Trial #69 — Recognition Potential Analysis

WEAK ALIGNMENT (58% MATCHED)

Subject	NM3 • recorded 07/25/2025 16:33 • dataset Celebrities
Stimuli	501 images: 70 clear, 431 scrambled • 70 keypresses (70 matched to clear images, median RT 459 ms)
EDF file	NM_20250624_033920.edf
Alignment	photodiode on CH21 (positive and negative spikes, matched to every image); clock offset 21684 ms (EDF header would give 2724820000 ms); 493/501 images matched; drift -45 ppm; jitter 39.1 ms
Electrodes	noise after filtering — O1 29 µV ✓, O2 30 µV ✓, T5 2019 µV, T6 1668 µV, P3 1926 µV, P4 1941 µV, Pz 1861 µV, Cz 62 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

⚠ Only 58% of images matched a photodiode spike on CH21, so the alignment may be wrong. Check the alignment plot before trusting these averages.

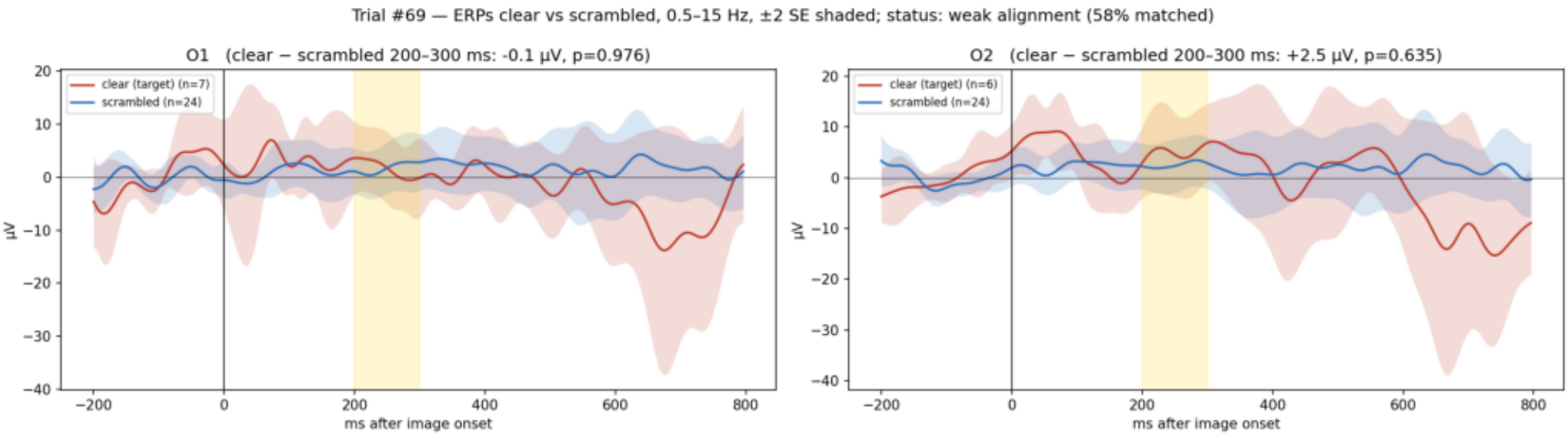
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
O1	7 / 24	-0.14 µV	0.976	-4.5 µV @ 344 ms
O2	6 / 24	+2.46 µV	0.635	+5.0 µV @ 320 ms

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

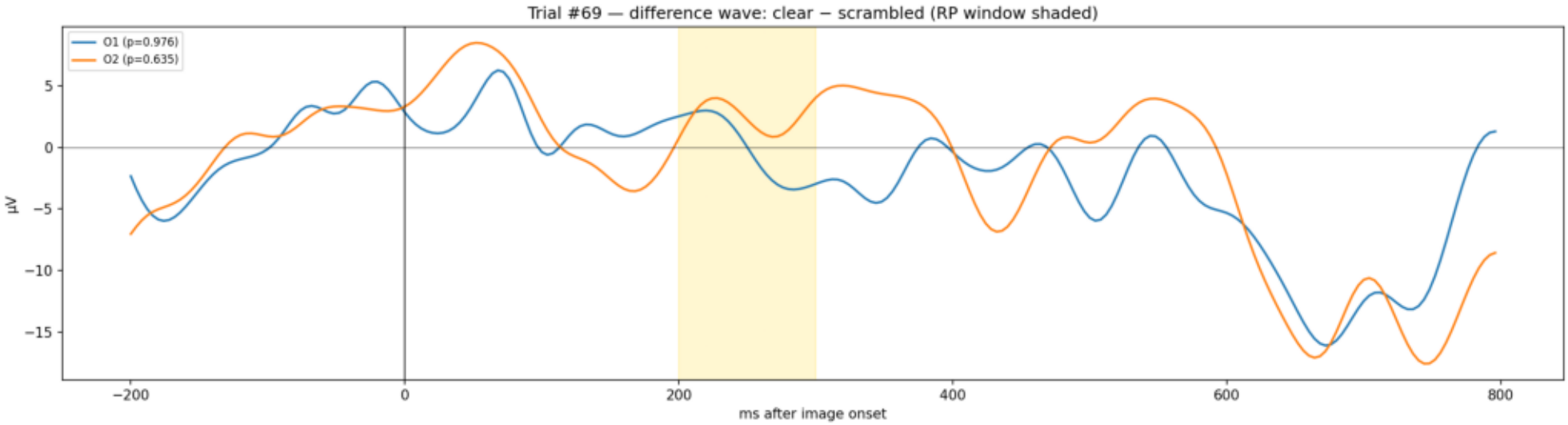
Event-related potentials: clear vs scrambled

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.



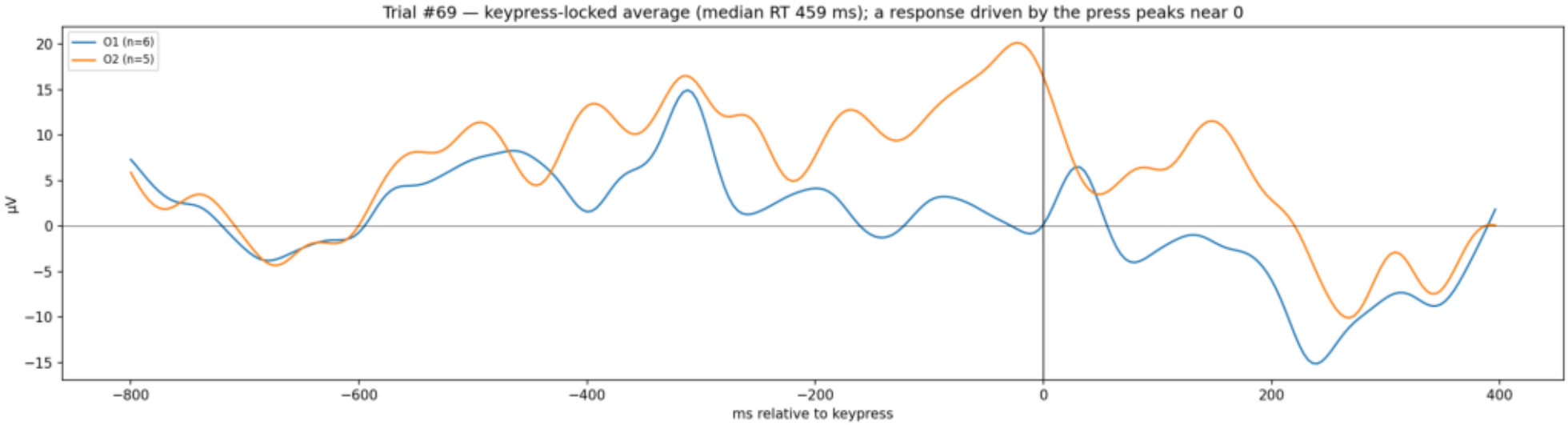
Difference wave (clear − scrambled)

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.



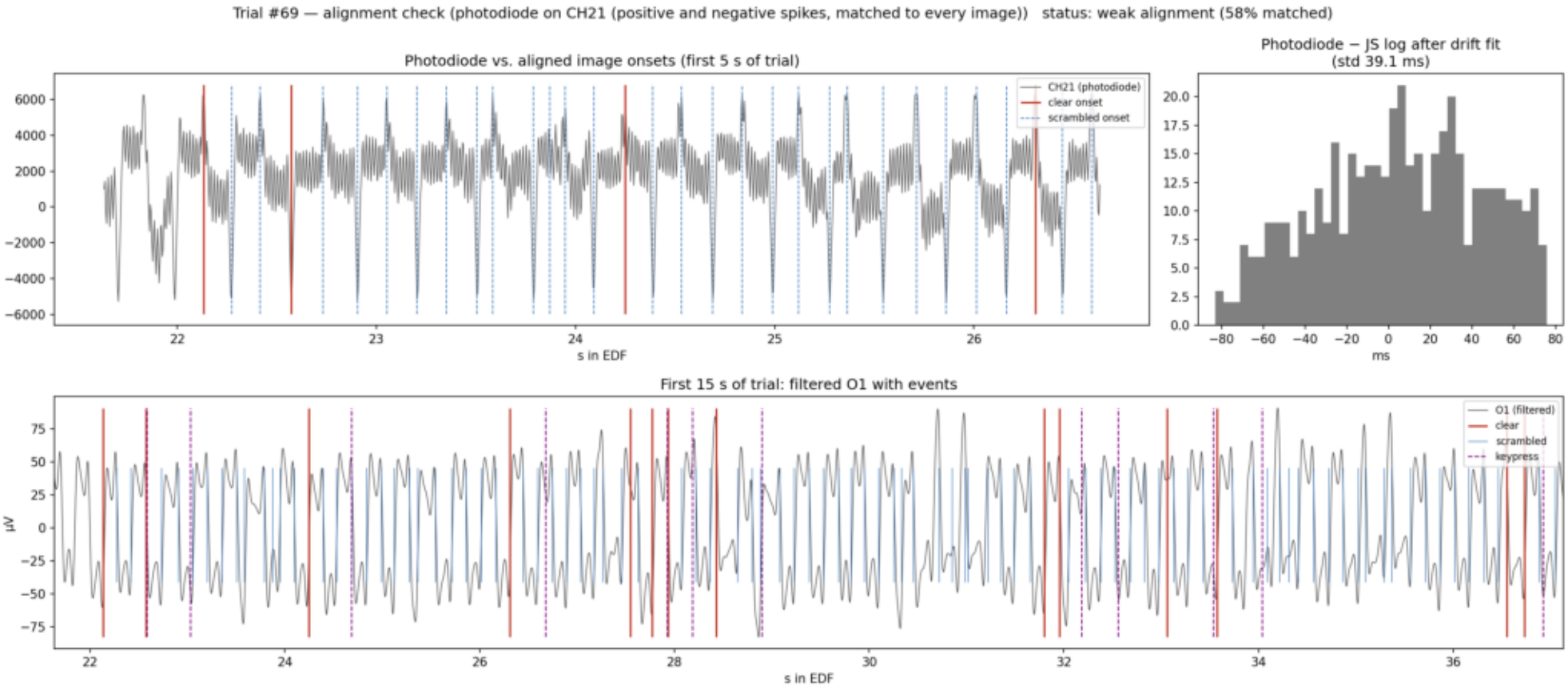
Keypress-locked average

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 #69 — subject NM3, 07/25/2025 16:33
  EDF: /home/japhy/eegdata/media/trialData/NM_20250624_033920.edf
  250 Hz, 441 s; 501 images (70 clear, 431 scrambled); 70 presses
  alignment: photodiode on CH21 (positive and negative spikes, matched to every image)
    offset 21684 ms (EDF header says 2724820000); 58% of images matched (typical 2%); drift -45 ppm; jitter 39.1 ms
  electrode noise (µV): O1 29, O2 30, T5 2019, T6 1668, P3 1926, P4 1941, Pz 1861, Cz 62
  using: O1, O2
  70 of 70 clear images followed by a keypress (median RT 459 ms)
  O1: clear−scrambled 200–300 ms = -0.14 µV, p=0.976, peak -4.5 µV @ 344 ms
  O2: clear−scrambled 200–300 ms = +2.46 µV, p=0.635, peak +5.0 µV @ 320 ms
  status: weak alignment (58% matched)
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