Brain Map Compare Video Notes

The Calculation of Change

- The comparison is based on percent of change or degree of movement in the post map in any direction, toward or away from the values on the prior map, with directional reference to the database norms
- Change is calculated in microvolts for magnitude and asymmetry
- Change is calculated in the standard terms for phase and coherence
- Change is calculated in terms of frequency for dominant frequency

Direction of Change

- To describe the percent of change toward the norm – Anterograde
- To describe the percent of change away from the norm – Retrograde
- These terms do NOT imply any positive or negative value with respect to symptomology
- These terms are inly technical descriptors of directional change

Initial Mistaken Assumptions

- Should see rapid change
- All movement to norm is good/ away is bad
- All green
- ALL INCORRECT!

Change is Relative

- The percent change is a relative term describing a fundamental resting state change in the brain from one point in time to another point in time
- It assumes the brain is a non-linear dynamical system that is auto-correlating to a new attractor basin
- The percent change does not describe a linear movement from a bad point to a good point
- The percent change is not an additive function - % change cannot be added together

Adaptive Change Away from the Norm

- As the basin seeks a new solution state, it forms adaptive responses involving the movement of some network features away from a statistically normative value
- Note the increase in frontal alpha while there is a decrease in beta
- Note that the changes toward the norm are circled in green and changes away from the norm are circled in red

Like a Rubik's Cube

- Some regions of the brain will move away from the norm for a time and then move back toward the norm for a time in a coordinated effort with other regions
- When solving a Rubik's cube, some movements appear to be going away from a solution when they are actually going toward the solution

Moving the Furniture/Cleaning out the closet

- Metaphor – things may get more unorganized before things fall into place
- Things will move around several times before a correct placement is found

Brain Maps are very stable

- Neurometrically very stable
- Diurnal Effects
    - Gradual shift in power over the course of the day
    - Shift is consistent and cyclic
    - For this reason, maps should be done at the same time of day for comparison purposes

Change is good!

- Low – 10-20%
- Norm – 30-40%
- High – 40-50%
- Interpretation should center around percent change and symptom change in the symptom tracker
- Initial maps with higher retrograde change typically correlate with strong positive symptom change

A good percent of change

- Changes of 10% can occur in randomly compared maps of the same individual
    - 10% variance
- Changes higher than this typically only occur from exposure to trauma or drugs
- Highest we've seen is 50%

Progression of Change

- The first maps tend to show more retrograde movement, suggesting an adaptive phase
- Later maps tend to show anterograde, suggesting a consolidation phase
- First maps tend to show more percent change than later maps