The present findings extend prior research—prior research examines a central model of neural dedifferentiation that proposes increased neural noise causes dedifferentiation.\(^1\) \(^2\)

The present study examined age differences in ERPs that show ‘selectivity’ for face (N170) and scene (P200) stimuli to address the following questions:

1. Is neural dedifferentiation observable in ERP measures of selectivity?
2. Are age differences in selectivity driven by differences in the timing and/or magnitude of selectivity?
3. Do estimates of neural noise, operationalized by the 1/f exponent of the power spectrum density (PSD), contribute to individual differences in selectivity and cognition?

**Methods**

- **Participants:** 44 young and 44 older cognitively normal adults
- **Task:** 1-back task with scene, object, and face stimuli
- **EEG Processing:** 1Hz high-pass FIR filter, ICA artifact correction, -1000ms to 1000ms epochs
- **ERP Analysis:** Peak amplitude and latency from difference waves for faces (N170) and scenes (P200) versus object stimuli with epochs of -200 to 600 ms
- **1/f Exponent:** Measured with the FOOOF algorithm and PSD was estimated from the 1000ms prestimulus period from each epoch.

**Behavioral Results**

Older adults were slower to respond than were young adults to repeated images (regardless of category). Both young and older adults responded slower to repeated scenes compared to repeated faces and objects.

**Conclusions**

- The present findings extend prior research—prior research examining a central model of neural dedifferentiation that proposes increased neural noise causes dedifferentiation.\(^1\) \(^2\)

**References**