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1. Background

- Dual process theories suggest separate Recollection and Familiarity contributions to recognition [e.g., 1].
- Some have argued the FN400 ERP (300-500 ms, old > new, mid-frontal topography) reflects familiarity, whereas another ERP component called the Late Positive Complex (LPC) (500-800 ms, old > new, left-parietal topography for words) captures recollection [2].
- Two other ERP components emerge later (800-1000 ms) in some studies that typically measure source memory. The right-frontal old/new effect (RFE; old > new) appears to capture general memory monitoring processes [3] and the Late Posterior Negativity (LPN, old < new) captures monitoring of source-specifying information [4].
- Typically, participants are instructed to identify old items from among a mix of old and new items. Therefore, the test query is stilted toward identifying old items.
- The present study investigated the effect of the test query on recognition-related ERP components. Participants made yes/no judgments to the prompt "Old?" on one recognition test and the prompt "New?" on the other test.

PREDICTION

- We examined whether ERP components differed as a function of the test question. The ERP component(s) affected would provide insight into which process was altered (FN400 → familiarity; LPC → recollection; RFE/LPN → post-retrieval monitoring).

2. Method

Participants: 35 right-handed, 27 females, Aged 18-23 (M = 19)
 Stimuli: 1259 words from the MRC Database [5] frequency M = 129, 50-461 (90.52) letters M = 6, 4-12 (1.87)

Encoding: 150 trials, "How many vowels?"

Tests (2 tests counterbalanced order)

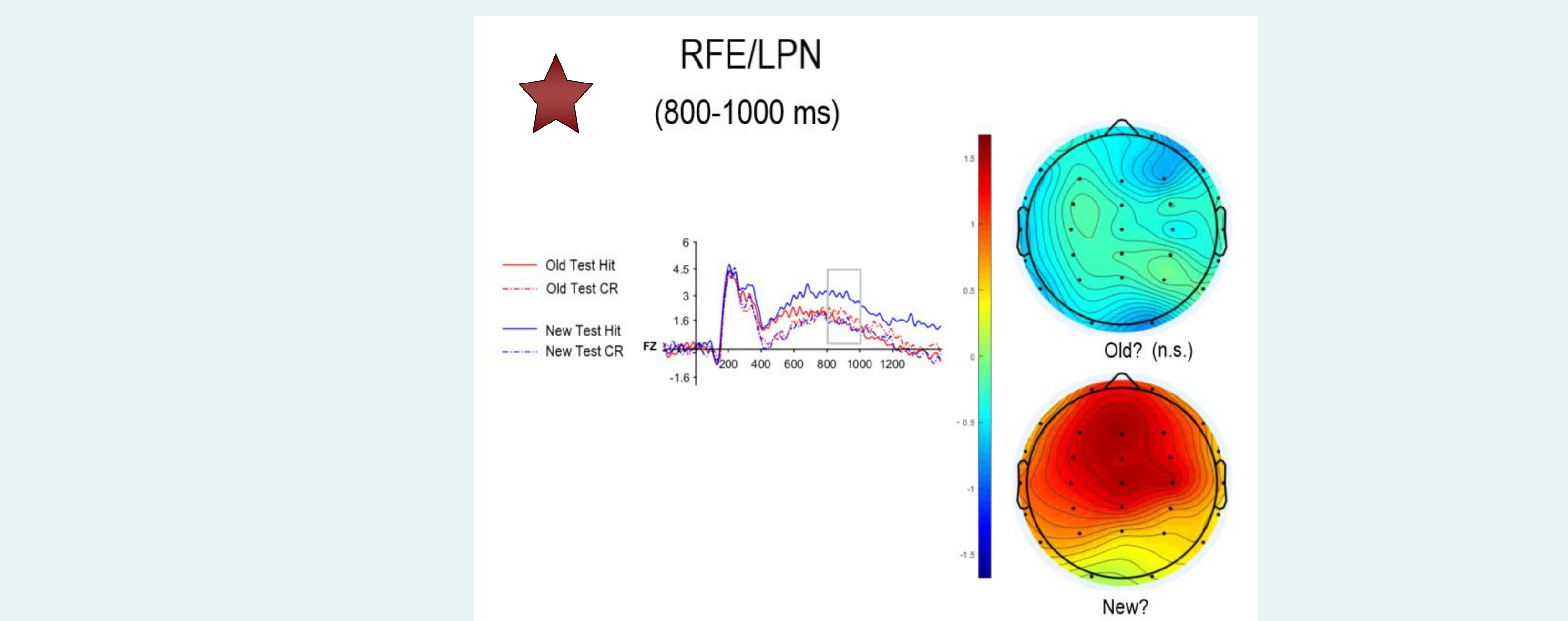
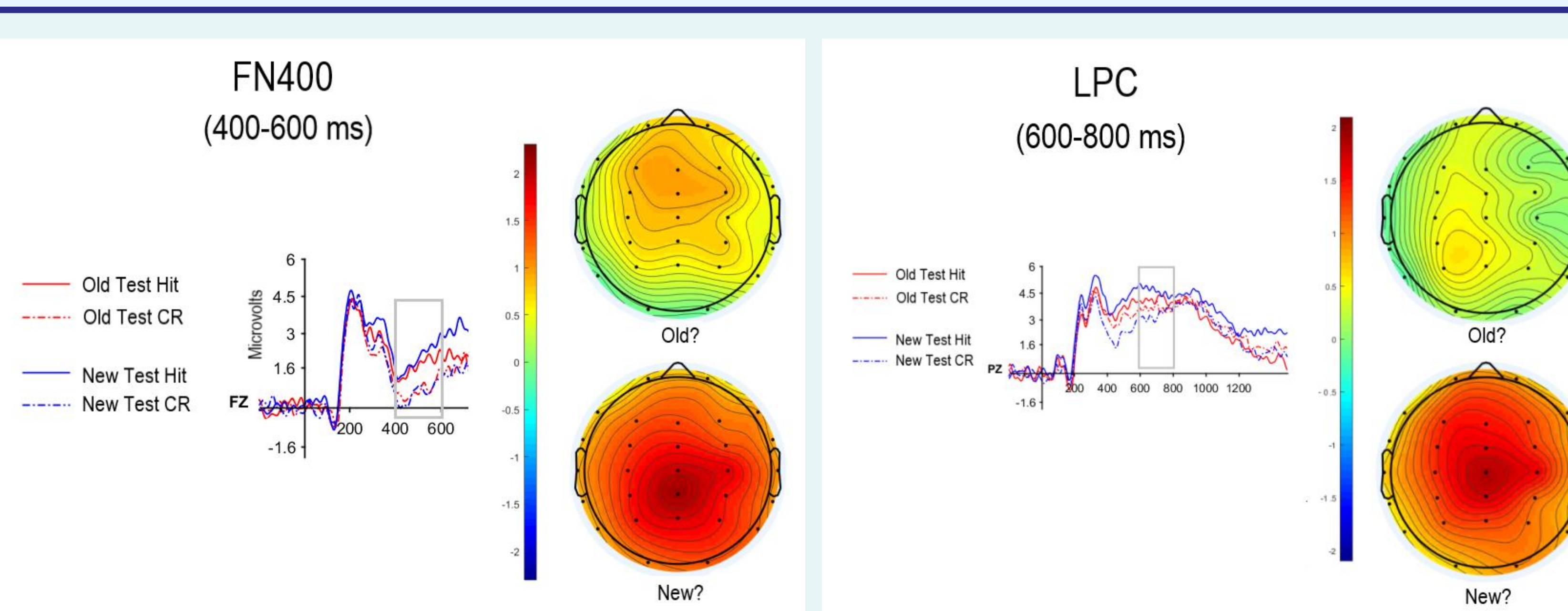
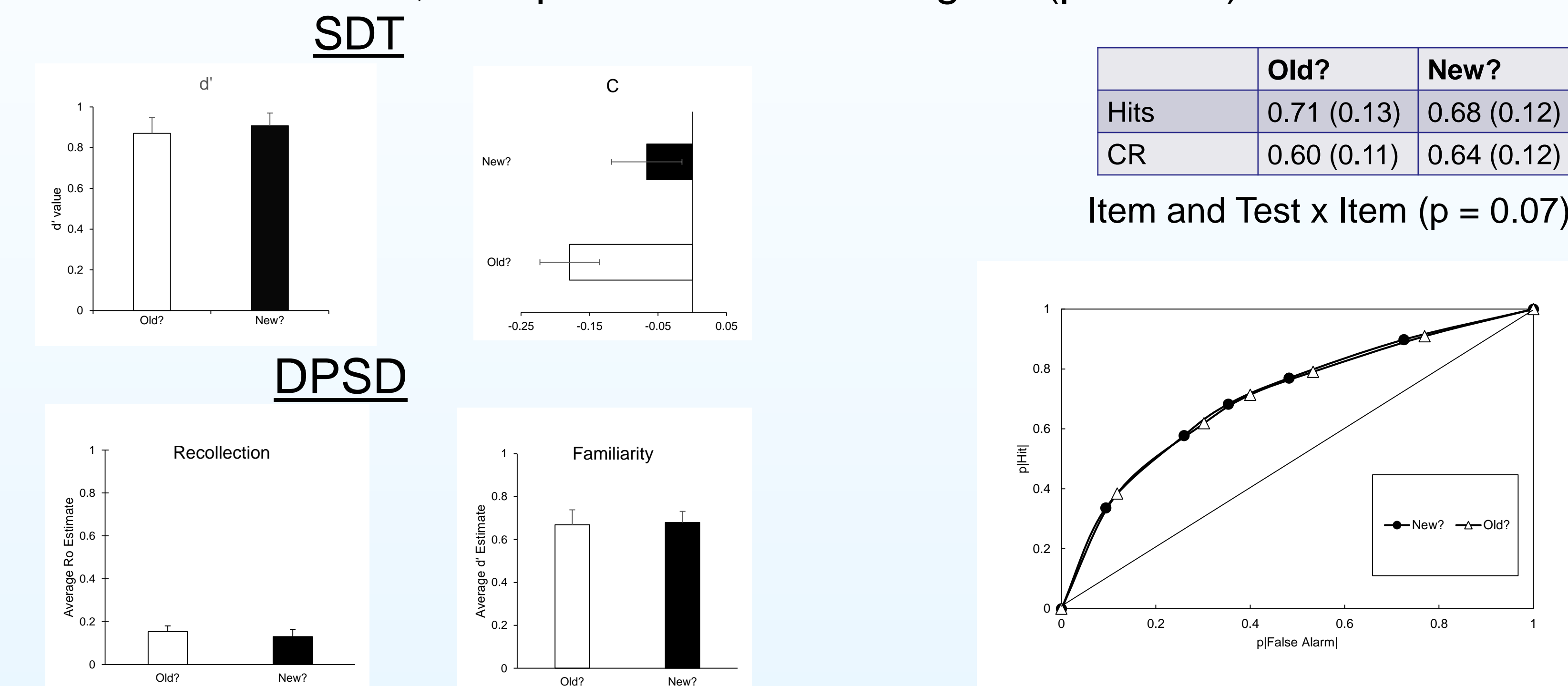
- Old Test: "Old?" or New Test: "New?"
- 75 old and 75 new words on each test
- Judgment: Yes or No followed by confidence rating (guess, less sure, moderately sure, or very sure)

ERP Recording: 29 channels, sampled 2048 Hz, referenced to left mastoid

ERP Processing: down sampled to 256hz, filtered (0.1-30 Hz), removed ocular artifacts with ICA, Automatic Artifact detection (Moving window peak-to-peak, Step-like, Blocking & Flat line, Re-references to average mastoids)

3. Results

No test differences, except criterion was marginal ($p = 0.06$)



4. Conclusions

- **FN400 and LPC were NOT affected by the test question. Suggests that reactivation of information is the same regardless of the probe question.**
- **A late ERP difference (800-1000 ms) that had a central-frontal topography was affected by the test probe. Suggests that the "New?" question recruits post-retrieval monitoring processes**
 - They could be general processes, typically captured by the RFE.
 - It could reflect a shift in decision criterion. The "New?" question prompted a more conservative criterion. Such criterion shifts have been associated with a late occurring right-frontal old/new effect [6, 7].

5. Relevant References

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- [7] Leynes, P.A., Batterman, A., & Abrimian, A. (2019) Expectations alter recognition and event-related potentials (ERPs). *Brain and Cognition*, 135, 103573.