# Trial #131 — Recognition Potential Analysis

OK

| | |
|---|---|
| **Subject** | AF • recorded 12/09/2025 13:03:28.326 • dataset Celebrities |
| **Stimuli** | 501 images: 70 clear, 431 scrambled • 70 keypresses (68 matched to clear images, median RT 435 ms) |
| **EDF file** | SD_20251209_130358.edf |
| **Alignment** | photodiode on CH21 (positive and negative spikes, matched to every image); clock offset 8798 ms (EDF header would give -29674 ms); 502/501 images matched; drift -179 ppm; jitter 7.3 ms |
| **Electrodes** | noise after filtering — O1 132 µV, O2 563 µV, T5 31 µV ✓, T6 398 µV, P3 882 µV, P4 868 µV, Pz 1022 µV, Cz 860 µV (✓ = used, threshold 50 µV) |
| **Processing** | 60 Hz notch, 0.5–15 Hz bandpass, epochs -200 to 800 ms, baseline -200 to 0 ms, reject > 100 µV peak-to-peak |

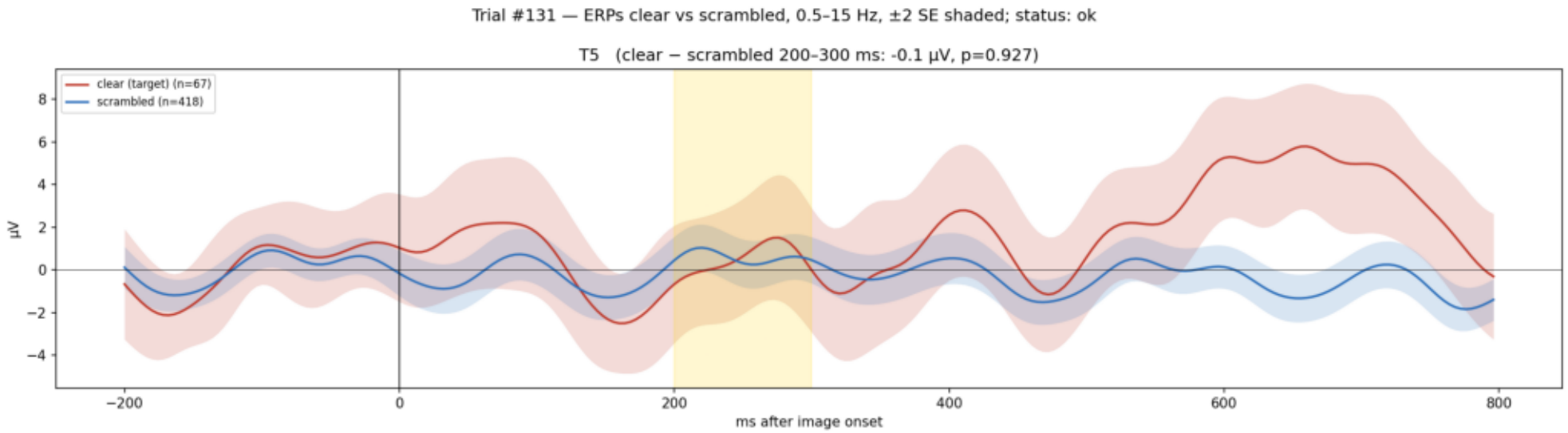
## Clear − scrambled, 200–300 ms RP window

| Channel | Epochs (clear / scrambled) | Mean difference | p (permutation, 2000) | Largest difference 150–350 ms |
|---|---|---|---|---|
| T5 | 67 / 418 | -0.10 µV | 0.927 | -1.4 µV @ 172 ms |

Bold = p < 0.05. Not corrected for testing several channels.

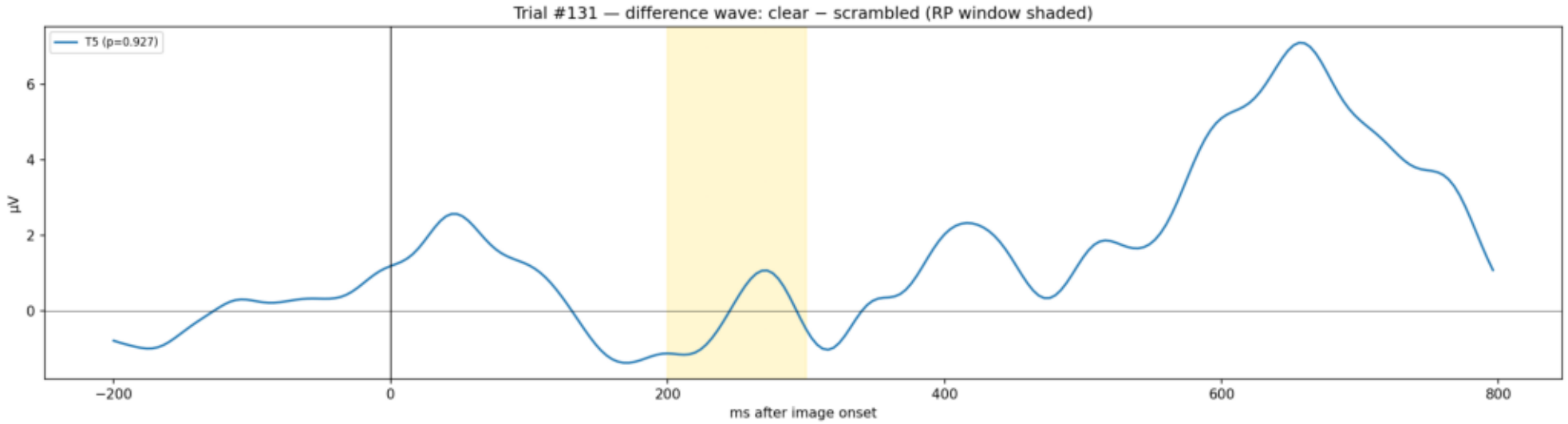
# Event-related potentials: clear vs scrambled

The recognition potential (RP) appears about 200–300 ms after a recognisable (clear) image as a deflection that is absent for scrambled images; its sign depends on the reference. The RP window is shaded; bands are ±2 standard errors.



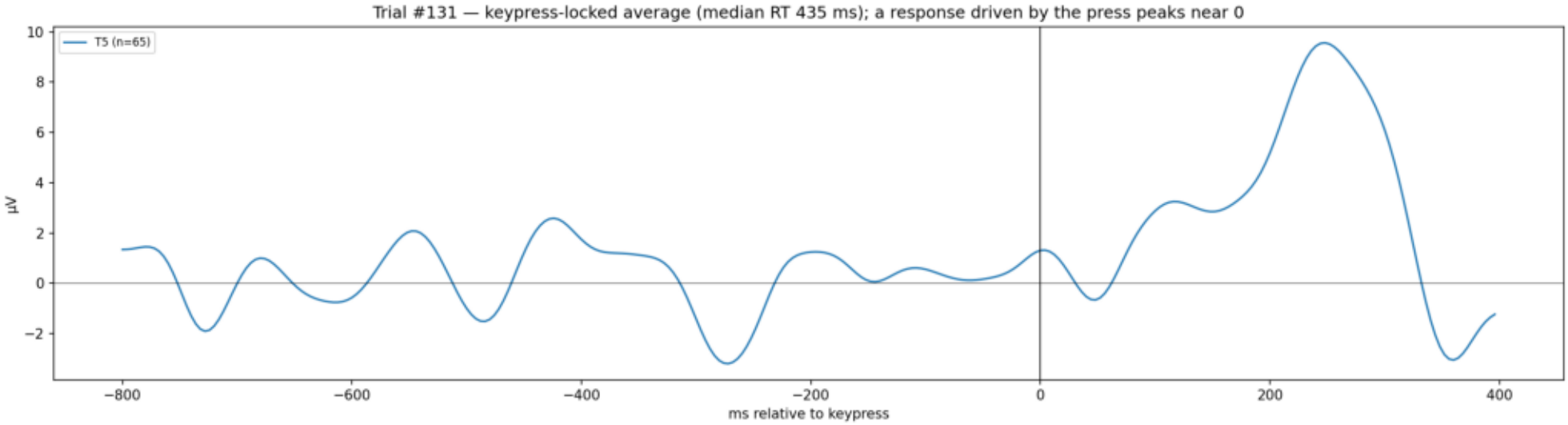
# Difference wave (clear − scrambled)

Images arrive every ~330 ms, so each epoch also contains responses to neighbouring images. Subtracting the scrambled average removes that shared part and isolates the RP.



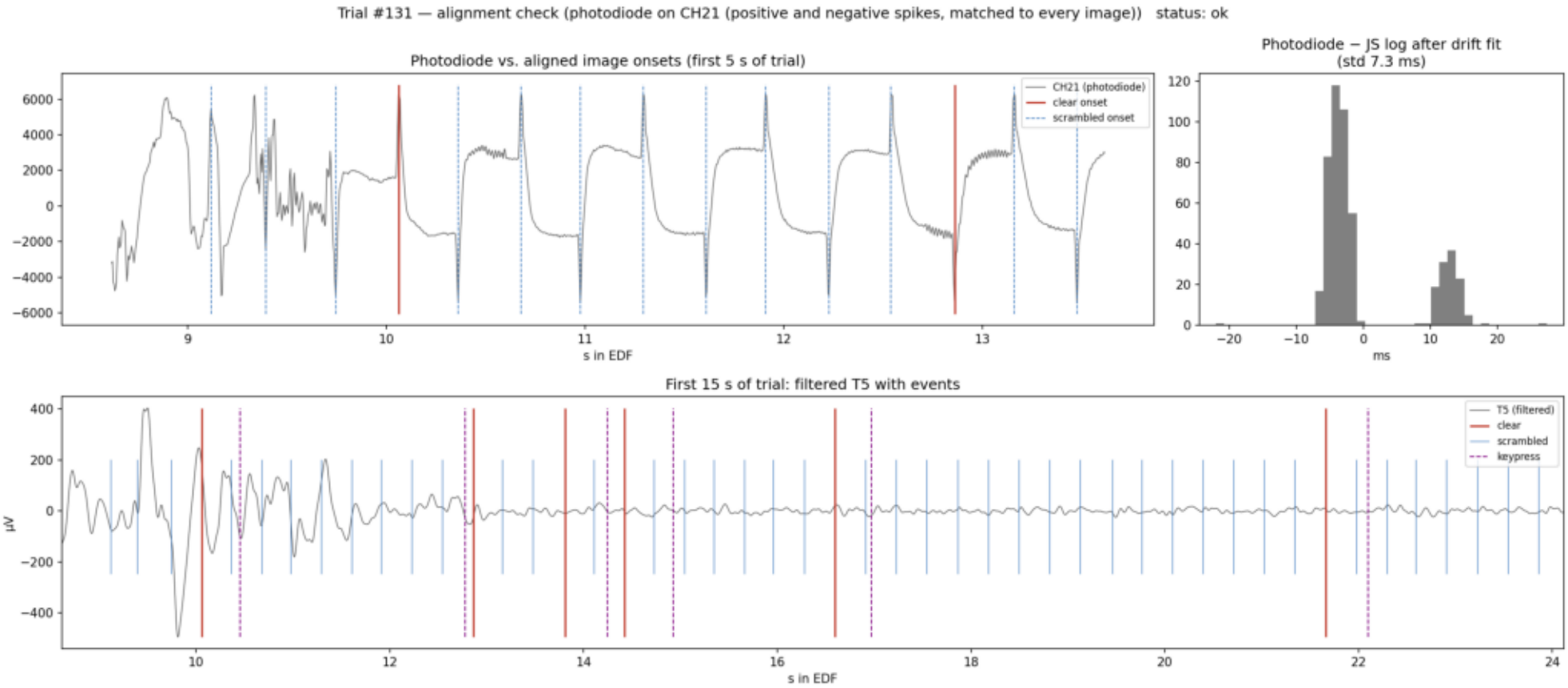
# Keypress-locked average

Checks whether activity tied to the button press, rather than recognition, drives the difference between clear and scrambled images.



# Alignment check and signal overview

Each image onset is snapped to its photodiode spike. Bottom: the first 15 s of the filtered signal with image onsets and keypresses.



# Analysis log

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Trial #131 — subject AF, 12/09/2025 13:03:28.326
  EDF: /home/japhy/eegdata/media/trialData/SD_20251209_130358.edf
  250 Hz, 173 s; 501 images (70 clear, 431 scrambled); 70 presses
  alignment: photodiode on CH21 (positive and negative spikes, matched to every image)
    offset 8798 ms (EDF header says -29674); 100% of images matched (typical 5%); drift -179 ppm; jitter 7.3 ms
  electrode noise (µV): O1 132, O2 563, T5 31, T6 398, P3 882, P4 868, Pz 1022, Cz 860
  using: T5
  68 of 70 clear images followed by a keypress (median RT 435 ms)
  T5: clear−scrambled 200–300 ms = -0.10 µV, p=0.927, peak -1.4 µV @ 172 ms
  status: ok
```