



LabNeuro Focus Report

Client: AD-Sample-02
Gender: male

Test Date: Feb 2004
Birth Date: withheld

1. Markers consistent with ADHD



2. Impairments in:

- Sustained Attention
- Impulsivity
- Intrusions
- Response Variation
- Brain Arousal EEG
- Selective Attention ERP

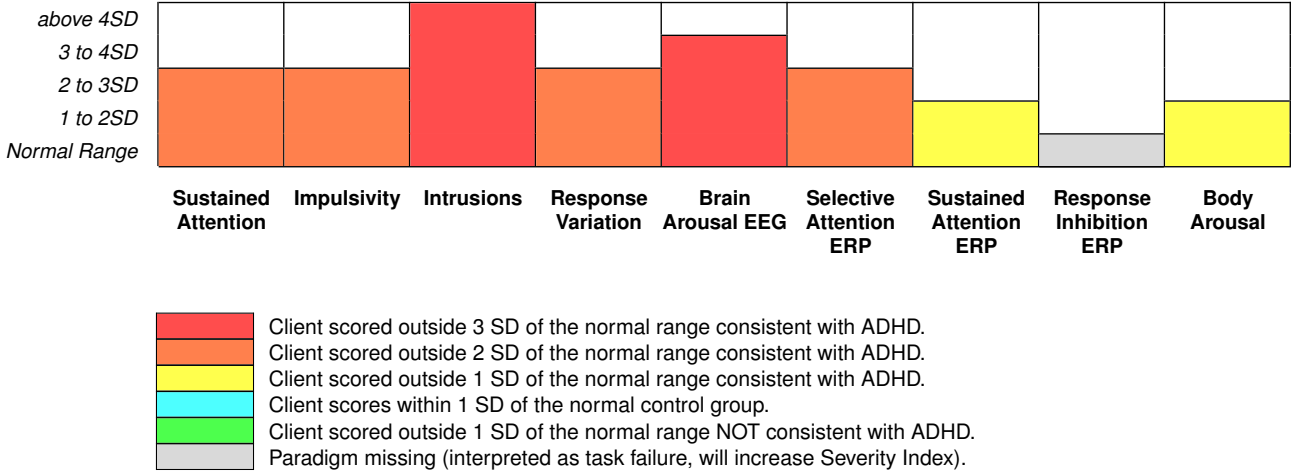
The remainder of this report provides the test details.

* See context and disclaimer details on last page.

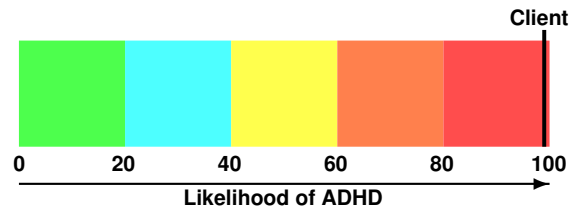
1. Summary of ADHD Marker Profile

Different individuals have personalized profiles. Nine markers in ADHD have been found to reflect severity (see Appendix 2). The markers are listed below along the horizontal axis. Severity is indicated by the changes in standard deviation (SD) with respect to healthy peers (vertical axis).

Session 1:

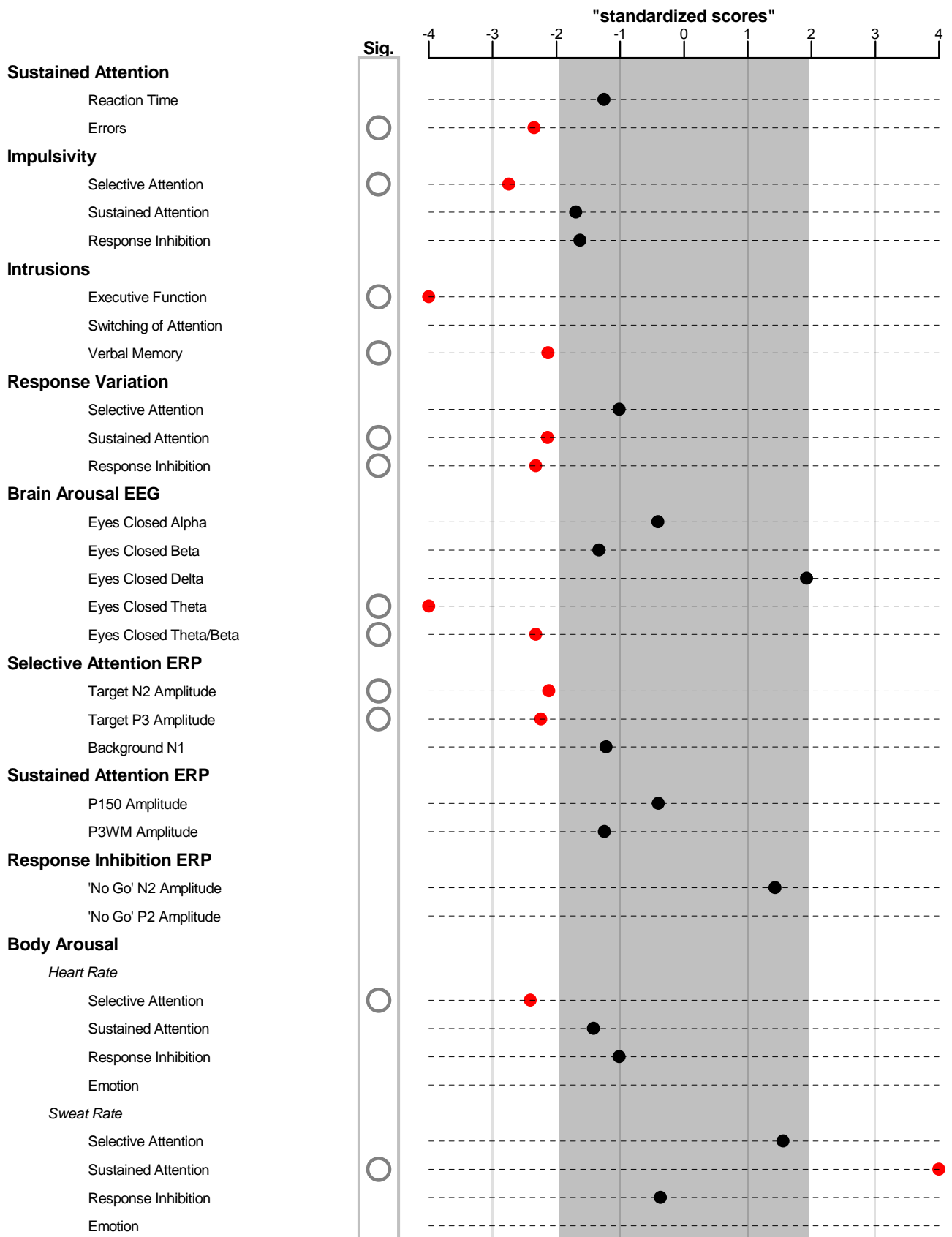


Markers (composite scores) revealed by ADHD group findings are combined below to calculate an overall **ADHD Severity Index** for this client (see page Appendix 2 for more details). The higher the Index of the client, the more likely he/she fits an ADHD profile. This client's Index is **99**, which means this client's Index is greater than 99% of controls.



2. ADHD Impairment Details

Client AD-Sample-02 compared to normal controls

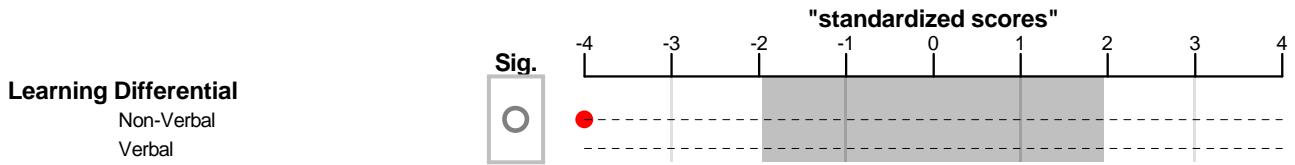


The circles on the left indicate statistically significant differences compared with the normal control. The "standardized scores" on the right are normalized for age, gender and years of education, which means differences from zero reflect differences from 'average peer' (also known as z-scores). Positive "standardized scores" indicate strengths, negative "standardized scores" indicate potential deficits. "Standardized scores" beyond -2 to +2 are statistically significant. **See Appendix 1 for details of all the cognition raw scores and rankings. See Appendix 2 for description of these scores. See Appendix 3 for visualization of significant findings.**

3. Comorbidity Details

Flag for potential Learning Problem: No evidence of learning deficit. Non-Verbal score does not exceed Verbal score by $> 1SD$.

Client AD-Sample-02 compared to normal controls



The circles on the left indicate statistically significant differences compared with the normal control. The "standardized scores" on the right are normalized for age, gender and years of education, which means differences from zero reflect differences from 'average peer' (also known as z-scores). Positive "standardized scores" indicate strengths, negative "standardized scores" indicate potential deficits. "Standardized scores" beyond -2 to +2 are statistically significant.

The Non-Verbal and Verbal scores shown here represent a composite of scores across all the Non-Verbal and Verbal tests, respectively.

A Learning Deficit is typically determined by a psycho-educational assessment. This flag may be helpful as part of that assessment. The results from the memory test may also be useful in this regards.

See Appendix 4 for Client Demographics.

Appendix 1. Details of all the cognition raw scores and rankings

Measure	Client	Int. Brain Database Average Std. Dev		Standardized Score	Percentile
Sustained Attention CPT					
Reaction time ^{1,4}	641ms	515ms	101ms	-1.25	11 th
False alarms ^{1,2}	7	2	2.9	-1.69	5 th
• False misses ¹	11	1.3	3.6	-2.7	< 1 st
Selective Attention					
Reaction time ⁴	350ms	355ms	38ms	0.14	55 th
• False alarms ²	8	0.8	2.6	-2.75	< 1 st
False misses	0	0.09	0.46	0.19	57 th
Response Inhibition					
Reaction time ²	288ms	278ms	44ms	-0.22	41 st
False alarms ³	5	2.8	2.3	-0.98	16 th
False misses	2	0.44	0.96	-1.63	5 th
Verbal Memory					
Immediate recall trial 1	5	5.5	1.3	-0.39	35 th
Immediate recall trial 2	5	7.9	1.6	-1.84	3 rd
• Immediate recall trial 3	0	9.2	1.6	-5.65	< 1 st
Immediate recall trial 4	7	10.1	2.1	-1.51	7 th
• Total immediate recall trials 1-4	17	32.5	4.7	-3.33	< 1 st
• Learning rate trials 1-4	0.1	1.37	0.61	-2.08	2 nd
• Total intrusions errors trials 1-4 ³	10	1.4	4.1	-2.13	2 nd
• Total perseveration errors trials 1-4	128	4	39	-3.21	< 1 st
Distractor recall trial 5	4	4.7	1.7	-0.42	34 th
Intrusion errors trial 5	0	0.29	0.49	0.59	72 nd
Interference errors trial 5	0	0.17	0.36	0.46	68 th
• Short delay recall trial 6	3	8.4	1.9	-2.82	< 1 st
• Intrusion errors trial 6	3	0.25	0.87	-3.18	< 1 st
• Interference errors trial 6	1	0.13	0.42	-2.07	2 nd
• Recognition accuracy	1	11.5	1.6	-6.62	< 1 st
• Rejection accuracy	0	11.7	1.5	-7.68	< 1 st
Executive Function					
• Trials completed	16	7.2	4	-2.18	1 st
• Completion time	415s	141s	81s	-3.39	< 1 st
Path learning time	331s	111s	114s	-1.93	3 rd
• Total errors ³	365	30	56	-5.95	< 1 st
• Number of overruns	125	14	21	-5.21	< 1 st
Digit Span					
Recall span (forwards)	4	5.4	1.6	-0.91	18 th
Trials correct (forwards)	4	5.7	1.9	-0.9	18 th
Span of Visual Memory					
Recall span	3	5	1.5	-1.39	8 th
Trials correct	3	6.4	1.9	-1.76	4 th

Raw scores of the Client findings (• = statistically significant; Std. Dev = standard deviation; Int = international).

1 = Sustained Attention, 2 = Impulsivity, 3 = Intrusions, 4 = Response Variation.

Measure	Client	Int. Brain Database Average	Std. Dev	Standardized Score	Percentile
Motor Tapping					
Number of taps (right)	140	150	25	-0.41	34 th
Variability of reaction time (right)	24 _{ms}	34 _{ms}	26 _{ms}	0.37	65 th
Number of taps (left)	150	130	24	0.84	80 th
Variability of reaction time (left)	49 _{ms}	58 _{ms}	49 _{ms}	0.18	57 th
Number of taps (dominant)	140	149	26	-0.35	36 th
Variability of reaction time (dominant)	24 _{ms}	38 _{ms}	28 _{ms}	0.51	69 th
Number of taps (non dominant)	150	125	24	1.05	85 th
Variability of reaction time (non dominant)	49 _{ms}	57 _{ms}	49 _{ms}	0.16	56 th
Choice Reaction Time					
• Reaction time	1448 _{ms}	735 _{ms}	198 _{ms}	-3.6	< 1 st
Time Estimation					
Accuracy	0.03 _s	0.01 _s	0.18 _s	0.09	53 rd
Verbal Interference					
Accuracy (word)	20	18	2.5	0.79	78 th
Errors (word)	0	0.28	0.38	0.75	77 th
Reaction time (word)	965 _{ms}	1049 _{ms}	139 _{ms}	0.6	73 rd
Accuracy (color)	12	12.3	2.5	-0.12	45 th
Errors (color)	0	0.85	0.7	1.21	89 th
Reaction time (color)	1633 _{ms}	1473 _{ms}	276 _{ms}	-0.58	28 th
Spot the Real Word					
• Accuracy	29	40.7	4.3	-2.74	< 1 st

Raw scores of the Client findings (• = statistically significant; Std. Dev = standard deviation; Int = international).

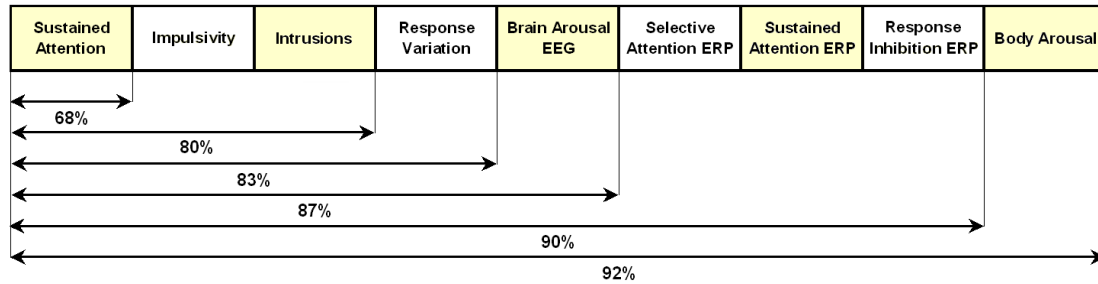
1 = Sustained Attention, 2 = Impulsivity, 3 = Intrusions, 4 = Response Variation.

Nominal classification bands	Percentile boundary
Very superior	≤ 100 th
Superior	< 98 th
High average	< 91 st
Average	< 75 th
Low average	< 25 th
Borderline	< 9 th
Extremely Low	< 2 nd

The test descriptions, selected references and how the scores are derived can be found at <http://www.brainresource.com/reportdetails.jsp>

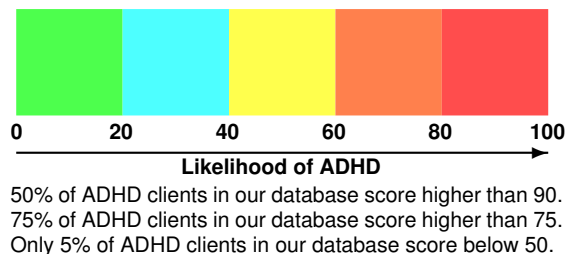
Appendix 2. Description of ADHD Markers

ADHD Group findings of markers and cumulative sensitivity



Nine markers (composite scores) were identified from standardized variables from within a large referential database that differed significantly ($p < .001$) between 175 ADHD and matched healthy controls. These variables were combined according to both statistical and theoretical rationale, to form each marker (details provided below). The first marker (Sustained Attention) is analogous to a continuous performance test (CPT) typically used to classify ADHD from healthy controls. As other markers were included in the discriminant analysis, higher levels of sensitivity were obtained (i.e. 68-92%). Sensitivity is the 'true positive rate' or the % of ADHD correctly classified as ADHD.

ADHD Severity Index



The ADHD Severity Index is a representation of the overall impact of nine markers revealed by a discriminant analysis (summarized above). Increased confidence can be attributed to more extreme severity index values.

Marker Definition

Sustained Attention: Errors and reaction time from a continuous performance test (CPT).

Impulsivity: False alarms across tasks.

Intrusions: Errors relating to overruns, memory intrusions and failed switching.

Response Variation: Reaction time variability across tasks.

Brain Arousal EEG: Resting EEG associated with cortical arousal.

Selective Attention ERP: Event-Related Potential (ERP) variables from the auditory oddball task.

Response Inhibition ERP: ERPs from the visual Go-NoGo task.

Sustained Attention ERP: ERPs from a continuous performance task that also assesses working memory.

Body Arousal: Heart rate and sweat rate.

Glossary of terms:

Executive Function: Executive maze.

Switching of Attention: Taps coordination of attention.

Verbal Memory: Verbal recall.

False Alarms (respond when should not): Errors of commission.

False Misses (not respond when should): Errors of omission.

Target (and Go): Stimuli designated for button press.

Background (and NoGo): Stimuli designated to ignore.

N1: ERP component at approx 100ms reflecting 'attention'.

P150: ERP component at approx 150ms reflecting 'early language processing'.

P2: ERP component at approx 200ms reflecting 'response decision'.

N2: ERP component at approx 200ms reflecting 'mismatch detection'.

P3: ERP component at approx 300ms reflecting 'context processing'.

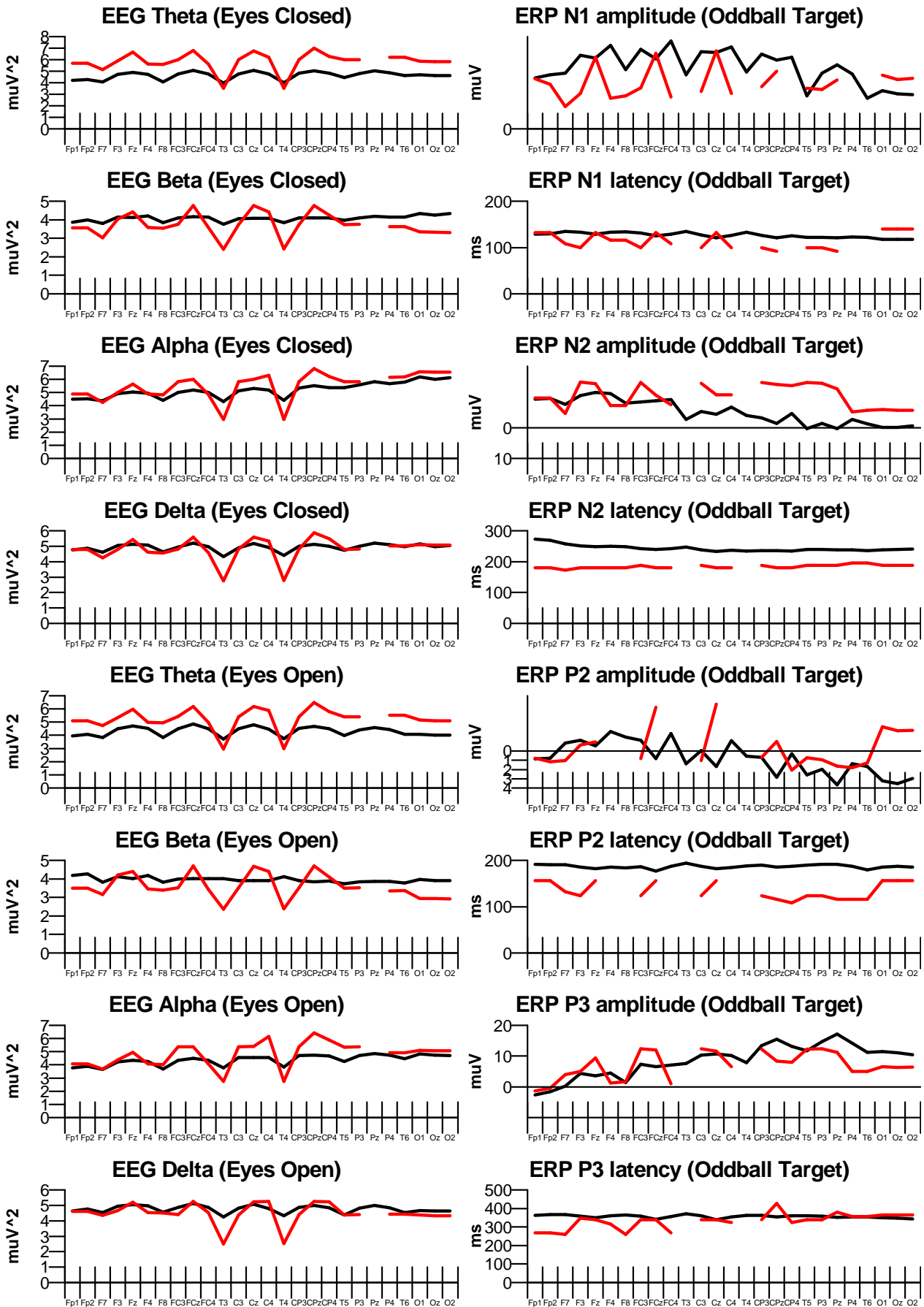
P3WM: ERP component at approx 450ms reflecting 'updating working memory'.

Amplitude: Magnitude.

Latency: Timing.

Appendix 3. Visualization of general EEG/ERP and significant findings

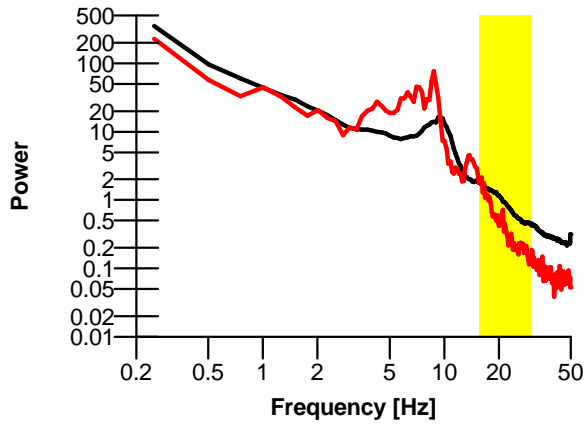
EEG and ERP overview of AD-Sample-02 compared to controls



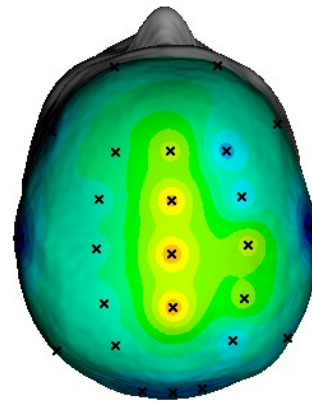
Group average normal controls - black; Individual client in red.

Selected significant findings of AD-Sample-02 compared to controls

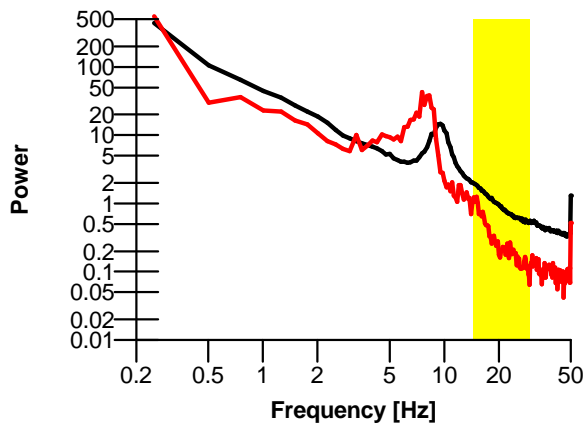
EEG Eyes Closed (Site=C3)



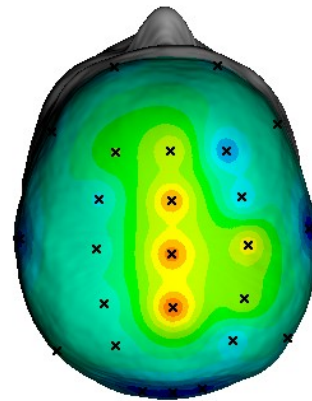
Beta Power



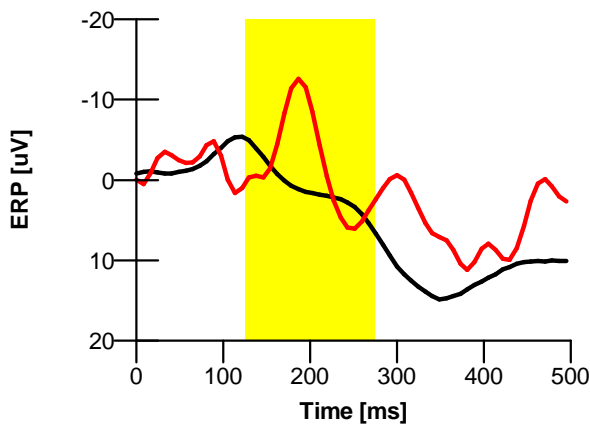
EEG Eyes Open (Site=O1)



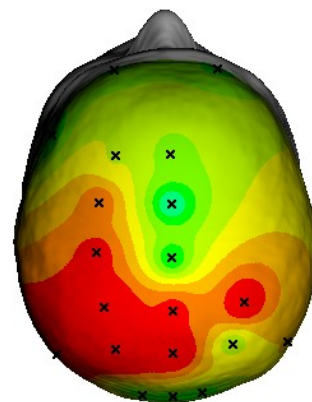
Beta Power



ERP Selective Att. Target (Site=Pz)

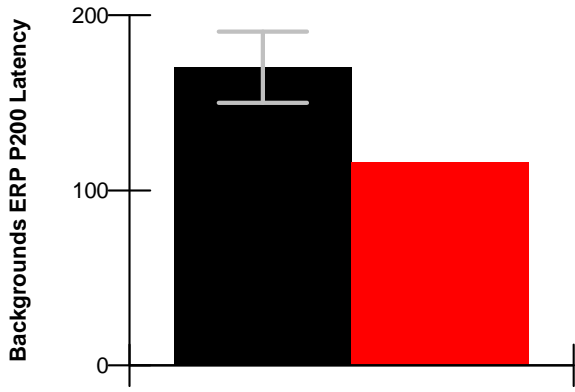


N2 - P2 Amplitude



The analog figures show the electrical brain function data of the client (red) compared to their age and gender matched controls (black). The head maps reflect the spatial distribution of the statistically significant findings as indicated by the yellow bars in the single site waveforms (increases are shown in red and decreases in blue). If the data is not applicable or missing at a site, that site is not shown.

CPT Background P150 Latency (Site=FCz)



Appendix 4. Client demographics (summary scores and clinical history)

Personal Details	Client				
Date of birth	withheld				
Gender	MALE				
Marital status	Single				
Height (cm)	143				
Weight (kg)	38				
Occupation	CustomerServiceRepresentative				
Highest level of education	Secondary/High school				
Number of years of education	8				
Handedness	Right				
Physical/Medical History	Client				
Sphere	NIL				
Vision impairment	No				
Hearing difficulties	No				
Restricted movement	No				
Mobile phone	No				
Dyslexia (learning difficulties)	No				
Traumatic experience	Yes				
Family or personal psychiatric illness	Yes				
Family or personal neurological disorder	No				
CNS surgery	No				
Physical trauma	No				
Sleep difficulties	No				
Staying awake difficulties	No				
Eating problems	No				
Number of caffeine beverages per week	2				
Substance Used	Client				
Tobacco	No				
Alcohol	No				
Marijuana	No				
Non-prescription/recreational drugs	No				
Depression Anxiety Stress Scales	Client	Severity Rating			
Depression	2	Normal			
Stress	14	Normal			
Anxiety	0	Normal			
Emotional Intelligence (EI)	Client	Average	Std. Dev	Standardized Score	Percentile
Empathy/Intuition factor	17	19.21	3.28	-0.67	25 th
Social/Relationships factor	10	12.91	2.63	-1.11	13 th
Self Esteem factor	13	13.64	1.9	-0.34	37 th

● = statistically significant (normalized for age, gender and years of education); Std. Dev = standard deviation; N/A = data not available
 For the list of questions - see Report Details on <http://www.brainresource.com/reportdetails.jsp>

Prescription Drugs	Client
Use prescription medications	Yes
Medication 1:	
Name	Ritalin LA
Reason	ADHD
Dosage	30 mg
Frequency	Once per day
Medication 2:	
Name	Zoloft
Reason	ADHD/Balance
Dosage	50 mg
Frequency	Once per day
Traumatic Experience	Client
Direct combat in war	No
Life-threatening accident	Yes
Natural disaster	No
Witnessed someone injured or killed	No
Raped	No
Sexually molested	No
Attacked or assaulted	No
Threatened with weapon or kidnapped	No
Tortured or victim of terrorists	No
Extremely stressful or upsetting event	No
Shock (happened to someone close)	No
Psychological History	Client
Diagnosed with psychiatric disorder	No



Context and Disclaimer

Reference: BRC-Sample-82

Test Date: Feb 2004

Report Date: 07 Jul 2006

This report provides indications of brain function and cognition as compared to an age and gender matched controls group normative database. It is not to be used as a basis for action without consideration by a competent relevant professional. Always seek the advice of a trained health professional or relevant specialist regarding any highlighted variances within this report before any treatment or action is taken.

This report is not intended to diagnose, treat or cure any health condition. It is also not intended to be used in any way on its own.

This report does not establish any physician-patient relationship or supplant any in-person medical consultation or examination. Appropriate medical attention should always be sought for specific ailments. Do not disregard professional medical advice or delay seeking medical treatment as a result of findings contained within this report.

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