Complex Figure (TCF).

**Results:** Overall, participants performed better for GB than CB after the first trial (significant block x time interaction). However, females performed substantially better on the GB than the CB whereas males performed similarly for both block types. No gender differences were evident on the CVLT-II or TCF. Correlational analyses suggest that participants used the same strategy throughout the CVLT-II and TCF but altered their strategy during the experimental test, which, anecdotally, became more verbally based.

**Conclusions:** Colors may have been distracting for participants, especially females, causing a shift in encoding strategy. Future work will examine the effects of unilateral temporal lobe lesions on block-type performance and of single-trial visuospatial learning tasks.

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**S. HAN, E.R. TUMINELLO, E.J. LUBOYESKI, J.M. WINGO & M.W. BONDI. Effects of Repetition and Encoding Strategy on Face-Name Recognition Memory.**

**Objective:** The ability to pair faces with names is arguably one of the most ecologically important memory activities. Previous studies have confirmed the facilitating role of repetition in memory; however, the effects of encoding strategies on face-name memory have received little attention. We sought to determine whether face-name recognition would (1) vary as a function of repetition, and (2) differ according to encoding strategy.

**Participants and Methods:** Seventy-nine young adult participants observed face-name pairs that were either new or repeated once, twice, or three times in random order. For half of the face-name pairs in random order, participants were asked to actively try and remember whether they have seen the same face-name pair before in the session ("yes/no" strategy). For the other half of the face-name pairs in random order, participants were asked to decide whether the name "fits" the face ("fit/unfit" strategy). Participants were then tested with a separate face-name recognition session that recorded rate of accuracy and confidence of responses.

**Results:** Within-participant analyses revealed significantly better recognition memory performances for the "fit/unfit" strategy trials versus the "yes/no" strategy trials overall ( $t=6.28$ ,  $p<0.001$ ), for no repetitions ( $t=4.73$ ,  $p<0.001$ ), one repetition, ( $t=4.07$ ,  $p<0.001$ ), and two repetitions ( $t=2.39$ ,  $p<0.001$ ), but not for three repetitions. The "fit/unfit" strategy also was associated with more "very confident" responses ( $t=3.08$ ,  $p<0.001$ ) and fewer "not confident" responses ( $t=-2.74$ ,  $p<0.001$ ) than the "old/new" strategy trials.

**Conclusions:** Deciding whether a name "fits" a face is supported by the present results as a potentially effective face-name encoding mnemonic. Future research is needed to elucidate what the underlying neurocognitive mechanisms of this strategy are and how they contribute to improved memory accuracy and confidence.

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**B.D. HILL, R.D. PELLA, J.R. O'JILE, D. GOUVIER, O.C. OKONKWO, H. WESTERVELT, J. DAVIS & G. TREMONT. Are Two Factors Better Than One? Examining the Validity of Combining Forward and Backward Digit Spans.**

**Objective:** Reynolds (1997) found that forward and backward span tasks formed two separate factors in a large sample of children and

adolescents. Based on these findings, combining forward and backward spans (as is commonly done on the Wechsler measures) was recommended against. This study sought to replicate these findings in a large sample with a more diverse age range than Reynolds' original study. We also wished to explore whether age had an impact on factor structure.

**Participants and Methods:** Records from 3199 individuals who had completed the WAIS-III Digit Span subtest as part of a broader outpatient neuropsychological evaluation were utilized. Participants age ranged from 6-90 years (mean 45.5, SD 23.9). Ethnicity: 89% Caucasian, 9% African-American, and 2% Latino. Exploratory factor analysis with principal axis factoring was used to determine the factor structure of forward and backward Digit Spans. This was done for the overall data and for five age subgroups: 6-17 years ( $n=223$ ), 18-30 years ( $n=1014$ ), 31-55 years ( $n=771$ ), 56-75 years ( $n=647$ ), and 76-96 years ( $n=537$ ).

**Results:** For the overall data, a single factor emerged that accounted for 65% of the variance in both forward and backward Digit Spans. A single factor also emerged for all of the following groups (variance accounted for by factor in parentheses): age 6-17 (73%), age 18-30 (60%), age 31-55 (66%), age 56-75 (65%), and age 76-96 (51%). Bartlett's test of sphericity was significant for all analyses.

**Conclusions:** We were unable to replicate Reynolds' (1997) finding that forward and backward span tasks load on distinct factors. While Reynolds recommended against combining forward and backward span tasks based on his findings, the current results support this commonly used test methodology. Additionally, our finding holds up both across and within a diverse age range, ruling out a developmental aspect to our divergent results. Additionally, the current results support Unsworth and Engle's (2006, 2007) recent conceptualization of working memory.

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**R.P. KESSELS, C. PIEKEMA, M. RIJPKEMA & G. FERNÁNDEZ. Hippocampal involvement in associative working memory: Evidence from fMRI.**

**Objective:** There is abundant evidence that the medial temporal lobe, including the hippocampus, is crucial for associative or relational memory. Consequently, hippocampal lesions may produce deficits in episodic memory formation which typically relies on intact associative processing or memory binding. However, recent fMRI data have indicated that the hippocampus may also be implicated in working memory binding, but most studies only focus on spatial binding. The present study systematically examines hippocampal activation in different forms of non-spatial working memory binding.

**Participants and Methods:** Nineteen participants performed a 3-pair Sternberg working memory task in the scanner (3T; 37 axial slices, TR = 2.18 s, TE = 25 ms), where associations had to be made between items processed within the same neocortical region (within-domain associations; house/house and face/face associations) and between items that are processed in different neocortical regions (between-domain associations; house/face associations).

**Results:** We demonstrate significantly more activation in the parahippocampal gyrus bilaterally (right:  $t[16]=4.59$ ,  $p=0.011$ ; left:  $t[16]=3.78$ ,  $p=0.028$ ) and the right hippocampus ( $t[16]=4.13$ ,  $p=0.019$ ) when between-domain associations have to be made, compared to within-domain associations.

**Conclusions:** These results support the notion that both the hippocampus and parahippocampal gyrus are involved in the binding of nonspatial information processed in distinct neocortical regions using a working-memory paradigm. In line with recent evidence, our findings further challenge the dissociation of working memory and episodic memory and may also have implications for clinical neuropsychology.

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