

Clustering results

To analyze the attentional reaction aspect in situational interest, the mean delta power and mean alpha power in each subtopic (Subtopic D, F, H, and I) were used as input to k-means and DBSCAN. These features were tested on single frontal channels F3 and F4, and their combination. Figure S1 and Figure S2 indicate that the k-means manage to cluster the data successfully into three classes in each case.

On the other hand, Figure S3 and Figure S4 show the result from DBSCAN. These figures indicate that the DBSCAN algorithm is managed to cluster the data successfully into three classes, except in channel F3 when the mean delta power was used (see Figure S4 (a)). Here, there were misclassified between the high and low SI groups.

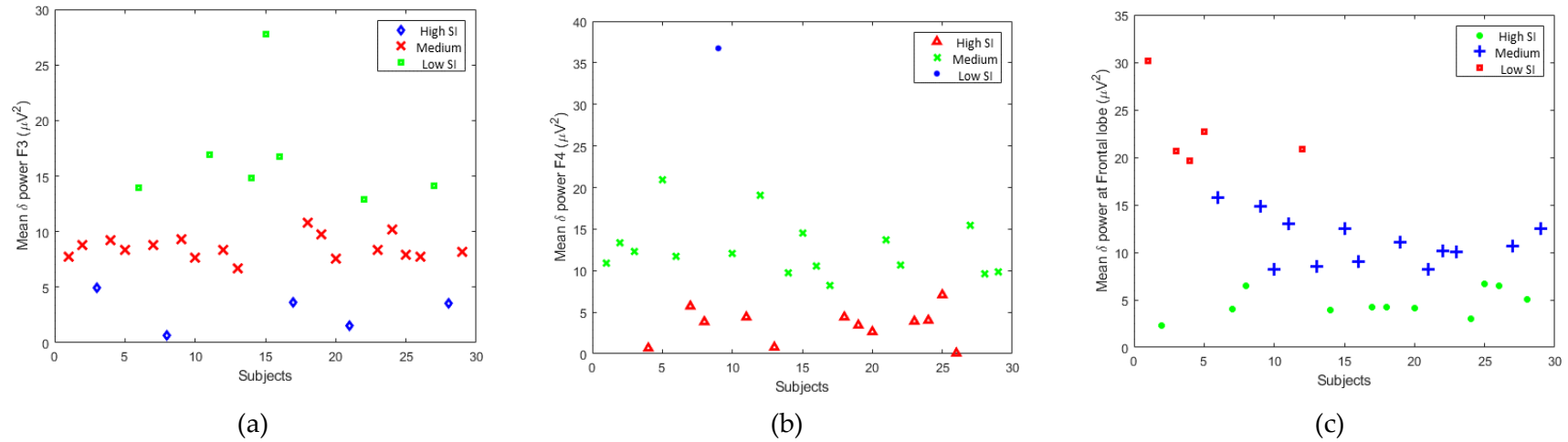
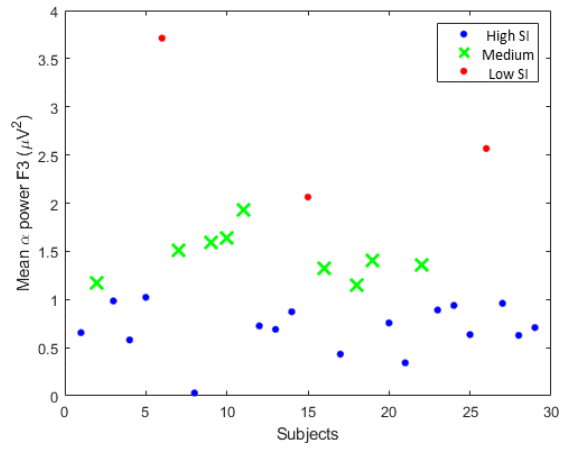
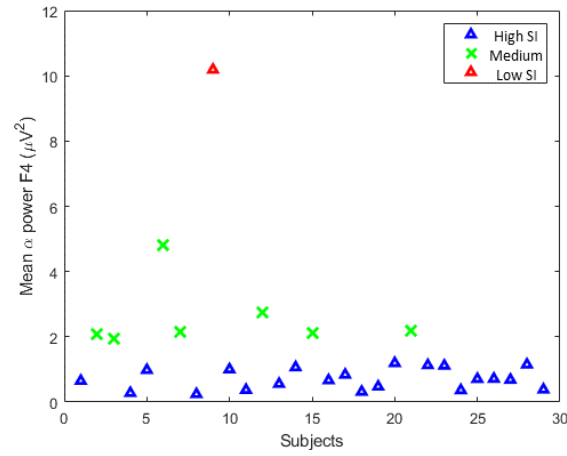


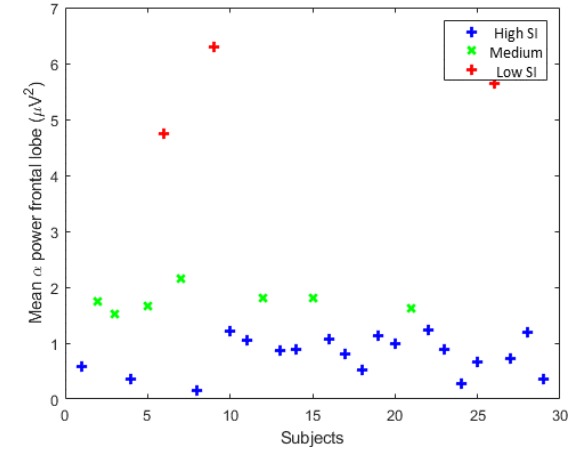
Figure S1. Example of k-means clustering results for mean delta power at the following electrode: (a) channel F3, (b) channel F4 and (c) combination of channel F3 & F4.



(a)

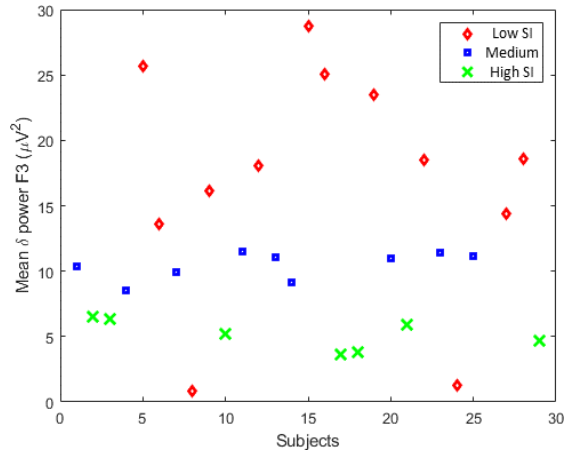


(b)

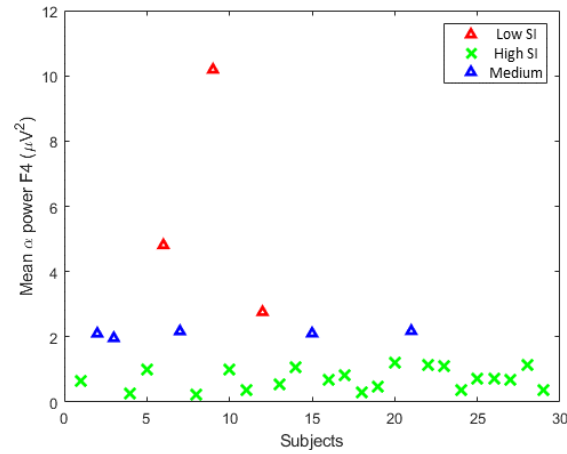


(c)

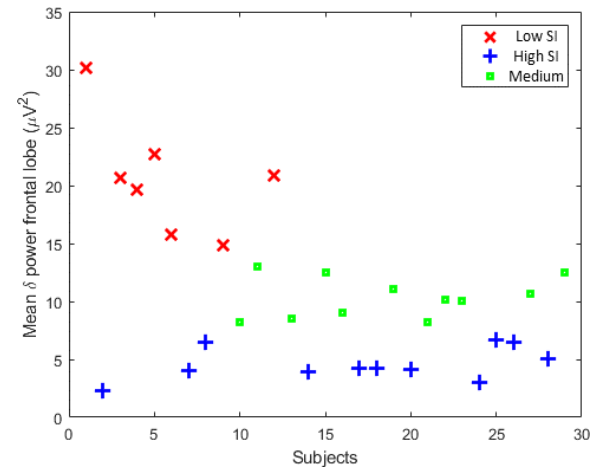
Figure S2. Example of k-means clustering results for mean alpha power at the following electrode: (a) channel F3, (b) channel F4 and (c) combination of channel F3 & F4.



(a)



(b)



(c)

Figure S3. Example of DBSCAN clustering results for mean delta power at the following electrode: (a) channel F3, (b) channel F4 and (c) combination of channel F3 & F4.

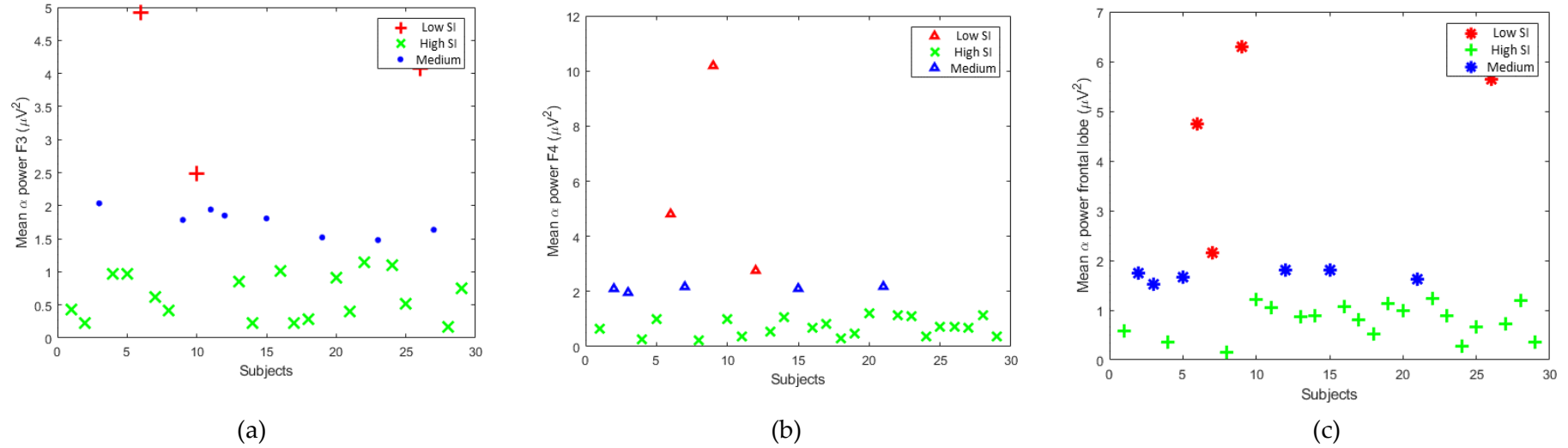
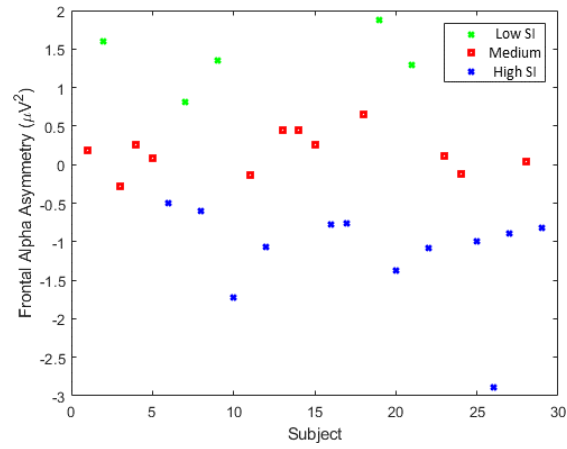


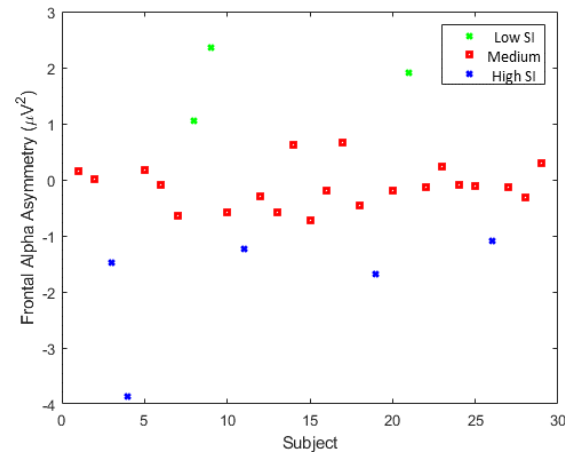
Figure S4. Example of DBSCAN clustering results for mean alpha power at the following electrode: (a) channel F3, (b) channel F4 and (c) combination of channel F3 & F4.

To analyze the FAA as an affective reaction predictor of situational interest, the asymmetry was calculated on a pairing of prefrontal channels (FP1-FP2) and frontal channels (F3-F4). The average asymmetry from these two combinations has also been calculated to represent the FAA for the overall frontal region. These features in each sub-topic (Subtopic D, F, H, and I) were used as input to k-means and DBSCAN. Figure S5 shows that the k-means manage to cluster the FAA successfully into three classes in each case.

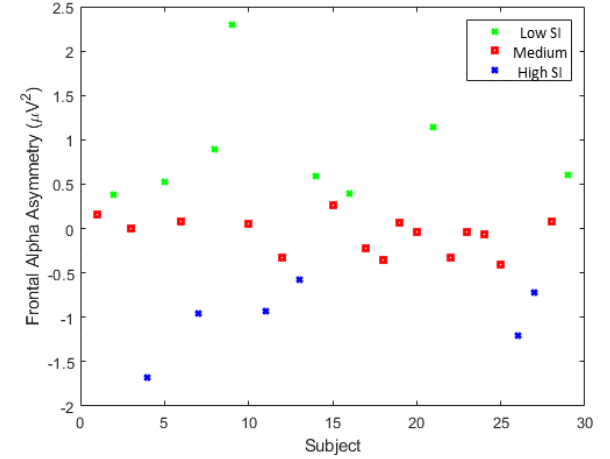
Besides, the results from DBSCAN for FAA were shown in Figure S6. These figures re-veal that the DBSCAN algorithm is managed to cluster the data successfully into three classes, only at the combination of the channels (see Figure S6 (c)). Misclasses were detected between the high and low SI groups in each pairing of FP1-FP2 and F3-F4.



(a)

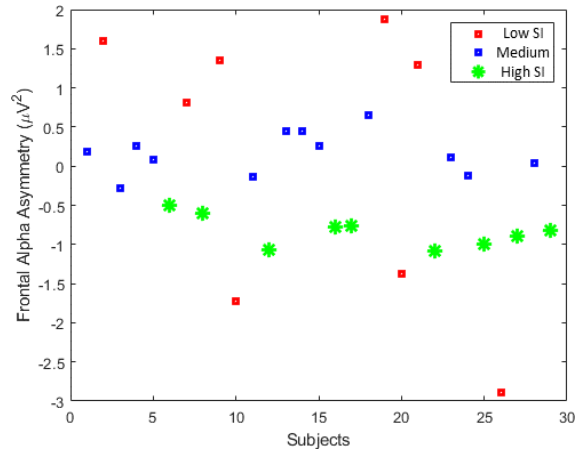


(b)

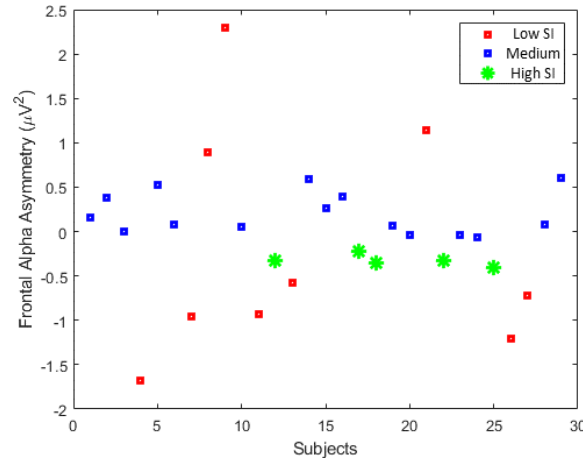


(c)

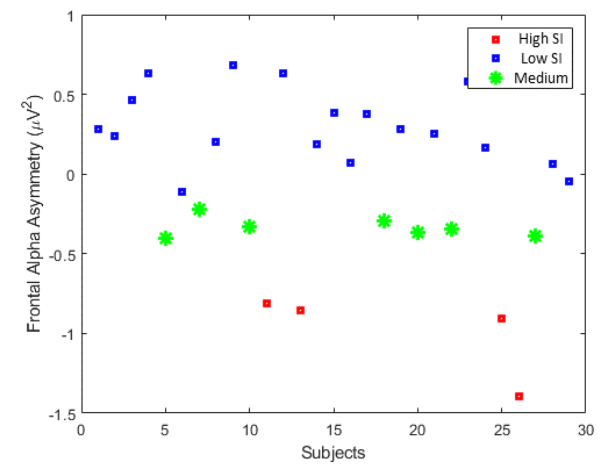
Figure S5. Example of k-means clustering results for FAA metrics at the following electrode: (a) FP1-FP2, (b) F3-F4 and (c) combination of channel prefrontal and frontal.



(a)



(b)



(c)

Figure S6. Example of DBSCAN clustering results for FAA metrics at the following electrode: (a) FP1-FP2, (b) F3-F4 and (c) combination of channel prefrontal and frontal.