Trial #79 — Recognition Potential Analysis

OK

Subject AF • recorded 08/14/2025 23:44 • dataset Celebrities

Stimuli 1001 images: 152 clear, 849 scrambled • 120 keypresses (120 matched to clear images, median RT 479 ms)

EDF file af_20250814_234417.edf

Alignment photodiode on CH21 (positive and negative spikes, matched to every image); clock offset 32440 ms (EDF header would give -17000 ms); 946/1001 images matched; drift -274 ppm; jitter 13.3 ms

Electrodes noise after filtering — O1 10 µV ✓, O2 9 µV ✓, T5 11 µV ✓, T6 11 µV ✓, P3 1020 µV, P4 1536 µV, Pz 919 µV, Cz 11 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

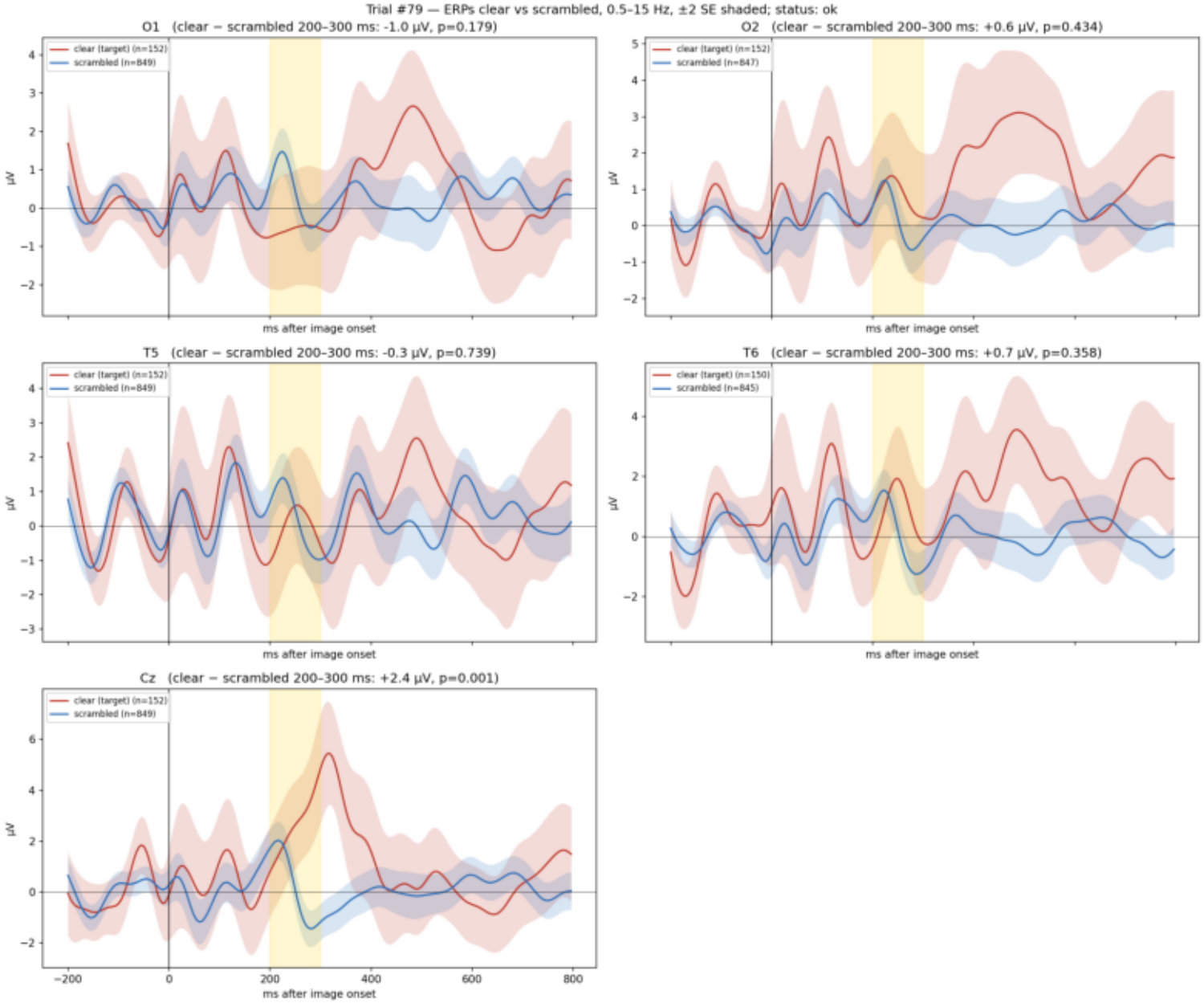
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
O1	152 / 849	-0.97 µV	0.179	-2.1 µV @ 224 ms
O2	152 / 847	+0.61 µV	0.434	+1.3 µV @ 264 ms
T5	152 / 849	-0.28 µV	0.739	-1.8 µV @ 208 ms
T6	150 / 845	+0.71 µV	0.358	+2.2 µV @ 264 ms
Cz	**152 / 849**	**+2.43 µV**	**0.001**	**+6.4 µV @ 312 ms**

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

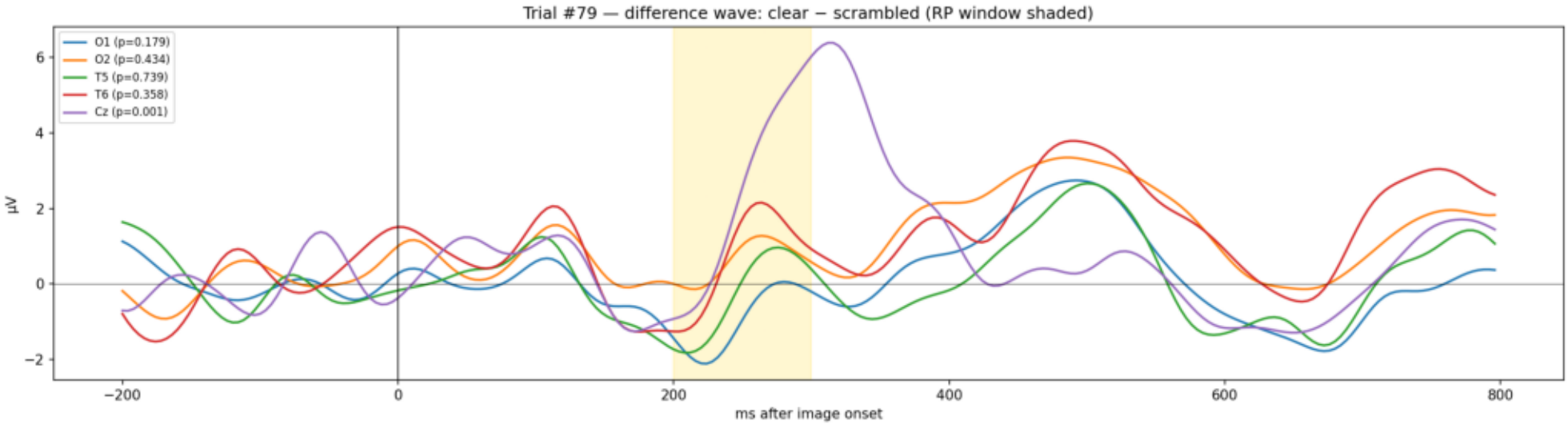
Event-related potentials: clear vs scrambled

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.



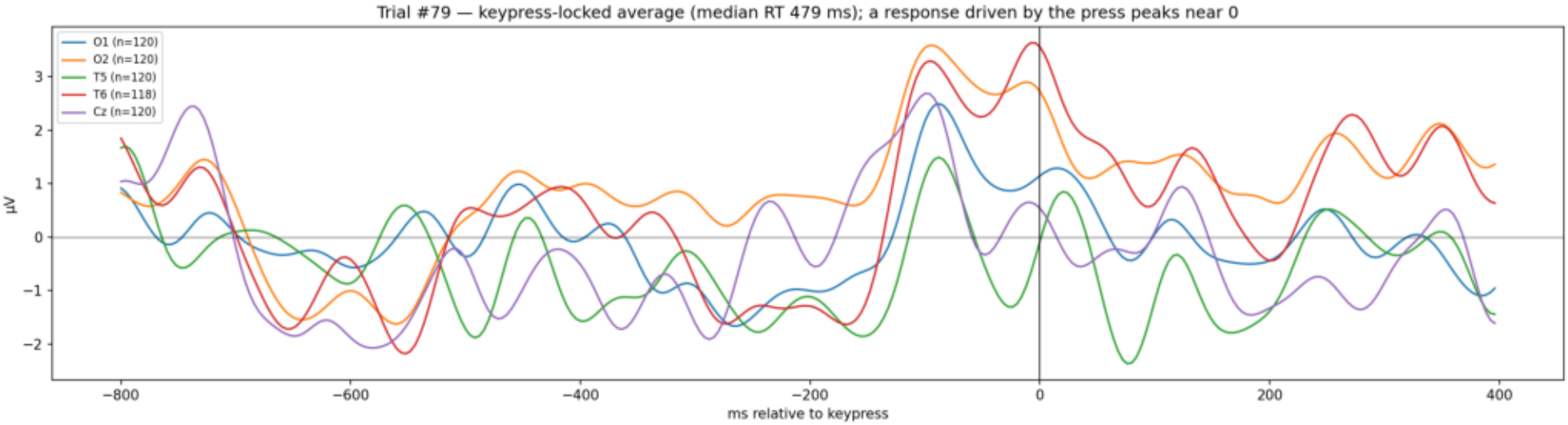
Difference wave (clear − scrambled)

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.



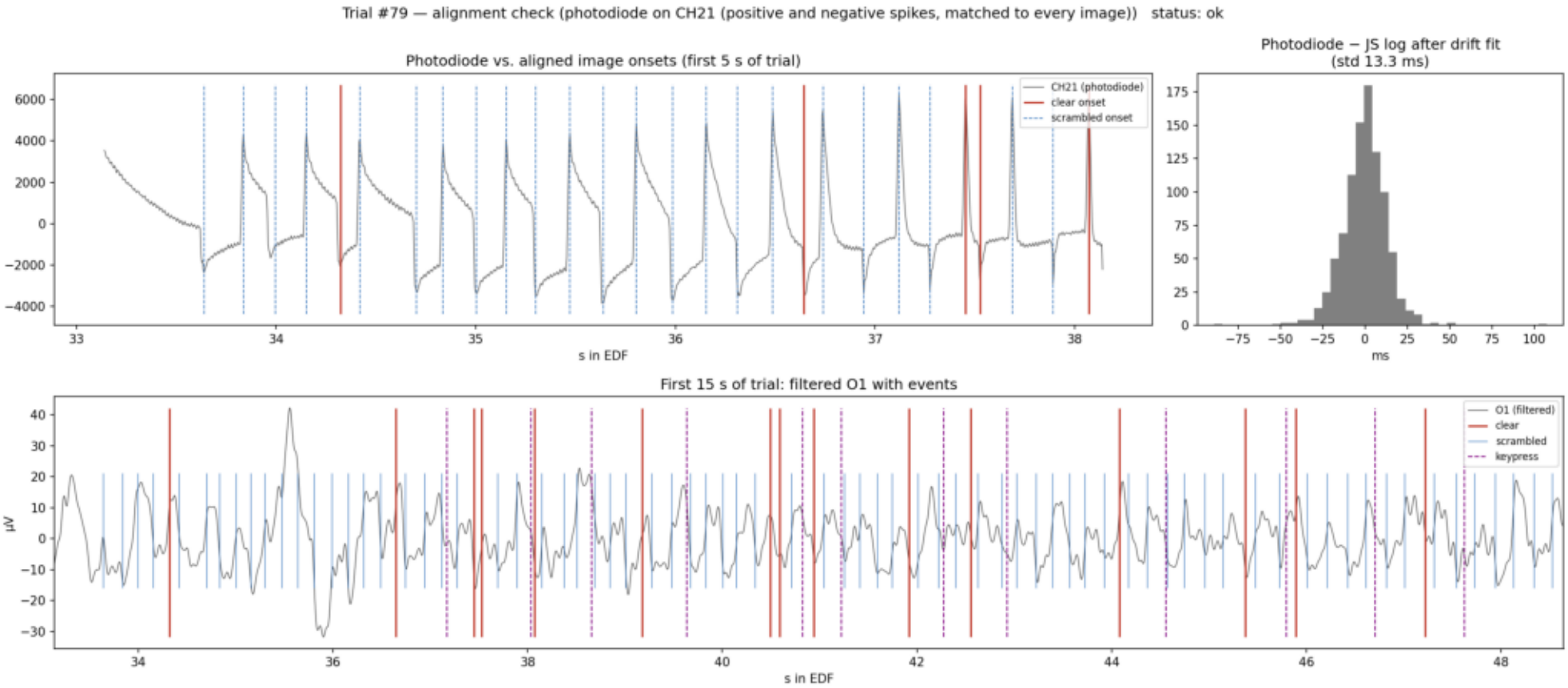
Keypress-locked average

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 #79 — subject AF, 08/14/2025 23:44
  EDF: /home/japhy/eegdata/media/trialData/af_20250814_234417.edf
  250 Hz, 251 s; 1001 images (152 clear, 849 scrambled); 120 presses
  alignment: photodiode on CH21 (positive and negative spikes, matched to every image)
    offset 32440 ms (EDF header says -17000); 89% of images matched (typical 33%); drift -274 ppm; jitter 13.3 ms
  electrode noise (µV): O1 10, O2 9, T5 11, T6 11, P3 1020, P4 1536, Pz 919, Cz 11
  using: O1, O2, T5, T6, Cz
  120 of 152 clear images followed by a keypress (median RT 479 ms)
  O1: clear−scrambled 200–300 ms = -0.97 µV, p=0.179, peak -2.1 µV @ 224 ms
  O2: clear−scrambled 200–300 ms = +0.61 µV, p=0.434, peak +1.3 µV @ 264 ms
  T5: clear−scrambled 200–300 ms = -0.28 µV, p=0.739, peak -1.8 µV @ 208 ms
  T6: clear−scrambled 200–300 ms = +0.71 µV, p=0.358, peak +2.2 µV @ 264 ms
  Cz: clear−scrambled 200–300 ms = +2.43 µV, p=0.001, peak +6.4 µV @ 312 ms
  status: ok
```