Trial #144 — Recognition Potential Analysis

OK

Subject	AH1 • recorded 02/28/2026 10:28:16.854 • dataset Celebrities
Stimuli	501 images: 75 clear, 426 scrambled • 77 keypresses (74 matched to clear images, median RT 568 ms)
EDF file	AH_20260228_102752.edf
Alignment	photodiode on EKG1 (positive and negative spikes, matched to every image); clock offset 17230 ms (EDF header would give 24854 ms); 494/501 images matched; drift -66 ppm; jitter 26.9 ms
Electrodes	noise after filtering — O1 13 µV ✓, O2 13 µV ✓, T5 16 µV ✓, T6 12 µV ✓, P3 130 µV, P4 554 µV, Pz 350 µV, Cz 194 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

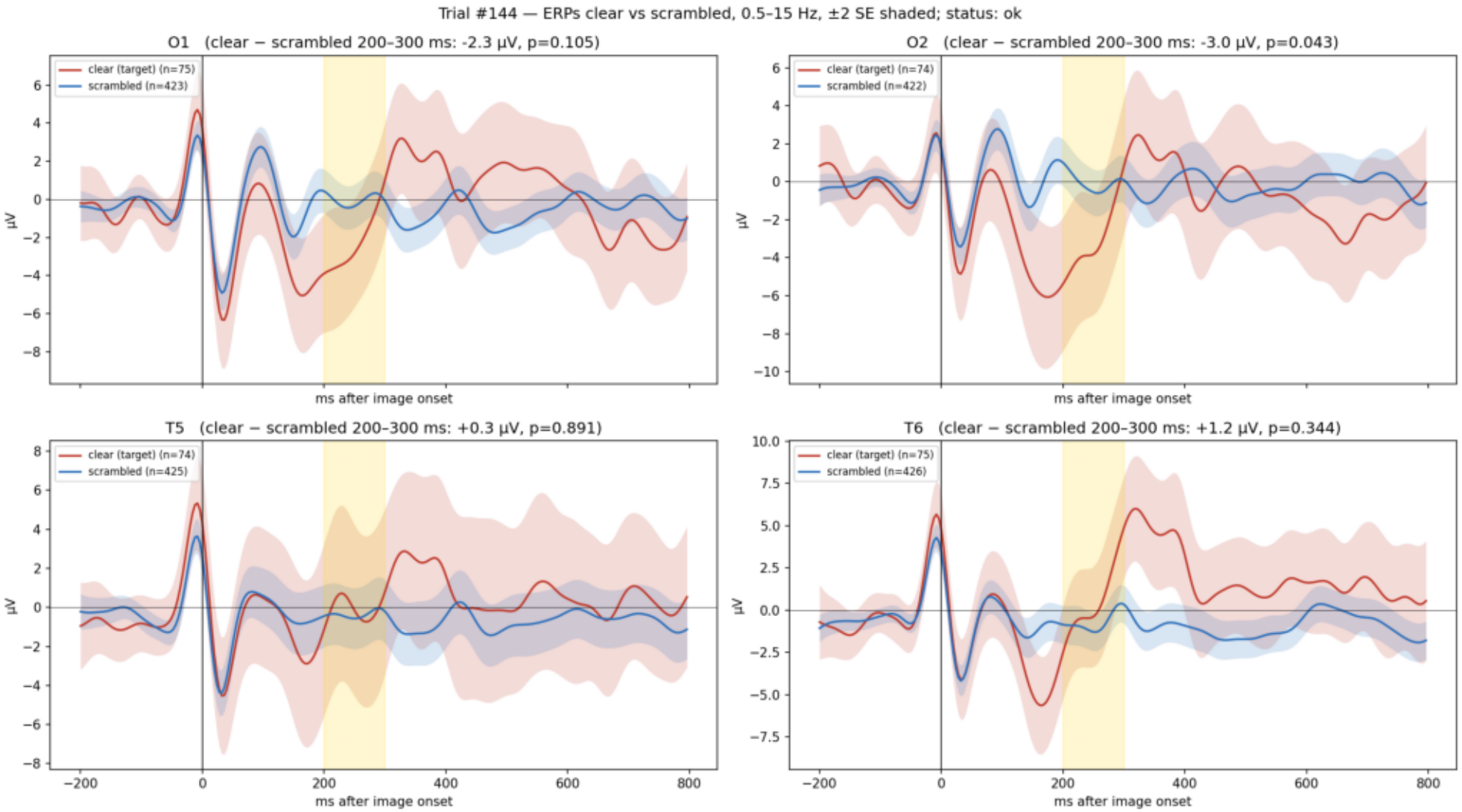
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
O1	75 / 423	-2.26 µV	0.105	+4.7 µV @ 328 ms
O2	**74 / 422**	**-3.02 µV**	**0.043**	**-7.0 µV @ 184 ms**
T5	74 / 425	+0.27 µV	0.891	+4.2 µV @ 332 ms
T6	75 / 426	+1.25 µV	0.344	+6.9 µV @ 324 ms

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

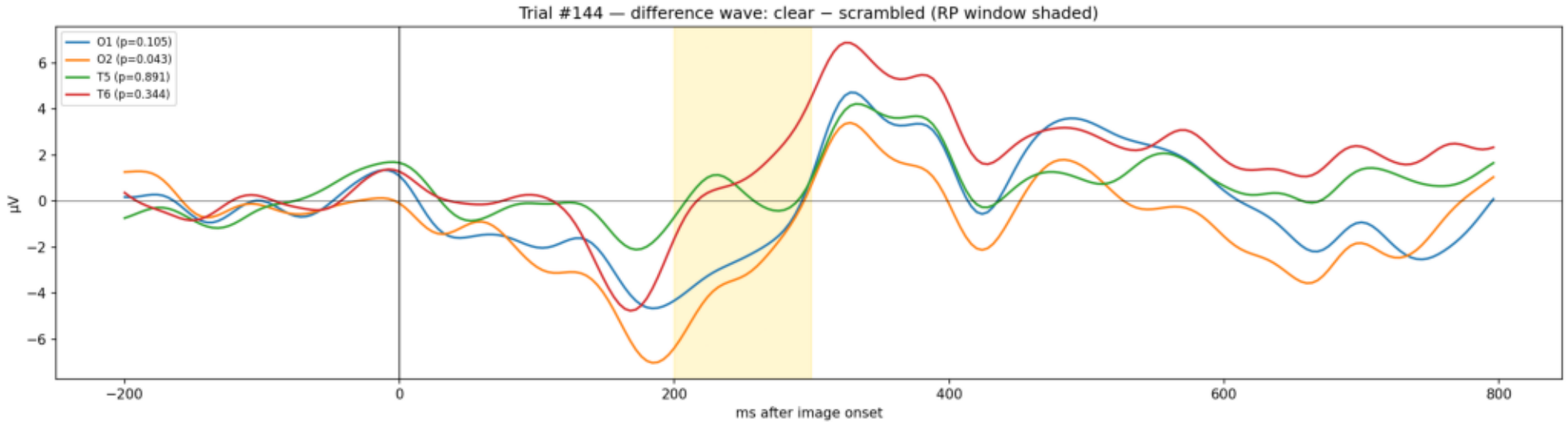
Event-related potentials: clear vs scrambled

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.



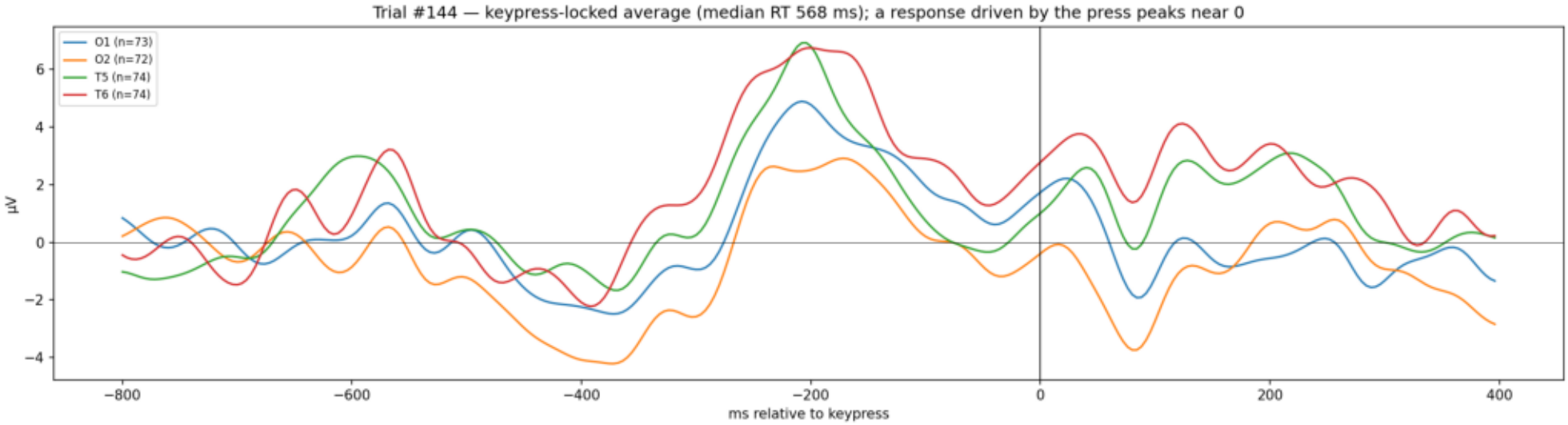
Difference wave (clear − scrambled)

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.



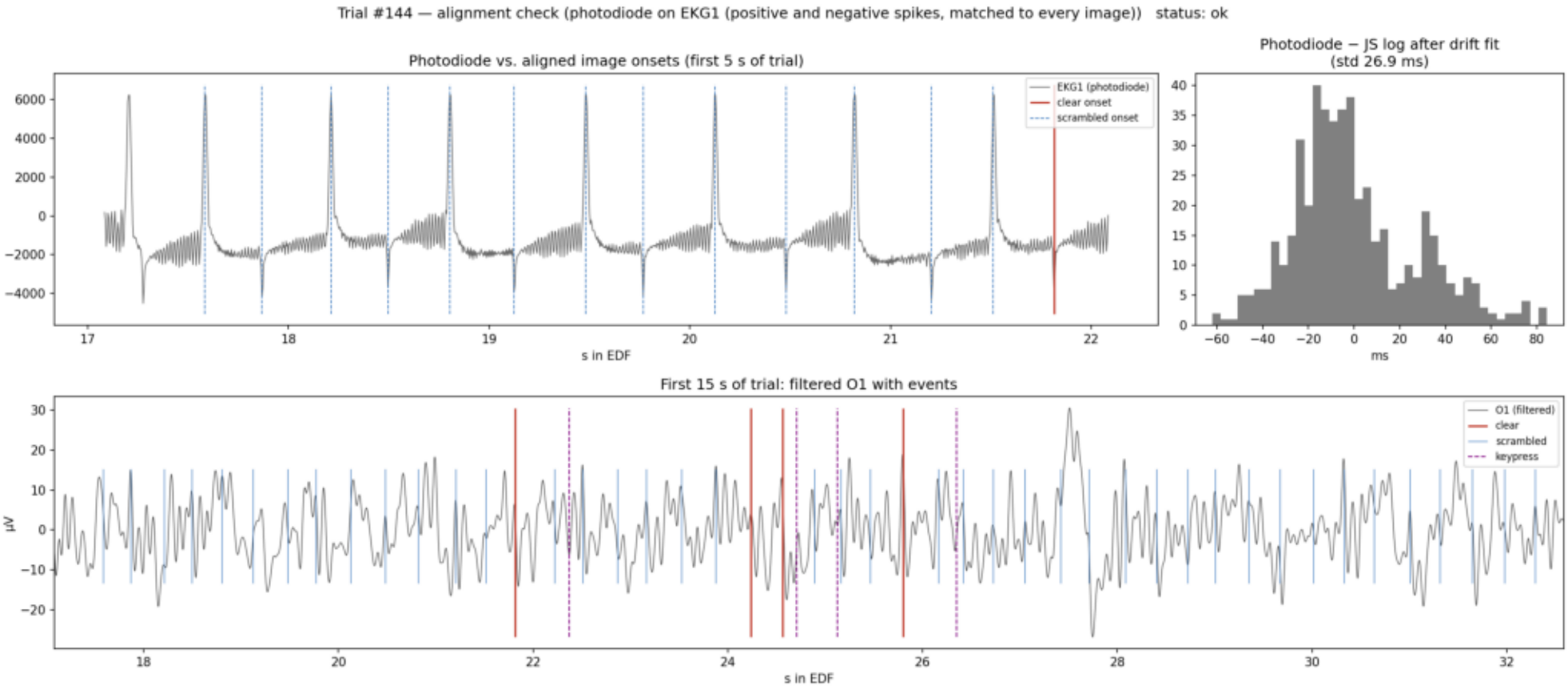
Keypress-locked average

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 #144 — subject AH1, 02/28/2026 10:28:16.854
  EDF: /home/japhy/eegdata/media/trialData/AH_20260228_102752.edf
  250 Hz, 190 s; 501 images (75 clear, 426 scrambled); 77 presses
  alignment: photodiode on EKG1 (positive and negative spikes, matched to every image)
    offset 17230 ms (EDF header says 24854); 86% of images matched (typical 21%); drift -66 ppm; jitter 26.9 ms
  electrode noise (µV): O1 13, O2 13, T5 16, T6 12, P3 130, P4 554, Pz 350, Cz 194
  using: O1, O2, T5, T6
  74 of 75 clear images followed by a keypress (median RT 568 ms)
  O1: clear−scrambled 200–300 ms = -2.26 µV, p=0.105, peak +4.7 µV @ 328 ms
  O2: clear−scrambled 200–300 ms = -3.02 µV, p=0.043, peak -7.0 µV @ 184 ms
  T5: clear−scrambled 200–300 ms = +0.27 µV, p=0.891, peak +4.2 µV @ 332 ms
  T6: clear−scrambled 200–300 ms = +1.25 µV, p=0.344, peak +6.9 µV @ 324 ms
  status: ok
```