Trial #146 — Recognition Potential Analysis

OK

Subject	AF • recorded 04/13/2026 17:21:40.260 • dataset Celebrities
Stimuli	501 images: 77 clear, 424 scrambled • 76 keypresses (74 matched to clear images, median RT 431 ms)
EDF file	AH_20260228_152647.edf
Alignment	photodiode on CH21 (positive spikes, matched to every image); clock offset 8677 ms (EDF header would give 3808493260 ms); 424/501 images matched; drift -167 ppm; jitter 10.0 ms
Electrodes	noise after filtering — O1 13 µV ✓, O2 462 µV, T5 769 µV, T6 349 µV, P3 266 µV, P4 618 µV, Pz 470 µV, Cz 312 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

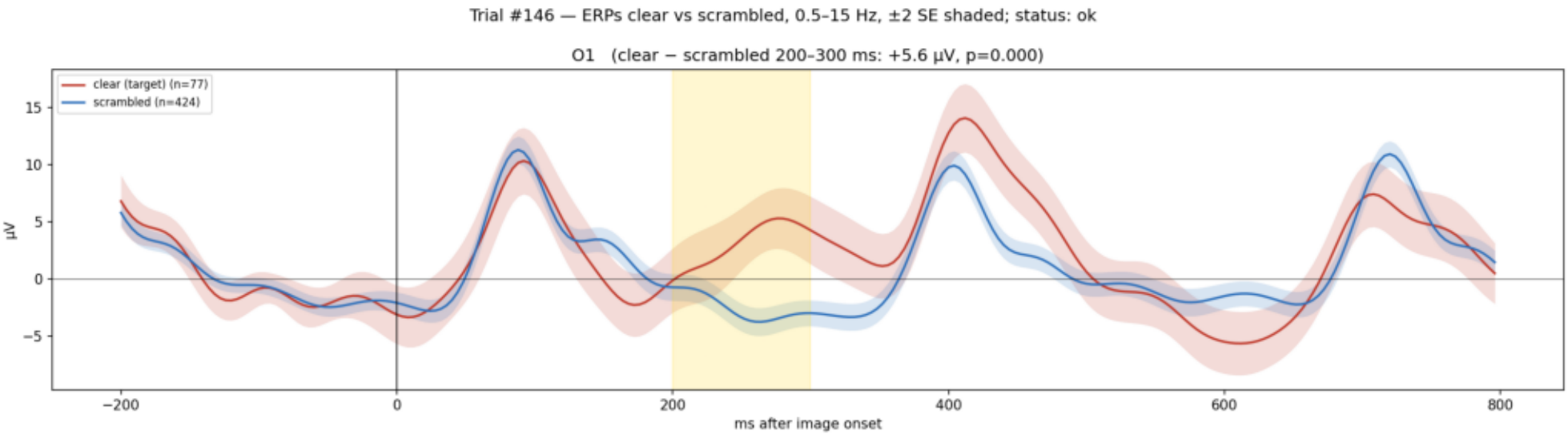
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
O1	**77 / 424**	**+5.57 µV**	**0.000**	**+8.8 µV @ 272 ms**

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

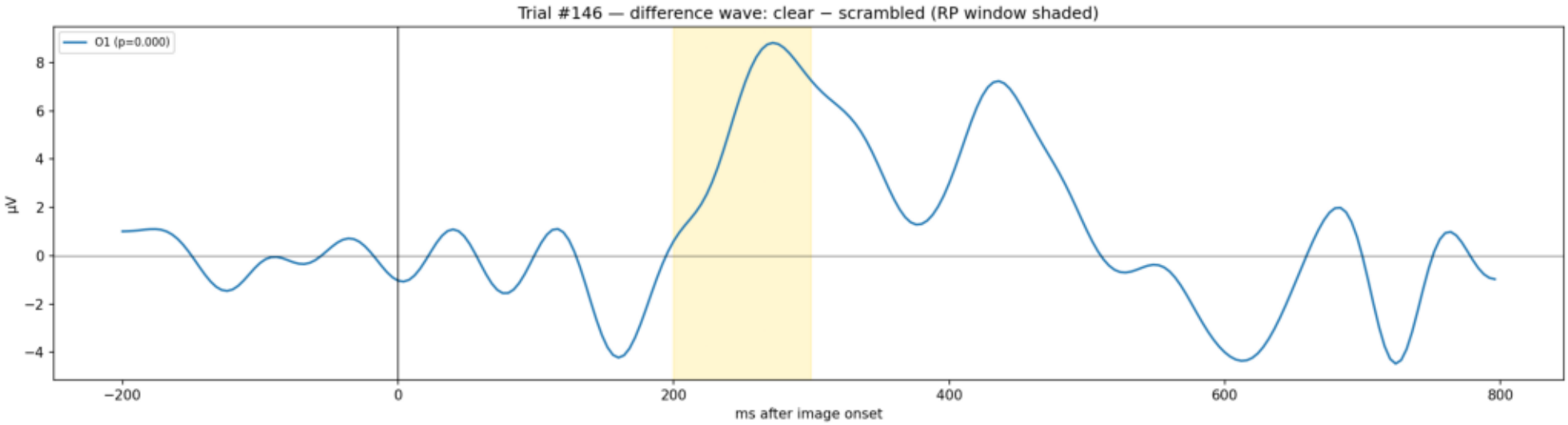
Event-related potentials: clear vs scrambled

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.



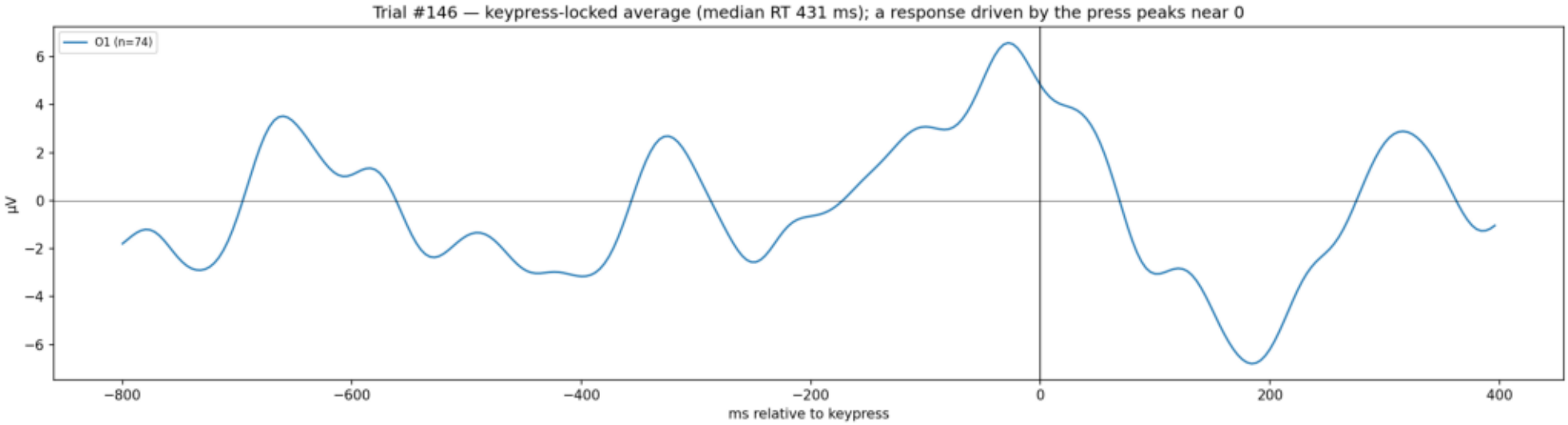
Difference wave (clear − scrambled)

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.



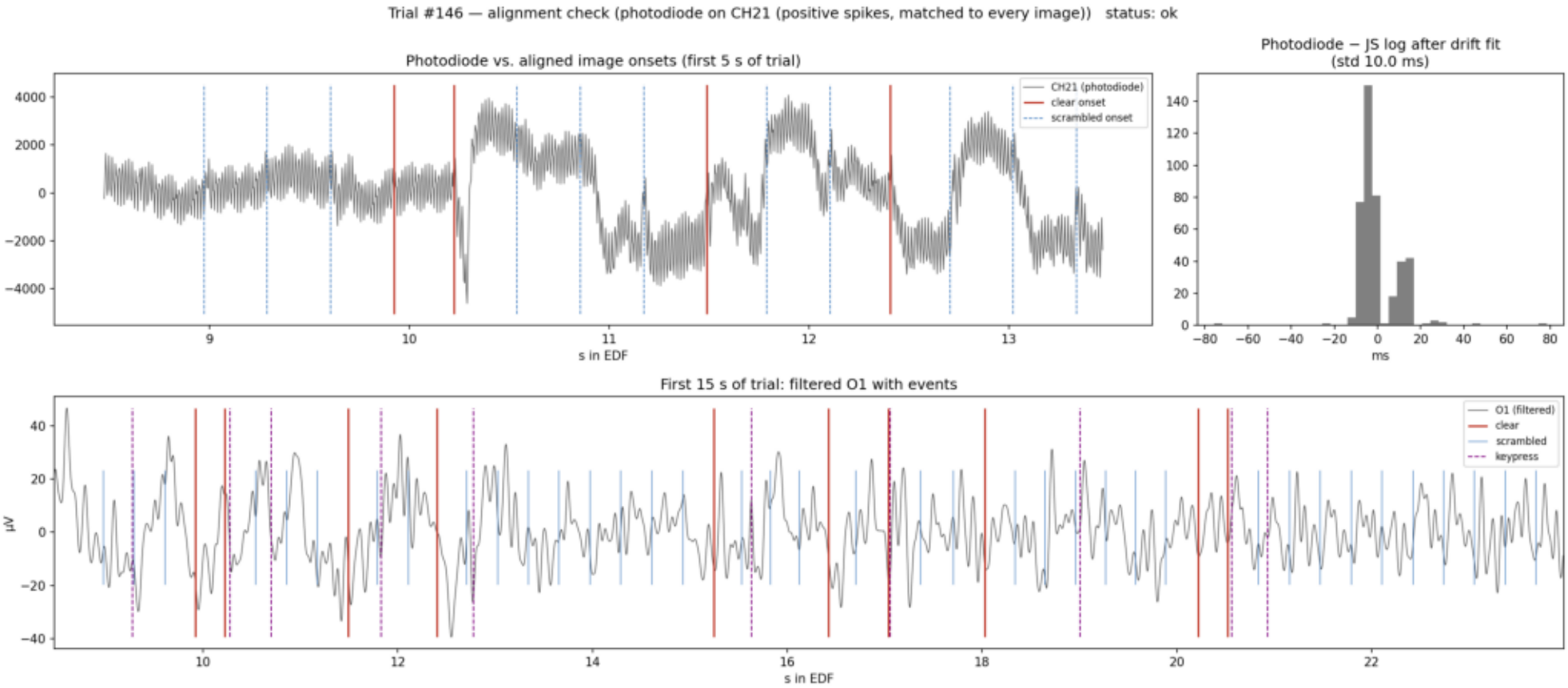
Keypress-locked average

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 #146 — subject AF, 04/13/2026 17:21:40.260
  EDF: /home/japhy/eegdata/media/trialData/AH_20260228_152647.edf
  250 Hz, 172 s; 501 images (77 clear, 424 scrambled); 76 presses
  alignment: photodiode on CH21 (positive spikes, matched to every image)
    offset 8677 ms (EDF header says 3808493260); 84% of images matched (typical 7%); drift -167 ppm; jitter 10.0 ms
  electrode noise (µV): O1 13, O2 462, T5 769, T6 349, P3 266, P4 618, Pz 470, Cz 312
  using: O1
  74 of 77 clear images followed by a keypress (median RT 431 ms)
  O1: clear−scrambled 200–300 ms = +5.57 µV, p=0.000, peak +8.8 µV @ 272 ms
  status: ok
```