Trial #132 — Recognition Potential Analysis

OK

Subject	AF • recorded 12/09/2025 13:14:17.207 • dataset Celebrities
Stimuli	501 images: 83 clear, 418 scrambled • 83 keypresses (81 matched to clear images, median RT 416 ms)
EDF file	SD_20251209_131444.edf
Alignment	photodiode on CH21 (positive and negative spikes, matched to every image); clock offset 11579 ms (EDF header would give -26793 ms); 501/501 images matched; drift -221 ppm; jitter 5.4 ms
Electrodes	noise after filtering — O1 71 µV, O2 565 µV, T5 17 µV ✓, T6 893 µV, P3 1182 µV, P4 1145 µV, Pz 1243 µV, Cz 1156 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

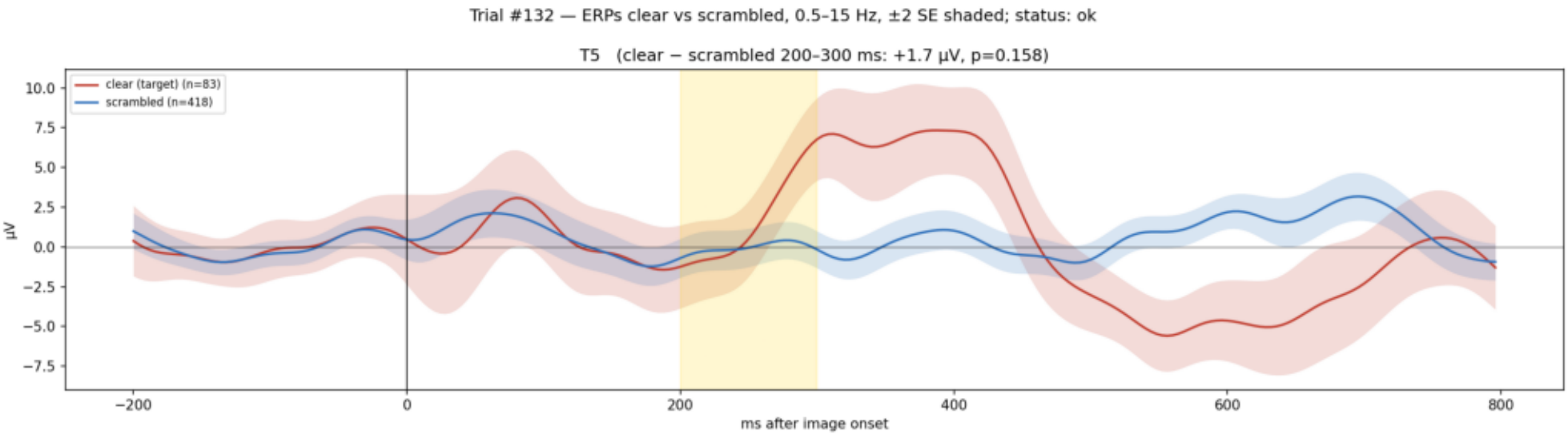
Clear − scrambled, 200–300 ms RP window

Channel	Epochs (clear / scrambled)	Mean difference	p (permutation, 2000)	Largest difference 150–350 ms
T5	83 / 418	+1.69 µV	0.158	+7.8 µV @ 316 ms

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

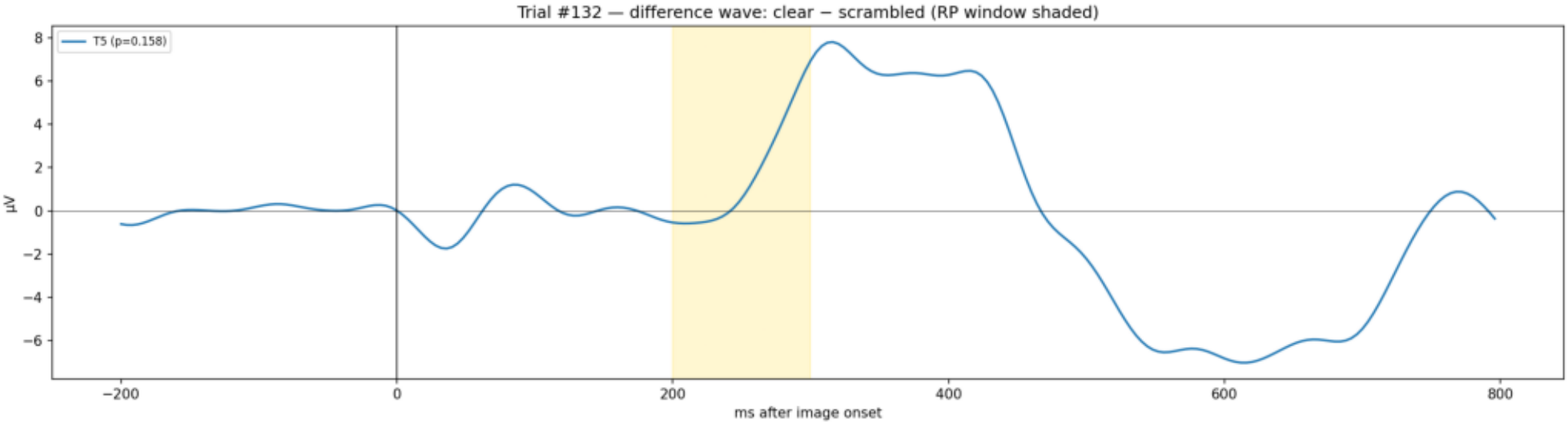
Event-related potentials: clear vs scrambled

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.



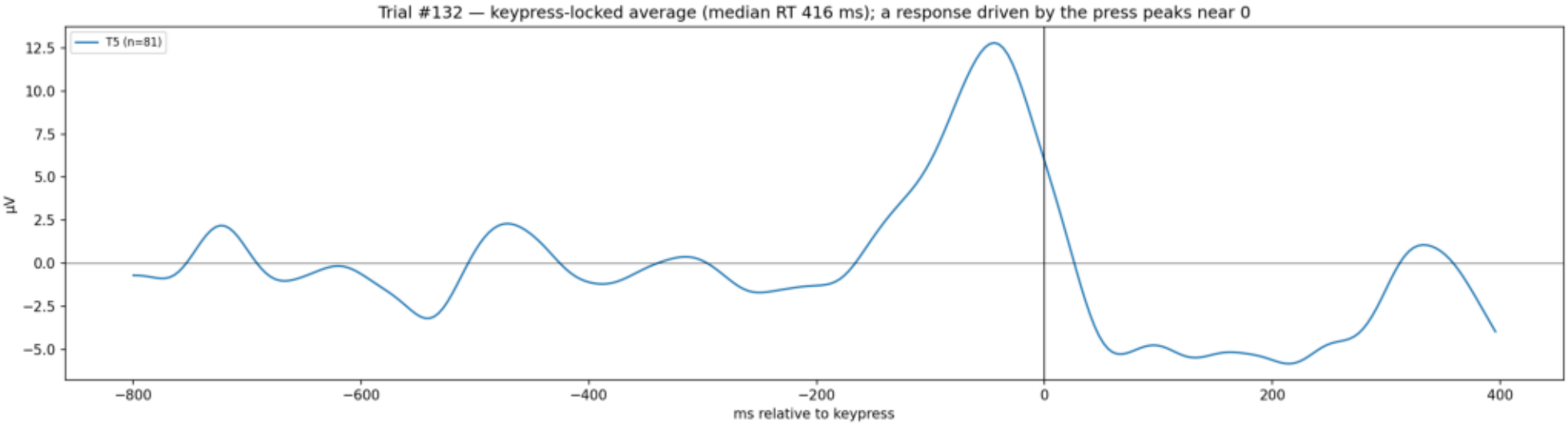
Difference wave (clear − scrambled)

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.



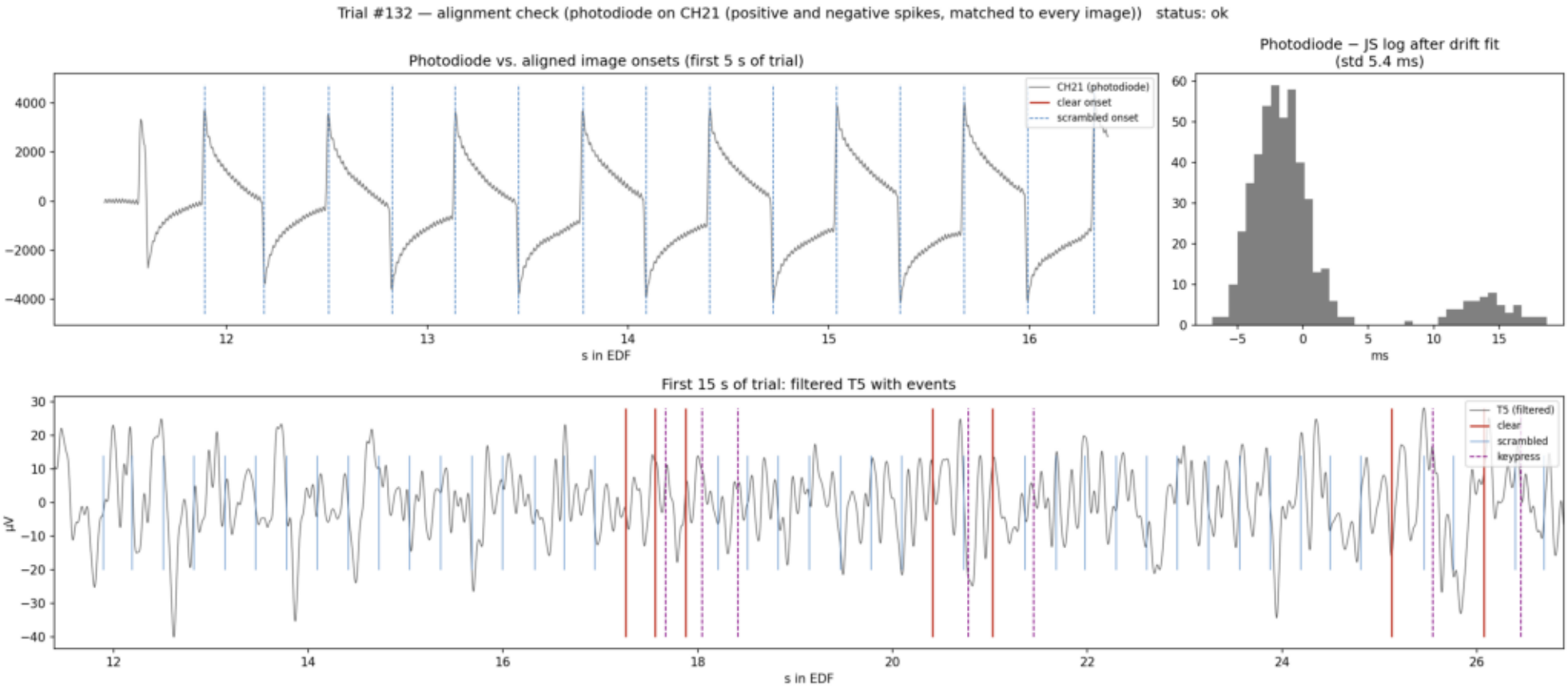
Keypress-locked average

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 #132 — subject AF, 12/09/2025 13:14:17.207
  EDF: /home/japhy/eegdata/media/trialData/SD_20251209_131444.edf
  250 Hz, 175 s; 501 images (83 clear, 418 scrambled); 83 presses
  alignment: photodiode on CH21 (positive and negative spikes, matched to every image)
    offset 11579 ms (EDF header says -26793); 100% of images matched (typical 11%); drift -221 ppm; jitter 5.4 ms
  electrode noise (µV): O1 71, O2 565, T5 17, T6 893, P3 1182, P4 1145, Pz 1243, Cz 1156
  using: T5
  81 of 83 clear images followed by a keypress (median RT 416 ms)
  T5: clear−scrambled 200–300 ms = +1.69 µV, p=0.158, peak +7.8 µV @ 316 ms
  status: ok
```