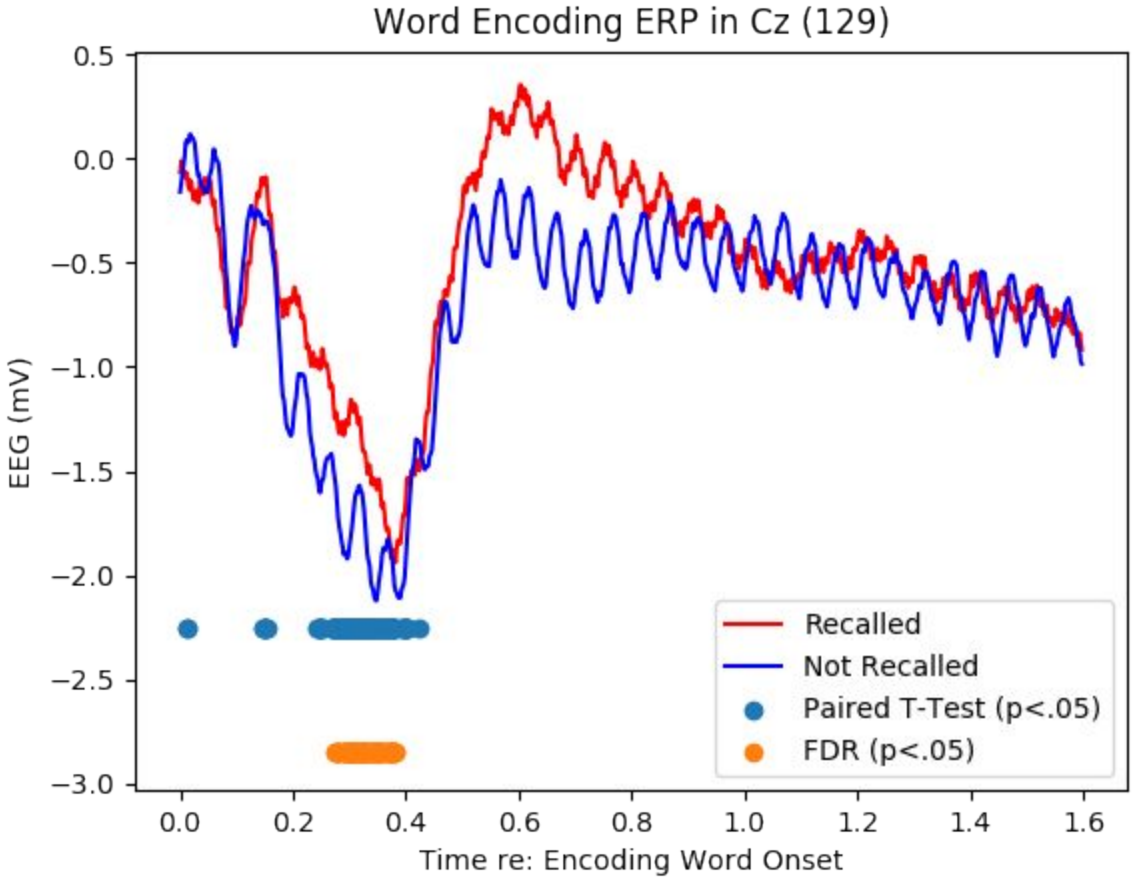
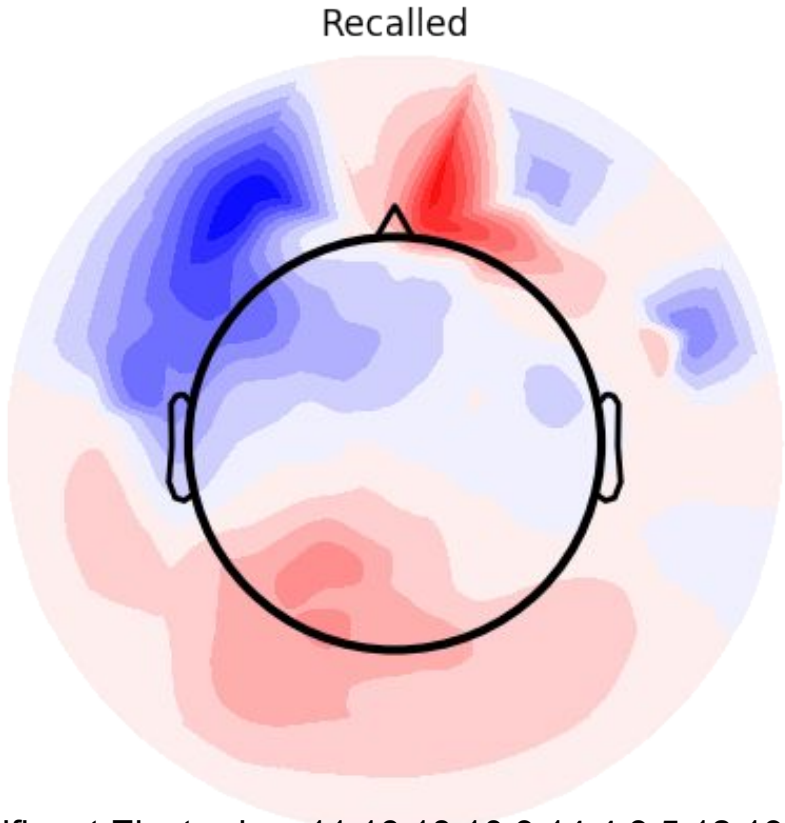
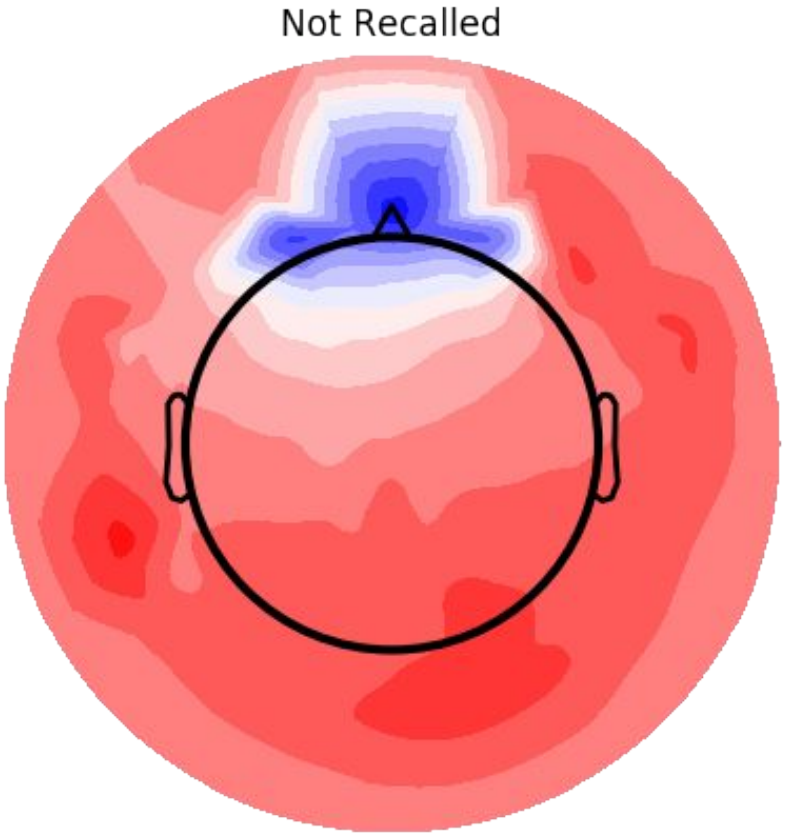
# SME in the Time Domain

Hw03 - Jonathan Levine

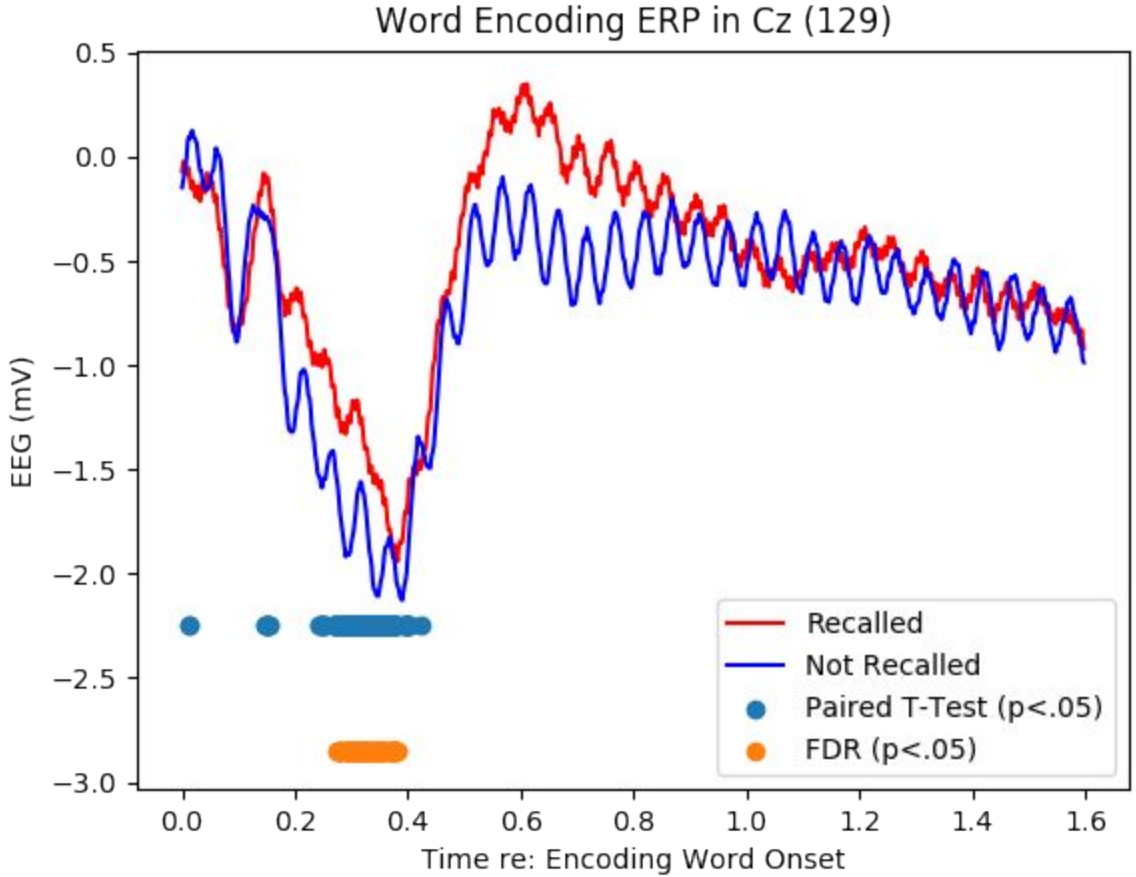

Word Encoding ERP in Cz (129)
0.5
0.0
−0.5
−1.0
−1.5
−2.0
−2.5
−3.0
EEG (mV)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
Time re: Encoding Word Onset
Recalled
Not Recalled
Paired T-Test (p<.05)
FDR (p<.05)



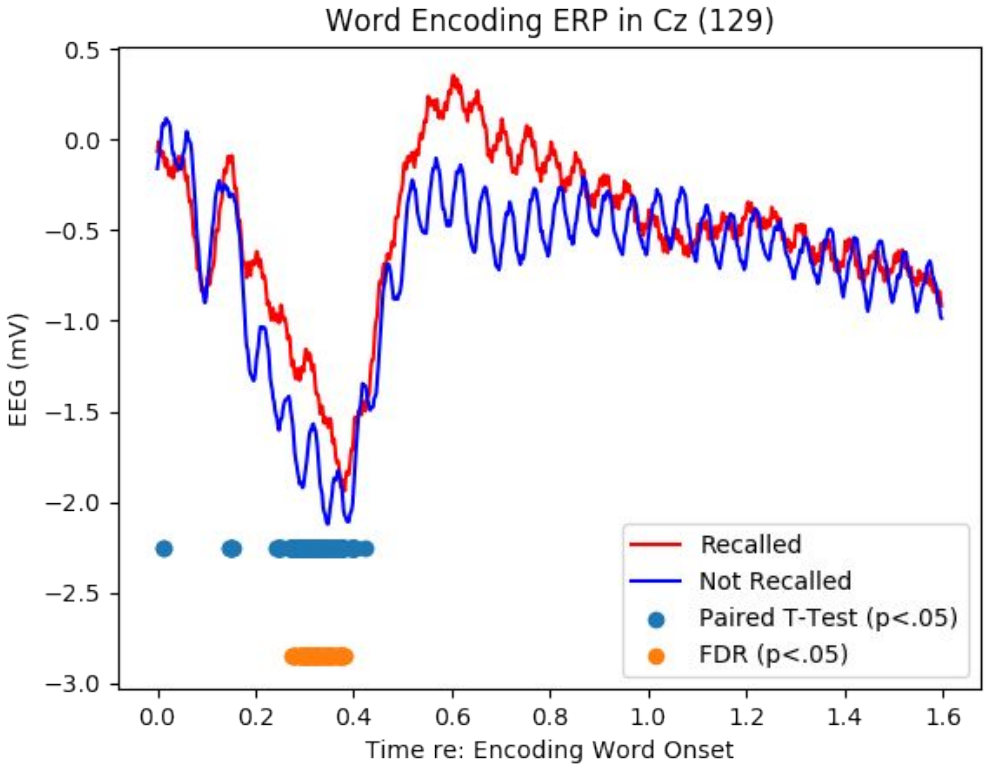




Significant Electrodes: 11 16 18 10 9 14 4 3 5 12 19
FDR: 16, 19, 12, 3, 5

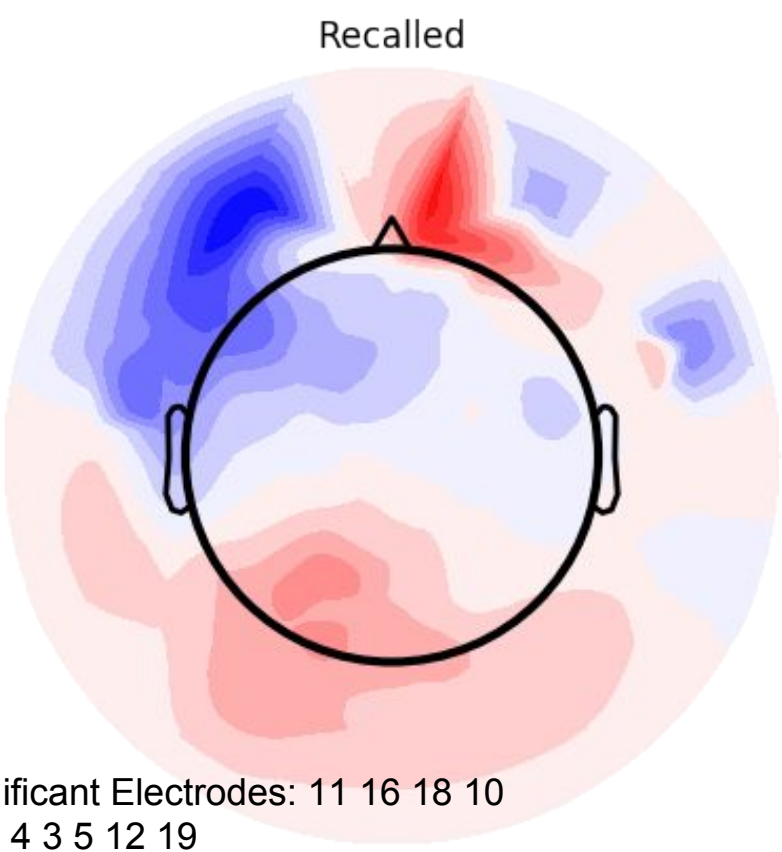
# With 60Hz Notch Filter

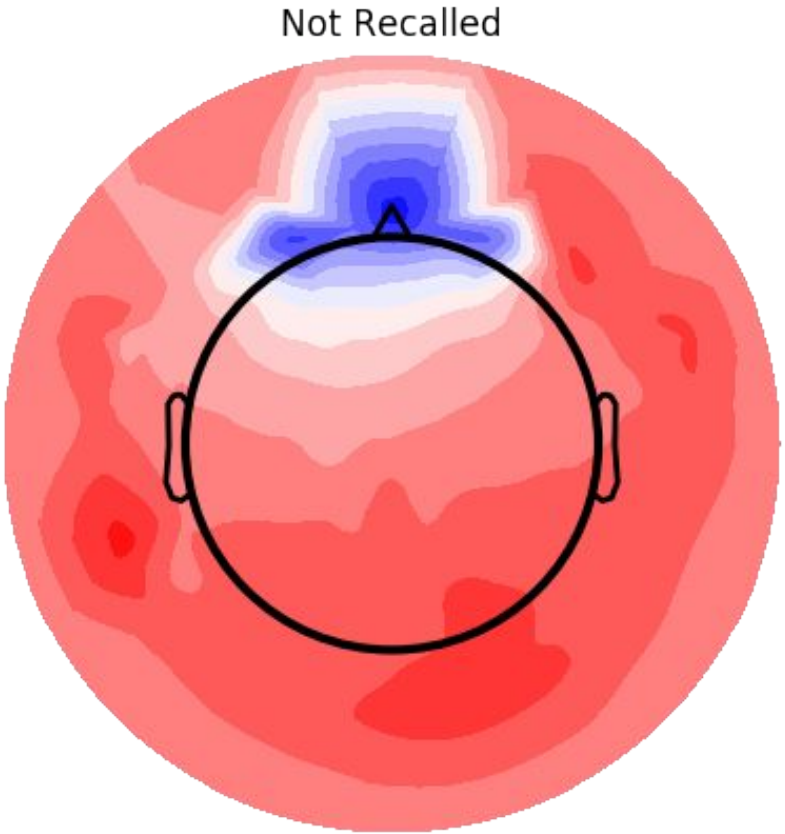


# With Artifact Removed



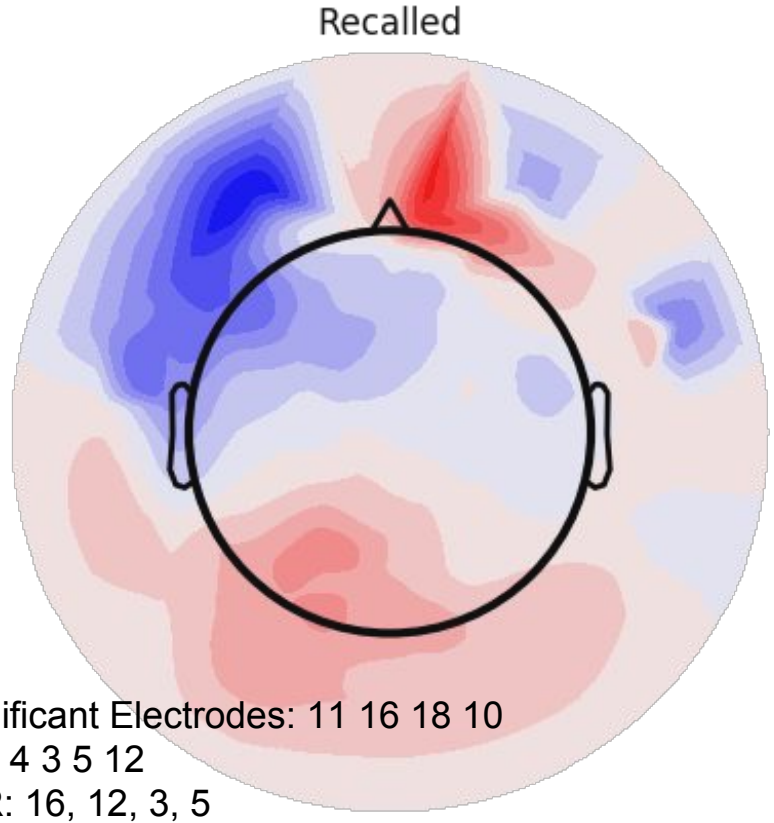
W/ 60Hz Filter

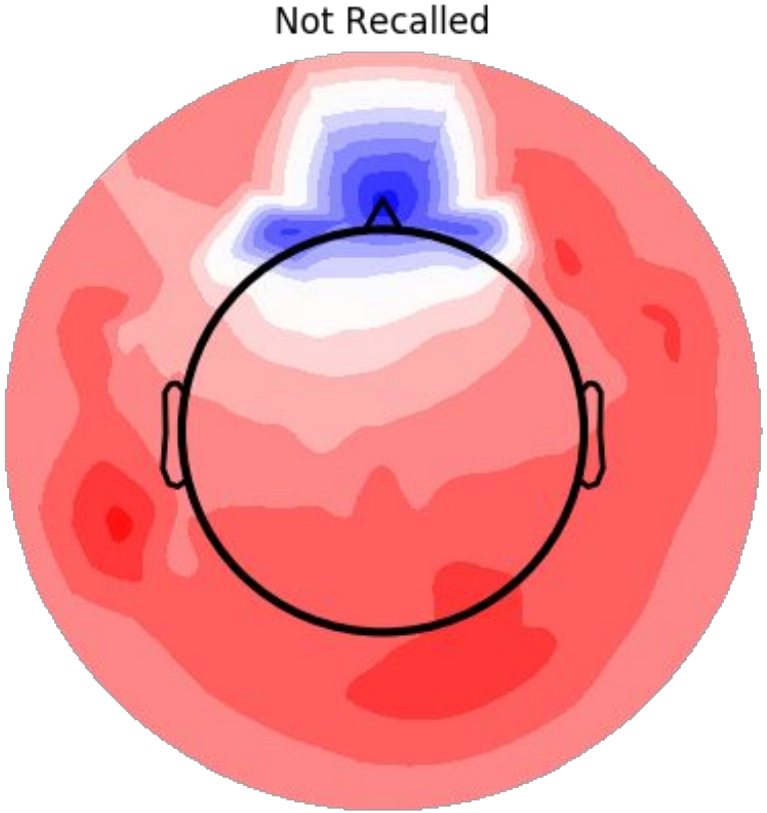



Significant Electrodes: 11 16 18 10
9 14 4 3 5 12 19
FDR: 16, 19, 12, 3, 5

W/ Artifact Removal




Significant Electrodes: 11 16 18 10
9 14 4 3 5 12
FDR: 16, 12, 3, 5

# Comments

There seems to be a strong, significant SME effect in the anterior part of the brain, focused a little more on the right hemisphere,  between 200 and 400 milliseconds after word onset. The FDR statistical test is a little more conservative than the regular paired t-test, in order to correct for the fallacy of multiple comparisons. Nevertheless the time and areas that show the effect are significant even with FDR. The artifact removal did not show much change, as the effect is strong enough and the artifacts were mostl likely averaged out. The notch filter also had little effect, and would only really change the shape of the waveform significantly in a frequency analysis.