Trial #77 — Recognition Potential Analysis

OK

Subject	AF • recorded 08/10/2025 16:53 • dataset Celebrities
Stimuli	1001 images: 134 clear, 867 scrambled • 137 keypresses (131 matched to clear images, median RT 487 ms)
EDF file	af_20250810_165257_kD0zd48.edf
Alignment	photodiode on CH21 (positive and negative spikes, matched to every image); clock offset 17511 ms (EDF header would give 3000 ms); 929/1001 images matched; drift -49 ppm; jitter 20.9 ms
Electrodes	noise after filtering — O1 33 µV ✓, O2 32 µV ✓, T5 33 µV ✓, T6 33 µV ✓, P3 787 µV, P4 1058 µV, Pz 1240 µV, Cz 32 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

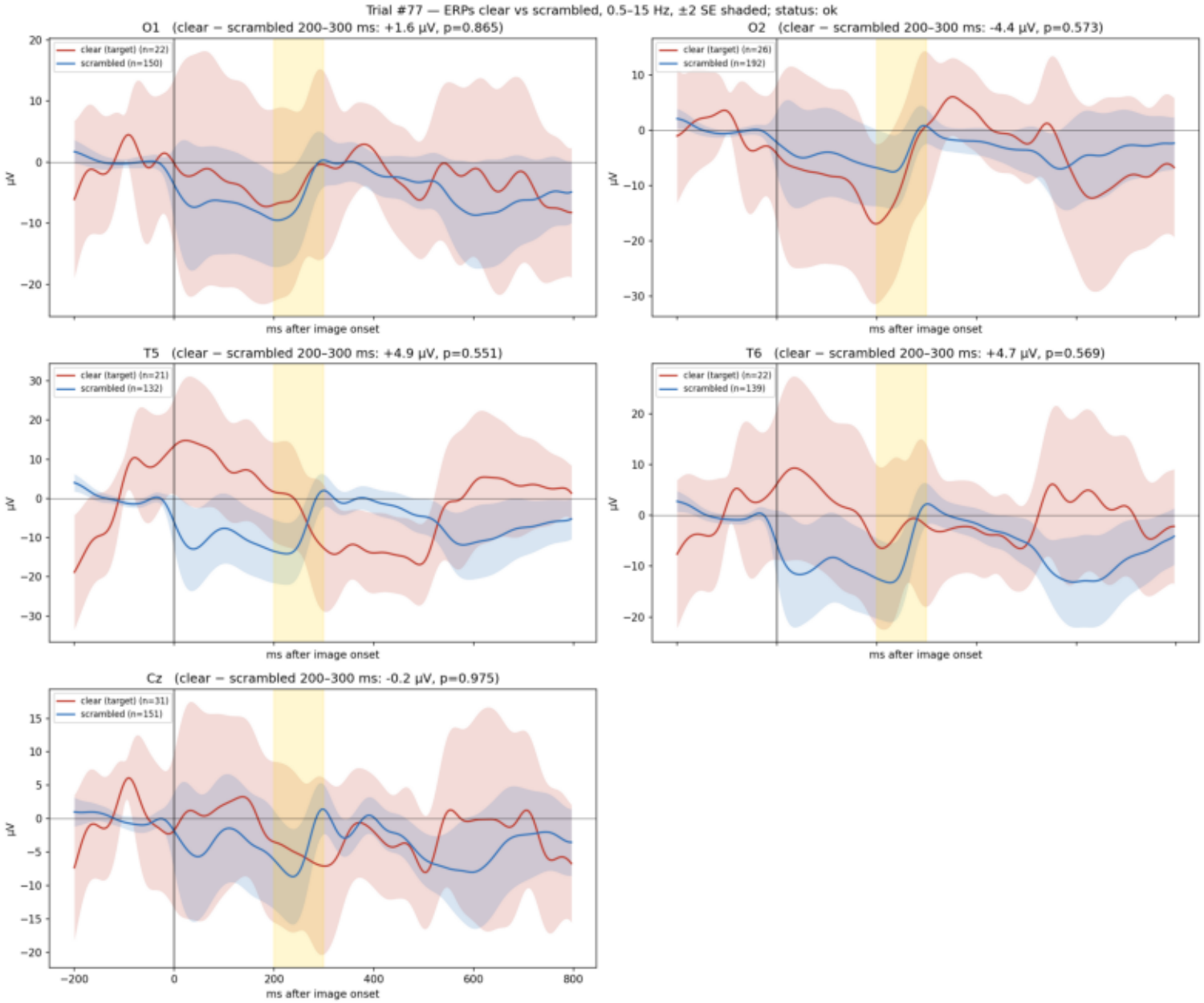
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
O1	22 / 150	+1.59 µV	0.865	+2.8 µV @ 212 ms
O2	26 / 192	-4.41 µV	0.573	-10.2 µV @ 196 ms
T5	21 / 132	+4.87 µV	0.551	+18.1 µV @ 152 ms
T6	22 / 139	+4.66 µV	0.569	+11.3 µV @ 152 ms
Cz	31 / 151	-0.23 µV	0.975	-8.5 µV @ 300 ms

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

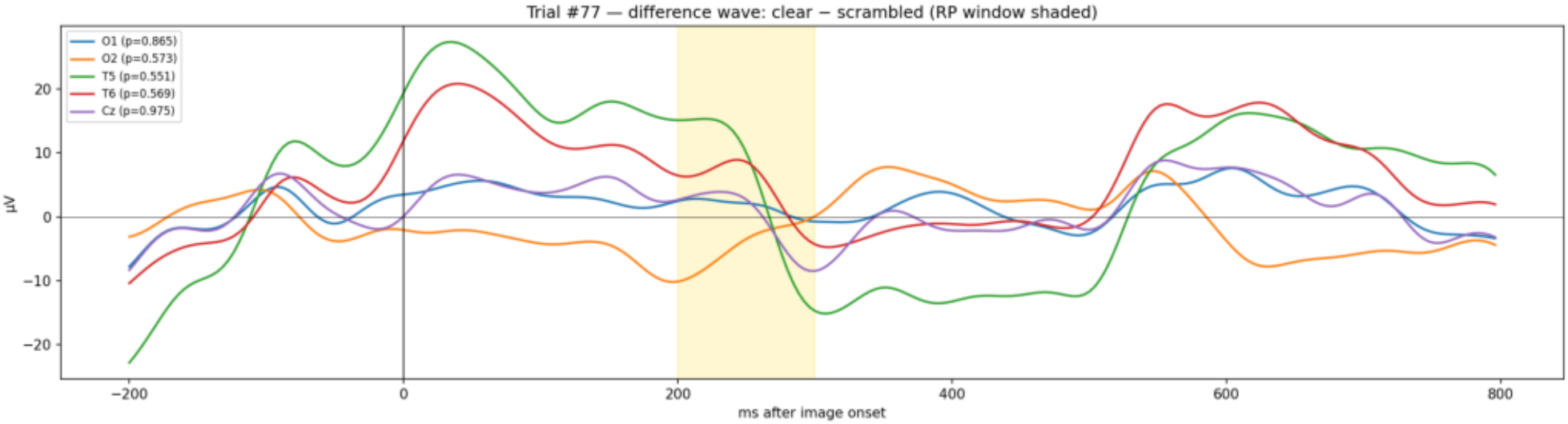
Event-related potentials: clear vs scrambled

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.



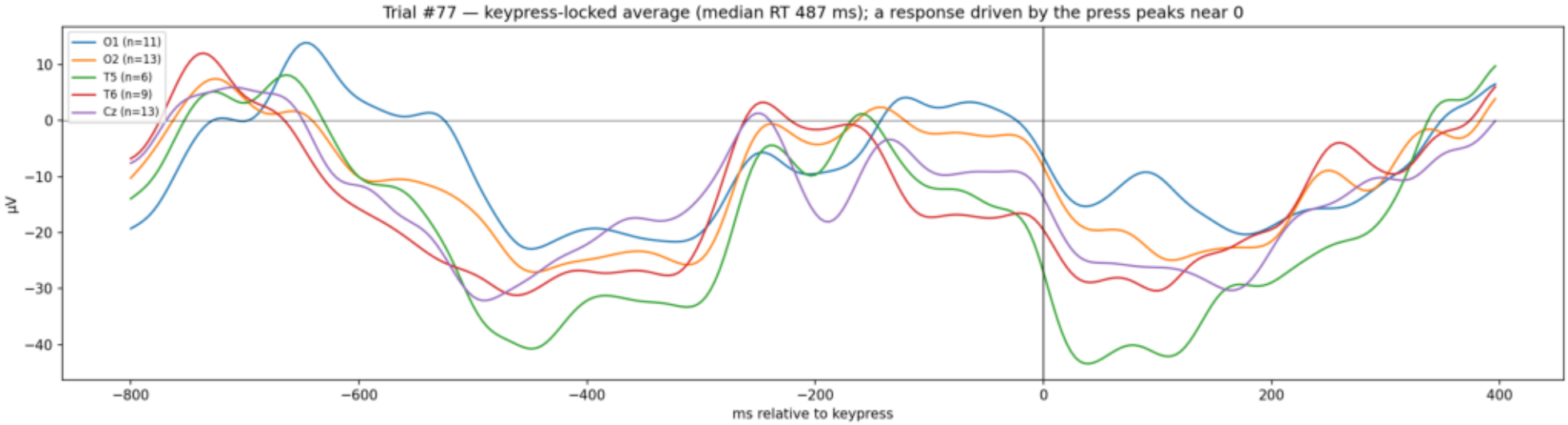
Difference wave (clear − scrambled)

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.



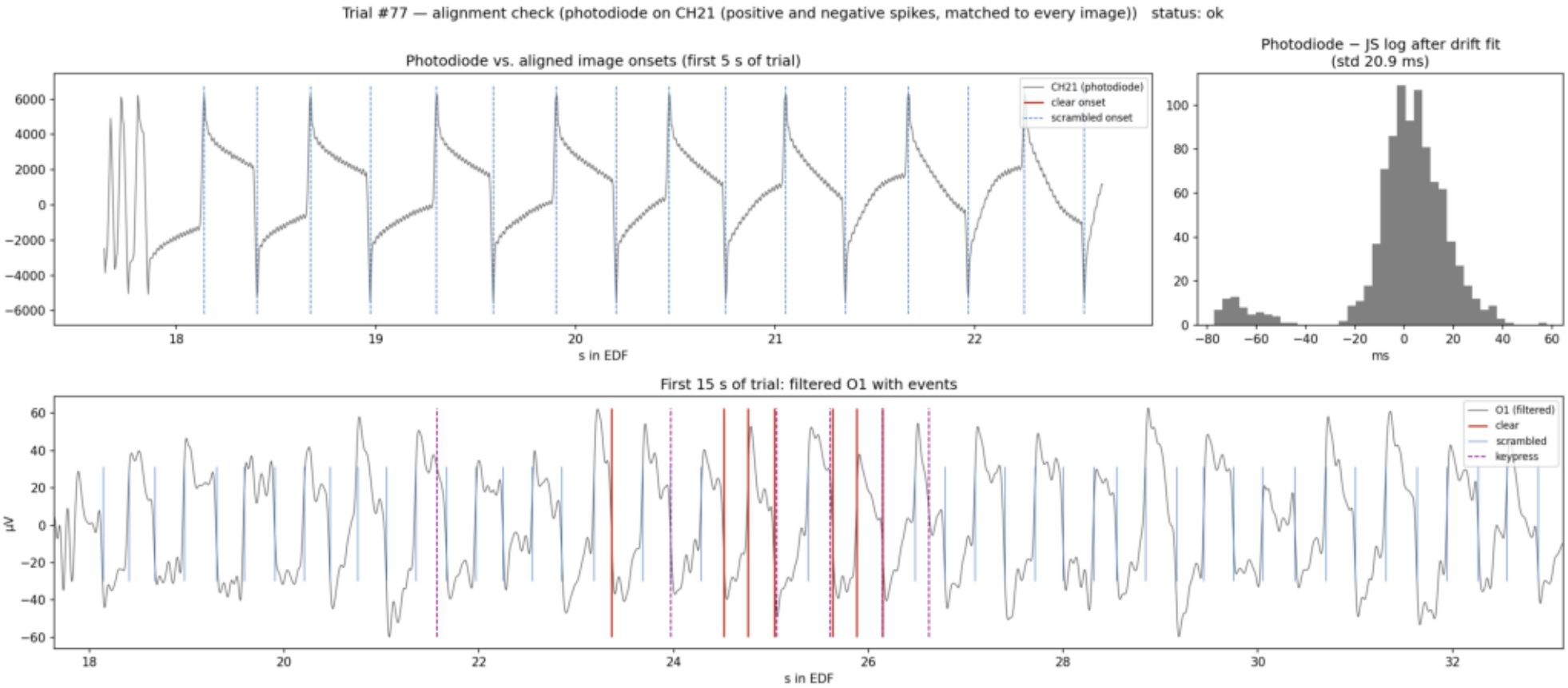
Keypress-locked average

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 #77 — subject AF, 08/10/2025 16:53
  EDF: /home/japhy/eegdata/media/trialData/af_20250810_165257_kD0zd48.edf
  250 Hz, 317 s; 1001 images (134 clear, 867 scrambled); 137 presses
  alignment: photodiode on CH21 (positive and negative spikes, matched to every image)
    offset 17511 ms (EDF header says 3000); 87% of images matched (typical 25%); drift -49 ppm; jitter 20.9 ms
  electrode noise (µV): O1 33, O2 32, T5 33, T6 33, P3 787, P4 1058, Pz 1240, Cz 32
  using: O1, O2, T5, T6, Cz
  131 of 134 clear images followed by a keypress (median RT 487 ms)
  O1: clear−scrambled 200–300 ms = +1.59 µV, p=0.865, peak +2.8 µV @ 212 ms
  O2: clear−scrambled 200–300 ms = -4.41 µV, p=0.573, peak -10.2 µV @ 196 ms
  T5: clear−scrambled 200–300 ms = +4.87 µV, p=0.551, peak +18.1 µV @ 152 ms
  T6: clear−scrambled 200–300 ms = +4.66 µV, p=0.569, peak +11.3 µV @ 152 ms
  Cz: clear−scrambled 200–300 ms = -0.23 µV, p=0.975, peak -8.5 µV @ 300 ms
  status: ok
```