Trial #145 — Recognition Potential Analysis

WEAK ALIGNMENT (46% MATCHED)

Subject	AF • recorded 04/13/2026 17:17:35.211 • dataset Celebrities
Stimuli	501 images: 68 clear, 433 scrambled • 61 keypresses (63 matched to clear images, median RT 409 ms)
EDF file	AH_20260228_152245.edf
Alignment	photodiode on CH21 (positive and negative spikes, matched to every image); clock offset 6291 ms (EDF header would give 3808490211 ms); 347/501 images matched; drift -254 ppm; jitter 23.3 ms
Electrodes	noise after filtering — O1 21 µV ✓, O2 676 µV, T5 1263 µV, T6 815 µV, P3 621 µV, P4 765 µV, Pz 803 µV, Cz 687 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 46% of images matched a photodiode spike on CH21, so the alignment may be wrong. Check the alignment plot before trusting these averages.

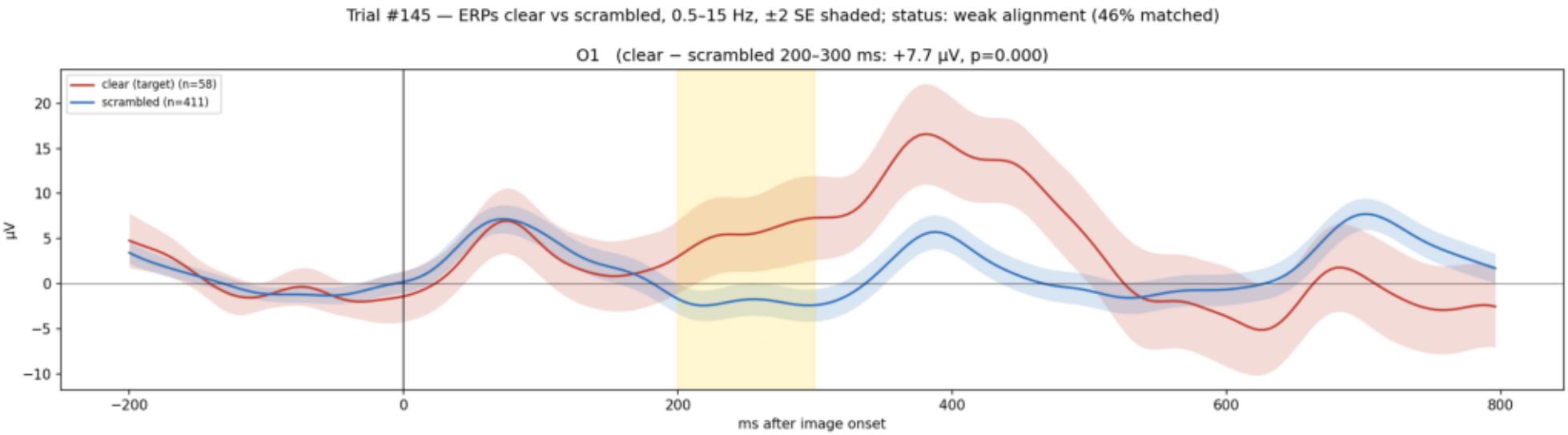
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
O1	**58 / 411**	**+7.69 µV**	**0.000**	**+10.0 µV @ 348 ms**

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

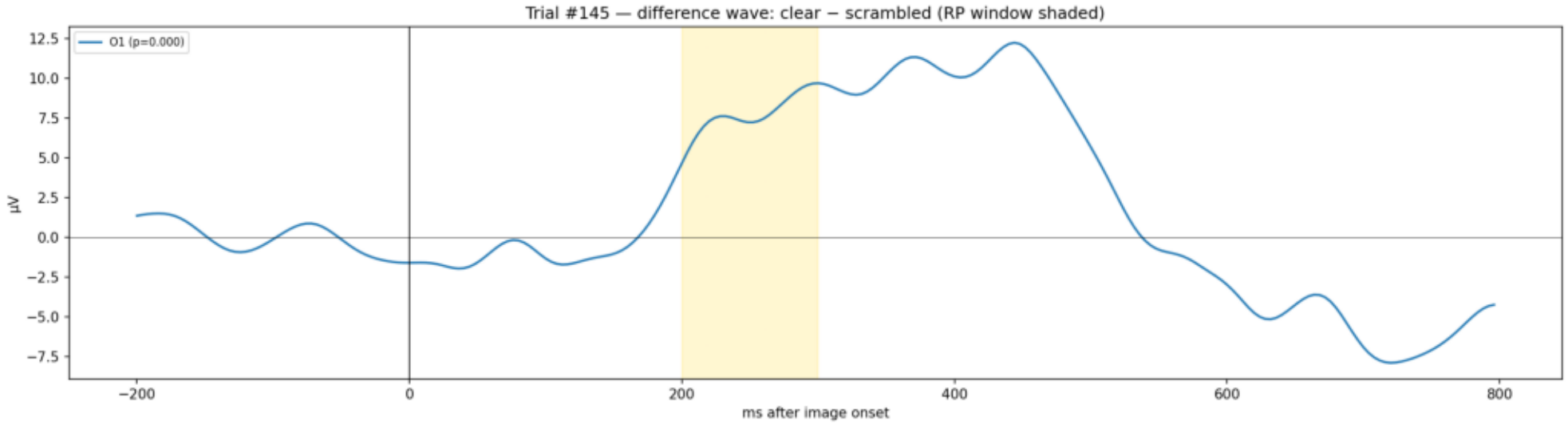
Event-related potentials: clear vs scrambled

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.



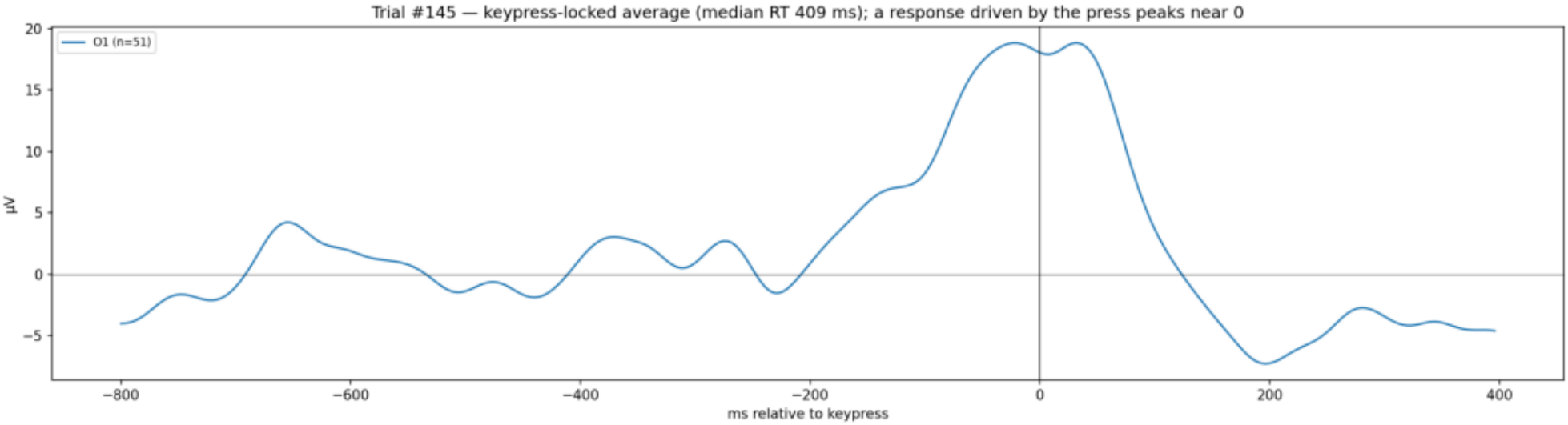
Difference wave (clear − scrambled)

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.



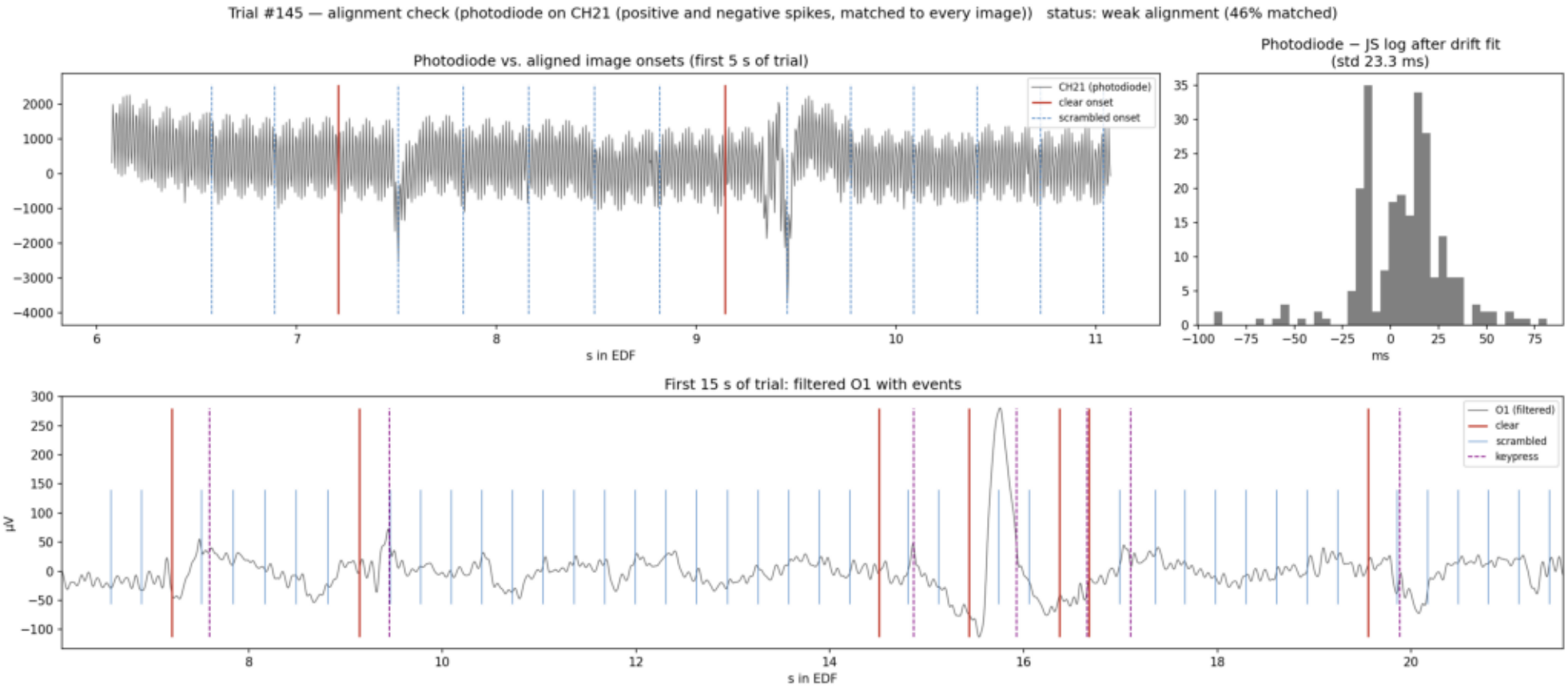
Keypress-locked average

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

```
============================================================
Trial #145 — subject AF, 04/13/2026 17:17:35.211
  EDF: /home/japhy/eegdata/media/trialData/AH_20260228_152245.edf
  250 Hz, 170 s; 501 images (68 clear, 433 scrambled); 61 presses
  alignment: photodiode on CH21 (positive and negative spikes, matched to every image)
    offset 6291 ms (EDF header says 3808490211); 46% of images matched (typical 8%); drift -254 ppm; jitter 23.3 ms
  electrode noise (µV): O1 21, O2 676, T5 1263, T6 815, P3 621, P4 765, Pz 803, Cz 687
  using: O1
  63 of 68 clear images followed by a keypress (median RT 409 ms)
  O1: clear−scrambled 200–300 ms = +7.69 µV, p=0.000, peak +10.0 µV @ 348 ms
  status: weak alignment (46% matched)
```