



ZENGAR RESEARCH CONFERENCE 2014

Cognitive Connections

&

Lise' DeLong, Ph.D., CPCRT, CCCM

Marc DeLong, BS, CCCM



Cognitive Connections

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 a orgasm





2 Specific Case Studies & Several Anecdotal Cases



The Story of D



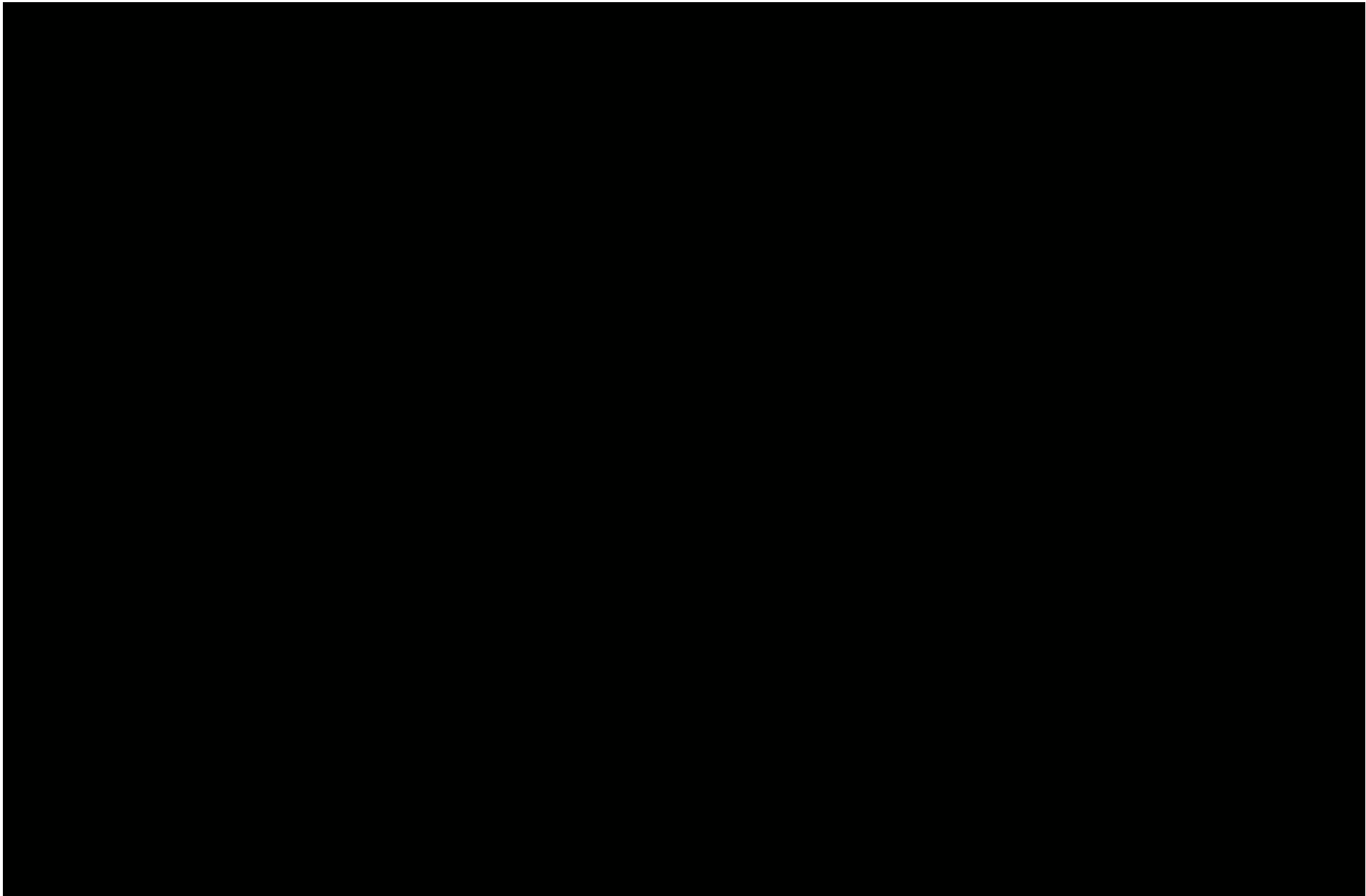
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D's Medical History

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



Gross Motor

Cognitive Connections
Gross Motor
Rating Sheet

Name: [redacted] Date of Evaluation: 11/16/14

3 - 6 months	6 - 12 months	12 - 18 months	18 - 24 months
1. Accepts hand	31. Stands 2 times (2 takes)	31. Stands 11 times	
2. Lifts head (30)	34. Stands alone		
3. Head (30)	35. Crawls or crawls		
4. Pulls hand to mouth	36. Walks alone		
5. Moves hand side to side	37. Sings		
6. Waves hand (30)	38. Claps		
7. Holds hand (30)			
8. Puts objects in mouth			
9. Reaches grasps			
10. Keeps hands open			
11. Sits alone			
12. Explores objects			
13. Puts in eating			
14. Looks from back to side			
15. Looks from stomach to back			
16. Holds with anterior grasp			
17. Sits alone			
18. Stands with support			
19. Reaches and takes			
20. Puts back up to stomach			
21. Sits / 30 seconds			
22. Top half hand to hand			
23. Stands w/ furniture support			
24. Reaches in eating			
25. Creeps			
26. Crouches			
27. Pincer grasp			
28. Grabs			
29. Puts in stacking			
30. Stands w/ aid			
31. Lowers self to sitting			
32. Throws without release			
	33. Jumps from 12 inches		
	34. Kicks ball		
	35. Throws with armwing		
	36. Climbs stairs		



Perceptual Motor

Cognitive Connections
Perceptual Motor
Rating Sheet

Name: [redacted] Date of Evaluation: 11/16/14

3 - 6 months	6 - 12 months	12 - 18 months	18 - 24 months
1. Follows eye objects	30. Pours 1 cup	31. Starts 2 cubes	32. Starts 10 cubes
2. Follows object	31. Starts 2 cubes	32. Starts 10 cubes	
3. Movement across body	32. Starts 4 cubes		
4. Sides of similar form			
5. Follows across middle			
6. Discovers need/corral			
7. Reaches approximately			
8. Fingers of 1 hand			
9. Turns 180 degrees			
10. Full-sized boxes			
11. Repeats facts			
12. Plays with table			
13. Holds object in each hand			
14. Describes and groups			
15. Imitates simple actions			
16. Reaches w/ one hand			
17. Drops and picks up			
18. Ability to bring			
19. Holds two objects w/ one hand			
20. Finds gaps			
21. Inserts pin a cube			
22. Recovers 1 object			
23. Recovers 2 objects			
24. Holds objects in container			
25. Matches with crayon			
26. Discovers both containers			
27. Formulated / sets			
28. Starts 2 cubes			
29. Stabilized on page			



These are the most difficult areas for her...and decreases her overall score dramatically



Language

Cognitive

Cognitive Connections Language Rating Sheet

Name: [Redacted] Date of Evaluation: 01/18/14

0 - 4 months	Achieved	22 - 24 months	Achieved	26 - 48 months	Achieved
1. Responds to mother's voice	100%	25. Points to 1-5 parts of a face	100%	34. Echoes 2-syllable words	100%
2. Cries/Whimpering	100%	26. Names 3 objects	100%	35. Understands 2-step directions	100%
3. Reaches for familiar object	100%	27. Names 2 colors	100%	36. Names 2 objects	100%
4. Cries	100%	28. Says 2 words	100%	37. Understands 3-step directions	100%
5. Responds to social stimulus	100%	29. Says 1 word	100%	38. Understands 4-step directions	100%
4 - 8 months					
6. Turns toward sound	100%	30. Says 2 words	100%	39. Understands 5-step directions	100%
7. Vocalizes / explores sounds	100%	31. Says 3 words	100%	40. Understands 6-step directions	100%
8. Babbling	100%	32. Says 4 words	100%	41. Understands 7-step directions	100%
8 - 12 months					
9. Vocalizes / rhymes	100%	33. Says 5 words	100%	42. Understands 8-step directions	100%
10. Imitates gestures	100%	34. Says 6 words	100%	43. Understands 9-step directions	100%
11. Responds to "hi"	100%	35. Says 7 words	100%	44. Understands 10-step directions	100%
12. Imitates sounds	100%	36. Says 8 words	100%	45. Understands 11-step directions	100%
13. Responds to words/gestures	100%	37. Says 9 words	100%		
14. Imitates / understands	100%	38. Says 10 words	100%		
12 - 18 months					
15. Imitates sound sequences	100%	39. Says 11 words	100%		
16. Imitates words	100%	40. Says 12 words	100%		
17. Waves "bye-bye"	100%	41. Says 13 words	100%		
18. Follows simple directions	100%	42. Says 14 words	100%		
19. Says 2+ words	100%	43. Says 15 words	100%		
18 - 24 months					
20. Vocabulary 3-50 words	100%	44. Says 16 words	100%		
21. Simple questions	100%	45. Says 17 words	100%		
22. Acts like 2 things	100%				
23. Points to pictures	100%				
24. "Hello", "thank you"	100%				
25. Names picture	100%				
26. Begins	100%				
27. Waves 12+ objects	100%				

Cognitive Connections Cognitive Rating Sheet

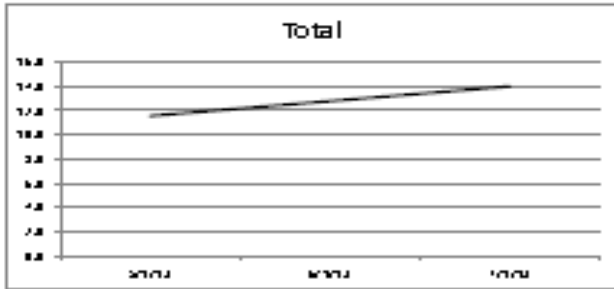
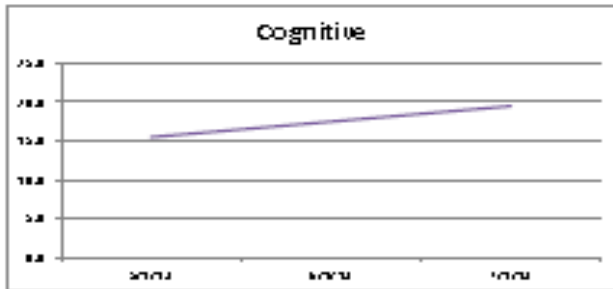
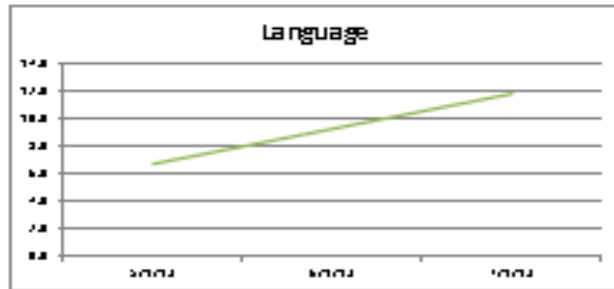
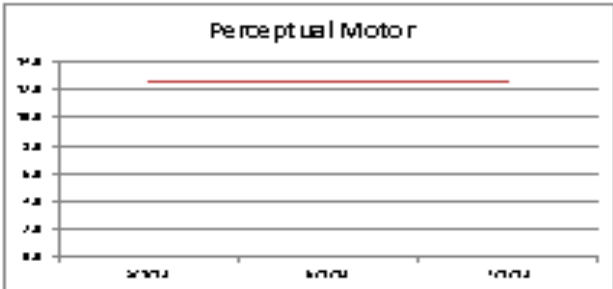
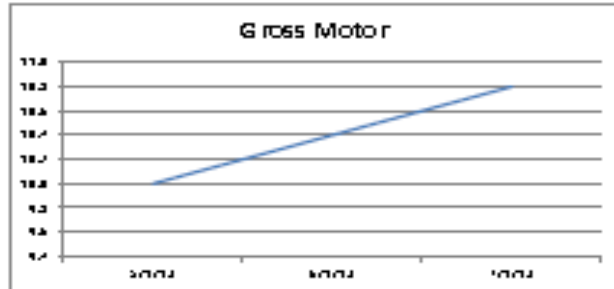
Name: [Redacted] Date of Evaluation: 01/18/14

0 - 4 months	Achieved	24 - 36 months	Achieved	48 - 66 months	Achieved
1. Responds to mother's voice	100%	21. Matches like objects	100%	48. Understands 10-step directions	100%
2. Responds to sound of rattle	100%	22. Gives feedback	100%	49. Understands 11-step directions	100%
3. Awareness of new situations	100%	23. Turns pages, etc.	100%	50. Understands 12-step directions	100%
4. Reaches for sight of toy	100%	24. Counts 2-4	100%	51. Understands 13-step directions	100%
4 - 8 months					
5. Discriminates strangers	100%	25. Imitates	100%	52. Understands 14-step directions	100%
6. Turns to look for dropped spoon	100%	26. Waves	100%	53. Understands 15-step directions	100%
7. Plays peek-a-boo	100%	27. Imitates	100%	54. Understands 16-step directions	100%
8. Uncovers toy	100%	28. Imitates	100%	55. Understands 17-step directions	100%
8 - 12 months					
9. Responds to name	100%	29. Imitates	100%	56. Understands 18-step directions	100%
10. Looks at pictures in books	100%	30. Imitates	100%	57. Understands 19-step directions	100%
11. Separates doll to make squeak	100%	31. Imitates	100%	58. Understands 20-step directions	100%
12. Looks in correct place for toys that fall out of sight	100%	32. Imitates	100%	59. Understands 21-step directions	100%
12 - 18 months					
13. Imitates puffed objects in box	100%	33. Imitates	100%	60. Understands 22-step directions	100%
14. Follows simple commands	100%	34. Imitates	100%	61. Understands 23-step directions	100%
15. Points to 1 body part	100%	35. Imitates	100%	62. Understands 24-step directions	100%
16. Alters toy with stick	100%	36. Imitates	100%	63. Understands 25-step directions	100%
18 - 24 months					
17. Follows one-step direction	100%	37. Imitates	100%	64. Understands 26-step directions	100%
18. Tries to sing	100%	38. Imitates	100%	65. Understands 27-step directions	100%
19. Follows 2 directions with ball	100%	39. Imitates	100%	66. Understands 28-step directions	100%
20. Discriminates 2-step plates	100%	40. Imitates	100%	67. Understands 29-step directions	100%
20. Size	100%	41. Imitates	100%	68. Understands 30-step directions	100%

Language and Cognition show intelligence...growth in these areas confirm capability...this equates to hope



First 3 months of NeurOptimal Training





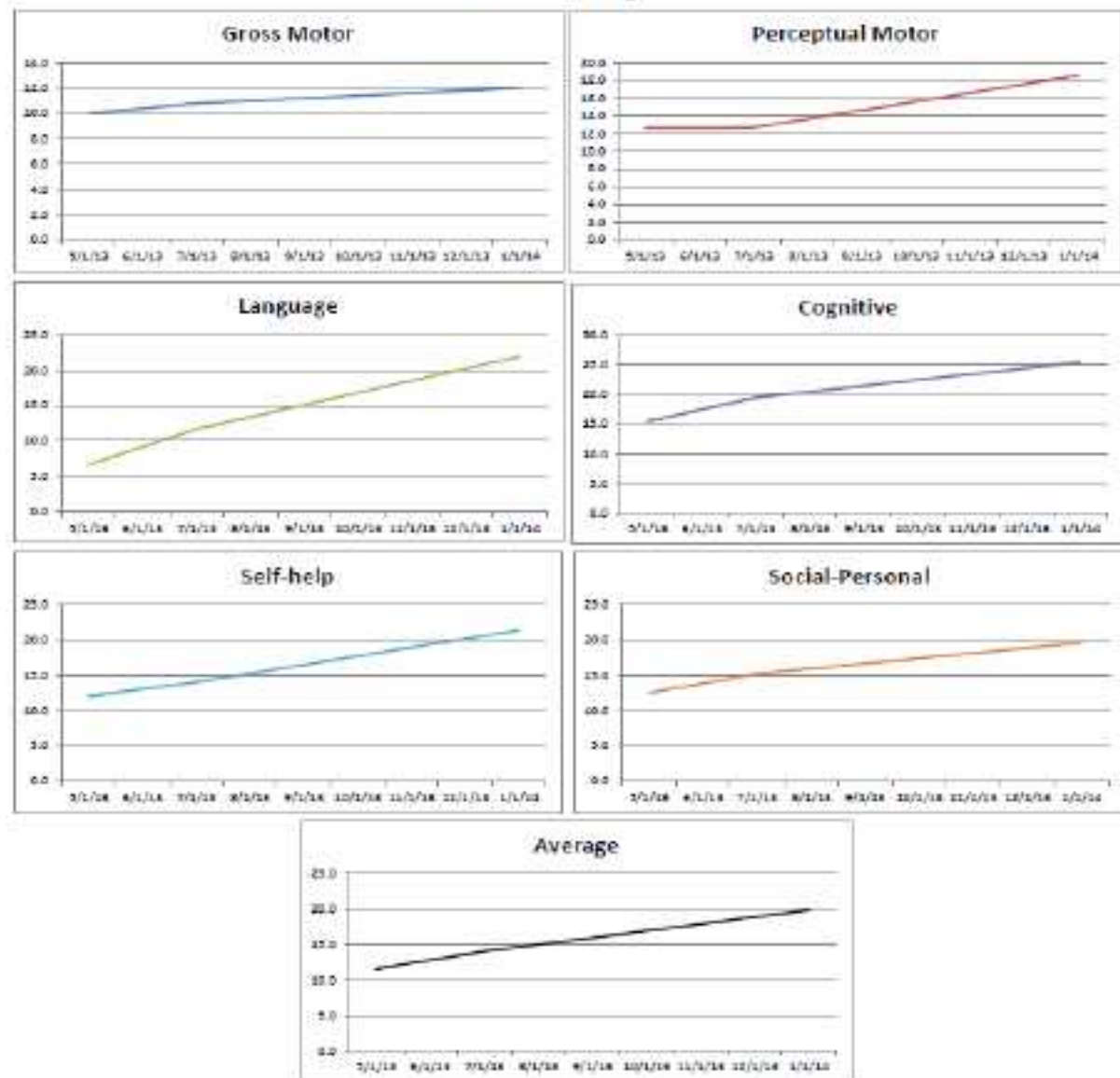
Child's Name D **Date of Birth** 11/9/10
School _____ **Teacher** _____
Initial Assessment Date 5/23/13 **Second Assessment Date** 1/12/14
Age at Initial Assessment 2.6 **Age at Final Assessment** 3.2
(years, months) (years, months)

<u>Initial</u>	<u>Functioning Age (months)</u>	<u>Current</u>	<u>Gain</u>
<u>10.0</u>	Motor	<u>12.0</u>	2.0
<u>12.7</u>	Perceptual Motor	<u>18.5</u>	5.9
<u>6.7</u>	Language	<u>21.9</u>	15.3
<u>15.5</u>	Cognitive	<u>25.5</u>	10.0
<u>12.0</u>	Self-Help	<u>21.3</u>	9.3
<u>12.5</u>	Social-Personal	<u>19.5</u>	7.1
<u>11.5</u>	AVERAGE FUNCTIONING AGE	<u>19.8</u>	8.3
<small>(Average functioning level at initial assessment)</small>		<small>(Average functioning level at assessment)</small>	



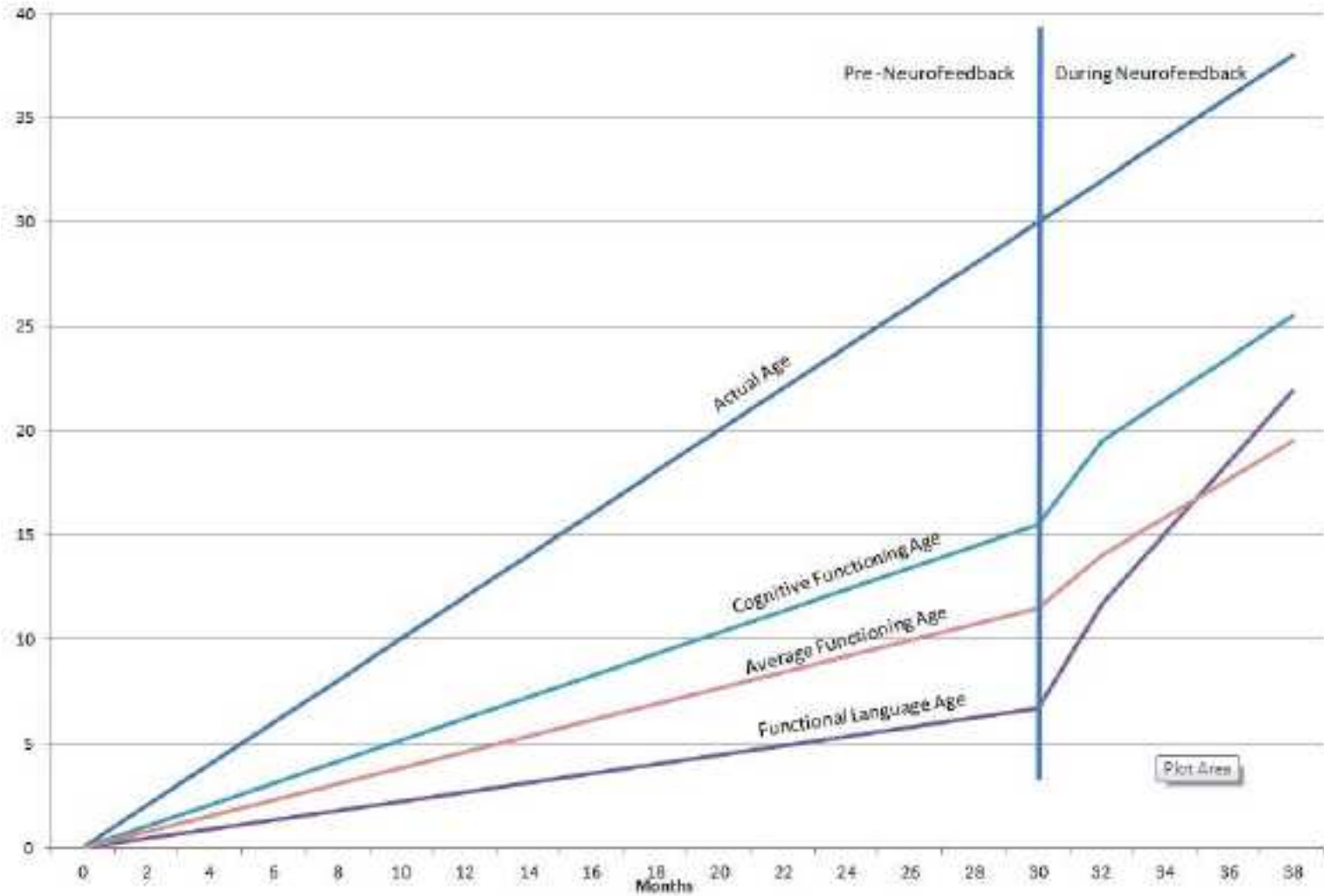
Total Progression in all areas of Development with NeurOptimal Training

Milestones Progress





Rate of Progression Prior to NO and After NO



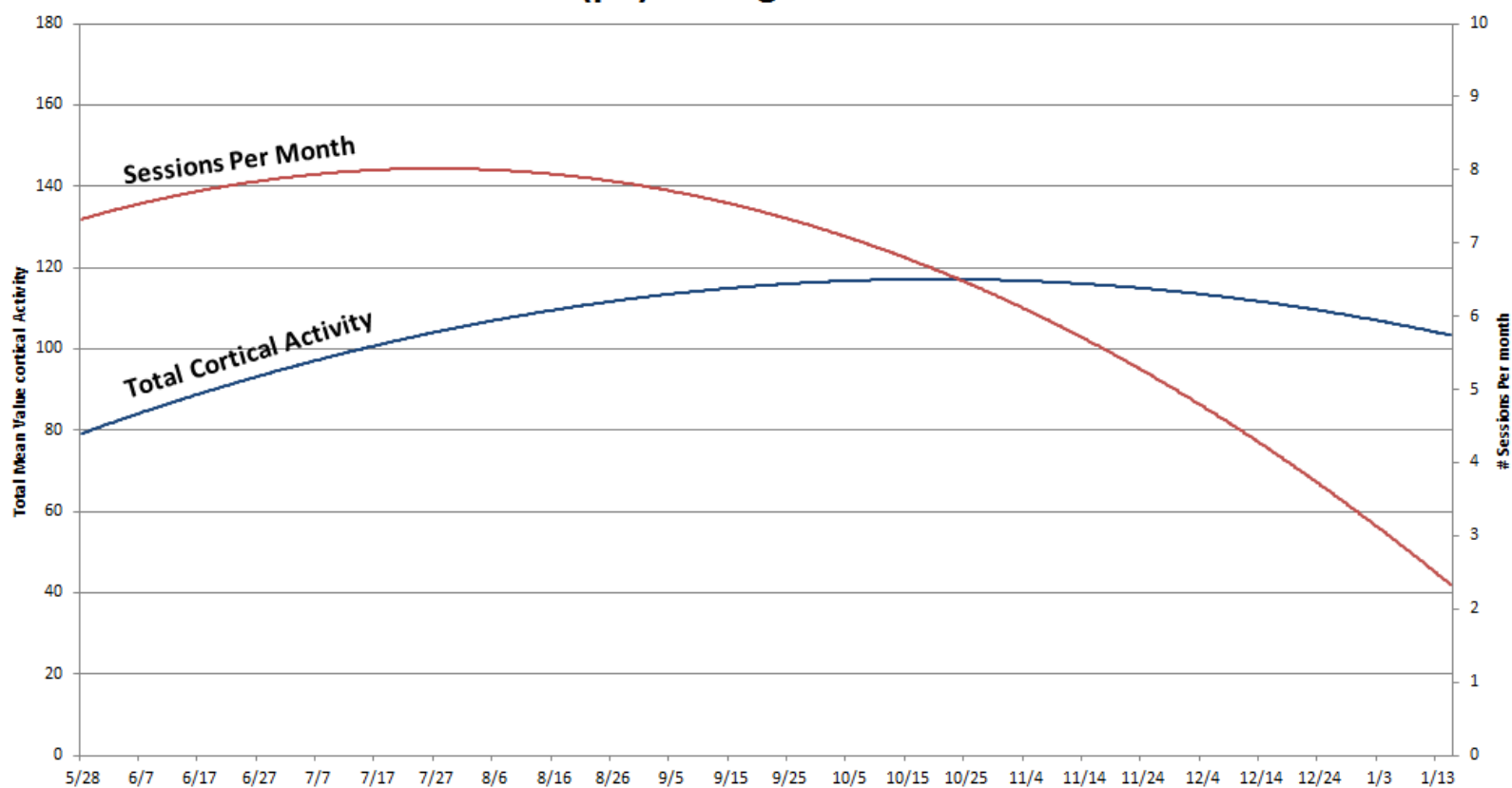


In 8 months time D
progressed an overall of
8.3 months



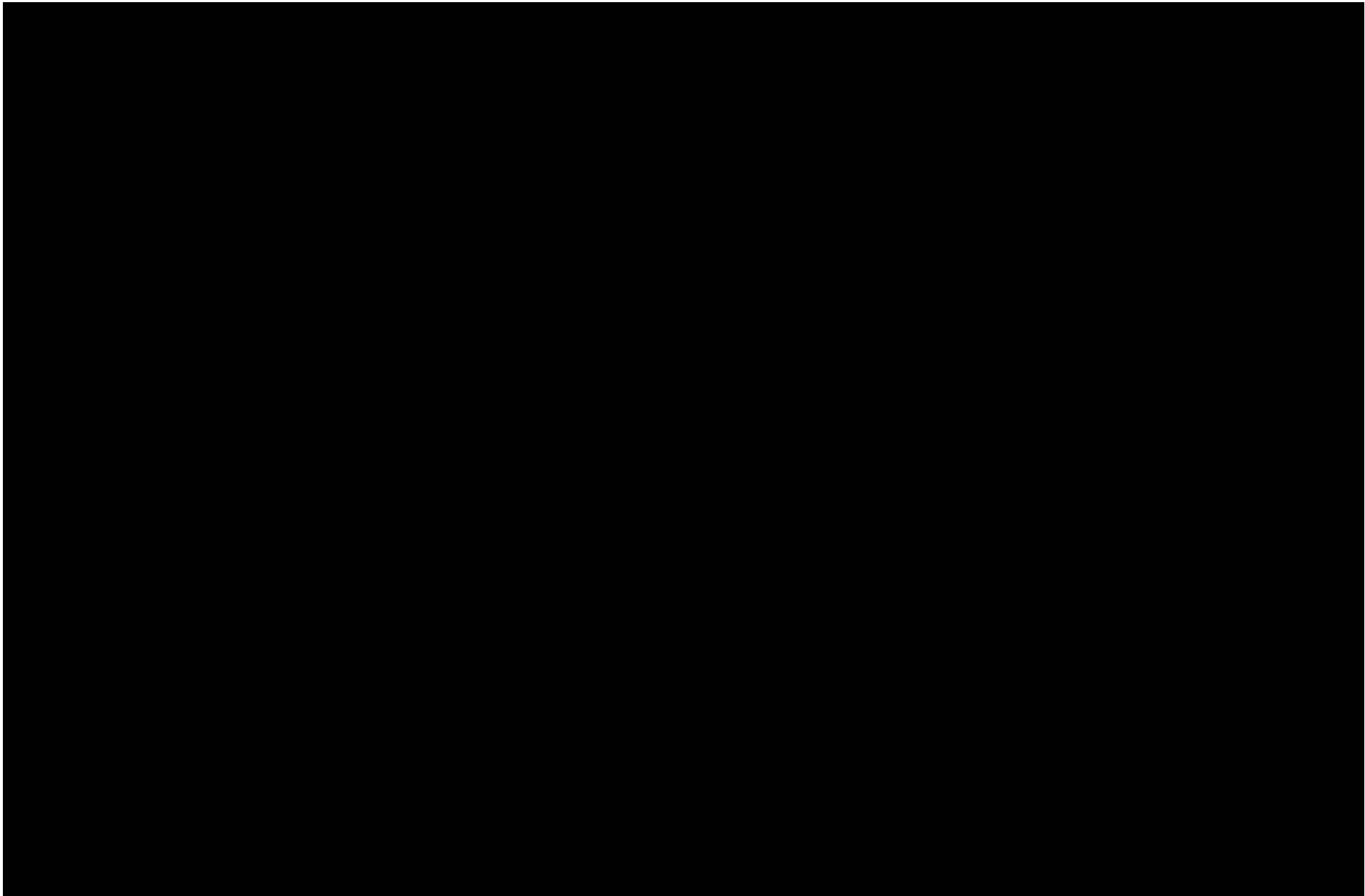
Correlation Between NO Session and Developmental Progression

D. Sessions per Month / Total Left and Right Mean Cortical Activity (μv) during Baseline





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

Name: **Grays**

Major Concerns:

Rehab Goals

21	Language Disorders	Auditory Processing, Memory Skills, Executive Function, Attention Skills, Communication Skills
22	Learning Disorder	Visual Processing Skills, Motor-Planning Skills, Communication Skills, CNS Responses
17	Hypersensitivity	Memory Skills, Executive Function
6	Information Processing Problems	Auditory Processing, Executive Function, Attention Skills
24	Mild NeuroCognitive Disorder	Visual Processing Skills, Motor-Planning Skills, Communication Skills

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

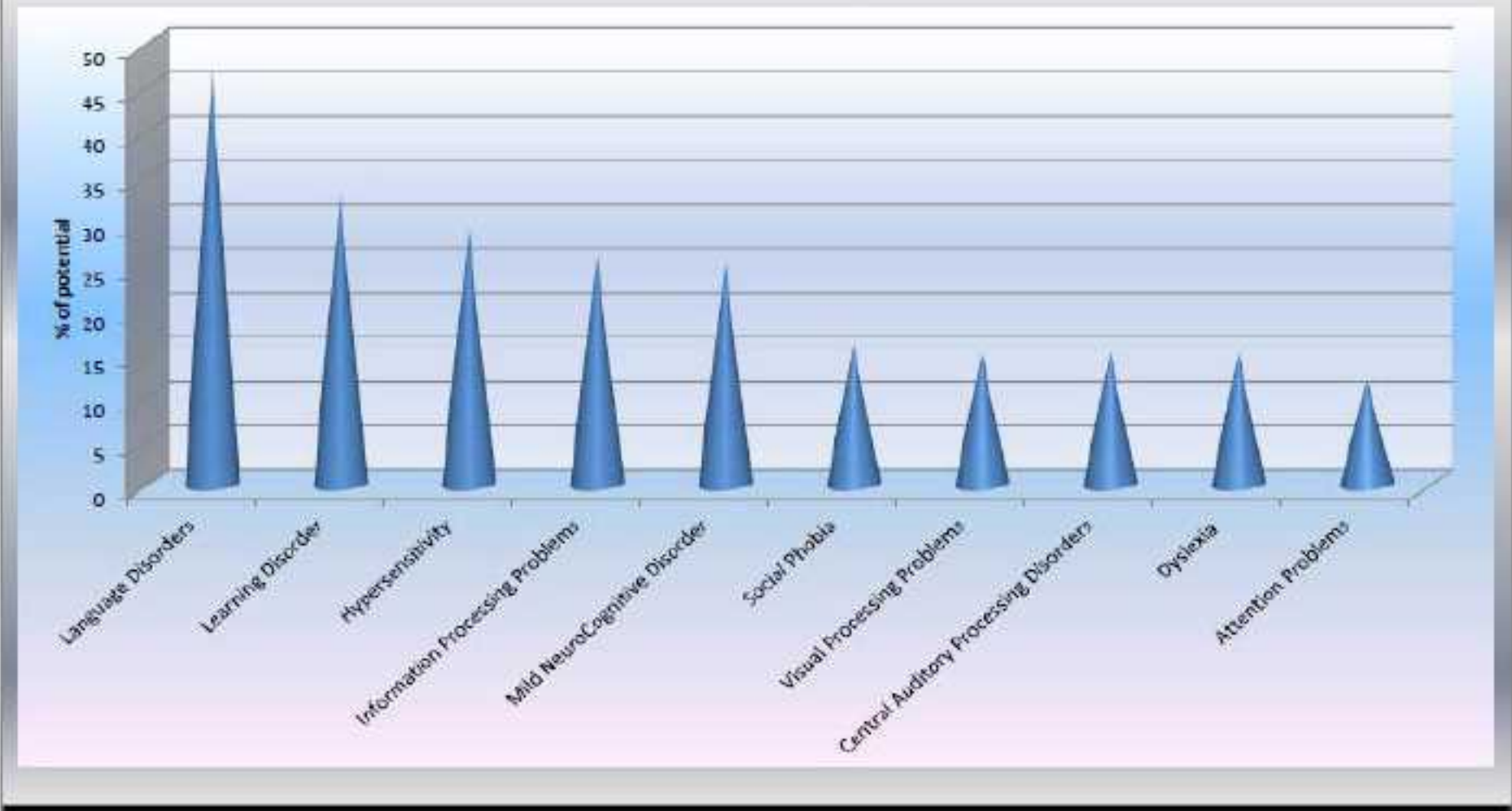


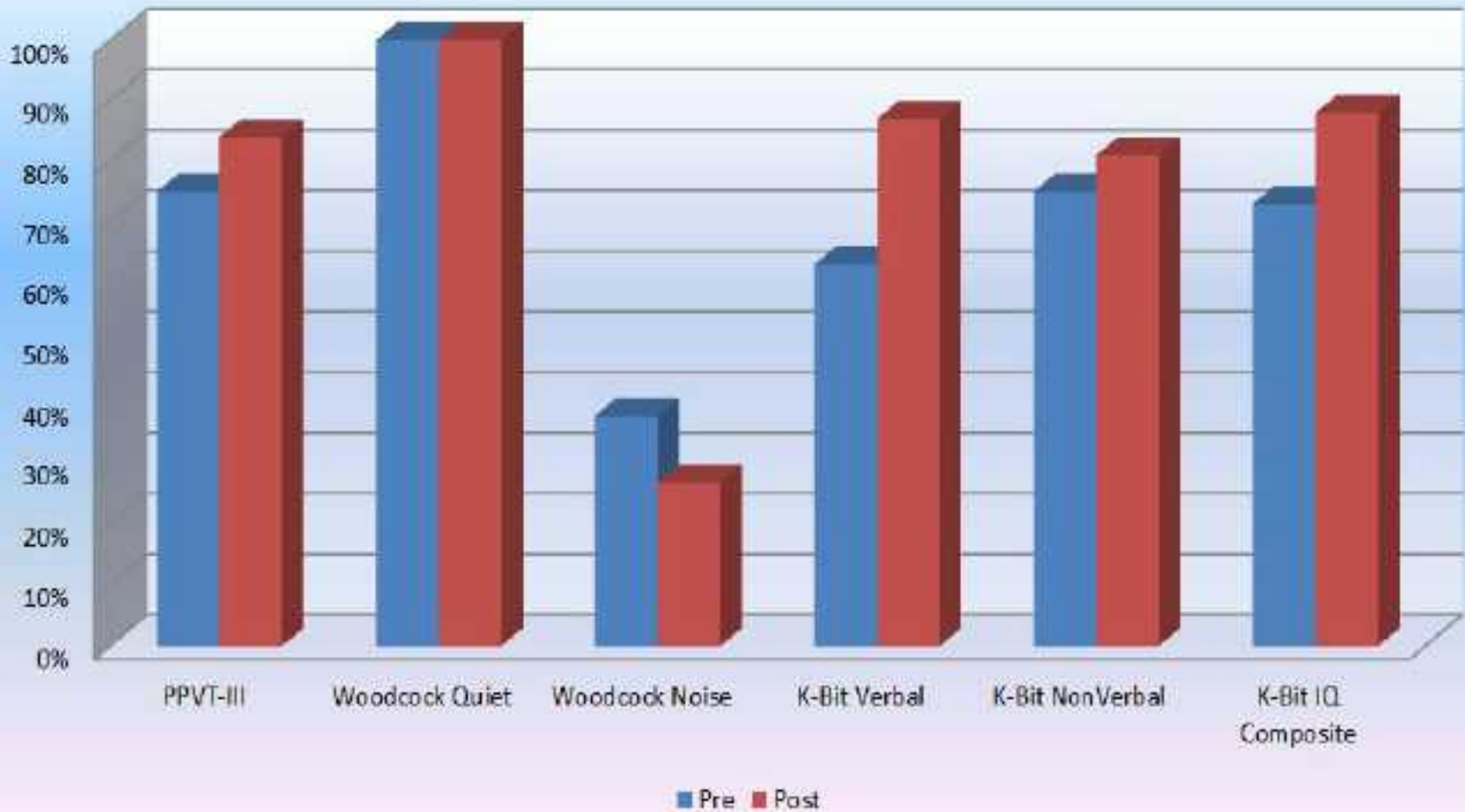
Cognitive Rehabilitation

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



400 Questions Top 10







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.

NeuroOptimal® Stats



Client:
Date: Monday, February 17, 2014
Time: 00:00:28.96



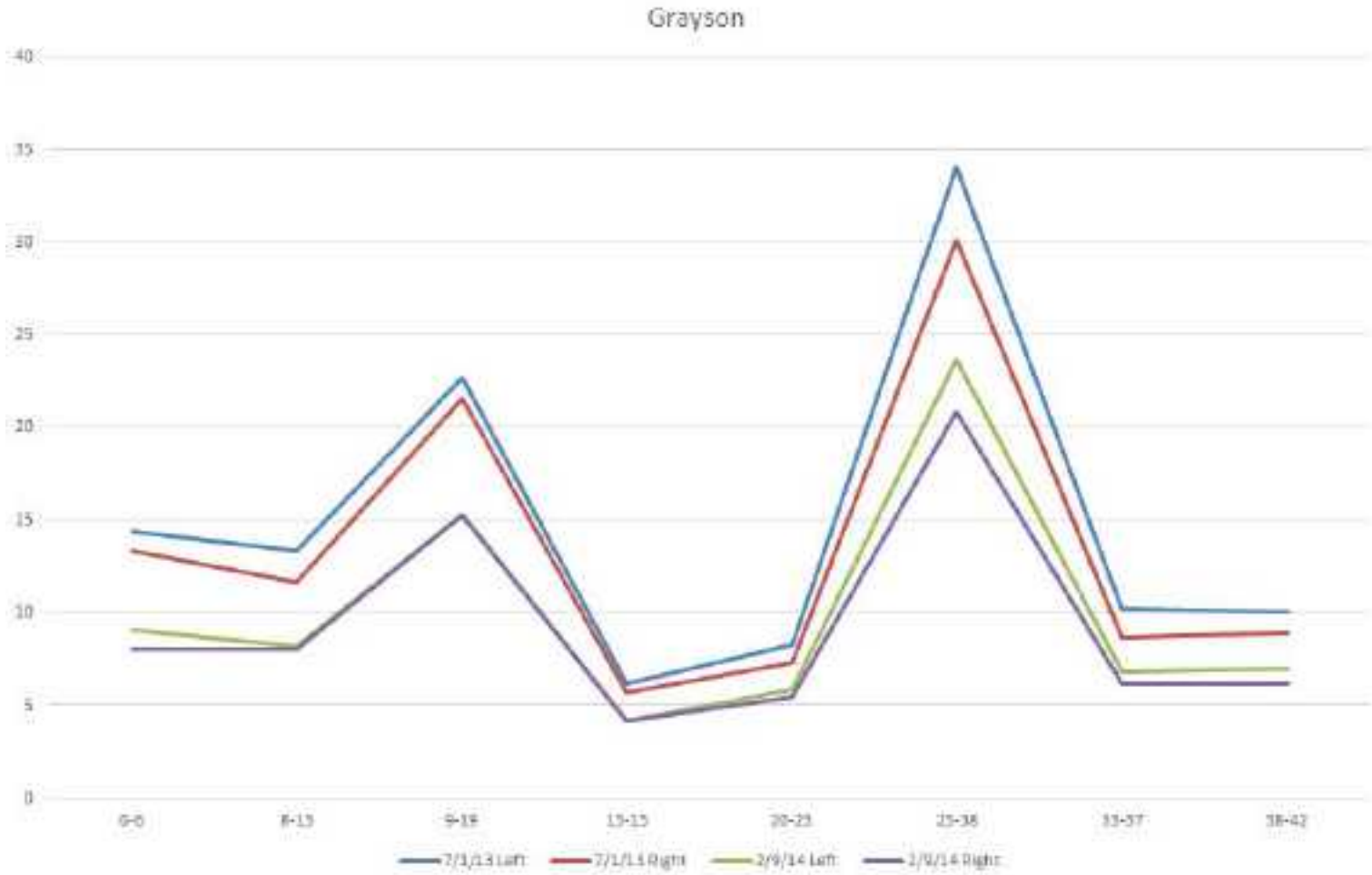
Portal: Baseline: Zengar Brights

Left Targets: C*r 0.986 CoV 68.2

	C*r	CoV	Min	Max	Range	Mean	Median	Mode	Moment	SD	Kurtosis	Skew
0 - 6 Hz Gabor	0.692	31.3	5.78	27.38	21.60	14.41	14.44	16.58	20.06	4.52	2.90	0.55
8 - 13 Hz Gabor	0.808	25.8	6.73	24.42	17.70	13.30	12.66	15.58	11.58	3.43	3.60	0.83
9 - 19 Hz Gabor	0.538	17.9	12.65	34.37	21.71	23.67	22.89	23.51	17.73	4.25	2.79	0.20
13 - 15 Hz Gabor	0.923	23.7	3.26	9.64	6.38	6.15	6.09	6.45	2.09	1.46	3.13	0.40
20 - 23 Hz Gabor	0.885	20.4	4.93	12.26	7.33	8.27	7.87	8.59	2.81	1.69	2.54	0.49
23 - 38 Hz Gabor	0.269	12.7	23.47	47.07	23.60	34.00	34.06	35.27	18.42	4.33	3.63	0.41
33 - 37 Hz Gabor	0.885	22.7	5.37	17.04	11.66	10.19	9.99	11.20	5.24	2.31	3.20	0.60
38 - 42 Hz Gabor	0.846	21.3	5.81	15.80	9.99	10.05	9.77	10.81	4.52	2.14	2.71	0.45

Right Targets: C*r 0.981 CoV 68.1

	C*r	CoV	Min	Max	Range	Mean	Median	Mode	Moment	SD	Kurtosis	Skew
0 - 6 Hz Gabor	0.615	41.6	4.77	34.96	30.19	13.34	12.44	19.87	30.34	5.55	5.19	1.11
8 - 13 Hz Gabor	0.808	24.3	7.05	21.19	14.14	11.65	11.29	14.12	7.86	2.83	4.38	0.98
9 - 19 Hz Gabor	0.692	16.0	13.23	29.49	16.26	21.59	21.07	21.36	11.68	3.45	2.61	0.14
13 - 15 Hz Gabor	1.000	19.4	3.51	7.94	4.43	5.66	5.69	5.72	1.18	1.10	2.26	0.15
20 - 23 Hz Gabor	1.000	20.7	4.55	11.43	6.88	7.30	7.13	7.99	2.25	1.51	3.33	0.55
23 - 38 Hz Gabor	0.269	14.7	18.55	41.14	22.59	30.10	30.32	29.84	19.12	4.41	3.16	0.16
33 - 37 Hz Gabor	0.846	21.3	4.79	14.37	9.58	8.63	8.37	9.58	3.32	1.84	3.84	0.85
38 - 42 Hz Gabor	0.923	19.6	5.43	14.54	9.11	8.87	8.77	9.99	2.96	1.74	4.93	1.00





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



Case #1

Hemiplegic Migraines

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



Protocol: Classic NO hookup, Initial
Initial Training with 'Dr. Lise' relaxation CD'

Sessions 1-5

Reports feeling less stressed and a reduction in intensity, duration and frequency Migraines

Sessions 6-10

Reports all migraines seem to be gone, she is feeling great.

Sessions 11-15

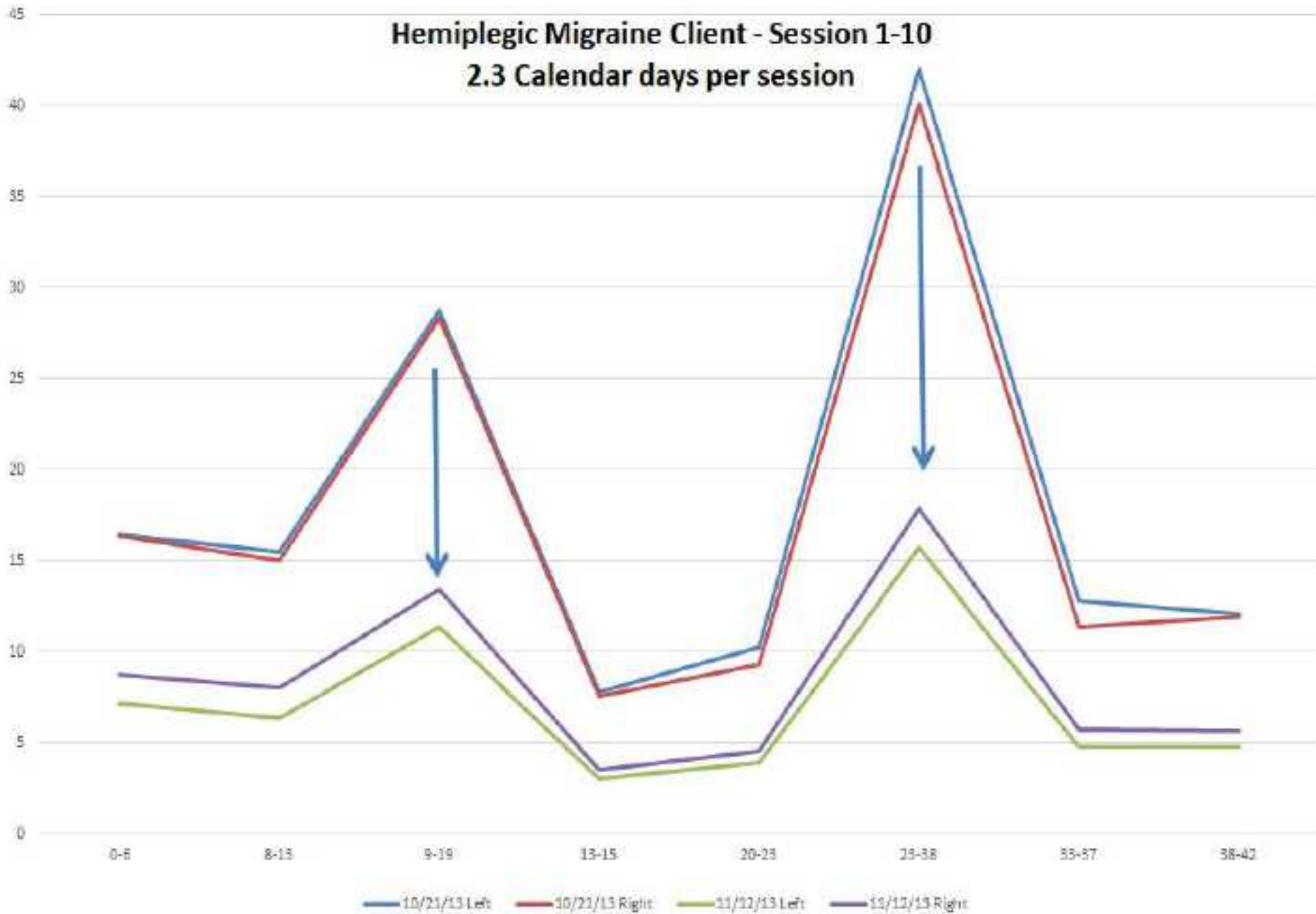
Decreased session frequency started to come less often, averaging every 16 days.

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.

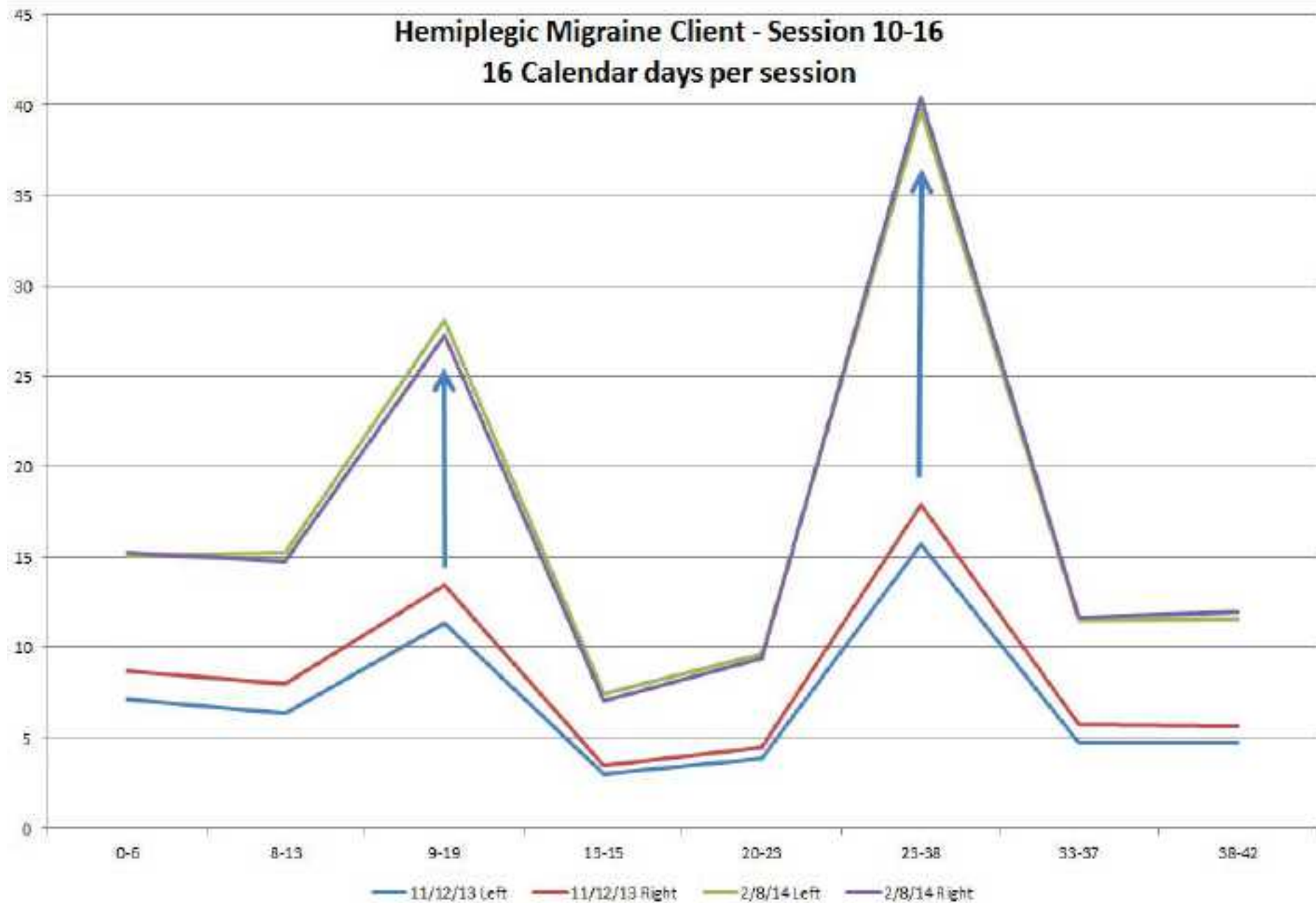
Session #16-

Left session with only tingling and no other symptoms, headache gone.

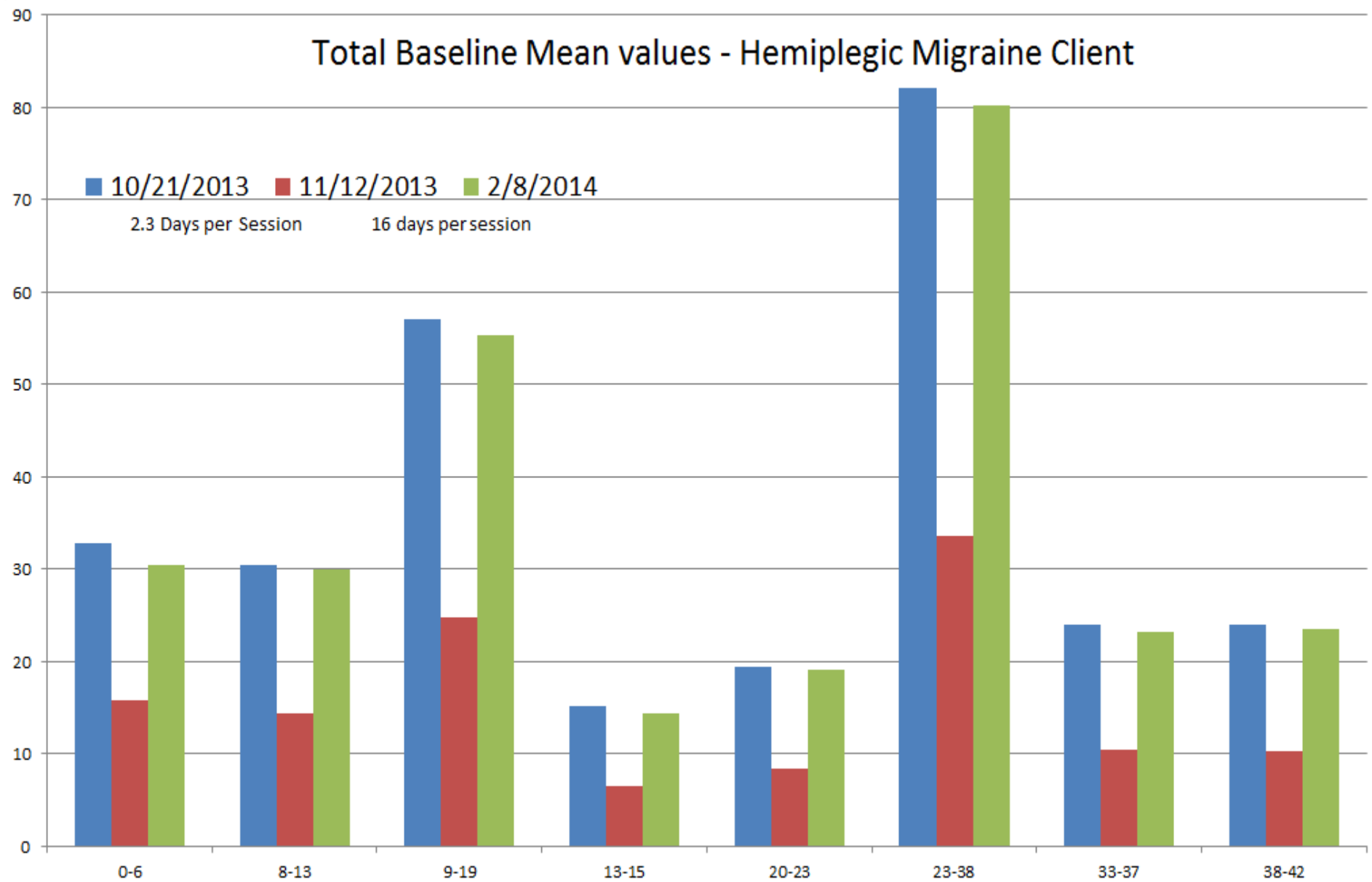
Hemiplegic Migraine Client - Session 1-10 2.3 Calendar days per session



Hemiplegic Migraine Client - Session 10-16 16 Calendar days per session



Total Baseline Mean values - Hemiplegic Migraine Client





Case #1

Cluster Migraines

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.



Protocol: Initial

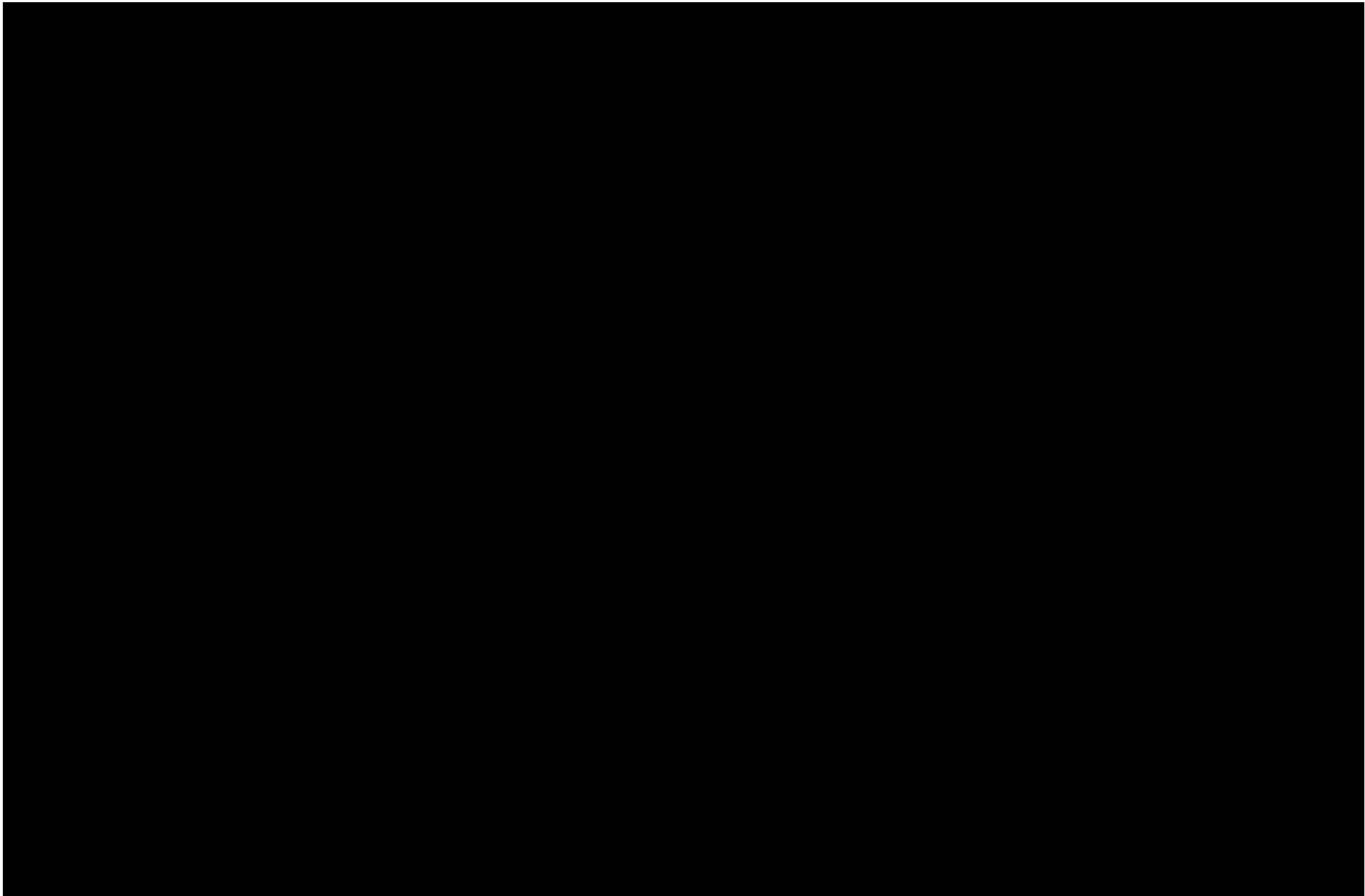
Session #1	Reported she felt very relaxed and more so than she remembers
Session #2-5	Reports much better sleep and the intensity, duration and frequency is much reduced.
Session #6-10	Reports no more migraines and the trigger of perfume, make-up and other odors are not bothering her.
Session #11-13	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





Thank you Zengar

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’...

