ZENGAR RESEARCH CONFERENCE 2014

Cognitive Connections

&

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Marc DeLong, BS, CCCM
Staff:

Lise’ - me
Marc - him
Joe - IT
Sam - Office Manager
Marilyn - Technician
Lizzie - Assistant
Mia - ESA
Fergie - ESA

Locations:

Greenwood, IN
Walnut Creek, CA
Brentwood, CA

*Fishers, IN
*Concord, CA
*Palo Alto, CA
*Pleasanton, CA

* = Affiliate Office
Fergie & Mia
our ESA
Trying to quantify a NeurOptimal experience is like…

Trying to measure the exact amount of oxytocin emitted while experiencing an orgasm
2 Specific Case Studies & Several Anecdotal Cases
The Story of D
D’s Medical History
A Rare Genetic Chromosomal Disorder

- Duplication of the 1st and 13th chromosome
- No Exact Cases in Medical Literature
- 8 similar cases that have duplication of 1q32-44
- Cognitively they range from moderate to severe
- Motorically some walk at 2 - 6 yrs old, 5 of 8 of the Children Talk while 3 are nonverbal
- Heart: Atrial Septal Defect
- Patent foramen ovale, Patent ductus arteriosus
- Pyloric Stenosis: Failure to Thrive
- Had surgery and recovered, has since gained weight
- Some of the other 8 cases have seizures- therefore is followed by Neurologist
- Strabismus intermittent cross right eye, Wears glasses 95 % of time
- Developmentally Delayed Globally, PT, OT, SLP, Music Therapy, Infant Stim. Teacher
- Sickness: History of Ear & Bladder Issues, Chronic Constipation, Strep & Virus' and Allergies
Research Design:
Single Case Study
Family purchased professional system

Protocol:
Montage: C3, C4, ipsilateral ear

Zen protocols:
3, 3, 0, 3
5, 5, 0, 5
8, 8, 0, 8
11,11,0,11
7, 7, 5, 7 (added Zen 3)

58 total sessions to date
Therapies used in conjunction with NeurOptimal:

- Occupational Therapy
- Speech and Language Therapy
- Physical Therapy
- Cognitive Rehabilitation Therapy
- Infant Stimulation Teacher
- Medications/Neutraceuticals
- Private Preschool
These are the most difficult areas for her…and decreases her overall score dramatically.
Language and Cognition show intelligence...growth in these areas confirm capability...this equates to hope.
First 3 months of NeurOptimal Training
<table>
<thead>
<tr>
<th>Child's Name</th>
<th>D</th>
<th>Date of Birth</th>
<th>11/9/10</th>
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<tbody>
<tr>
<td>School</td>
<td></td>
<td>Teacher</td>
<td></td>
</tr>
<tr>
<td>Initial Assessment Date</td>
<td>5/23/13</td>
<td>Second Assessment Date</td>
<td>1/12/14</td>
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<tr>
<td>Age at Initial Assessment</td>
<td>2.6</td>
<td>Age at Final Assessment</td>
<td>3.2</td>
</tr>
<tr>
<td>(years, months)</td>
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<td>(years, months)</td>
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<table>
<thead>
<tr>
<th>Initial</th>
<th>Functioning Age (months)</th>
<th>Current</th>
<th>Gain</th>
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<tr>
<td>10.0</td>
<td>12.7</td>
<td>12.0</td>
<td>2.0</td>
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<tr>
<td></td>
<td>6.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15.5</td>
<td>18.5</td>
<td>5.9</td>
</tr>
<tr>
<td></td>
<td>12.0</td>
<td>21.9</td>
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<tr>
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<td>12.5</td>
<td>21.3</td>
<td>9.3</td>
</tr>
<tr>
<td>11.5</td>
<td>AVERAGE FUNCTIONING AGE</td>
<td>19.8</td>
<td>8.3</td>
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</tbody>
</table>

(Average functioning level at initial assessment)

(Average functioning level at assessment)
Total Progression in all areas of Development with NeurOptimal Training
Rate of Progression Prior to NO and After NO
In 8 months time D progressed an overall of 8.3 months
Correlation Between NO Session and Developmental Progression

D. Sessions per Month / Total Left and Right Mean Cortical Activity ($\mu v$) during Baseline

![Graph showing the correlation between sessions per month and total mean cortical activity.](image)
The Story of Kristi & Grayson
Grayson: 10 Year Old, Male

Grayson’s initial concerns:

- Adenoids out at age 4
- Continued breathing issues
- Food avoidance (would eat very little and only specific textures)
- High anxiety
- When reading, must constantly start over to understand text
- Short working memory
- Test anxiety
- Weight loss
- Hyper-sensitive → dogs barking, dry skin, clothing tags, etc…
Grayson’s Pro’s:

- Good grades
- Exceptionally good athlete
- High energy and very active (with purpose and intent)
Neurofeedback Protocols and Cognitive Rehabilitation

<table>
<thead>
<tr>
<th>Name:</th>
<th>Grays</th>
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<table>
<thead>
<tr>
<th>Major Concerns</th>
<th>Rehab Goals</th>
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<tr>
<td>Language Disorders</td>
<td>Auditory Processing, Memory Skills, Executive Function, Attention Skills</td>
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<tr>
<td>Learning Disorder</td>
<td>Visual Processing Skills, Motor-Planning Skills, Communication Skills, CNS Responses</td>
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<tr>
<td>Hypersensitivity</td>
<td>Memory Skills, Executive Function</td>
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<tr>
<td>Information Processing Problems</td>
<td>Auditory Processing, Executive Function, Attention Skills</td>
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<tr>
<td>Mild NeuroCognitive Disorder</td>
<td>Visual Processing Skills, Motor-Planning Skills, Communication Skills</td>
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</tbody>
</table>

Neurofeedback Focus: Auditory Processing and Listening Skills

Suggested Preliminary Protocol: 5, 5, 20, 5

Montage:
Active Leads C3, C4, Reference Leads on Fossa,
Ground Leads on Lobule

Cognitive Rehabilitation

Daily Protocol: Adult Earobics, SoundSmart - Advanced, Brainbuilder, Speed Reader, Thinkfast, Parrot Software - conditional Statements
Home Protocol:

Regular

Zen 1: 5 min
Zen 2: 7 min
Zen 3: 14 min
Zen 4: 7.3 min

Montage - standard NO hook-up

c3/c4 ipsilateral ear

Two to three times per week throughout the course.
<table>
<thead>
<tr>
<th>Left Targets:</th>
<th>C*&lt;sub&gt;r&lt;/sub&gt;</th>
<th>CoV</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Moment</th>
<th>SD</th>
<th>Kurtosis</th>
<th>Skew</th>
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<td>0 - 6 Hz Gabor</td>
<td>0.692</td>
<td>31.3</td>
<td>5.78</td>
<td>27.38</td>
<td>21.60</td>
<td>14.41</td>
<td>14.44</td>
<td>16.58</td>
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<td>17.70</td>
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<td>12.66</td>
<td>15.58</td>
<td>11.58</td>
<td>3.43</td>
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<td>17.9</td>
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<td>21.71</td>
<td>23.67</td>
<td>22.89</td>
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<td>3.26</td>
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<td>6.38</td>
<td>6.15</td>
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<td>2.09</td>
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<td>4.93</td>
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<td>7.33</td>
<td>8.27</td>
<td>7.87</td>
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<td>23.47</td>
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<td>23.60</td>
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<td>35.27</td>
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<td>2.71</td>
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<td>13 - 15 Hz Gabor</td>
<td>1.000</td>
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<td>3.51</td>
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<td>4.43</td>
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<td>2.96</td>
<td>1.74</td>
<td>4.93</td>
<td>1.00</td>
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</tbody>
</table>
Anecdotal Cases
At Cognitive Connections we believe:

• There are 2 main brain states we help a person achieve;
  • *Relaxed*- so they can sleep
  • *Alert*- so they can stay focused when needed

• We believe the brain needs an ‘outside environment’ to reinforce that brain state
  • When trying to achieve a relaxed state, lights out, laying back, *autogenics* before NO
  • When alert, we do *focused activities* that will create the external environment that assists with their personal cognitive concerns
Female, 34 yr old

Symptoms of hemiplegic migraine include:

- Severe, throbbing pain, often on one side of your head
- A pins-and-needles feeling, often moving from your hand up your arm
- Numbness on one side of your body, which can include your arm, leg, and/or one side of your face
- Weakness or paralysis on one side of your body
- Loss of balance and coordination
- Visual aura, such as seeing zigzag lines, double vision, or blind spots
- Language difficulties, such as mixing words or trouble remembering a word
- Slurred speech
- Dizziness or vertigo
- Nausea and vomiting
- Extreme sensitivity to light, sound, and smell
- Confusion
<table>
<thead>
<tr>
<th>Sessions 1-5</th>
<th>Reports feeling less stressed and a reduction in intensity, duration and frequency Migraines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sessions 6-10</td>
<td>Reports all migraines seem to be gone, she is feeling great.</td>
</tr>
<tr>
<td>Sessions 11-15</td>
<td>Decreased session frequency started to come less often, averaging every 16 days.</td>
</tr>
</tbody>
</table>

Then due to Holidays was unable to come in for 3 weeks-
Session #16 was experiencing an episode of paralysis of entire left side of body.

| Session #16- | Left session with only tingling and no other symptoms, headache gone. |
Hemiplegic Migraine Client - Session 10-16
16 Calendar days per session
Total Baseline Mean values - Hemiplegic Migraine Client

- 10/21/2013
- 11/12/2013
- 2/8/2014

2.3 Days per Session vs. 16 Days per Session
Female 54 yrs old

**Cluster Migraines:**

Cluster headache is pain that occurs along one side of the head. It's frequently described as pain that occurs around, behind, or above the eye and along the temple in cyclic patterns or clusters. The pain of a cluster headache is very severe; many patients describe a “drilling” type of sensation.

Cluster attacks usually occur with clocklike regularity during a 24-hour day, and the cycle of cluster periods often follows the seasons of the year.

These patterns suggest that the body's biological clock is involved. In humans, the biological clock is located in the hypothalamus, which lies deep in the center of your brain.

Abnormalities of the hypothalamus may explain the timing and cyclical nature of cluster headache. Imaging studies have detected increased activity in the hypothalamus during the course of a cluster headache.
**Session #1**  Reported she felt very relaxed and more so than she remembers

**Session #2-5**  Reports much better sleep and the intensity, duration and frequency is much reduced.

**Session #6-10**  Reports no more migraines and the trigger of perfume, make-up and other odors are not bothering her.

**Session #11-13**  She has started wearing perfume for the first time in years, and has the energy to babysit her Grandson
The Case of Portia
A 4 year old with
Autism & Apraxia
NeurOptimal has made a deep impression on many of the families we have had the honor to be a part of! We have maintained that there is not a system out there that is any more robust and consistent with their results.

When asked “will NO help everyone?” I have to say ‘Yes… but the magic is in the unique way the results manifests’…