Trial #157 — Recognition Potential Analysis

OK

Subject	AF • recorded 04/23/2026 17:38:49.286 • dataset Celebrities
Stimuli	501 images: 67 clear, 434 scrambled • 66 keypresses (67 matched to clear images, median RT 423 ms)
EDF file	LL_20260413_180841.edf
Alignment	photodiode on CH21 (positive spikes, matched to every image); clock offset 12122 ms (EDF header would give 862208286 ms); 501/501 images matched; drift -223 ppm; jitter 8.4 ms
Electrodes	noise after filtering — O1 30 µV ✓, O2 142 µV, T5 631 µV, T6 31 µV ✓, P3 411 µV, P4 417 µV, Pz 406 µV, Cz 380 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

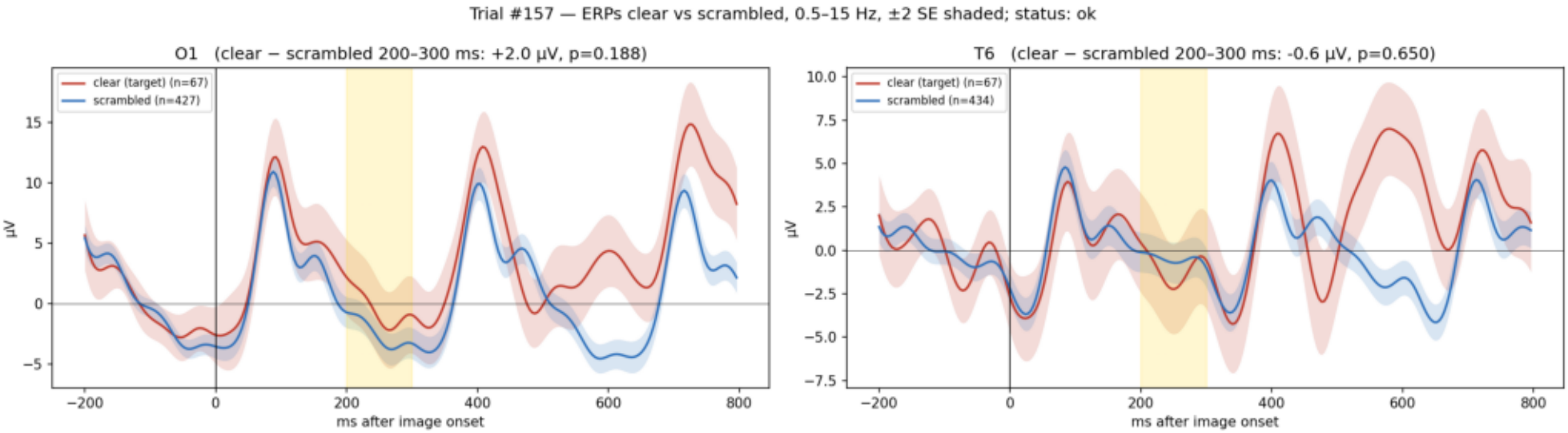
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
O1	67 / 427	+2.03 µV	0.188	+3.3 µV @ 188 ms
T6	67 / 434	-0.56 µV	0.650	-1.5 µV @ 248 ms

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

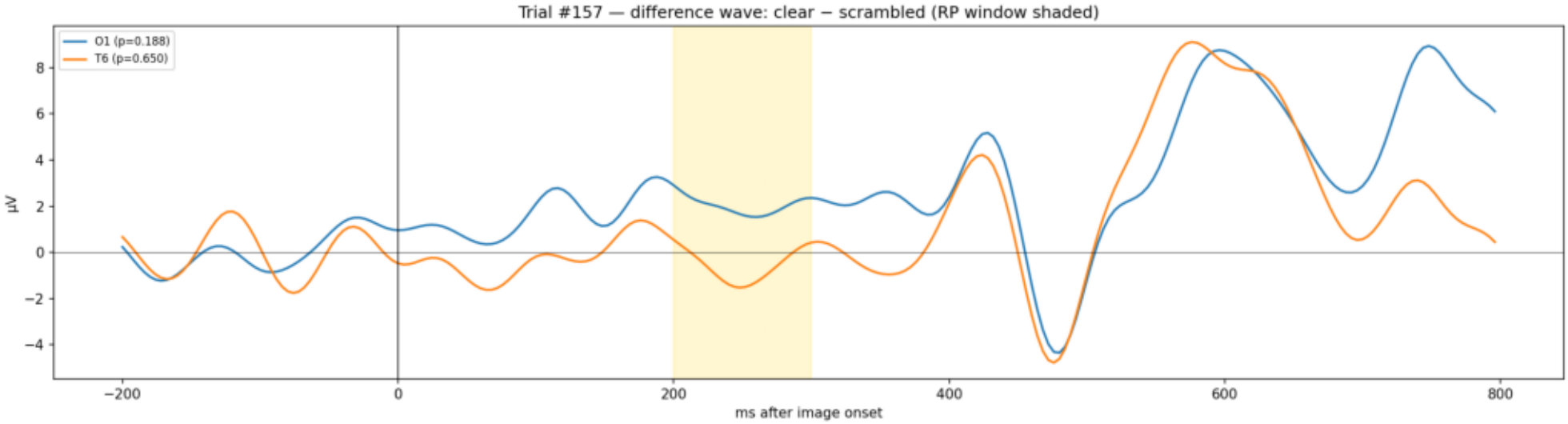
Event-related potentials: clear vs scrambled

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.



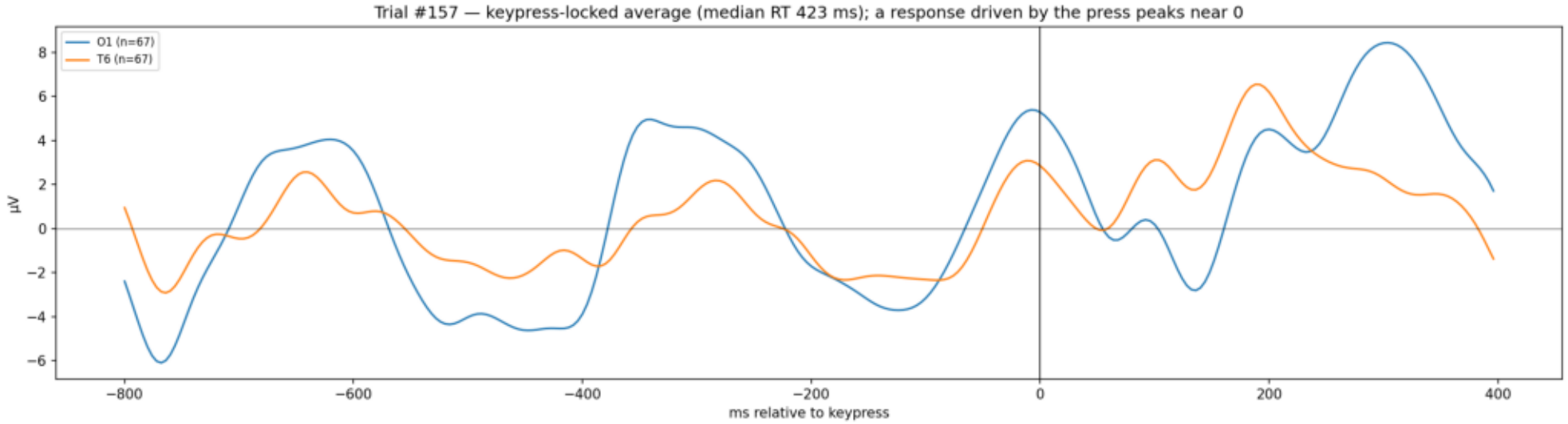
Difference wave (clear − scrambled)

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.



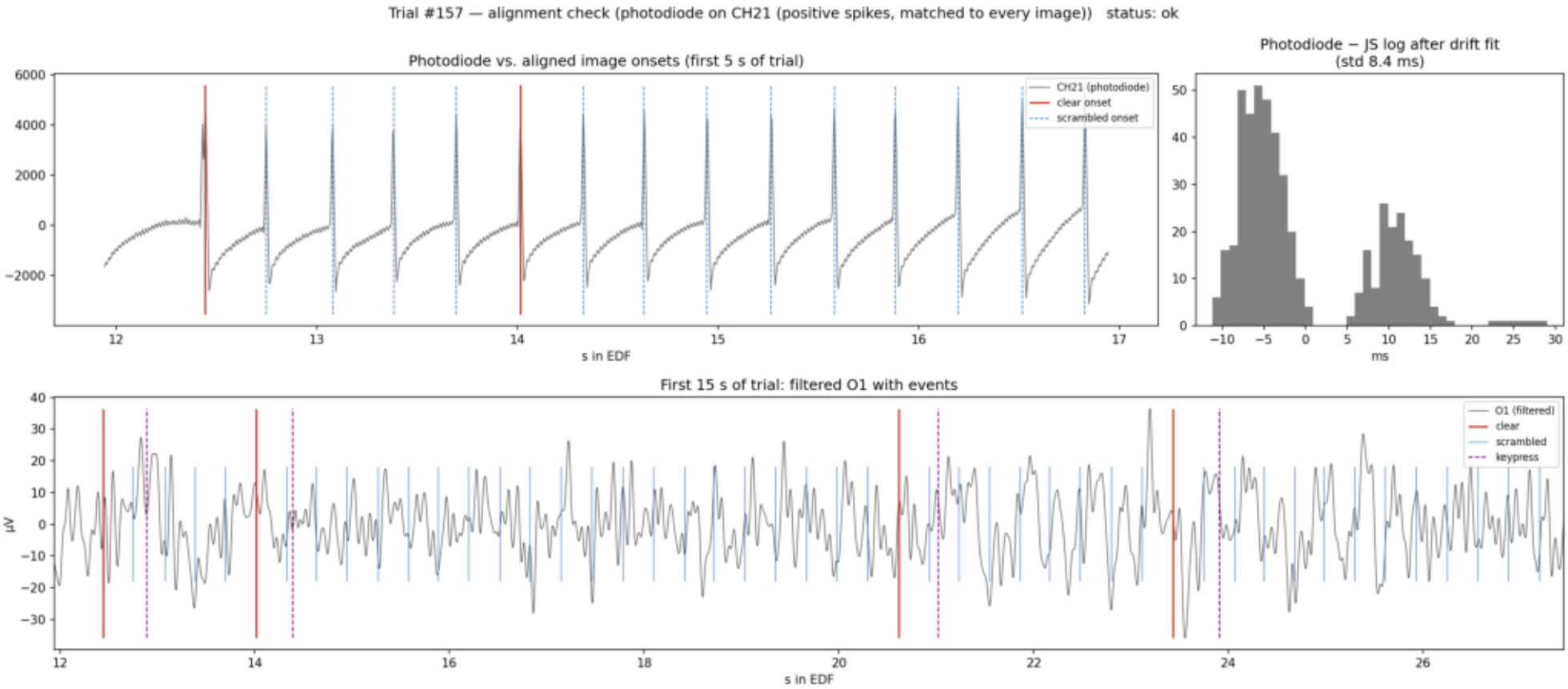
Keypress-locked average

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 #157 — subject AF, 04/23/2026 17:38:49.286
  EDF: /home/japhy/eegdata/media/trialData/LL_20260413_180841.edf
  250 Hz, 204 s; 501 images (67 clear, 434 scrambled); 66 presses
  alignment: photodiode on CH21 (positive spikes, matched to every image)
    offset 12122 ms (EDF header says 862208286); 100% of images matched (typical 16%); drift -223 ppm; jitter 8.4 ms
  electrode noise (µV): O1 30, O2 142, T5 631, T6 31, P3 411, P4 417, Pz 406, Cz 380
  using: O1, T6
  67 of 67 clear images followed by a keypress (median RT 423 ms)
  O1: clear−scrambled 200–300 ms = +2.03 µV, p=0.188, peak +3.3 µV @ 188 ms
  T6: clear−scrambled 200–300 ms = -0.56 µV, p=0.650, peak -1.5 µV @ 248 ms
  status: ok
```