TFR analyses for mirror and rotation adaptation

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Contents

This document shows plots and time-frequency analyses related to feedback error processing and movement preparation for different perturbation types: fixed rotation, mirror reversal, random rotation.

```
source('ana/shared.R')
source('ana/permutationTtest.R')
```

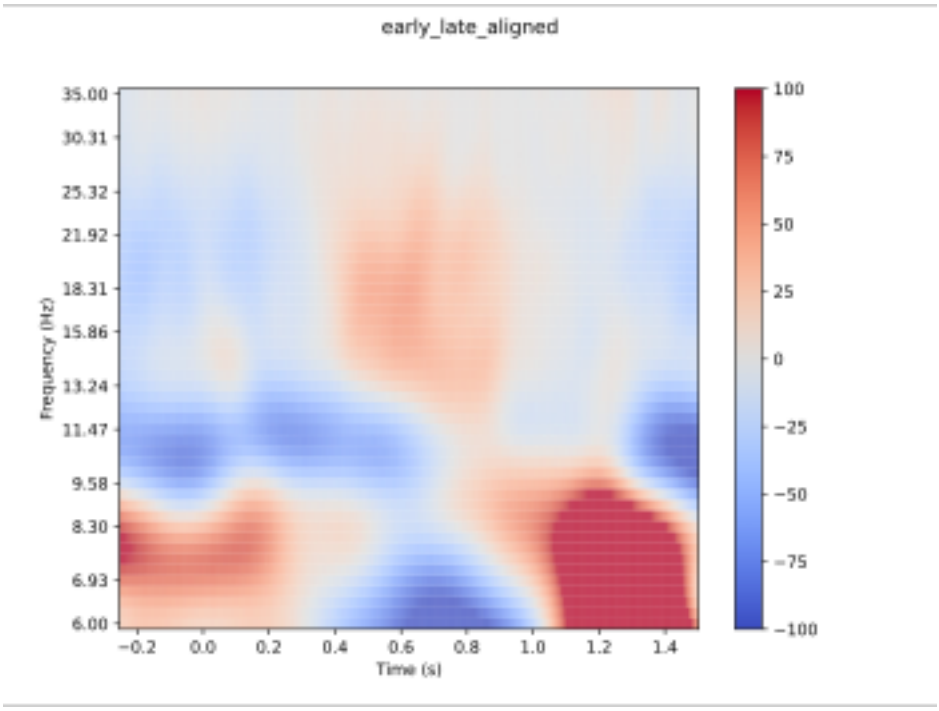
Feedback error processing

We transform the signals across epochs into time-frequency representations (TFRs) using Morlet wavelet (6 cycles) convolution. The frequencies we include are log-spaced values that range from 6 to 35 Hz. First, we show plots time-locked to feedback onset. We include 250 ms before the feedback onset, to show TFRs around the movement onset, given that we observed some ERPs during these timepoints. However, we shift our focus to analyzing the second that follows feedback onset.

Early vs. Late training

To focus better on differences between early and late training within each perturbation type, we only analyze the first two blocks of trials during early training (first 12 training trials) and the last two blocks of trials during late training (last 12 training trials). We then generate TFRs for each of the conditions (early vs. late for fixed rotation, mirror reversal, random rotation), and calculate TFRs for the baseline aligned reaches. We focused on two different regions of interest (ROIs): the medial frontal areas (F1, Fz, F2, FC1, FCz, FC2, C1, Cz, C2) and lateral central areas of the left hemisphere (i.e., opposite the moving hand; C5, C3, CP5, CP3, CP1, P5, P3, P1)

```
image_read_svg('doc/fig/tfr_mne/frn/medfro_early_late_aligned_power-tfr.svg', width=350)
```


early_late_aligned
35.00
30.31
25.32
21.92
18.31
15.86
13.24
11.47
9.58
8.30
6.93
6.00
Frequency (Hz)
−0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Time (s)
100
75
50
25
0
−25
−50
−75
−100