Trial #126 — Recognition Potential Analysis

OK

Subject	AF • recorded 10/31/2025 17:18:41.148 • dataset Celebrities
Stimuli	501 images: 55 clear, 446 scrambled • 55 keypresses (51 matched to clear images, median RT 456 ms)
EDF file	AF_20251031_171828.edf
Alignment	photodiode on CH21 (positive and negative spikes, matched to every image); clock offset 6296 ms (EDF header would give 13148 ms); 501/501 images matched; drift -163 ppm; jitter 8.0 ms
Electrodes	noise after filtering — O1 55 µV, O2 52 µV, T5 43 µV ✓, T6 46 µV ✓, P3 1062 µV, P4 903 µV, Pz 958 µV, Cz 7 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

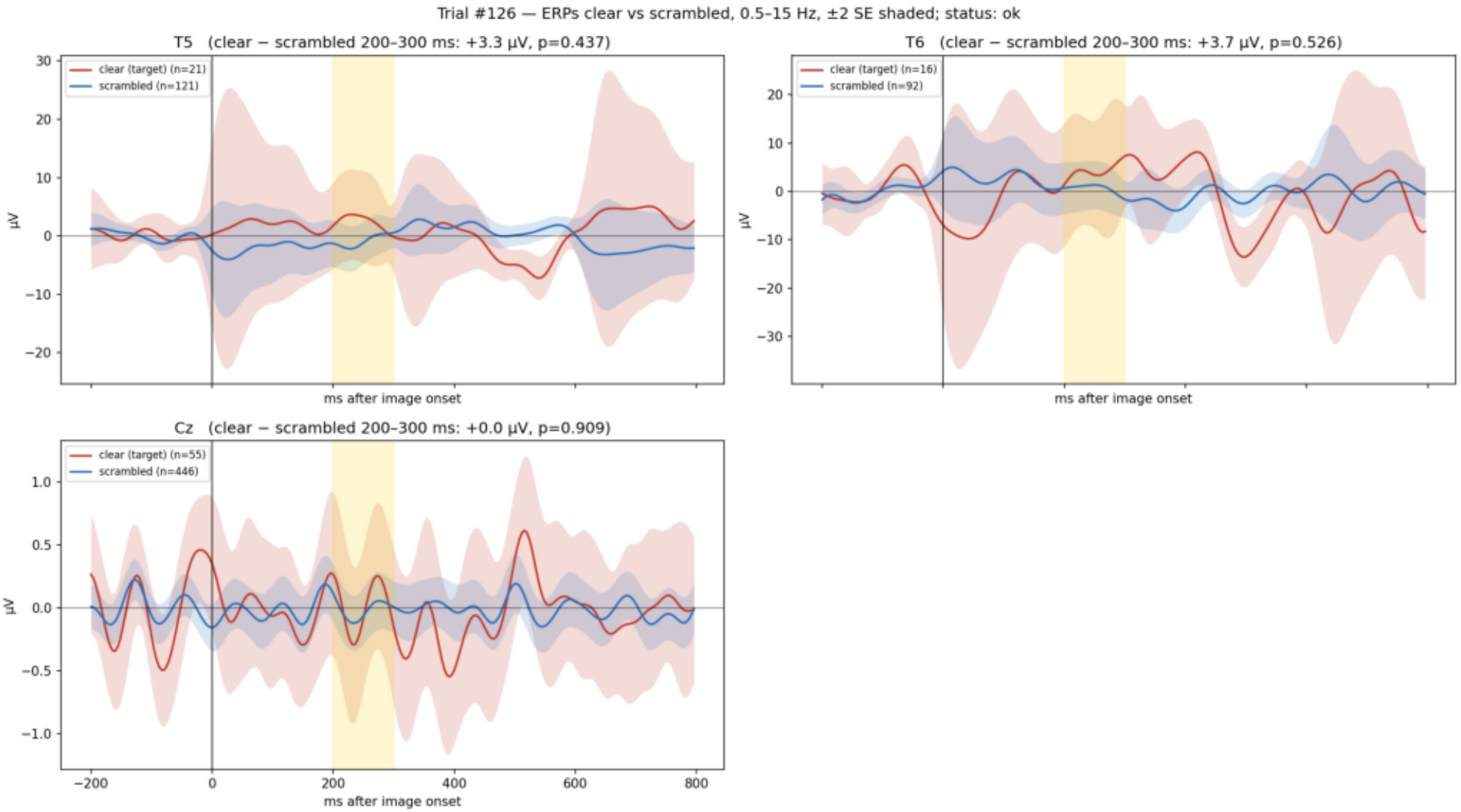
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
T5	21 / 121	+3.26 µV	0.437	+5.9 µV @ 228 ms
T6	16 / 92	+3.66 µV	0.526	+9.5 µV @ 308 ms
Cz	55 / 446	+0.03 µV	0.909	-0.4 µV @ 320 ms

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

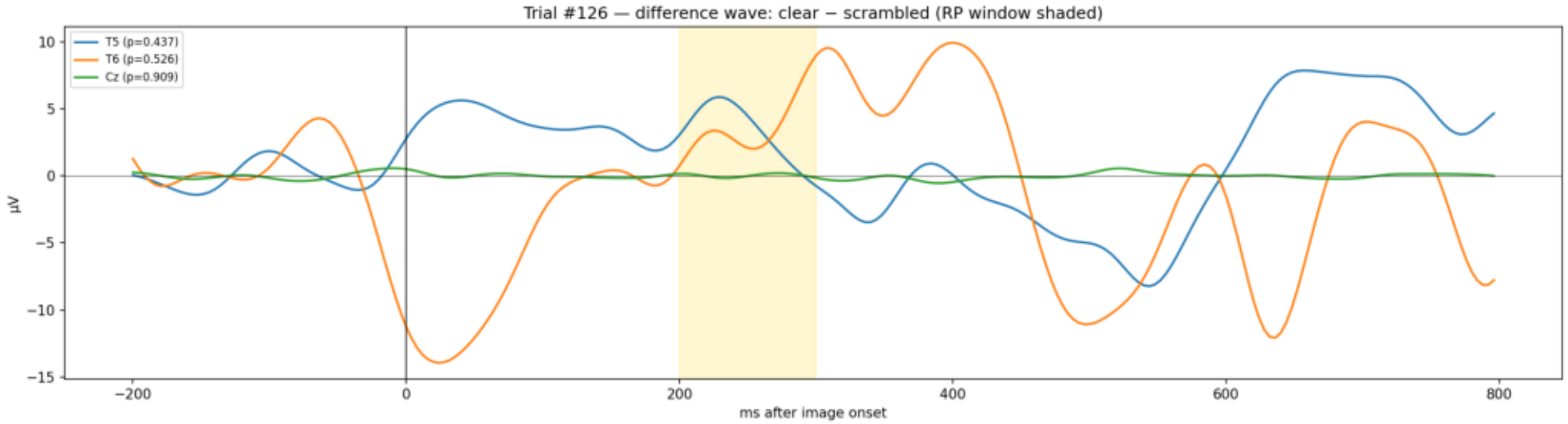
Event-related potentials: clear vs scrambled

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.



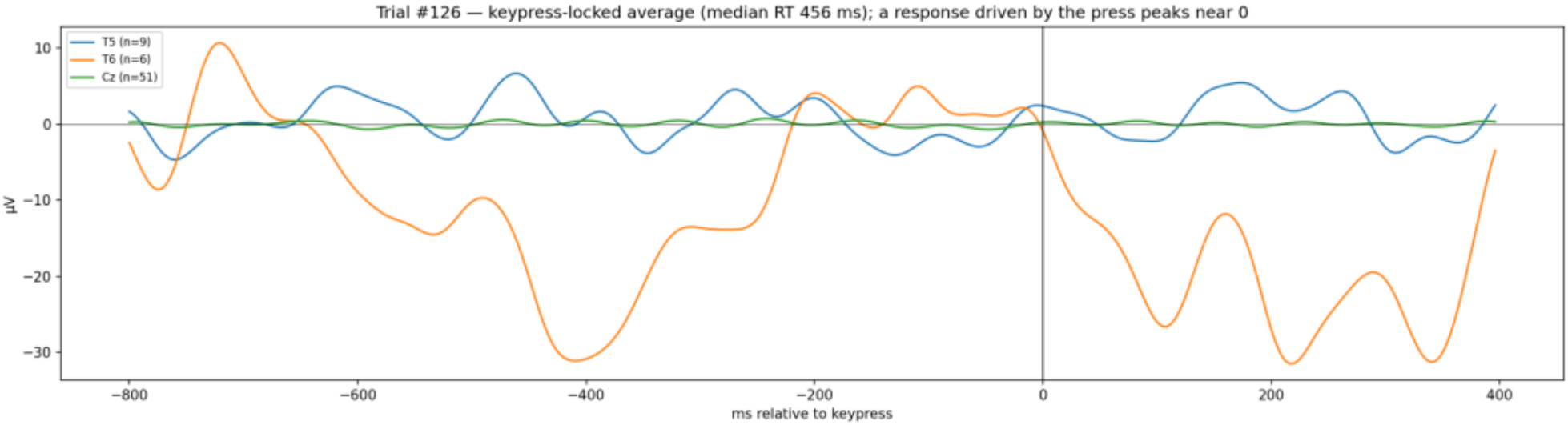
Difference wave (clear − scrambled)

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.



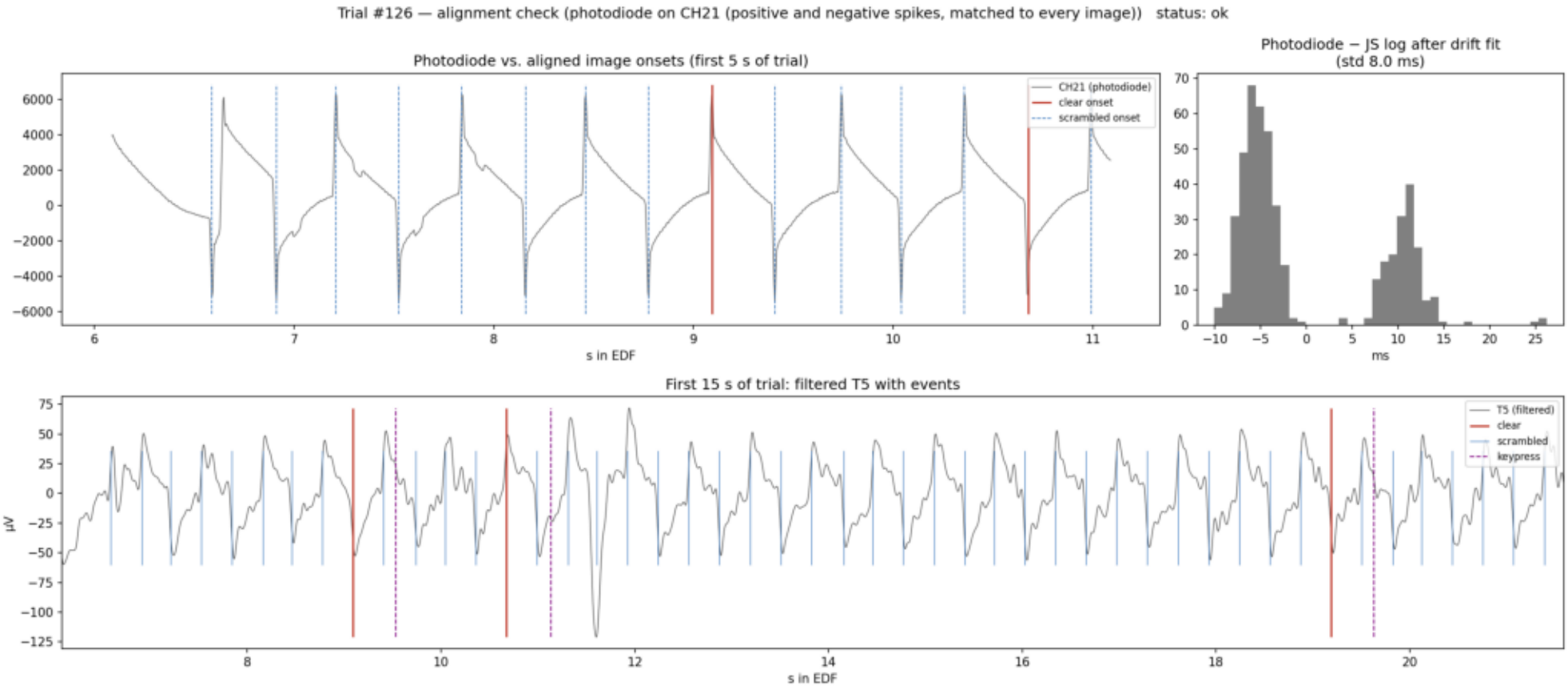
Keypress-locked average

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 #126 — subject AF, 10/31/2025 17:18:41.148
  EDF: /home/japhy/eegdata/media/trialData/AF_20251031_171828.edf
  250 Hz, 170 s; 501 images (55 clear, 446 scrambled); 55 presses
  alignment: photodiode on CH21 (positive and negative spikes, matched to every image)
    offset 6296 ms (EDF header says 13148); 100% of images matched (typical 19%); drift -163 ppm; jitter 8.0 ms
  electrode noise (µV): O1 55, O2 52, T5 43, T6 46, P3 1062, P4 903, Pz 958, Cz 7
  using: T5, T6, Cz
  51 of 55 clear images followed by a keypress (median RT 456 ms)
  T5: clear−scrambled 200–300 ms = +3.26 µV, p=0.437, peak +5.9 µV @ 228 ms
  T6: clear−scrambled 200–300 ms = +3.66 µV, p=0.526, peak +9.5 µV @ 308 ms
  Cz: clear−scrambled 200–300 ms = +0.03 µV, p=0.909, peak -0.4 µV @ 320 ms
  status: ok
```