

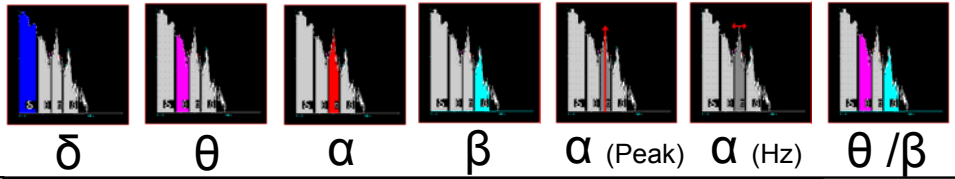
Cognitive Correlates of EEG

Negative Relationship



Positive Relationship

EO = Eyes Open EEG Task
EC = Eyes Closed EEG Task



| | δ | θ | α | β | α (Peak) | α (Hz) | θ / β |
|-------------------------------|----------|----------|----------|---------|-----------------|---------------|------------------|
| Motor Tapping | | | | | EO | | |
| Choice Reaction Time | | | | | | | |
| Time Estimation | | | | | | | EO EC |
| Span of Visual Memory | | | | | | | |
| Spot the Real Word | | | | | | | |
| Digit Span | | | | | | | EO EC |
| Memory Recall | EO | | EO | | EO | | EO EC |
| Verbal Interference | EC | EO EC | EO EC | | EO EC | | EO EC |
| Word Generation | | EO | | | | | |
| Visual Working Memory | | | | | | | |
| Switching of Attention | | | | | | | |
| Go No-Go | | | | | | | |
| Executive Maze | EC | EC | | | | | EO EC |

Cognitive Correlates of Heart Rate Variability

Increase in variability associated with a decrease in performance



Increase in variability associated with better performance

Resting HR Variability

Task HR Variability

| | | |
|--|---|---|
|  Motor Tapping | | |
|  Choice Reaction Time | | |
|  Time Estimation | | |
|  Span of Visual Memory | | |
|  Spot the Real Word | | |
|  Digit Span | | |
|  Memory Recall | | |
|  Verbal Interference |  | |
|  Word Generation | | |
|  Visual Working Memory | | |
|  Switching of Attention |  |  |
|  Go No-Go | | |
|  Executive Maze |  |  |

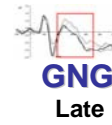
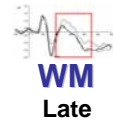
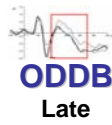
Cognitive Correlates of ERPs

Decrease in amplitude/latency associated with better performance




Increase in amp/lat associated with better performance

WM = Working Memory ERP
 ODDB = Oddball ERP
 GNG = Go No-Go ERP
 A = Amplitude, L = Latency
 B = Background, T = Target
 G = 'Go', N = 'No-Go'



| | | | | | | |
|-------------------------------|------------|--------------|-----------|-------------------|------------|-------------------|
| Motor Tapping | N1 BT A | N2 P3 T L | | N2 B L | | N2 G L |
| Choice Reaction Time | N2 T L | | N1 B A | P3 T A | N1 G A | N2 G A |
| Time Estimation | | | | | P2 G A | N2 G A |
| Span of Visual Memory | | | | | P2 N A | |
| Spot the Real Word | | N2 T A | | | | P3 G A |
| Digit Span | | P3 T A | P2 B A | | | P3 G A |
| Memory Recall | | | | | N1 G A | P3 G A |
| Verbal Interference | | P3 T A | N1 T A | N2 B A | P2 G A | P3 G A |
| Word Generation | P2 T L | N2 T L | | | | |
| Visual Working Memory | N1 TB A | P3 T A | | P3 P3 TB A L T | | N2 P3 B L A TB |
| Switching of Attention | | P3 T A | N1 T A | N2 B A | N1 G A | N2 G L |
| Go No-Go | | | N1 B L | P3 T A | | P3 P3 T A L B |
| Executive Maze | N1 B L | | N1 B A | N2 BT A | P2 BT A | N2 TB A |

Cognitive Correlates of MRI

Negative Relationship  Positive Relationship

Total



grey

Cortical



Cingulate



Frontal



Occipital



Temporal

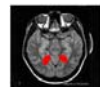


Parietal














Sub-Cortical



Hippocampus



Amygdala

| | Total | Cingulate | Frontal | Occipital | Temporal | Parietal | Hippocampus | Amygdala |
|--|---|---|---|---|--|---|---|---|
|  Motor Tapping | | | |  | | | | |
|  Choice Reaction Time |  |  | | |  | | |  |
|  Time Estimation |  | | |  |  |  |  |  |
|  Span of Visual Memory |  |  | |  |  |  |  | |
|  Spot the Real Word | |  |  | | | | | |
|  Digit Span | |  | | | | | | |
|  Memory Recall | | |  | | |  | | |
|  Verbal Interference |  |  |  |  |  |  |  |  |
|  Word Generation |  |  |  |  |  | | |  |
|  Visual Working Memory | | | | | | |  |  |
|  Switching of Attention |  |  |  |  |  |  |  |  |
|  Go No-Go | |  | | | | | | |
|  Executive Maze |  |  |  |  |  |  |  |  |