NEUROFEEDBACK RECIDIVISM REDUCTION PROJECT

SEPTEMBER 22, 2021

Agenda

- Why we are presenting to CCP
- What is this Project?
- Why was it initiated?
- Why neurofeedback as the intervention.
- How neurofeedback works.
- What is the Project Design?
- What the Project status?
- Project Benefits
- Next steps

Why we are presenting to CCP

- Project funders want assurance that the County will seriously consider implementing/funding neurofeedback, if it demonstrates cost-effective recidivism reduction
- 3 years ago we presented this Project (before it started).
- CEO Miyasato wrote a letter of support.
- Now we have asked CEO Miyasato to do this again and she again wants CCP input.

Neurofeedback Project – What is it?

- 4-year random control trial
- 360 High-risk-to-reoffend parolees
  - 180 Intervention group
  - 180 Control group
- Premise – neurofeedback can, when combined with other interventions, significantly reduce 1-year, 3-year recidivism rates of high-risk-to-reoffend parolees

Neurofeedback Project – Why?

- Historical Recidivism Rate ~ 65% in 3 years
- Day Reporting Centers reduced this to ~ 33%
- Why are the 33% continuing to fail?
- Possible answer: Cognitive issues undermine ability to productively participate in CBT

- Reduce recidivism by making Cognitive Behavior Therapy more effective
- Increase public safety and save tax dollars

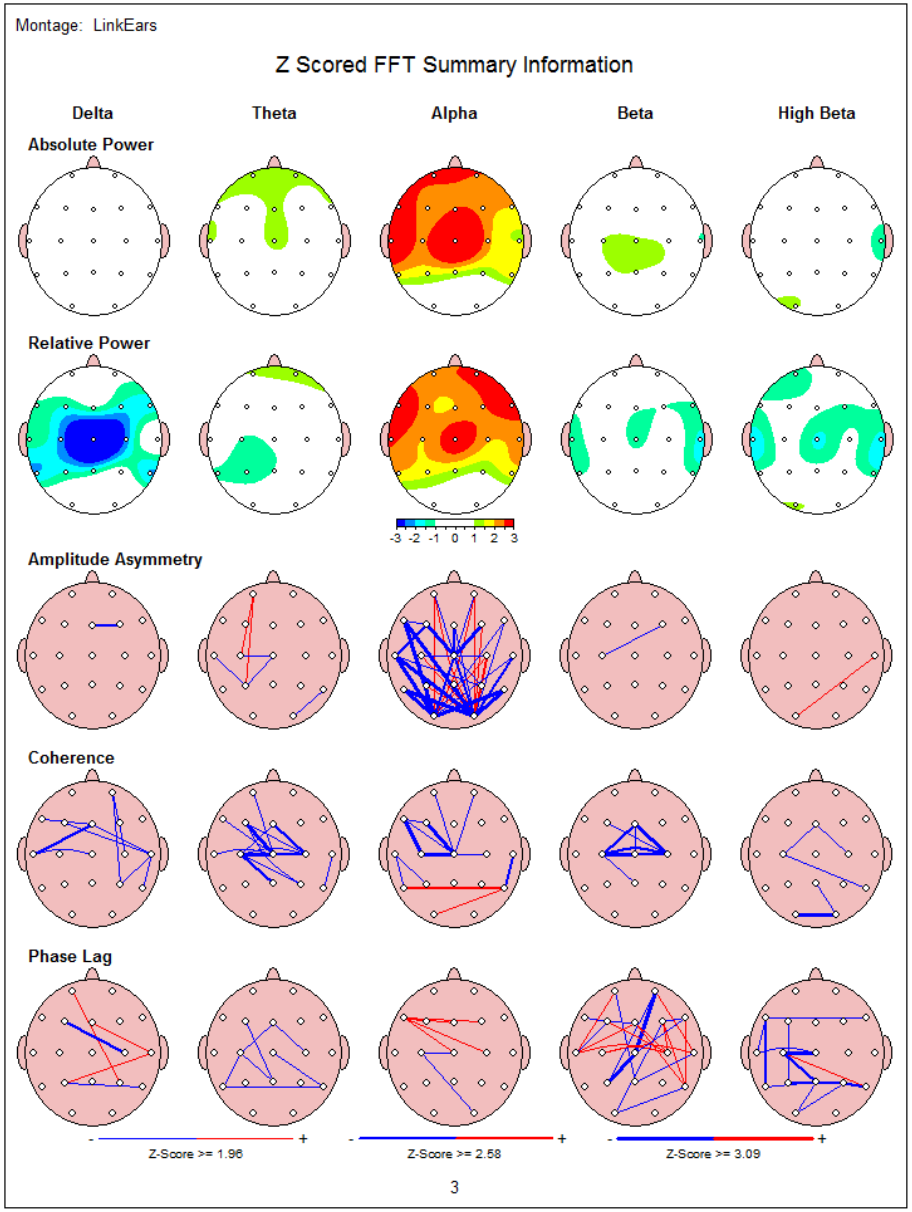
Why? cont'd

- Investigation of brain trauma and neurofeedback
  - The Body Keeps the Score, Bessel Van der Kolk
  - Community members experience of neurofeedback
- Conclusion: Brains that have suffered trauma can have cognitive issues that make CBT less successful.
  - Trauma – related to childhood, adult, or injury
- After "testing" neurofeedback on 6 parolee volunteers, we decided to initiate the Project.

Neurofeedback - What is it and how does it work?

- Biofeedback for the brain
- EEG measures a person's brainwaves
- Client's brainwave data collected and compared to normative database (NeuroGuide)
- Brain map is produced and analysis guides training

QEEG/ Brain Map



Neurofeedback Training – How it works

- Session protocols target anomalies identified in the brain map. Feedback "rewards" the client when their brain waves are approaching the norm.
- The brain learns to create new patterns through the repetitive training.
- 30-minute sessions, 2 - 4 times per week
- Effects are seen within 1-8 sessions, permanent after 20-30 sessions

Cognitive issues helped by Neurofeedback

- OCD
- Lack of concentration
- Developmental trauma
- ADHD
- PTSD
- Anxiety
- Impulse control
- Addiction
- Anger

Project Design

- High risk-to-reoffend volunteers (measured by the LSI-R assessment) are brain mapped and take a cognitive test (CNS-VS)
- Randomly assigned to an intervention group or a control group, balanced for ethnicity (Caucasian or Hispanic)
- Both groups receive standard DRC programming. In addition the intervention group receives 20-30 sessions of neurofeedback
- Follow-up Brain Map and CNS-VS at completion of Neurofeedback training
- After assignment, a participant is always calculated as "in", whether or not they complete training

Project Analysis and Evaluation

- School of Criminal Justice at California State University at Long Beach (CSULB)
- Team
  - Dr. Aili Malm (lead researcher)
  - Dr. Robert Schug
  - Dr. Christine Scott-Hayward
- Self funding the evaluation

Project Analysis and Evaluation (cont'd)

- Outcome Evaluation
  - Recidivism definition: conviction of a new crime
  - Recidivism Data is from California Office of Attorney General (OAG)

- Products
  - Interim and final reports
  - Peer-reviewed journal articles

What we've learned

- No recidivism data available yet.
- We did analyze arrests and "days in Jail" for intervention and control groups. Results:
  - Some decrease in arrests (8%) and days in jail (20%) for intervention vs. control.
  - Only half of the intervention group completed their neurofeedback sessions
  - Large decrease in arrests and days in jail for those who completed intervention (82%, 61%)

What we've learned (cont'd)

- Project is delivering high-quality neurofeedback training to clients.
- Strong indications if clients complete neurofeedback sessions, significant reduction in recidivism will result, but…
- We cannot depend on parolees to provide sufficient number of clients for the Project.
- Project needs to include the client population from the new Northern Branch Jail to produce an adequate sample for a robust statistical analysis.

Montage: LinkEars

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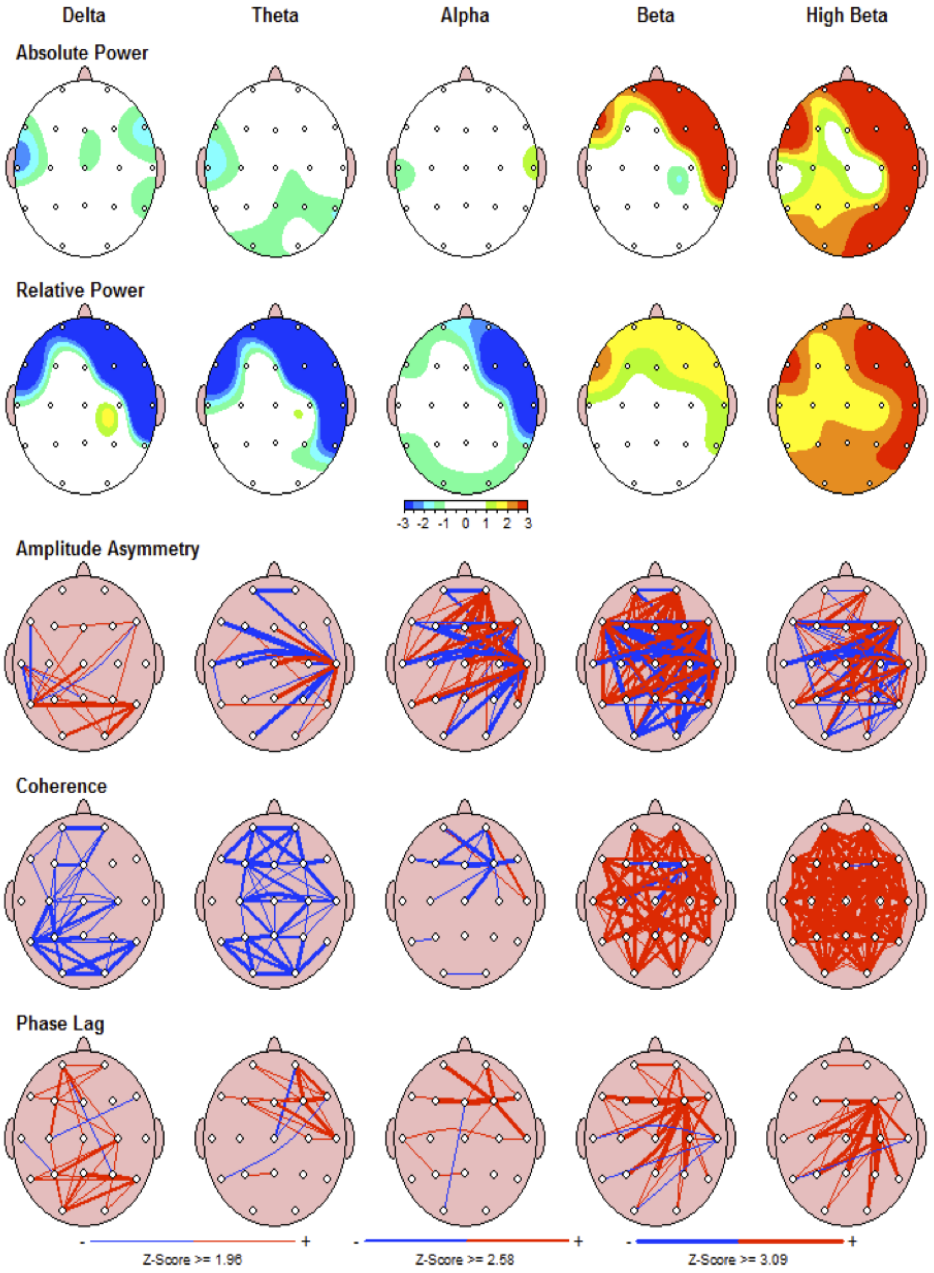

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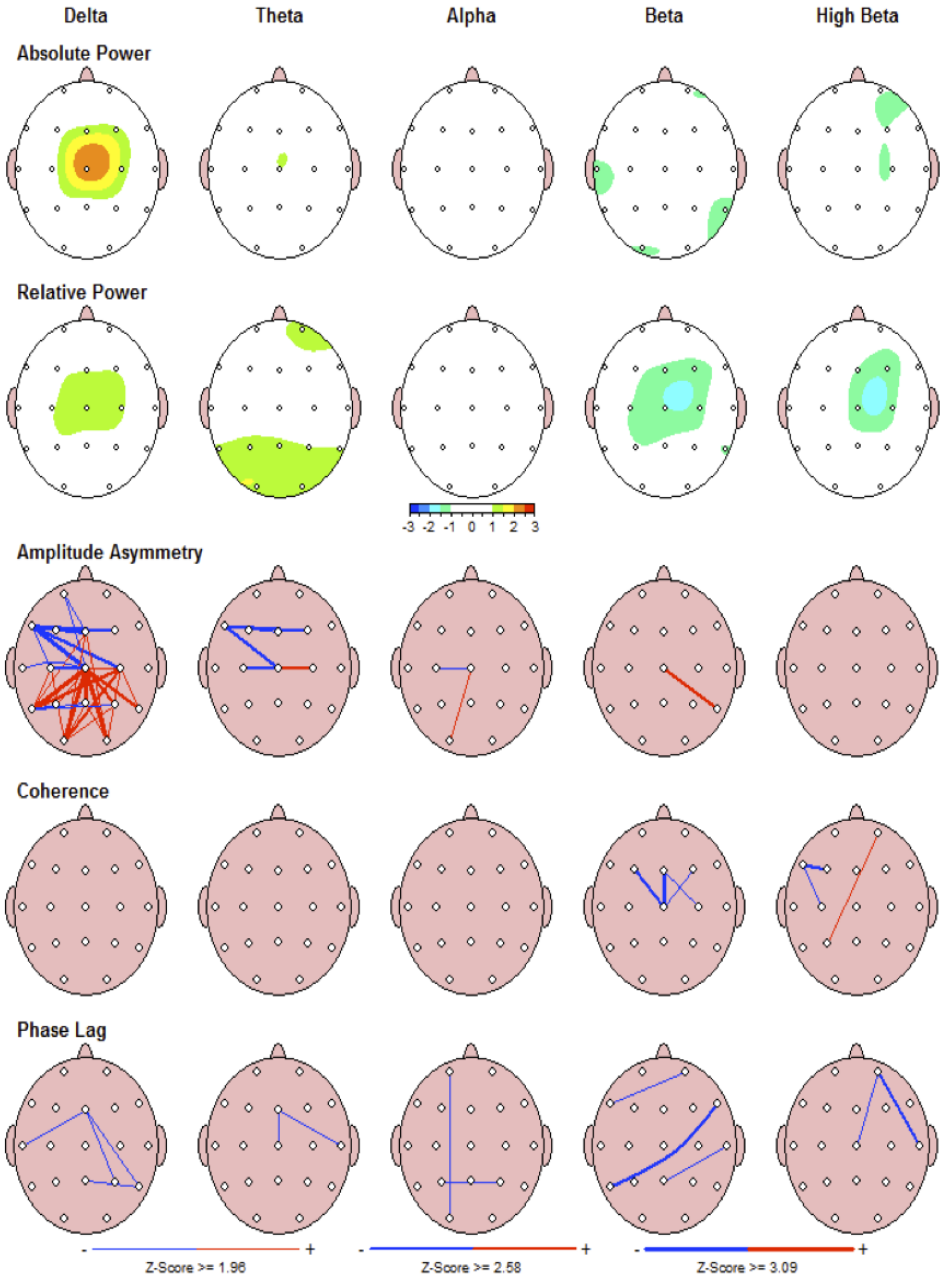

Economics of Recidivism Reduction

- Results First model: cost in Santa Barbara County for a high-risk-to-reoffend probationer who recidivates is $92,000
- Cost per neurofeedback client = $4,000
- Assume 50 clients with baseline recidivism rate of 50%, Cost = $200,000
- Breakeven point is 9% reduction in recidivism

% Reduction	10%	20%	30%	40%
Cost Savings	$230,000	$460,000	$690,000	$920,000
ROI (Savings per $ spent)	115%	230%	345%	460%

Next Steps

- Expand Project to include inmates in the new Northern Branch Jail.
  - Volunteer criteria will be the same: High-risk-to-reoffend LSI-R assessment.
  - Volunteers will be randomly assigned to intervention and control group.
  - Both groups will receive STP programs. Intervention will also receive neurofeedback.
- Sheriff's Department is working with County Counsel to sign an MOU with CSI.
- Space is allocated in new jail.
- Working with Jail/STP on implementation plan.

Q & A