

Hemoencephalography for Autistic Spectrum Disorder

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Atlanta, Georgia

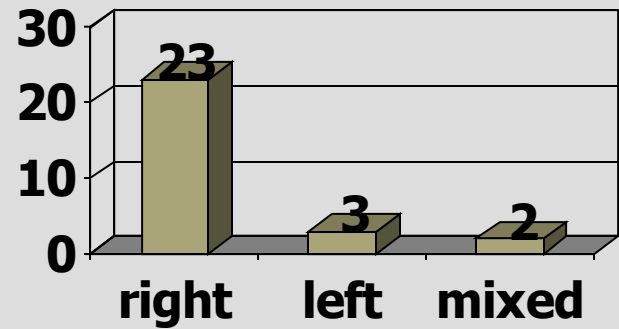
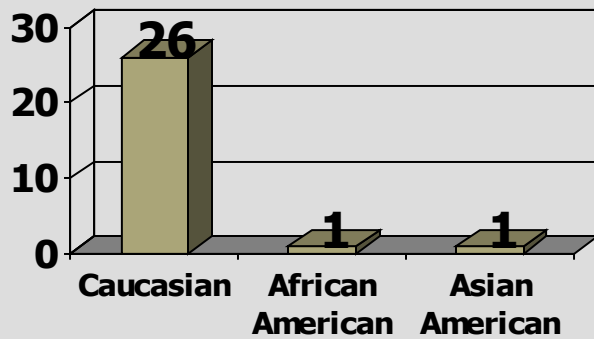
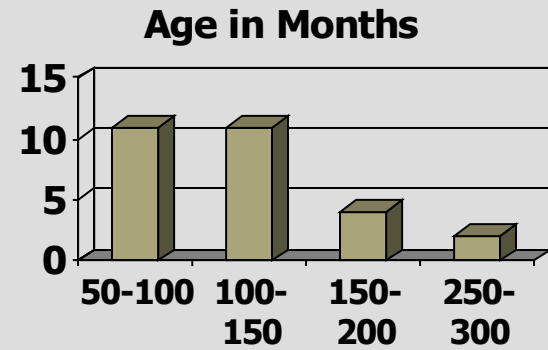
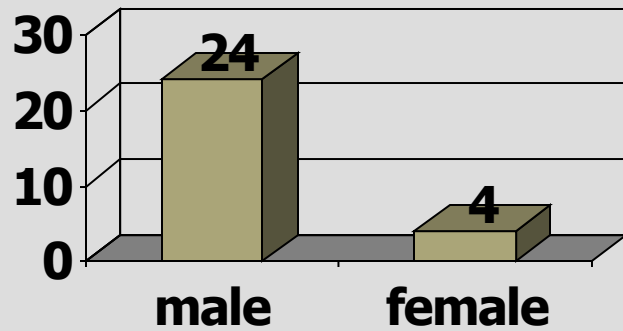
Methods

- 28 Autistics seen in our practice for at least 20 sessions of HEG (nir or pirHEG).
- All patients had already received 20 sessions of EEG Biofeedback.
- This was assessment guided HEG in that all patients were deemed to have frontal system dysfunction based on NP, IR and QEEG data.
- Pre and Post ATEC, GADS, BRIEF, PIC-2.
- Pre and Post NP testing.
- Pre and Post Infrared Imaging surrounding each session.
- Pre and Post QEEG.

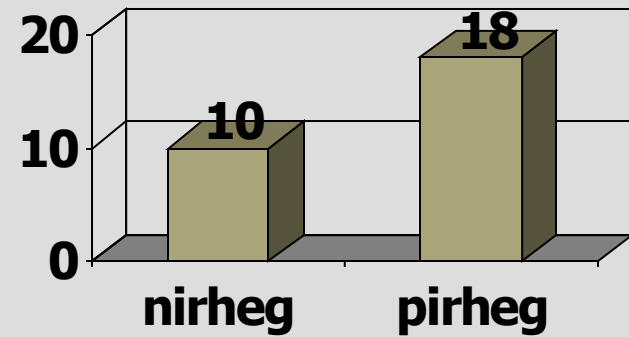
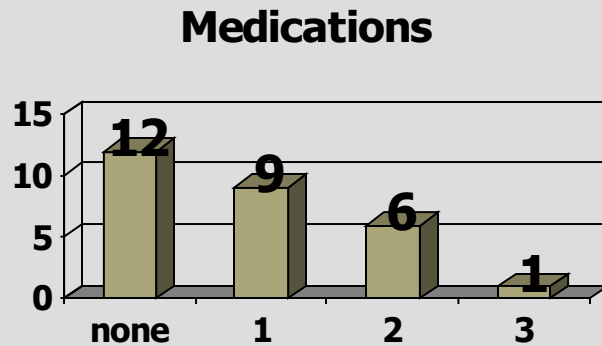
HEG Procedures

- nirHEG or pirHEG – therapy remained the same over the entire course of 20 sessions.
- Sessions were 15 – 25 minutes depending on tolerance.
- Done twice weekly.
- Therapy was done with DVD and/or Gamecube video games.

Patient Sample



Patient Sample

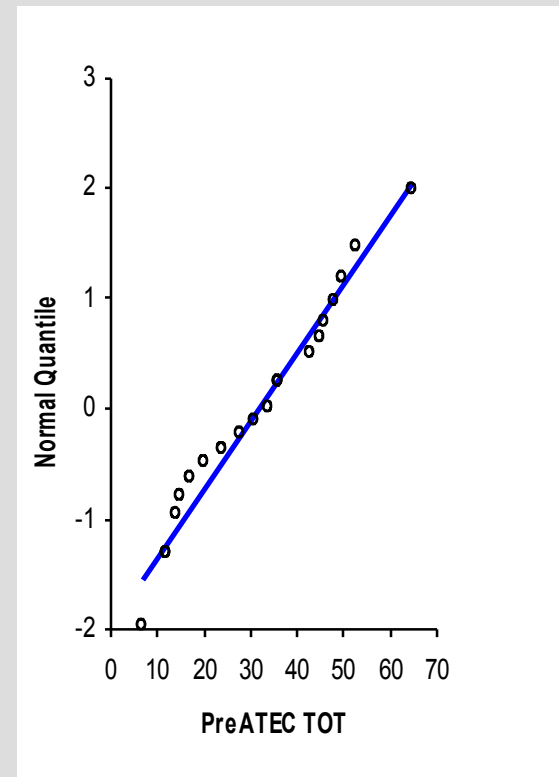
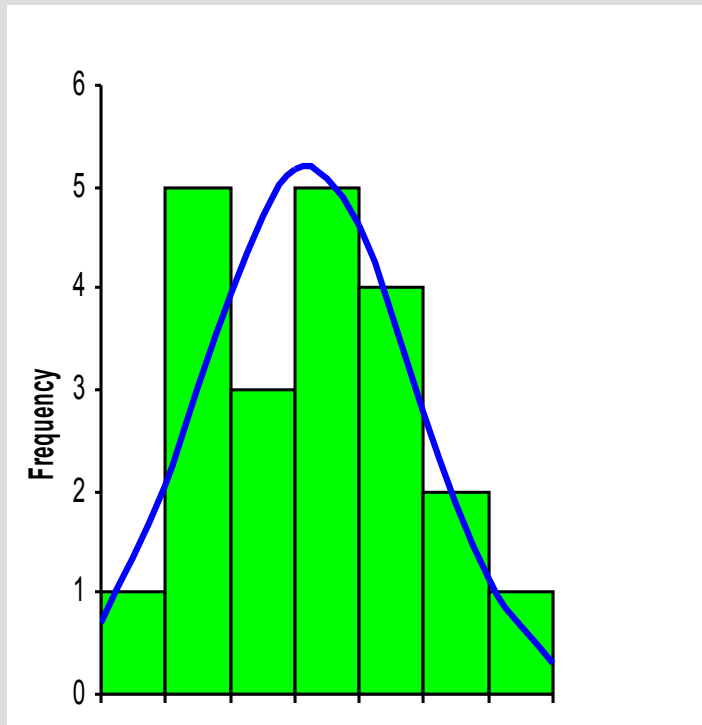


- Comparison of nir and pir groups for gender, age, race, handedness, and medications were all ns.

Control Sample

- 12 subjects in wait list control group.
- Matched for gender, age, race, handedness, other treatments, initial ATEC score.
- No new treatment during study design.
- Pre-post testing showed no significant changes on any measure.

ATEC distribution



Results: ATEC ratings

- Total – $p < .0001$ – 42% reduction
- Communication – $p < .017$ – 47% reduction
- Socialization – $p < .022$ – 43% reduction
- Sensory/Cognition – $p < .004$ – 44% reduction
- Behavior – $p < .0001$ – 39% reduction

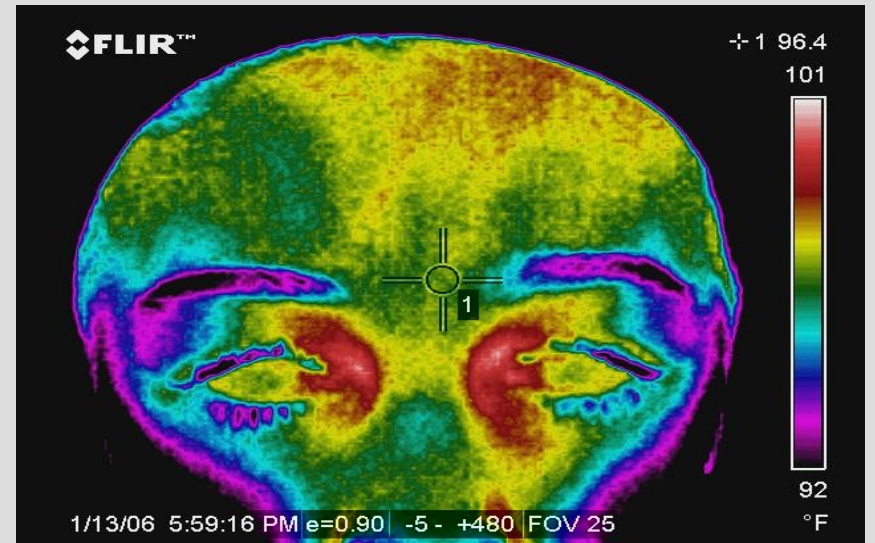
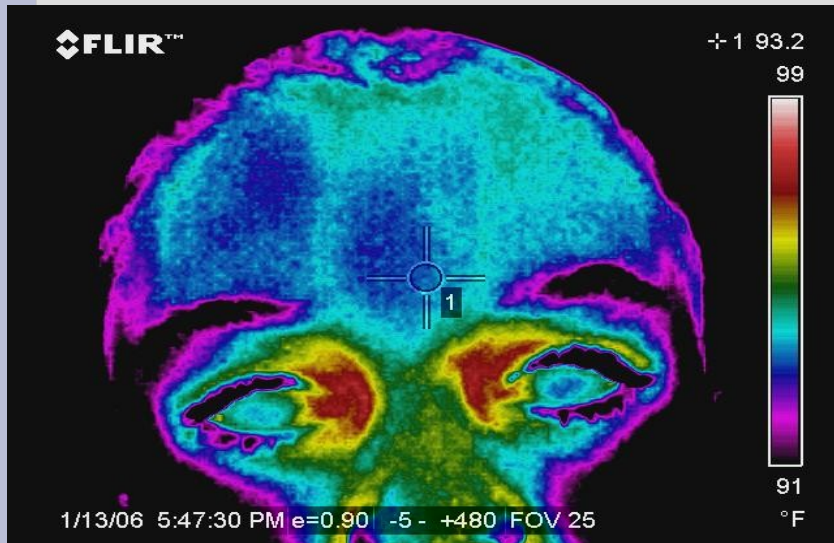
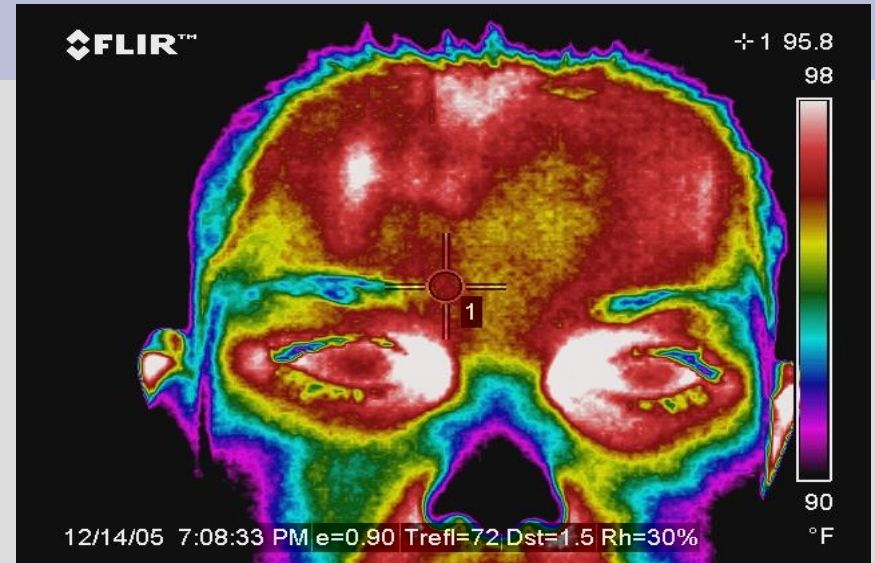
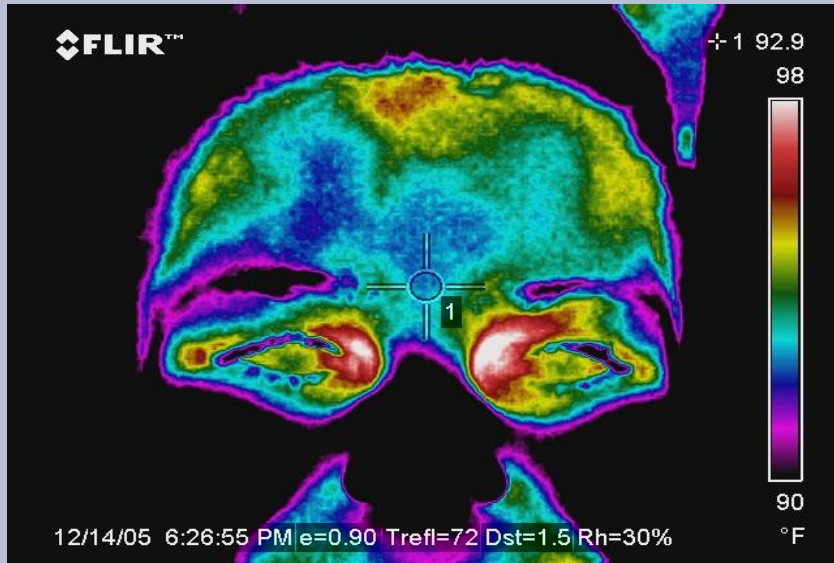
Results – Rating Scales

- GADS Aspergers Disorder Quotient – $p < .002$
- GADS Social Interaction – $p < .015$
- GADS Restricted Patterns of Behavior – $p < .012$
- GADS Cognitive Patterns – $p < .0002$
- BRIEF Working Memory – $p < .045$
- PIC-2 ADHD – $p < .0113$
- PIC-2 Delinquency – $p < .038$
- PIC-2 Family Relations – $p < .047$
- PIC-2 Psychological Discomfort – $p < .05$
- PIC-2 Social Skills – $p < .05$

Results: Neuropsychological Incices

- Attention – $p < .0002$
- Executive Functioning – $p < .0001$
- Language – $p < .024$
- Visuospatial – $p < .0008$

Infrared Imaging: nirHEG and pirHEG

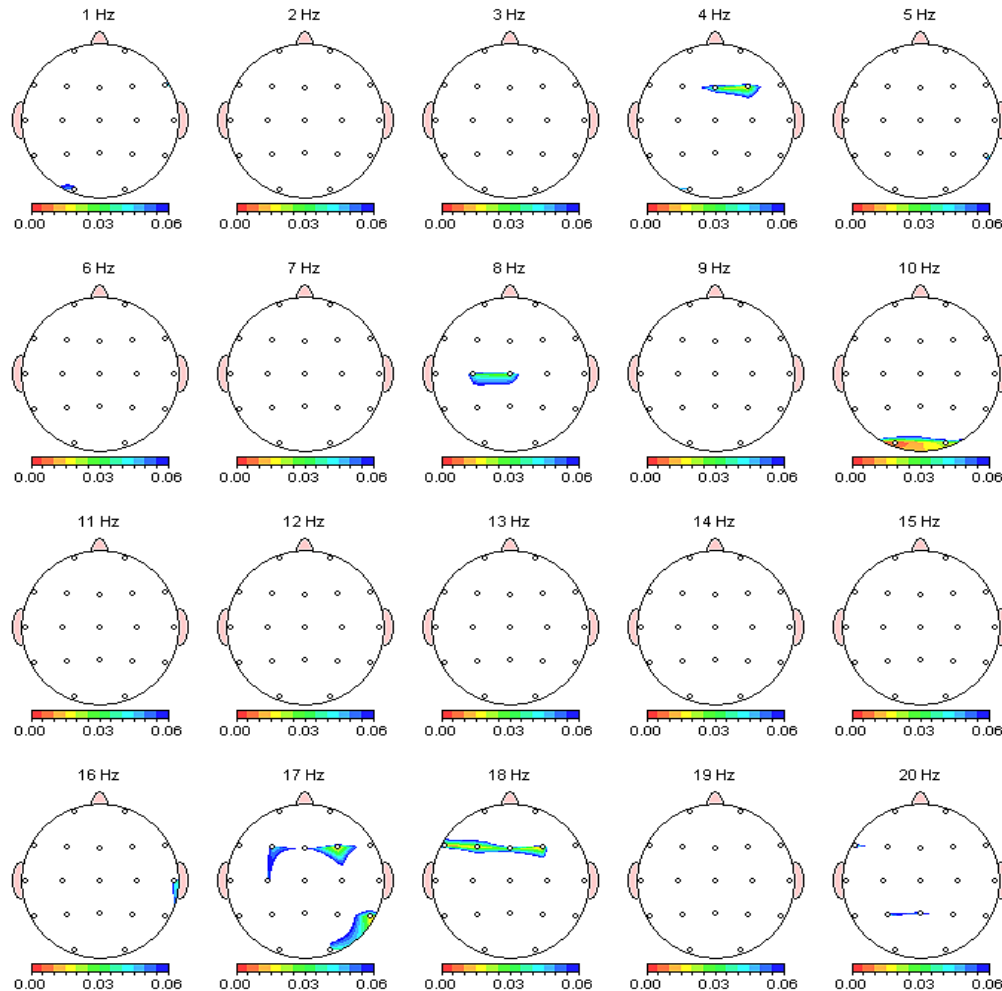


Results: Infrared Imaging

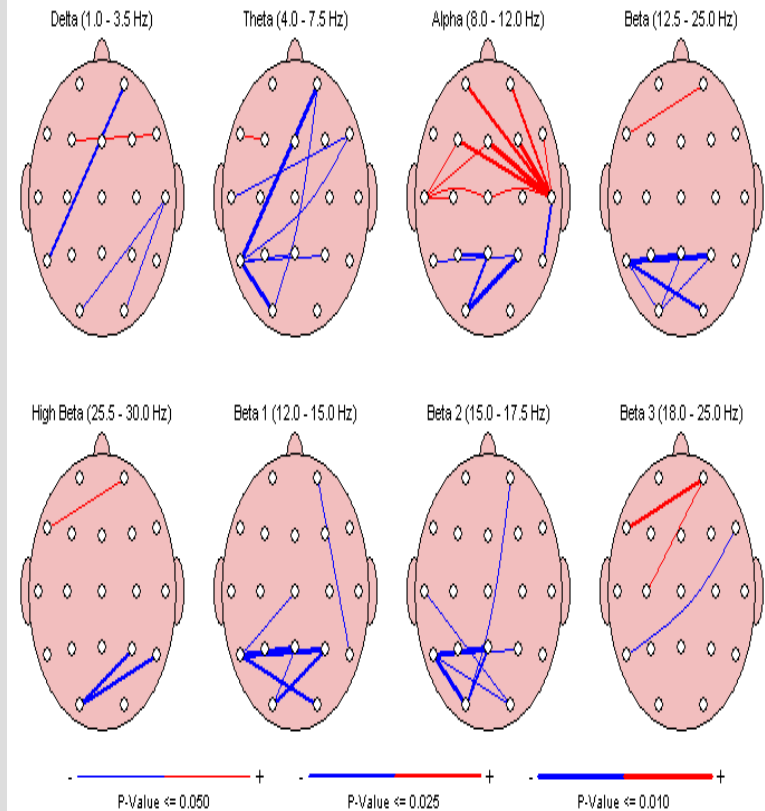
- 1st session – minimum temp – $p < .0025$
- 1st session – temp range – $p < .003$
- Last session – minimum temp – $p < .024$
- Last session – temp range – $p < .026$

Results: QEEG changes

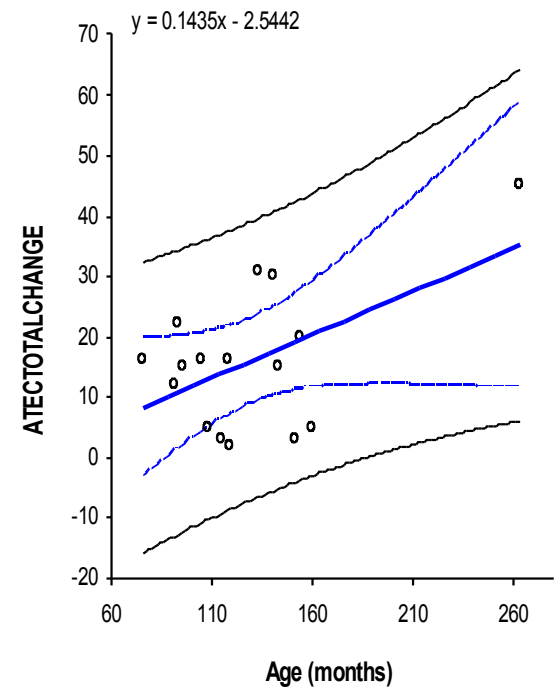
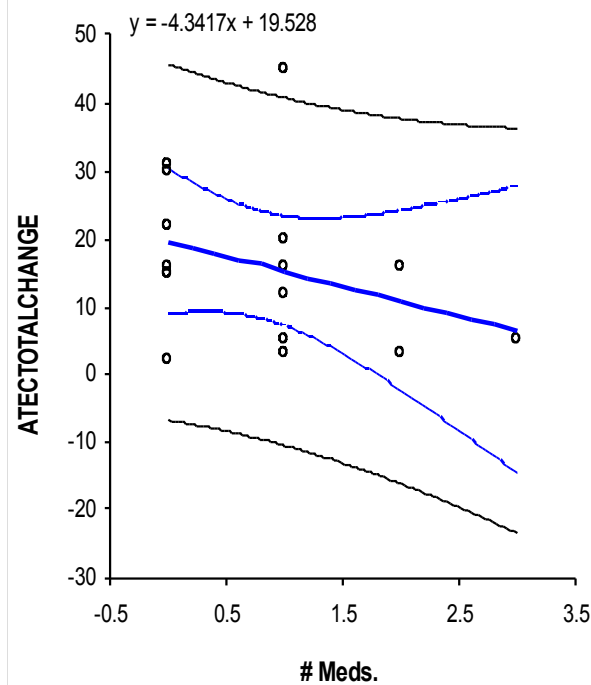
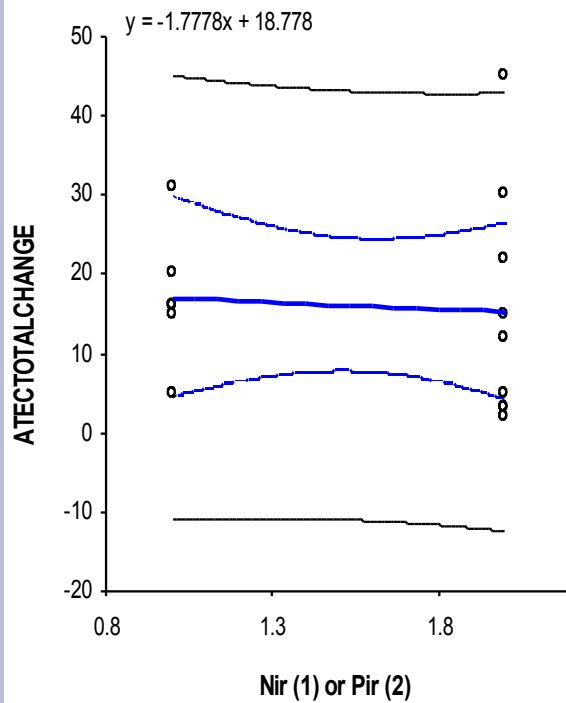
FFT Relative Power Group Paired t-Test (P-Value)



FFT Coherence Group Paired t-Test (P-Value)

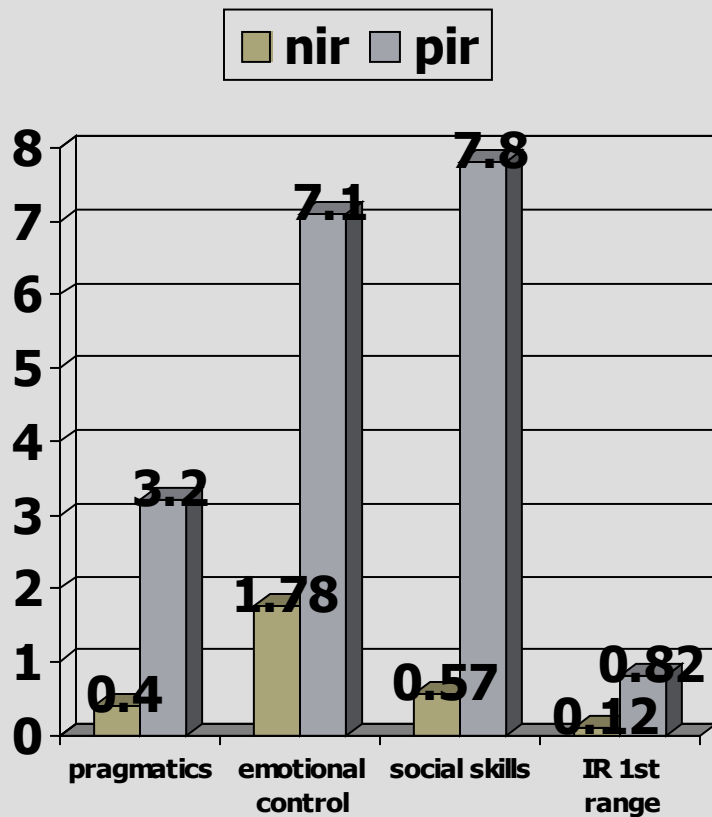


Predictors of Response to HEG



$R^2 = .28; p < .036$

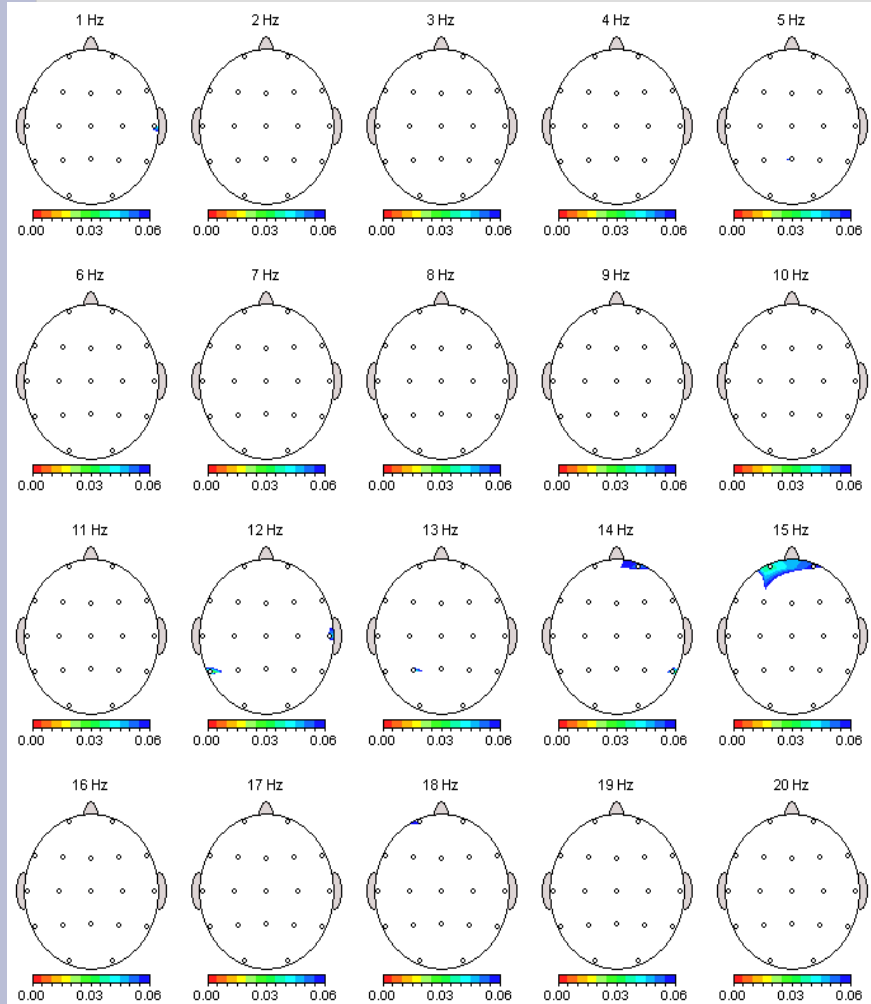
nirHEG/pirHEG Comparisons



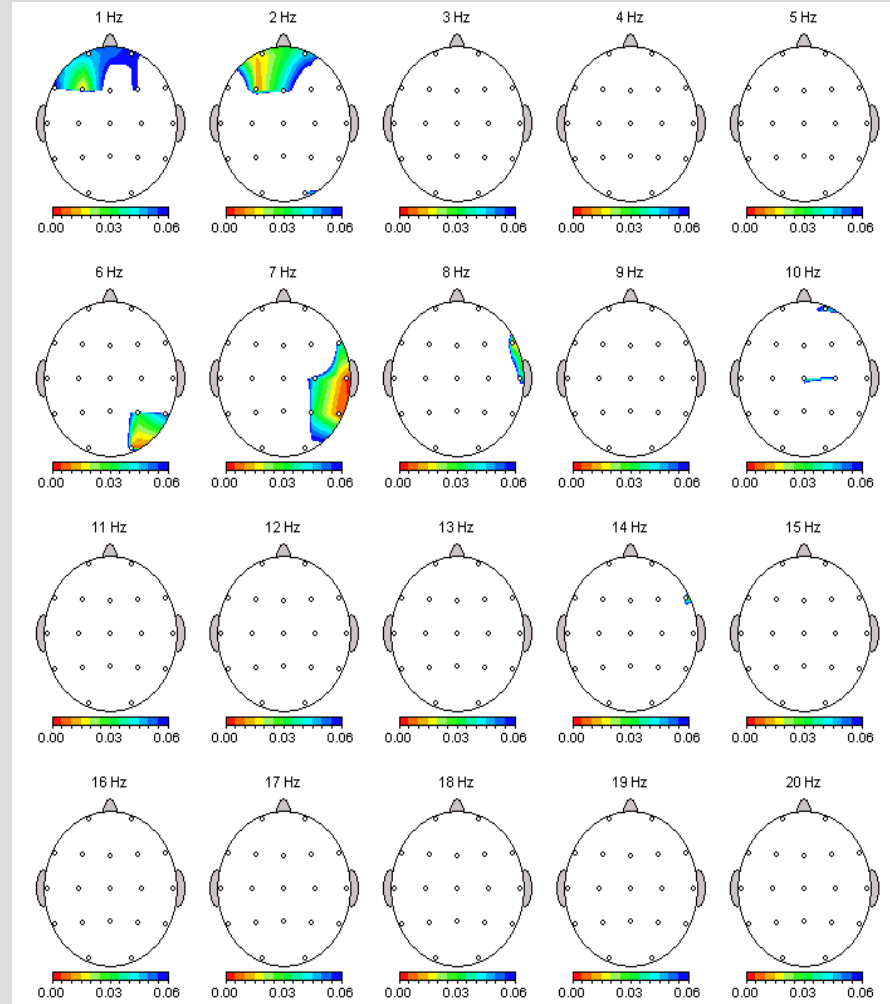
- No significant difference for ATEC scores, GADS ADQ, BRIEF Working Memory, PIC-2 ADH, Delinquency, Family relations, Psychological discomfort, or any Neuropsychological index.

nirHEG/pirHEG Comparisons – Relative Power

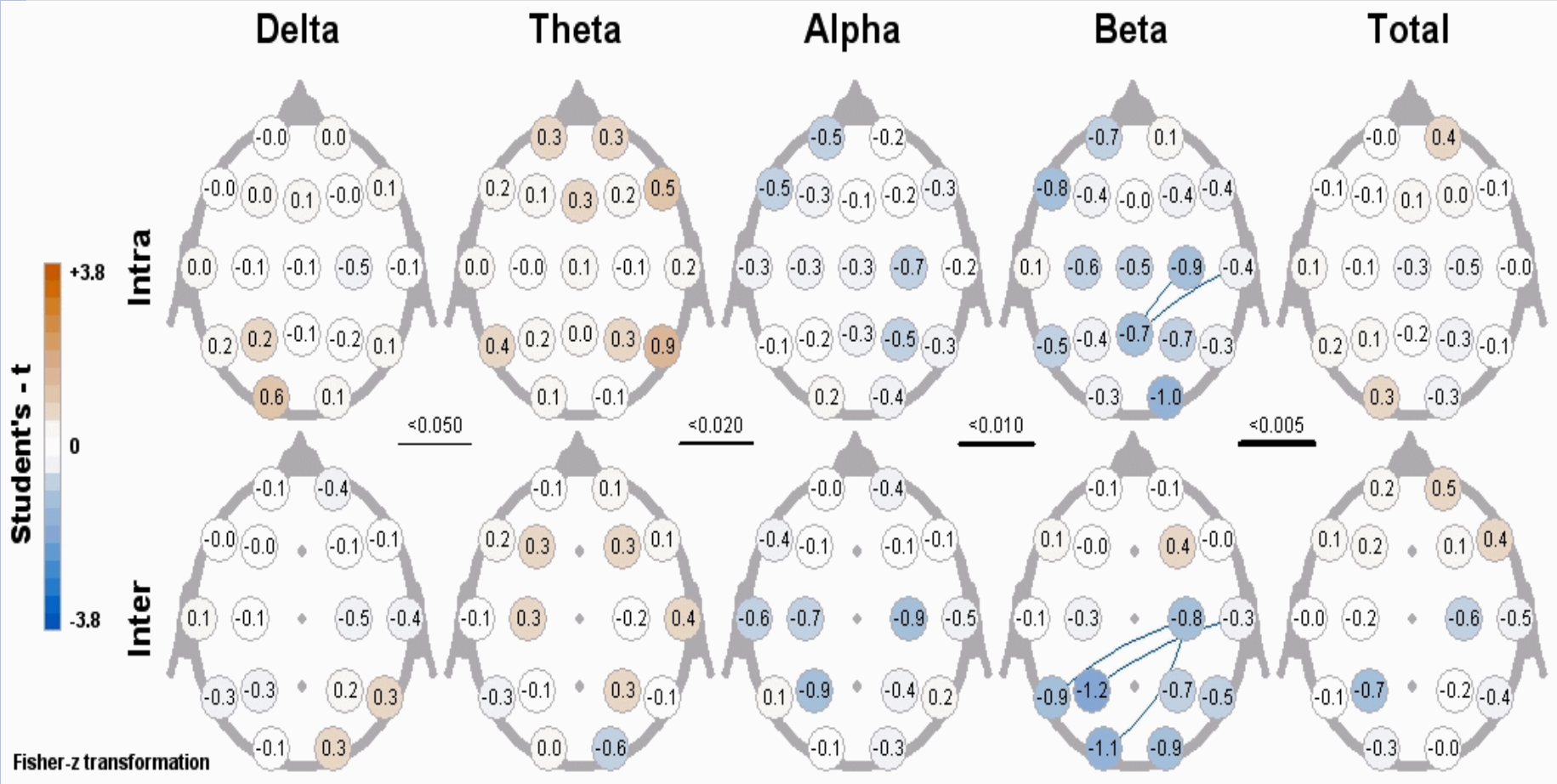
nirHEG



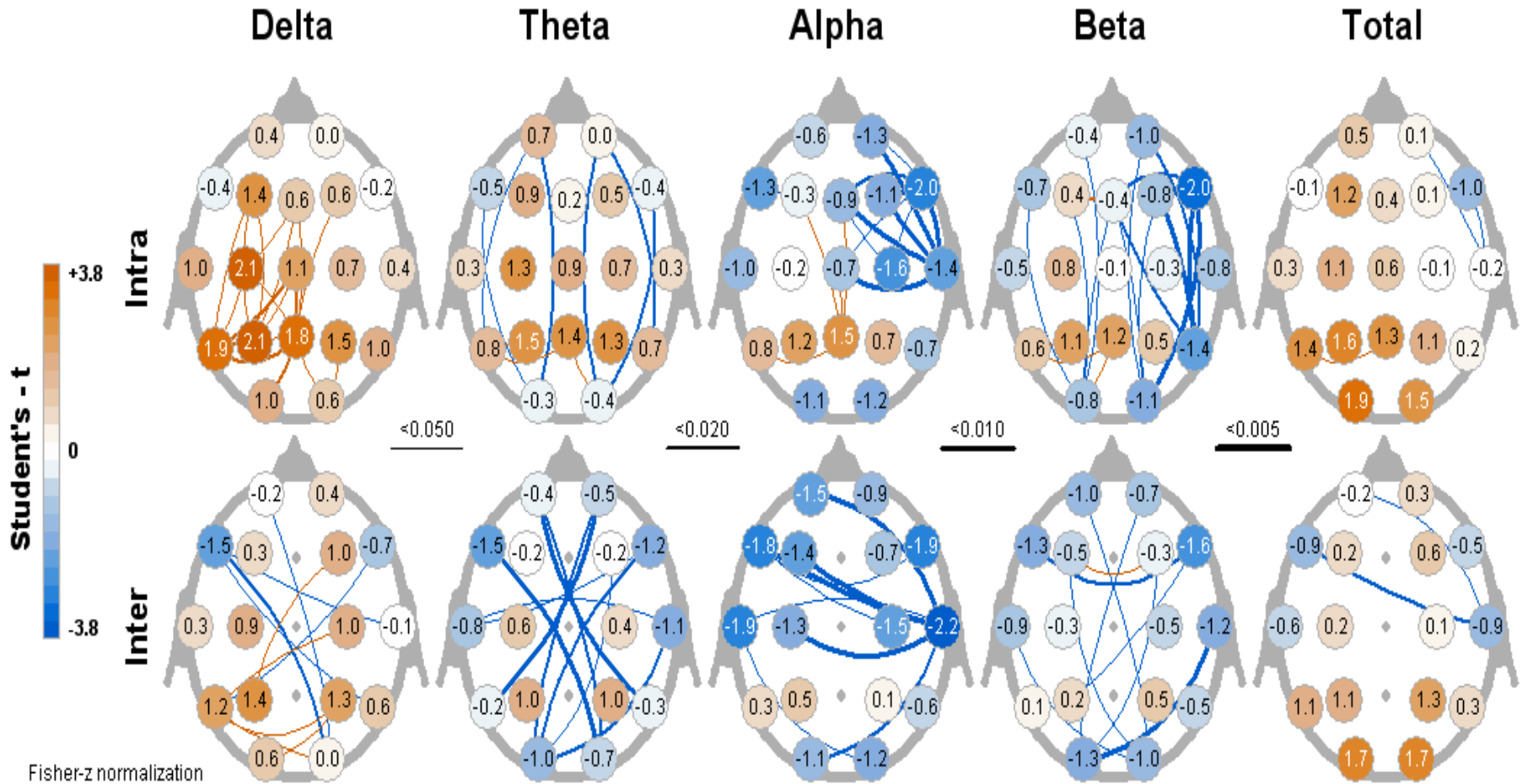
pirHEG



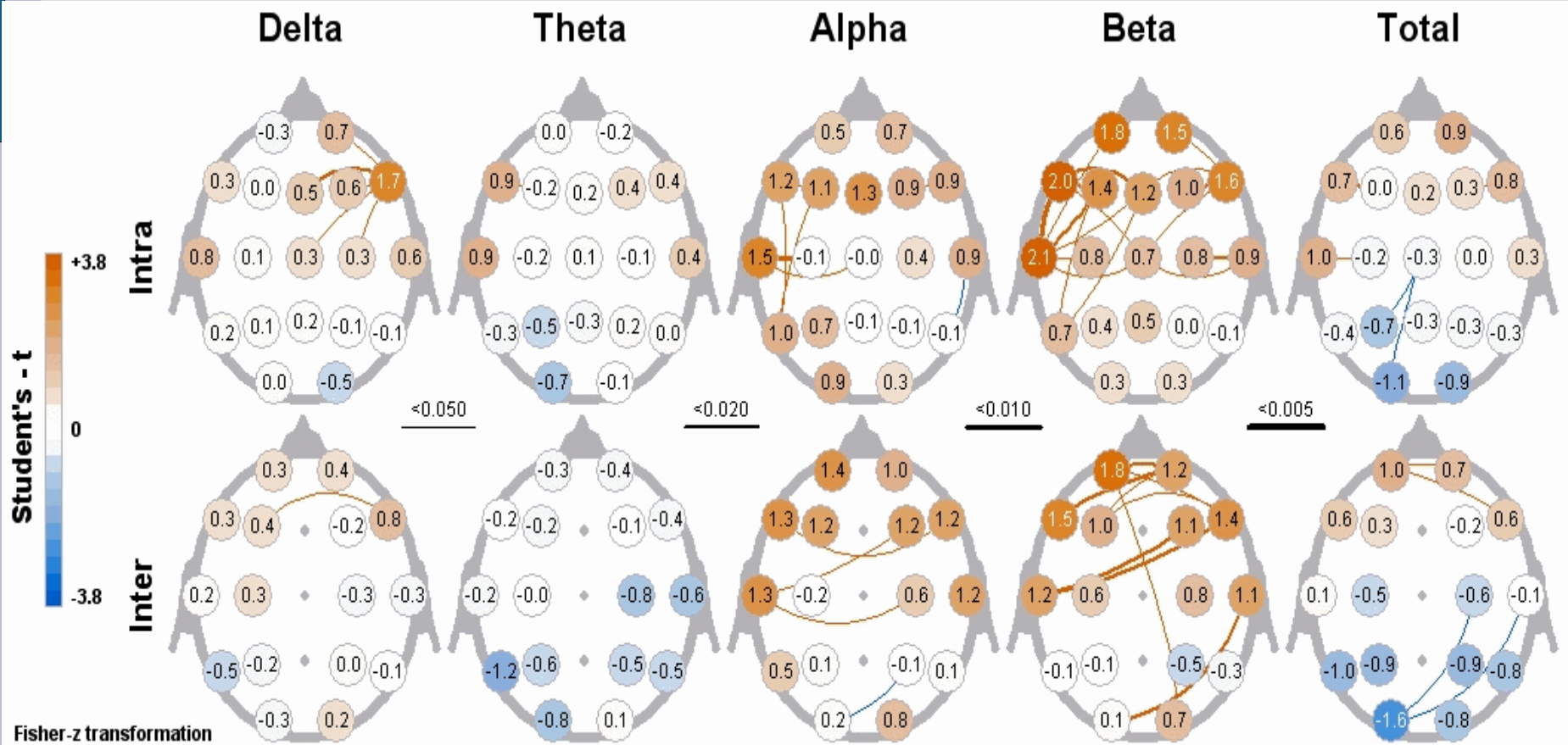
nirHEG/pirHEG Comparisons – Connectivity - NIRHEG



Connectivity – NIRHEG



nirHEG/pirHEG Comparisons – Connectivity - PIRHEG



Connectivity - PIRHEG

