CNS Vital Signs
Neurocognitive Case Studies

Adding Value to Your Practice by Providing Solutions for Measuring, Monitoring and Managing Neurocognitive and Behavioral Health…

CNS Vital Signs®

www.CNSVS.com

Introduction

This Case Study Guide is designed to give clinicians helpful information about the use of CNS Vital Signs neurocognitive testing, behavioral assessments, and mental health screening. It includes a variety relevant patient and practice examples that may be used to address HOW CNS Vital Signs neurocognitive and behavioral health assessment platform can be used across the lifespan e.g., children, adolescent, adult and senior patients to gain deeper clinical insight and to help manage treatments. It also provides suggestions for combinations of codes that can be used when offering services and testing procedures using the CNS Vital Signs assessment platform capabilities. ***Please note that this information is designed to provide helpful tips regarding the actual use by CNS Vital Signs clinicians and has not been peer reviewed.***

It is also recommended that clinical users consult our peer-reviewed papers including our Validity & Reliability paper published in the "Archives of Clinical Neuropsychology' listed at the PULLICATIONS section of the CNS Vital Signs website.

To learn more about the CNS Vital Signs neurocognitive testing, behavioral assessments, and mental health screening platform and how it will work best for your practice or research project you should schedule a FREE CNS Vital Signs webinar.

EACH CNS Vital Signs Webinar can cover topics such as:

- Clinical Use including… Test Report Interpretation
- Billing & Coding
- Validity & Reliability
- Research Applications
- Practice Efficiencies and much more…

At the top of the CNS Vital Signs Homepage CLICK

Register for
In-Service Webinar

Brief Clinical Procedure Case Study Examples

AD/HD

- Adolescent Assessment and Medication Management
- College Student Assessment and Medication Management
- AD/HD Evaluation and Cogmed Evidence-Based Outcomes
- Neurobehavioral Feedback Longitudinal Tracking

TBI & PTSD

- 27 year old Marine… 2 IED's in Iraq… TBI & PTSD
- Posit Science Brain Fitness (24 yo professional baseball player)
- Cognitive Resilience Training

SLEEP

- Sleep Disorder Patient

OTHER

- Cognitive Fatigue; Sorting Out Comorbidities; Folic Acid, Plus Stimulant
- Measure Aerobic Exercise
- Use in MCI Dementia

Free Neuropsych Questionnaire NPQ-207 In-Take Tool for Assessing Symptoms and Possible Comorbidities

Johnny, a twelve year old boy struggling in school was referred to a Neuropsychiatrist by the school for additional AD/HD evaluation and management.

Johnny's mother completed this 207 questionnaire of possible neuropsych symptoms and possible comorbidities in the waiting room using an I-pad and the results were auto-scored. Based on clinic policy the results were printed and reviewed. Noticing the possibility of AD/HD from his school record and the NPQ Johnny was given the CNS Vital Signs BRIEF-CORE assessment prior to the clinician interviewing and examining the patient.

= Key Symptoms

NeuroPsych Questionnaire (NPQ) LF-207 (Page 1 of 8)

Subject Reference/ID: AD/HD Case Study	Test Date: February 11 2009 11:24:43
Age: 12 ***(Informant Survey by Mother)***	Administrator: Med Tech
Total Test Time: 10:31 (min:secs)	Language: English (United States)

Reported Symptoms

Possible Comorbidities

Domain	Score	Severity
Attention	208	Moderate
Impulsive	225	Severe
Learning	145	Mild
Memory	157	Moderate
Anxiety	114	Mild
Panic	33	Not a Problem
Agoraphobia	33	Not a Problem
Obsessions & Compulsions	56	Not a Problem
Social Anxiety	100	Mild
Depression	136	Moderate
Mood Stability	108	Moderate
Oppositional	145	Mild
Mania	17	Not a Problem
Aggression	80	Mild
Psychotic	43	Not a Problem
Somatic	56	Not a Problem
Fatigue	0	Not a Problem
Sleep	0	Not a Problem
Suicide	83	Mild
Pain	83	Mild
Average Symptom Score	142	Mild
PTSD	85	Mild
Bipolar	100	Mild
Autism	46	Not a Problem
Aspergers	81	Mild
ADHD	197	Moderate
MCI	173	Moderate
Concussion	111	Mild
Anxiety/Depression	110	Mild

Description

The Neuropsych Questionnaire asks patients (or an appropriate observer) a series of questions about their clinical state. The questions are about the symptoms of various neuropsychiatric disorders. The terminology is similar to that used in the diagnostic manuals, and in many familiar clinical questionnaires and rating scales; but it has been simplified, and all symptoms are scored on the same metric.

Scores are reported on a scale of 0 (not a problem) to 300 (severe). As a rule, scores above 225 indicate a severe problem; scores from 150-224 indicate a moderate problem; and scores from 75-149, a mild problem. A high score on the Neuropsych Questionnaire means that the patient is reporting more symptoms of greater intensity.

It doesn't necessarily mean that the patient has a particular condition; just that he or she (or their spouse, parent or caregiver) are saying that they have a lot of intense symptoms. Conversely, a low score simply means that the patient (or caregiver) is not reporting symptoms associated with a particular condition, at least during the period of time specified. It does not mean that the patient does not have the condition. Just as some people over-state their problems, others tend to under-state their problems. The Neuropsych Questionnaire is not a diagnostic instrument. The results it generates are only meant to be interpreted by an experienced clinician in the course of a clinical examination.

Every patient with ATTENTION DEFICIT has a Unique PROFILE.

Johnny, a twelve year old boy struggling in school was given CNS Vital Signs VSX BRIEF-CORE Clinical Battery… he scored below average in 5 of 9 cognitive domains (pre-dose).

After examining the H&P, the test results, and the PCS - pediatric symptom checklist & Vanderbilt AD/HD rating scales; Johnny was given a prescription medication. Four weeks later he was administered the test again (post-dose).

The CNS Vital Signs report is available seconds after the testing session ends and is a useful tool for assessing academic and vocational accommodations as well as ***measuring medication effect and helping clinicians tailor medications to get the minimum dose vs. maximum neurocognitive effect.***

Pre Dose

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	66	1	Yes					x
Composite Memory	101	100	51	Yes		x			
Verbal Memory	52	102	49	Yes		x			
Visual Memory	49	98	19	Yes			x		
Processing Speed	34	73	4	Yes				x	
Executive Function	21	68	2	Yes					x
Psychomotor Speed	148	81	10	Yes			x		
Reaction Time*	896	64	1	Yes					x
Complex Attention*	24	48	1	Yes					x
Cognitive Flexibility	22	69	2	Yes					x
Total Test Time (min: secs)	29:24				Total time taken to complete the tests shown.				

Domains most sensitive to attention deficit conditions.

Post Dose

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	105	63	Yes		x			
Composite Memory	104	106	50	Yes		x			
Verbal Memory	53	105	50	Yes		x			
Visual Memory	51	101	50	Yes		x			
Processing Speed	45	90	26	Yes		x			
Executive Function	49	111	75	Yes		x			
Psychomotor Speed	194	109	74	Yes		x			
Reaction Time*	731	78	7	Yes				x	
Complex Attention*	4	118	88	Yes	x				
Cognitive Flexibility	46	109	74	Yes		x			
Total Test Time (min: secs)	26:03				Total time taken to complete the tests shown.				

"For the first time I am able to show my son that his mind functions better when he is on his medication than when he is not..." Johnny's Mother

"Our relatives are always giving us a hard time about giving our boys AD/HD medicine. For the first time I have proof that they need their medicine." Johnny's Father

College Student Attention Deficit Case Study

1 PRE: Part of AD/HD Assessment Protocol

◯ = Low Frontal Lobe Domain Scores

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	88	21	Yes			x		
Composite Memory	107	113	58	Yes	x				
Verbal Memory	58	118	88	Yes	x				
Visual Memory	49	105	63	Yes		x			
Processing Speed	86	125	95	Yes	x				
Executive Function	40	84	14	Yes			x		
Psychomotor Speed	208	115	84	Yes	x				
Reaction Time*	641	92	30	Yes		x			
Complex Attention*	28	35	1	Yes					x
Cognitive Flexibility	39	83	13	Yes			x		
Working Memory	13	109	73	Yes		x			
Sustained Attention	26	106	66	Yes		x			
Total Test Time (min: secs)	36:12				Total time taken to complete the tests shown.				

Patient History:

James K. a 21 year old college student on a Presidential scholarship for his piano playing ability. James is gifted musically, has played with symphony orchestras, and can watch someone play a musical piece then repeat from memory the piece. James' high school academic performance was average and he was a popular student. At college James has struggled, he reports he has a problem concentrating in the library compared to his peers. He has struggled with a number of courses and has dropped at least one course per semester. A peer in his dorm told James he should "get some Adderall". James was referred for clinical evaluation.

Clinical Findings:

As part of the patient in-take he was administered the Adult ADHD Self-Report Scale in which he scored a 40 overall and a 25 in the 'inattentive' category (24 or greater = Highly likely to have ADHD). James was also administered the CNS Vital Signs neurocognitive 1 assessment and was identified as having possible frontal lobe deficits. Based on this information James was given the Brown ADD Scales which confirmed possible executive and attentional dysfunction. Reviewing James' initial Domain Dashboard confirms James has above average skills in Memory, Processing Speed, and Psychomotor Speed which would be expected given his considerable piano playing skills.

College Student Attention Deficit Case Study

1 PRE: Part of AD/HD Assessment Protocol

James K. 21 Year Old College Student: Adult ADHD Self-Report Scale (ASRS-v1.1)

1	How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?	**3 - Often**
2	How often do you have difficulty getting things in order when you have to do a task that requires organization?	**3 - Often**
3	How often do you have problems remembering appointments or obligations?	**2 - Sometimes**
4	When you have a task that requires a lot of thought, how often do you avoid or delay getting started?	**4 - Very Often**
5	How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?	**1 - Rarely**
6	How often do you feel overly active and compelled to do things, like you were driven by a motor?	**2 - Sometimes**
7	How often do you make careless mistakes when you have to work on a boring or difficult project?	**4 - Very Often**
8	How often do you have difficulty keeping your attention when you are doing boring or repetitive work?	**4 - Very Often**
9	How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?	**2 - Sometimes**
	Part A (Inattentive)	25
10	How often do you misplace or have difficulty finding things at home or work?	**4 - Very Often**
11	How often are you distracted by activity or noise around you?	**3 - Often**
12	How often do you leave your seat in meetings or other situations in which you are expected to remain seated?	**1 - Rarely**
13	How often do you feel restless or fidgety?	**0 - Never**
14	How often do you have difficulty unwinding and relaxing when you have time to yourself?	**2 - Sometimes**
15	How often do you find yourself talking too much when you are in social situations?	**2 - Sometimes**
16	When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?	**2 - Sometimes**
17	How often do you have difficulty waiting your turn in situations when turn taking is required?	**0 - Never**
18	How often do you interrupt others when they are busy?	**1 - Rarely**
	Part B (Hyperactive/Impulsive)	15
	ASRS Total Score	40

College Student Attention Deficit Case Study

❷ POST: Part of AD/HD Assessment Follow-up

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	108	70	Yes		x			
Composite Memory	107	113	81	Yes	x				
Verbal Memory	55	108	70	Yes		x			
Visual Memory	52	113	81	Yes	x				
Processing Speed	82	121	92	Yes	x				
Executive Function	55	107	68	Yes		x			
Psychomotor Speed	206	114	82	Yes	x				
Reaction Time*	618	96	40	Yes		x			
Complex Attention*	3	110	75	Yes		x			
Cognitive Flexibility	55	108	70	Yes		x			
Working Memory	10	98	45	Yes		x			
Sustained Attention	32	105	63	Yes		x			
Total Test Time (min: secs)	33:22				Total time taken to complete the tests shown.				

The Results:

James was prescribed 20mg of Vyvanse™ and returned for a follow-up to measure the impact of Vyvanse™ on neurocognitive function. The Domain Dashboard test scores, ❷ **POST-MEDICATION,** reveals a beneficial or positive shift in his neurocognitive function. No side-effects were experienced or observed by the student. The college health center provided James with copies of his tests which he was able to share with his family. The family was impressed that the CNS Vital Signs test was able to quantify and illuminate the various neurocognitive functions and help them better understand their son's status and see the impact medication had on their son's cognition. Vyvanse™ is a product of Shire Pharmaceuticals.

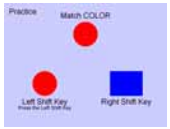
CNS Vital Signs neurocognitive tests are psychometrically sound and include measures of the most common complaints of AD/HD: ***inattention*** (Complex Attention Domain), ***impulsive responding*** (Complex Attention and Executive Function Domain), ***executive control*** (Executive Function, Cognitive Function), and ***speed of processing*** (Processing Speed Domain), and ***working memory*** (four-part CPT). Clinicians can now easily and objectively measure executive control, attention, and other important domains as part of their evaluation and management activities. CNS Vital Signs helps contribute to an efficient, systematic continuity between evaluation and treatment (medication management).

Why Use CNS Vital Signs to Assess AD/HD?

Frontal Lobe

Objective Measure of Clinical Pathology

The CNS Vital Signs tests can compliment other "Executive Function" assessments e.g., Brown AD/HD, BRIEF, CONNERS, Barkley, etc. to help identify and effectively address neurocognitive challenges that can have dramatic impact on academic and vocational performance.

Frontal Lobe Tests		Neurocognitive Function	Clinical Domains	
Symbol Digit Coding (SDC) *Approx. 4 Minutes*		■ Information Processing Speed ■ Complex Attention ■ Visual-Perceptual Speed ■ Information Processing Speed	**Processing Speed**	**Measure:** How well a subject recognizes and processes information i.e., perceiving, attending/responding to incoming information, motor speed, fine motor coordination, and visual-perceptual ability. **Relevance:** Ability to recognize and respond/react i.e., fitness-to-drive, occupation issues, possible danger/risk signs or issues with accuracy and detail.
Stroop Test (ST) *Approx. 4 - 5 Minutes*		■ Executive Function ■ Simple and Complex Reaction Time ■ Speed-Accuracy Trade-Off ■ Information Processing Speed ■ Inhibition / Disinhibition	**Executive Function**	**Measure:** How well a subject recognizes rules, categories, and manages or navigates rapid decision making. **Relevance:** Ability to sequence tasks and manage multiple tasks simultaneously as well as tracking and responding to a set of instructions.
Shifting Attention (SAT) *Approx. 2.5 Minutes*		■ Executive Function: Shifting Sets ■ Reaction Time ■ Information Processing Speed ■ Speed-Accuracy Trade-off	**Complex Attention**	**Measure:** Ability to track and respond to information over lengthy periods of time and/or perform mental tasks requiring vigilance quickly and accurately. **Relevance:** Self-regulation and behavioral control.
Continuous Performance (CPT) *Approx. 5 Minutes*		■ Sustained Attention ■ Choice Reaction Time ■ Impulsivity	**Cognitive Flexibility**	**Measure:** How well subject is able to adapt to rapidly changing and increasingly complex set of directions and/or to manipulate the information. **Relevance:** Reasoning, switching tasks, decision-making, impulse control, strategy formation, attending to conversation.
4-Part Continuous Performance (FPCPT) *Approx. 7 Minutes*		■ Sustained Attention ■ Working Memory	**Working Memory**	**Measure:** How well a subject can perceive and attend to symbols using short-term memory processes (4PCPT). **Relevance:** Ability to carry out short-term memory tasks that support decision making, problem solving, planning, and execution. Enables "right-now" responses.
			Sustained Attention	**Measure:** How well a subject can direct and focus cognitive activity on specific stimuli. **Relevance:** How well a subject can focus and complete task or activity, sequence action, and focus during complex thought.

Auto-scored

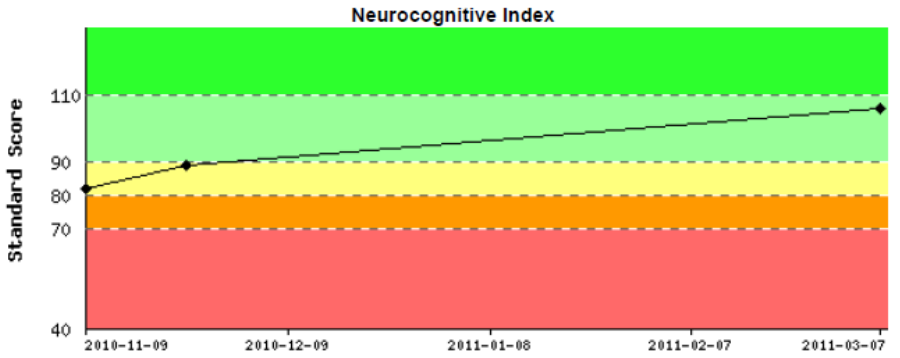
CNS Vital Signs is used throughout the world as a clinical tool to evaluate and manage ADHD. Executive Functioning, sometimes called executive control system, is generally considered a frontal lobe (see orange section of the brain) neurocognitive system that controls and manages other cognitive processes. It is considered a higher-order brain function, which include attention, behavioral planning and response inhibition, and the manipulation of information in problem-solving tasks. Sometimes referred to as the "command and control" or the "conductor" of many cognitive skills.

Neurobehavioral Feedback **Age: 34**

CNS Vital Signs Graphical Report — Generated By Matthew Fleischman on January 11, 2012

Above Average	Average	Low Average	Low	Very Low

Test Time	Neurocognitive Index	Composite Memory	Psychomotor Speed	Reaction Time*	Complex Attention*	Cognitive Flexibility	Verbal Memory	Visual Memory	Processing Speed	Executive Functioning	Social Acuity	Reasoning	Sustained Attention	Working
2010-11-09 08:43:12	82	97	94	64	65	88	96	99	80	102	81	114	74	115
2010-11-24 11:23:47	89	113	109	41	87	94	112	109	97	94	110	128	112	109
2011-03-07 11:49:16	106	105	137	80	102	105	125	82	110	105	110	131	114	115



Many clinicians that provide Neurobehavioral Feedback training also use CNS Vital Signs assessment Platform as part of their evaluation and then to assess neurobehavioral feedback treatment efficacy.

Pre November 9, 2010

Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	81	10	Yes			X		
Composite Memory	97	97	42	Yes		X			
Verbal Memory	51	96	40	Yes		X			
Visual Memory	46	99	47	Yes		X			
Psychomotor Speed	168	93	32	Yes		X			
Reaction Time*	816	64	1	Yes					X
Complex Attention*	15	65	1	Yes					X
Cognitive Flexibility	41	88	21	Yes			X		
Processing Speed	46	80	9	Yes			X		
Executive Function	51	102	55	Yes		X			
Social Acuity	6	81	10	Yes			X		
Reasoning	10	114	82	Yes	X				
Sustained Attention	16	74	4	No				X	
Working Memory	14	115	84	No	X				

Post November 24, 2010

Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	89	23	Yes			X		
Composite Memory	105	113	81	Yes	X				
Verbal Memory	56	112	79	Yes	X				
Visual Memory	49	109	73	Yes		X			
Psychomotor Speed	192	109	73	Yes		X			
Reaction Time*	947	41	1	Yes					X
Complex Attention*	9	87	19	Yes			X		
Cognitive Flexibility	45	94	34	Yes		X			
Processing Speed	58	97	42	Yes		X			
Executive Function	46	94	34	Yes		X			
Social Acuity	10	110	75	Yes	X				
Reasoning	14	128	97	Yes	X				
Sustained Attention	34	112	79	Yes	X				
Working Memory	12	109	73	Yes		X			

Post March 7, 2011

Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	106	66	Yes		X			
Composite Memory	101	105	63	Yes		X			
Verbal Memory	60	125	95	Yes	X				
Visual Memory	41	82	12	Yes			X		
Psychomotor Speed	234	137	99	Yes	X				
Reaction Time*	723	80	9	Yes			X		
Complex Attention*	5	102	55	Yes		X			
Cognitive Flexibility	52	105	63	Yes		X			
Processing Speed	67	110	75	Yes	X				
Executive Function	53	105	63	Yes		X			
Social Acuity	10	110	75	Yes	X				
Reasoning	15	131	98	Yes	X				
Sustained Attention	35	114	82	Yes	X				
Working Memory	14	115	84	Yes	X				

Brief Clinical Procedure Case Study Examples

AD/HD

- Adolescent Assessment and Medication Management
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- Neurobehavioral Feedback Longitudinal Tracking

TBI & PTSD

- 27 year old Marine… 2 IED's in Iraq… TBI & PTSD
- Posit Science Brain Fitness (24 yo professional baseball player)
- Cognitive Resilience Training

SLEEP

- Sleep Disorder Patient

OTHER

- Cognitive Fatigue; Sorting Out Comorbidities; Folic Acid, Plus Stimulant
- Measure Aerobic Exercise
- Use in MCI Dementia

27 YO Marine… 2 IED's: Neurocognitive Tests

Robert, a 27 year old Marine that was involved in 2 improvised explosive devices in Iraq was struggling and was referred to an experimental treatment program using HBOT (hyperbaric oxygen). Robert was given CNS VS neurocognitive tests and 3 health rating scales *(Medical Outcomes Survey SF-36, Epworth Sleep Scale, & NPQ-45)* at baseline prior to treatment.

The baseline revealed frontal lobe impairment and multiple symptom deficits e.g. sleep, depression, etc.

Robert was reevaluated following HBOT therapy, Cognitive behavioral theory was added due to Roberts current emotional state. Post baseline assessments were given one month following the treatment.

General improvement was seen in both his cognitive and symptom scores.

Baseline Post-Injury 1.05.2009

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	**Subject Score**	**Standard Score**	**Percentile**	**VI****	**Above**	**Average**	**Low Average**	**Low**	**Very Low**
Neurocognition Index (NCI)	NA	85	16	Yes			x		
Composite Memory	102	103	58	Yes		x			
Verbal Memory	51	93	32	Yes		x			
Visual Memory	51	110	75	Yes	x				
Processing Speed	48	79	8	Yes				x	
Executive Function	34	75	5	Yes				x	
Psychomotor Speed	174	93	32	Yes		x			
Reaction Time*	555	107	68	Yes		x			
Complex Attention*	21	56	1	Yes					x
Cognitive Flexibility	26	63	1	Yes					x
Total Test Time (min:secs)	39:40				Total time taken to complete the tests shown.				

Post-Injury Treatment 2.11.2009

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	**Subject Score**	**Standard Score**	**Percentile**	**VI****	**Above**	**Average**	**Low Average**	**Low**	**Very Low**
Neurocognition Index (NCI)	NA	95	37	Yes		x			
Composite Memory	92	84	14	Yes			x		
Verbal Memory	45	71	3	Yes				x	
Visual Memory	47	99	47	Yes		x			
Processing Speed	49	80	9	Yes			x		
Executive Function	54	105	63	Yes		x			
Psychomotor Speed	176	94	34	Yes		x			
Reaction Time*	605	98	45	Yes		x			
Complex Attention*	7	98	45	Yes		x			
Cognitive Flexibility	50	100	50	Yes		x			
Total Test Time (min:secs)	49:06				Total time taken to complete the tests shown.				

27 YO Marine... 2 IED's: SF-36

1. Robert, a 27 year old Marine was still running 5 miles a day and reported a high pain tolerance.
2. His scores for Role Functioning , Energy/ Fatigue, Emotional Well Being, Social Functioning, and Health Change was confirmed by a spouses informant scale and through clinical interview.

   Robert was drinking a fifth of alcohol a week.
3. ***General improvement was seen in his symptom scores following treatment.***

Baseline Post-Injury

Domain	Score	Standard	Percentile	
Physical Functioning	95	113	81 (1)	As part of the Medical Outcomes Study (MOS) — a multi-year, multi-site study to explain variations in patient outcomes — RAND (www.rand.org) developed the 36-Item Medical Outcomes Survey (SF-36). SF-36 is a set of generic, coherent, and easily administered quality-of-life measures. These measures rely upon patient self-reporting and are now widely utilized by managed care organizations and by Medicare for routine monitoring and assessment of care outcomes in adult patients.
Role Functioning - Physical	0	81	10	
Role Functioning - Emotional	0	76	5	
Energy/Fatigue	10	72	3 (2)	
Emotional Well Being	12	60	1	
Social Functioning	0	54	1	
Pain	100	117	87 (1)	
General Health	45	91	27	
Health Change	25	78	7 (2)	

Post-Injury Treatment

Domain	Score	Standard	Percentile	
Physical Functioning	100	116	86	As part of the Medical Outcomes Study (MOS) — a multi-year, multi-site study to explain variations in patient outcomes — RAND (www.rand.org) developed the 36-Item Medical Outcomes Survey (SF-36). SF-36 is a set of generic, coherent, and easily administered quality-of-life measures. These measures rely upon patient self-reporting and are now widely utilized by managed care organizations and by Medicare for routine monitoring and assessment of care outcomes in adult patients.
Role Functioning - Physical	100	117	87	
Role Functioning - Emotional	100	113	81	
Energy/Fatigue	35	89	23	
Emotional Well Being	48	85	16 (3)	
Social Functioning	38	76	5	
Pain	100	117	87	
General Health	65	106	66	
Health Change	25	78	7	

27 YO Marine... 2 IED's: Epworth Sleep

Baseline Post-Injury

In contrast to just feeling tired, how likely are you to doze off or fall asleep in the following situation?		
1	Sitting and reading	3 - High chance of dozing
2	Watching TV	2 - Moderate chance of dozing
3	Sitting inactive in a public place (e.g., a theater or a meeting)	2 - Moderate chance of dozing
4	As a passenger in a car for an hour without a break	1 - Slight chance of dozing
5	Lying down to rest in the afternoon when circumstances permit	2 - Moderate chance of dozing
6	Sitting and talking to someone	0 - Would never doze
7	Sitting quietly after a lunch without alcohol	0 - Would never doze
8	In a car, while stopped for a few minutes in traffic	0 - Would never doze
	Epworth Score	**10**

Post-Injury Treatment

In contrast to just feeling tired, how likely are you to doze off or fall asleep in the following situation?		
1	Sitting and reading	2 - Moderate chance of dozing
2	Watching TV	1 - Slight chance of dozing
3	Sitting inactive in a public place (e.g., a theater or a meeting)	1 - Slight chance of dozing
4	As a passenger in a car for an hour without a break	0 - Would never doze
5	Lying down to rest in the afternoon when circumstances permit	1 - Slight chance of dozing
6	Sitting and talking to someone	0 - Would never doze
7	Sitting quietly after a lunch without alcohol	1 - Slight chance of dozing
8	In a car, while stopped for a few minutes in traffic	0 - Would never doze
	Epworth Score	**6**

The patient is getting enough sleep if they score 6 or less. Scores of 7 or 8 are average. If the patients score is 9 or more they should seek the advice of a sleep specialist without delay.

27 YO Marine... 2 IED's: NPQ-45

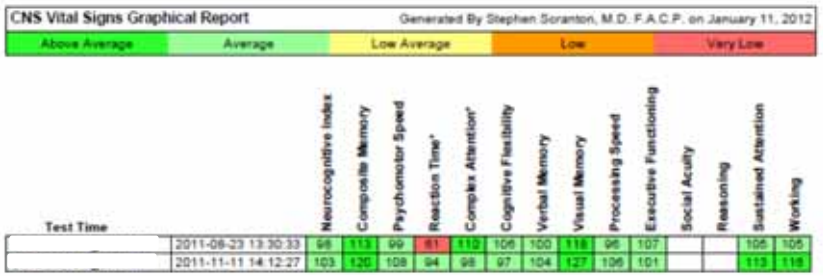
Baseline Post-Injury

Domain	Score	Severity
Attention	280	Severe
Impulsive	280	Severe
Memory	225	Severe
Anxiety	300	Severe
Panic	167	Moderate
Depression	300	Severe
Mood Stability	275	Severe
Aggression	125	Mild
Fatigue	233	Severe
Sleep	300	Severe
Suicide	167	Moderate
Pain	175	Moderate

Post-Injury Treatment

Domain	Score	Severity
Attention	80	Mild
Impulsive	40	Not a problem
Memory	25	Not a problem
Anxiety	67	Not a problem
Panic	67	Not a problem
Depression	160	Moderate
Mood Stability	75	Mild
Aggression	0	Not a problem
Fatigue	0	Not a problem
Sleep	100	Mild
Suicide	0	Not a problem
Pain	25	Not a problem

Posit Science: 24 Year Old Baseball Player



Tom, a 24 year old professional baseball player was hit in the head with a baseball and was struggling. He was referred to a clinical practice in Florida for cognitive training using the Posit Science System. Tom, was given the CNS VS neurocognitive tests at baseline prior to treatment.

The baseline revealed reaction time impairment.

Tom was reevaluated following therapy. Post baseline assessments were given one month following the treatment.

Pre

Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	98	45	Yes		X			
Composite Memory	107	113	81	Yes	X				
Verbal Memory	53	100	50	Yes		X			
Visual Memory	54	118	88	Yes	X				
Psychomotor Speed	183	99	47	Yes		X			
Reaction Time*	817	61	1	Yes					X
Complex Attention*	3	110	75	Yes	X				
Cognitive Flexibility	54	106	66	Yes		X			
Processing Speed	62	96	40	Yes		X			
Executive Function	55	107	68	Yes		X			
Sustained Attention	32	105	63	Yes		X			
Working Memory	12	105	63	Yes		X			

Post

Patient Profile	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Valid Score**	Above	Average	Low Average	Low	Very Low
Neurocognitive Index (NCI)	NA	103	58	Yes		X			
Composite Memory	111	120	91	Yes	X				
Verbal Memory	54	104	61	Yes		X			
Visual Memory	57	127	96	Yes	X				
Psychomotor Speed	197	108	70	Yes		X			
Reaction Time*	632	94	34	Yes		X			
Complex Attention*	7	98	45	Yes		X			
Cognitive Flexibility	48	97	42	Yes		X			
Processing Speed	70	106	66	Yes		X			
Executive Function	51	101	53	Yes		X			
Sustained Attention	37	113	81	Yes	X				
Working Memory	15	116	86	Yes	X				

Cognitive Resilience Training

20 Year old soldier post IED

6 Week Cognitive Resilience program

Pre BASELINE

Patient Profile	Percentile Range			> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range			> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Above	Average	Low Average	Low	Very Low
Verbal Memory	50	89	23			X		
Processing Speed	56	89	23			X		
Executive Functioning	56	108	70		X			
Social Acuity	5	80	9			X		

Week One: Effective Movement Training including VIPR, TRX and functional movement assessment and remedial interventions including triangulated movement

Week Two: Nutrition and Hydration incorporating 10g fish oil daily, 300ml water per 10kg, no processed food, sugar, alcohol etc.

Week Three: Recovery training using Heart Rate Variability training and mindfulness

Post 6 WEEK TREATMENT

Patient Profile	Percentile Range			> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range			> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	Above	Average	Low Average	Low	Very Low
Verbal Memory	51	93	32		X			
Processing Speed	58	91	27		X			
Executive Functioning	58	111	77	X				
Social Acuity	8	98	45		X			

Mindset: Week Four, incorporating gratitude rituals, positive psychology based interventions, cognitive restructuring, HRV training, Mindfulness training

Mindset: Week Five, re-socializing including Interpersonal Psychotherapy, Relaxation training, self-hypnosis, visualization, calibrated exposure desensitization therapy

Week Six, Stress management, Heart Rate Variability training, review of nutrition and exercise rituals, advanced exposure to threatening stimuli

A six week integrated solution based on exercise, nutrition/hydration, recovery and mindset interventions resulted in normalization of all parameters measured and a return to active duties.

Follow up treatment with medication in the field made little difference to deployment status.

Integrated body-brain solutions appear to be effective interventions for such clients

See www.roysugarman.com
Enquiries: Dr Roy Sugarman
USA: 480-463-1109
Aus: 0403 289 092

Brief Clinical Procedure Case Study Examples

AD/HD

- Adolescent Assessment and Medication Management
- College Student Assessment and Medication Management
- AD/HD Evaluation and Cogmed Evidence-Based Outcomes
- Neurobehavioral Feedback Longitudinal Tracking

TBI & PTSD

- 27 year old Marine… 2 IED's in Iraq… TBI & PTSD
- Posit Science Brain Fitness (24 yo professional baseball player)
- Cognitive Resilience Training

SLEEP

- Sleep Disorder Patient

OTHER

- Cognitive Fatigue; ***Sorting Out Comorbidities***; Folic Acid, Plus Stimulant
- Measure Aerobic Exercise
- Use in MCI Dementia

Sleep Case Study

1 PRE: Part of Sleep Assessment Protocol

Dan a 39 Year Old Office Worker: Epworth Sleepiness Scale

In contrast to just feeling tired, how likely are you to doze off or fall asleep in the following situation?		
1	Sitting and reading	3 - High chance of dozing
2	Watching TV	2 - Moderate chance of dozing
3	Sitting inactive in a public place (e.g., a theater or a meeting)	2 - Moderate chance of dozing
4	As a passenger in a car for an hour without a break	1 - Slight chance of dozing
5	Lying down to rest in the afternoon when circumstances permit	2 - Moderate chance of dozing
6	Sitting and talking to someone	0 - Would never doze
7	Sitting quietly after a lunch without alcohol	0 - Would never doze
8	In a car, while stopped for a few minutes in traffic	0 - Would never doze
	Epworth Score	10

The patient is getting enough sleep if they score 6 or less. Scores of 7 or 8 are average. If the patients score is 9 or more they should seek the advice of a sleep specialist without delay

NeuroPsych Questionnaire (NPQ) SF-45

Domain	Score	Severity	Description
Attention	190	Moderate	The Neuropsych Questionnaire Short Form asks patients (or an appropriate observer) a series of questions about their clinical state. The questions are about the symptoms of various neuropsychiatric disorders. The terminology is similar to that used in the diagnostic manuals, and in many familiar clinical questionnaires and rating scales; but it has been simplified, and all symptoms are scored on the same metric. Scores are reported on a scale of 0 (not a problem) to 300 (severe). As a rule, scores above 225 indicate a severe problem; scores from 150-224 indicate a moderate problem; and scores from 75-149, a mild problem. A high score on the Neuropsych Questionnaire Short Form means that the patient is reporting more symptoms of greater intensity. It doesn't necessarily mean that the patient has a particular condition; just that he or she (or their spouse, parent or caregiver) are saying that they have a lot of intense symptoms. Conversely, a low score simply means that the patient (or caregiver) is not reporting symptoms associated with a particular condition, at least during the period of time specified. It does not mean that the patient does not have the condition. Just as some people over-state their problems, others tend to under-state their problems. The Neuropsych Questionnaire Short Form is not a diagnostic instrument. The results it generates are only meant to be interpreted by an experienced clinician in the course of a clinical examination.
Impulsive	217	Moderate	
Memory	200	Moderate	
Anxiety	220	Moderate	
Panic	120	Mild	
Depression	182	Moderate	
Mood Stability	188	Moderate	
Aggression	120	Mild	
Fatigue	233	**Severe**	
Sleep	300	**Severe**	
Suicide	40	Not a Problem	
Pain	120	Mild	

Every patient with SLEEP can have a Unique PROFILE.

Dan, a thirty-nine year old man struggling vocationally was given CNS Vital Signs VSX BRIEF-CORE Clinical Battery… he scored low in 6 of 9 cognitive domains (pre-cpap).

After examining the H&P, the test results, and the SF-36, NPQ-45, and Epworth Sleep rating scales; Dan underwent a sleep study and was prescribed CPAP. Following four weeks of compliant CPAP therapy he was administered the CNS Vital Signs test again (post-cpap).

The CNS Vital Signs report is available seconds after the testing session ends and is a useful tool fort ***measuring treatment effect and helping clinicians reinforce CPAP compliance to maximize neurocognitive effect.***

1 Pre CPAP: May 12, 2011

Baseline Prior to Sleep Study

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	81	10	Yes			x		
Composite Memory	86	75	5	Yes				x	
Verbal Memory	43	71	3	Yes				x	
Visual Memory	43	89	23	Yes			x		
Processing Speed	43	75	5	Yes				x	
Executive Function	35	78	7	Yes				x	
Psychomotor Speed	152	83	13	Yes			x		
Reaction Time*	642	95	37	Yes		x			
Complex Attention*	12	76	5	Yes				x	
Cognitive Flexibility	34	78	7	Yes				x	
Total Test Time (min: secs)	34:24				Total time taken to complete the tests shown.				

2 Post CPAP: June 24, 2011

Retest Following Four Weeks of Compliant CPAP

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	94	34	Yes		x			
Composite Memory	96	95	37	Yes		x			
Verbal Memory	48	87	19	Yes			x		
Visual Memory	48	106	66	Yes		x			
Processing Speed	62	103	58	Yes		x			
Executive Function	45	93	32	Yes		x			
Psychomotor Speed	178	100	50	Yes		x			
Reaction Time*	674	89	23	Yes			x		
Complex Attention*	7	94	34	Yes		x			
Cognitive Flexibility	43	91	27	Yes		x			
Total Test Time (min: secs)	28:39				Total time taken to complete the tests shown.				

"I was like "WOW what a difference" when I was able to see the benefits of the CPAP machine..."

Sleep Study Participant

"It was like getting my old husband back... he wanted to quit the CPAP machine... I said let's give it 3 weeks more... now I think he is motivated."

Sleep Study Participant Spouse

Brief Clinical Procedure Case Study Examples

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- Cognitive Resilience Training

SLEEP

- Sleep Disorder Patient

OTHER

- Cognitive Fatigue; ***Sorting Out Comorbidities***; Folic Acid, Plus Stimulant
- Measure Aerobic Exercise
- Use in MCI Dementia

Case Study: Cognitive Fatigue – ADD

Lisa, a 54 year old mother of 2 would be driving in Dallas traffic and start having “Mini-Seizures” that would require her to pull to the side of the road and her husband would need to leave work to rescue her.

Lisa had been to numerous doctors and generally prescribed multiple anti-depressants and anti-anxiety medications with little or no effect.

Lisa was referred to a Neurologist and was tested using CNS VS, on the last test she started exhibiting the symptoms seen while driving.

Lisa was given a number of blood and genetic tests and a was reevaluated following therapy. Post baseline assessment was given one year later post folic acid therapy. Lisa had not experienced any “Mini-Seizures” one year later and improved cognition was reveled using CNS VS retest. Based on the follow-up exam and past history Lisa was administered the Adult AD/HD scale and based on the follow-up test, history, and rating scale she was prescribed a low dose of Vyvanse…

1 Baseline / Patient In-take

CNS Vital Signs Clinical Report	Test Date: November 26 2009 10:20:24
Subject Reference/ID: CogFatigueADD1	Administrator: administrator
Language: English (United States)	Age: 57

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	78	7	Yes				x	
Composite Memory	94	93	32	Yes		x			
Verbal Memory	52	99	47	Yes		x			
Visual Memory	42	90	25	Yes		x			
Processing Speed	29	64	1	Yes					x
Executive Function	28	77	6	Yes				x	
Psychomotor Speed	127	69	2	Yes					x
Reaction Time*	751	87	19	Yes			x		
Complex Attention*	16	70	2	Yes				x	
Cognitive Flexibility	22	70	2	Yes				x	
Total Test Time (min:secs)	34:07				Total time taken to complete the tests shown.				

2 Post Folic Acid Therapy… then assessed for Attention Deficit

CNS Vital Signs Clinical Report	Test Date: October 16 2010 08:11:16
Subject Reference/ID: CogFatigueADD2	Administrator: administrator
Language: English (United States)	Age: 58

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	97	42	Yes		x			
Composite Memory	106	118	88	Yes	x				
Verbal Memory	54	106	66	Yes		x			
Visual Memory	52	122	93	Yes	x				
Processing Speed	36	76	5	Yes				x	
Executive Function	37	89	23	Yes			x		
Psychomotor Speed	149	88	21	Yes			x		
Reaction Time*	722	92	30	Yes		x			
Complex Attention*	7	99	47	Yes		x			
Cognitive Flexibility	36	89	23	Yes			x		
Total Test Time (min:secs)	32:37				Total time taken to complete the tests shown.				

Administered Adult AD/HD Scale

❷ Lisa's Adult AD/HD Rating Scale

1	How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?	3 - Often
2	How often do you have difficulty getting things in order when you have to do a task that requires organization?	4 - Very Often
3	How often do you have problems remembering appointments or obligations?	2 - Sometimes
4	When you have a task that requires a lot of thought, how often do you avoid or delay getting started?	4 - Very Often
5	How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?	2 - Sometimes
6	How often do you feel overly active and compelled to do things, like you were driven by a motor?	2 - Sometimes
7	How often do you make careless mistakes when you have to work on a boring or difficult project?	3 - Often
8	How often do you have difficulty keeping your attention when you are doing boring or repetitive work?	3 - Often
9	How often do you have difficulty concentrating on what people say to you, even when they are speaking to you directly?	4 - Very Often
	Part A (Inattentive)	27
10	How often do you misplace or have difficulty finding things at home or work?	3 - Often
11	How often are you distracted by activity or noise around you?	2 - Sometimes
12	How often do you leave your seat in meetings or other situations in which you are expected to remain seated?	1 - Rarely
13	How often do you feel restless or fidgety?	2 - Sometimes
14	How often do you have difficulty unwinding and relaxing when you have time to yourself?	2 - Sometimes
15	How often do you find yourself talking too much when you are in social situations?	1 - Rarely
16	When you're in a conversation, how often do you find yourself finishing the sentences of the people you are talking to, before they can finish them themselves?	1 - Rarely
17	How often do you have difficulty waiting your turn in situations when turn taking is required?	1 - Rarely
18	How often do you interrupt others when they are busy?	2 - Sometimes
	Part B (Hyperactive/Impulsive)	15
	ASRS Total Score	42

❸ Lisa's Cognitive Fatigue – ADD Case Study, continued

A month and a half later Lisa was retested and the effect of a low dose stimulant, adjusted diet and exercise was revealed both objectively by the CNS Vital Signs test as well as by statements from Lisa.

COMMENT:

One of the most difficult assessments is determining the comorbidity of cognition dysfunction that leads to depression or is the depression caused from metabolic or environmental circumstances.

The following two pages has information from a recent study that can help demonstrate how CNS Vital Signs can help clinicians sort out possible underlying conditions that may need to be ruled in or out.

CNS Vital Signs Clinical Report	Test Date: December 15 2010 12:48:20
Subject Reference/ID: CogFatigueADD3	Administrator: administrator
Language: English (United States)	Age: 58

Patient Profile:	Percentile Range				> 74	25 - 74	9 - 24	2 - 8	< 2
	Standard Score Range				> 109	90 - 109	80 - 89	70 - 79	< 70
Domain Scores	Subject Score	Standard Score	Percentile	VI**	Above	Average	Low Average	Low	Very Low
Neurocognition Index (NCI)	NA	102	55	Yes		x			
Composite Memory	102	110	75	Yes	x				
Verbal Memory	51	96	40	Yes		x			
Visual Memory	51	119	90	Yes	x				
Processing Speed	46	94	34	Yes		x			
Executive Function	42	96	40	Yes		x			
Psychomotor Speed	158	96	40	Yes		x			
Reaction Time*	724	92	30	Yes		x			
Complex Attention*	2	115	84	Yes	x				
Cognitive Flexibility	41	96	40	Yes		x			
Total Test Time (min:secs)	37:15				Total time taken to complete the tests shown.				

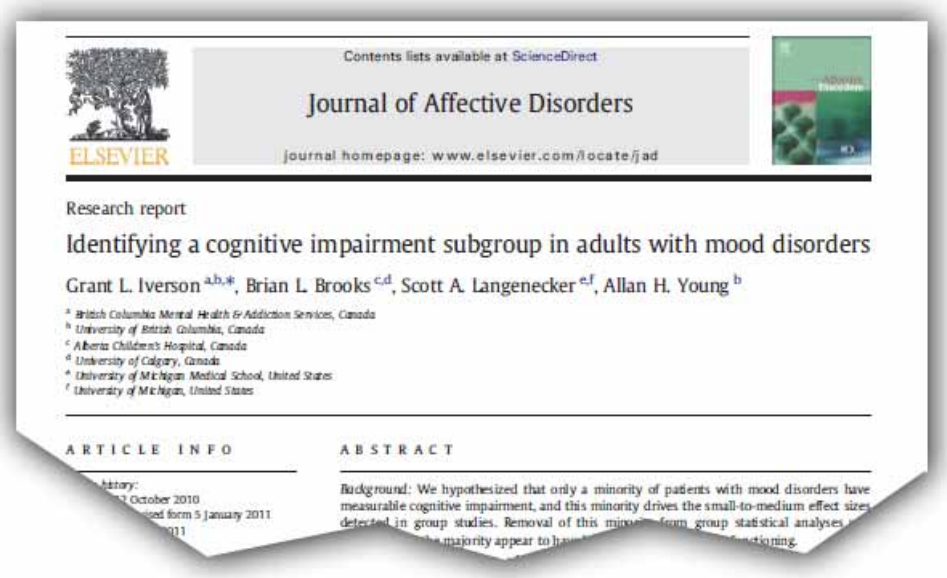
CNS Vital Sign Graphical Report

Above Average	Average	Low Average	Low	Very Low

Subject	Test Time	Neurocognitive Index	Composite Memory	Psychomotor Speed	Reaction Time*	Complex Attention	Cognitive Flexibility	Verbal Memory	Visual Memory	Processing Speed	Executive Functioning	Social Acuity	Reasoning	Sustained Attention	Working
● CogFatigueADD1	2009-11-26 10:20:24	78	93	69	87	70	70	99	90	64	77				
■ CogFatigueADD2	2010-10-16 08:11:16	97	118	88	92	99	89	106	122	76	89				
◆ CogFatigueADD3	2010-12-15 12:48:20	102	110	96	92	115	96	96	119	94	96				

Helping Assess Comorbidities

Cognition and Depression



Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research report

Identifying a cognitive impairment subgroup in adults with mood disorders

Grant L. Iverson [a,b,*], Brian L. Brooks [c,d], Scott A. Langenecker [e,f], Allan H. Young [b]

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[c] Alberta Children's Hospital, Canada
[d] University of Calgary, Canada
[e] University of Michigan Medical School, United States
[f] University of Michigan, United States

ARTICLE INFO

ABSTRACT

Background: We hypothesized that only a minority of patients with mood disorders have measurable cognitive impairment, and this minority drives the small-to-medium effect sizes detected in group studies. Removal of this minority from group statistical analyses ... the majority appear to have ... functioning.

"Indeed, there is some suggestion that cognitive or executive functioning deficits may be a trait risk factor for depression (Douglas and Porter, 2009; Frasch et al., 2009; Micco et al., 2009; Reppermund et al., 2009). Furthermore, worse neuropsychological test performance at baseline is associated with poorer response to treatment (Dunkin et al., 2000; Kampf-Sherf et al., 2004; Mohlman and Gorman, 2005), and cognitive deficits are more pronounced in patients who are unemployed (Baune et al., 2010). It is possible that treatment refractory depression is a subtype characterized in part by cognitive impairment.

The accurate identification and quantification of neurocognitive impairment are important for research relating to neurobiological underpinnings, treatment, and functional outcome in patients with mood disorders. It is essential, methodologically, that we have accurate methods for identifying those patients who are objectively cognitively impaired and separate them from patients who have the subjective experience of poor thinking skills or thinking that is easily perturbed by negative affect, but perform normally on cognitive testing in controlled conditions. The treatments and outcomes for these two groups may differ markedly, as well as the prognosis."

Source: Identifying a cognitive impairment subgroup in adults with mood disorders. J Affect Disord. 2011 Aug;132(3):360-7. Epub 2011 Mar 25.

http://www.ncbi.nlm.nih.gov/pubmed/21439647

Cognition and Depression

Cognitive Flexibility

Domain scored from two venerable AD/HD tests

Healthy Control

Mood Disorder, Normal Cognition

Mood Disorder, Cognitive Impairment

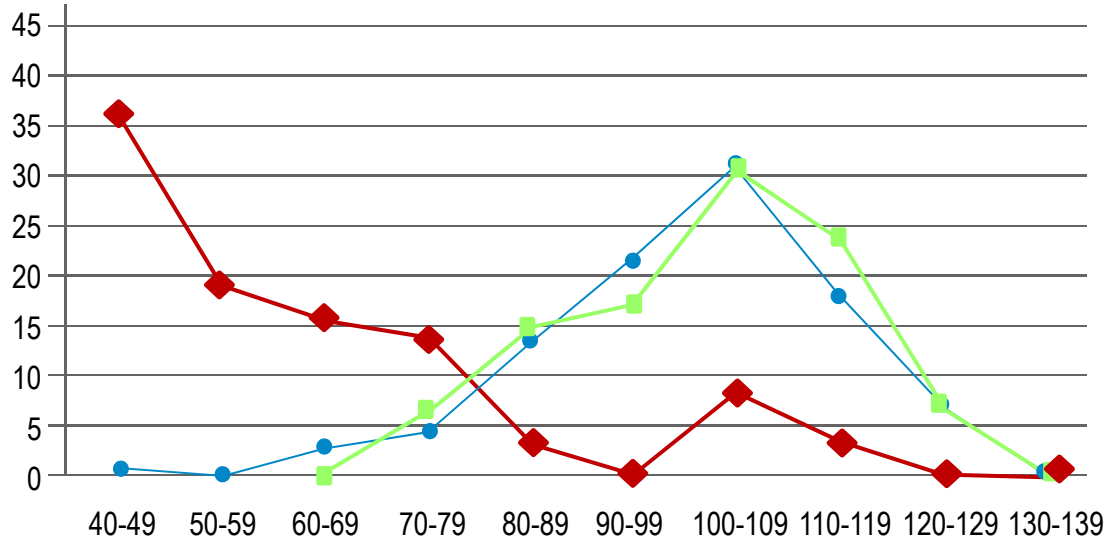


Fig. 3. Distributions of **CNS Vital Signs *cognitive flexibility*** index score in patients with or without impaired cognition. Figure note: Healthy control, N=660. Mood disorder, normal cognition, n=128. Mood disorder, cognitive impairment, n=58. *Normative scores were truncated at 40. Each value represents the percentage of subjects in that score range.

Human Performance Application

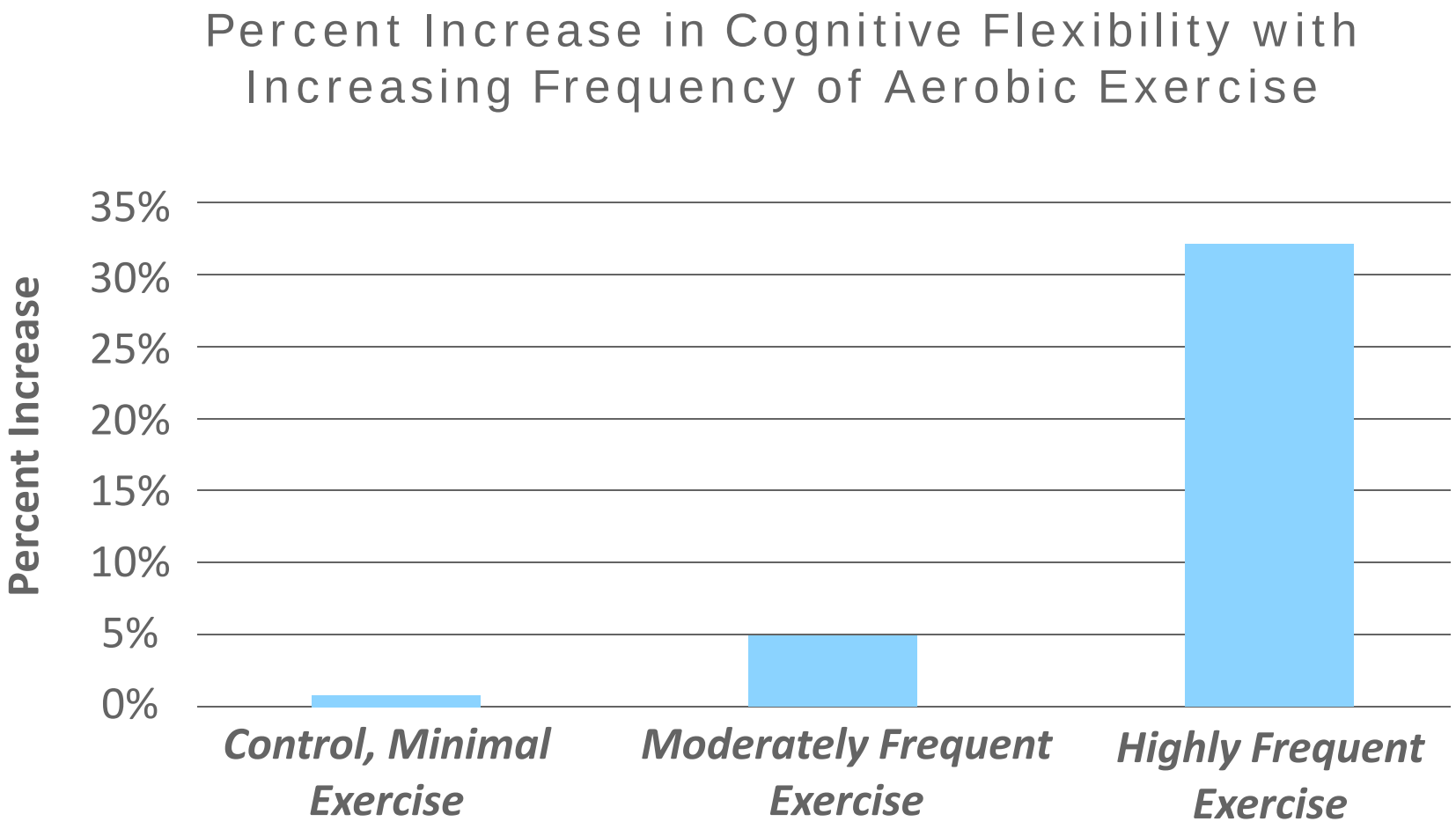
Source: J Clin Psychol Med Settings (2009) 16:186–193; Steven Masley, Richard Roetzheim, Thomas Gualtieri

Aerobic Exercise Enhances Cognitive Flexibility

Introduction: Physical activity is believed to prevent cognitive decline and may enhance frontal lobe activity… The association between physical fitness and cognitive health is as intuitive as ‘‘mens sana in corpore sano.’’ Over time, this Latin phrase has come to mean that only a healthy body can produce or sustain a healthy mind…

Conclusion: Over a 10 week period, increasing frequency of aerobic activity was shown to be associated with enhanced cognitive performance, in particular cognitive flexibility, a measure of executive function.

Human Performance Application

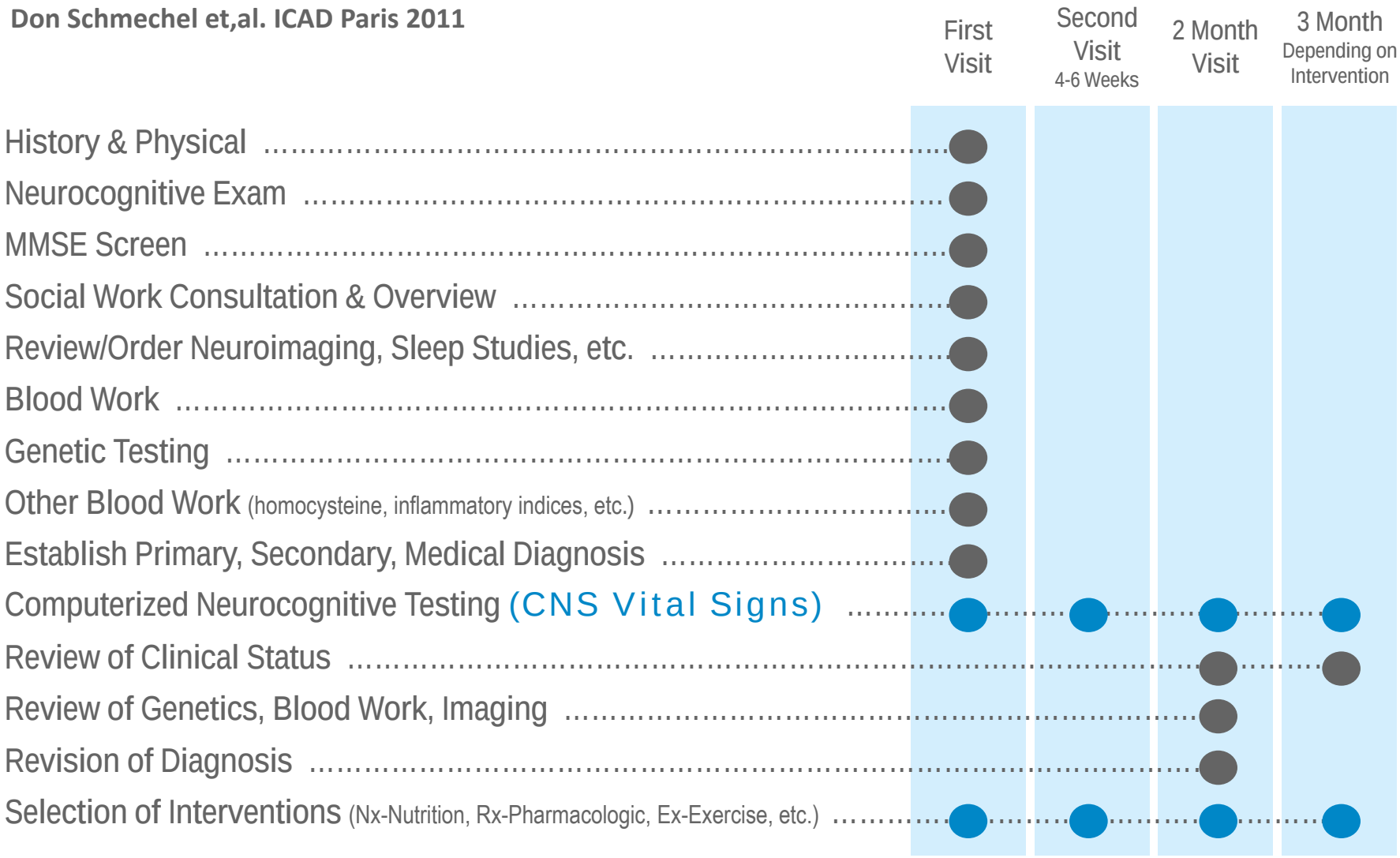


Source: J Clin Psychol Med Settings (2009) 16:186–193; Steven Masley, Richard Roetzheim, Thomas Gualtieri

HOW? Neurocognitive Health Management

Aggressive Evaluation, Management and Monitoring of MCI/Dementia Syndromes

Don Schmechel et,al. ICAD Paris 2011



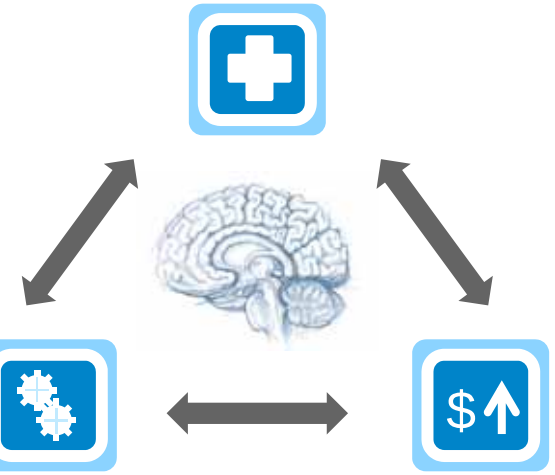
Why CNS Vital Signs?

CNS Vital Signs ***valid, reliable, and affordable*** *'research quality' NEUROCOGNITIVE & BEHAVIORAL HEALTH assessment platform can be easily configured and deployed depending on each practices or researchers needs and goals. The CNS Vital Signs assessment platforms helps to support a practices comprehensive, state-of-the-art clinical assessment, and evidence-based treatment services for children, adolescents, and adults across the lifespan by:*

- Accurately measuring and characterizing a patient's neurocognitive function based on his or her status or effort
- Facilitating the thinking about the patient's condition (50+ well known medical and health rating scales)and helping to explain the patient's current difficulties
- Optimizing serial administration which helps to monitor and guide effective intervention.
- *Systematically collecting brain function, behavioral, symptom, and comorbidity data* ***enabling outcomes and evidence-based medicine***

Enhanced Brain & Behavior Evaluation and Care Management

OBJECTIVE, PRECISE, and STANDARDIZED… *Customizable Toolboxes or Test Panels Supporting many Neurological, Psychiatric, & Psychological Clinical Guidelines*



Extend Practice Efficiency

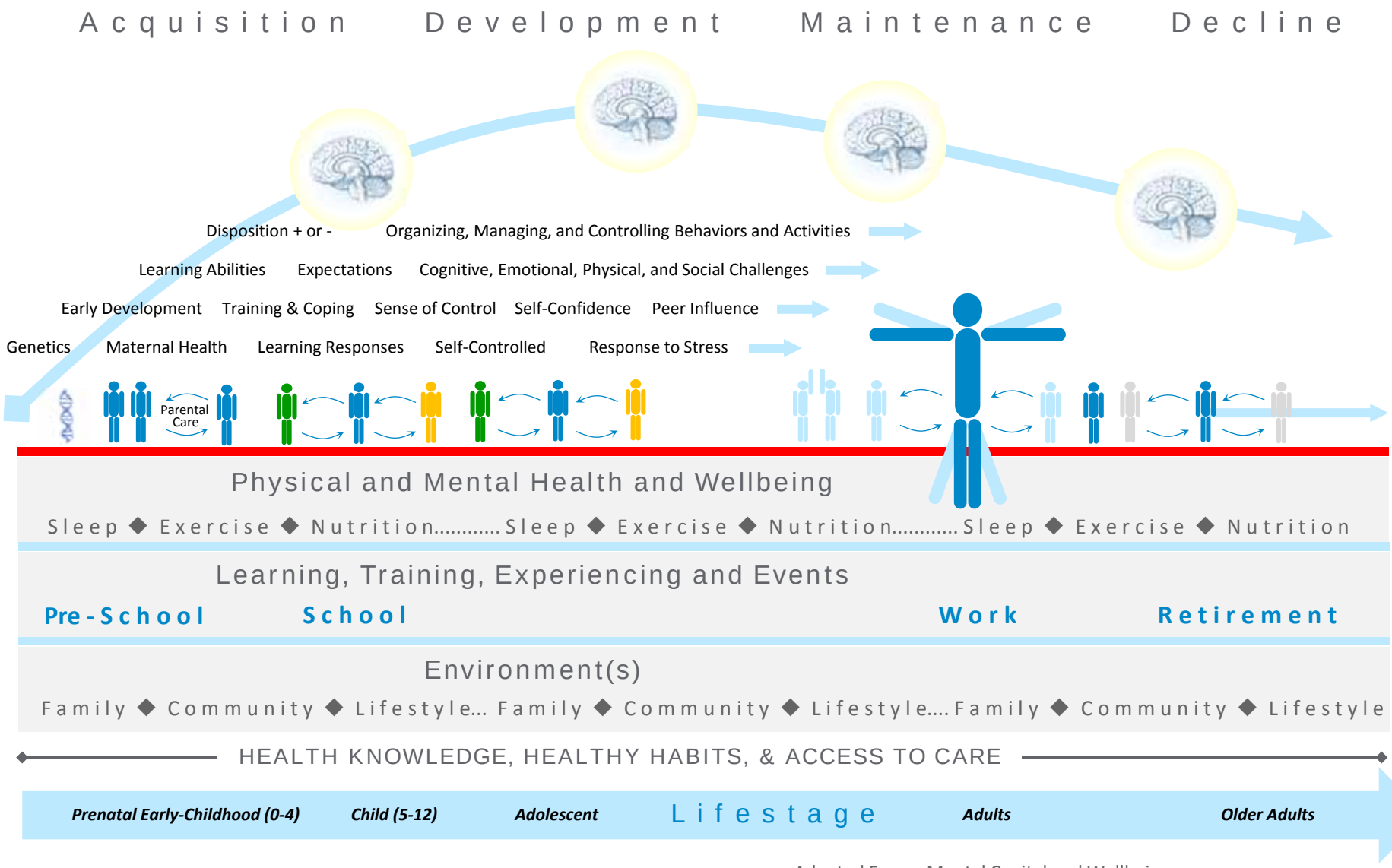
Objective and Evidence-Based Assessments, Auto-Scored and Systematically Documented.

(HIPAA Enabled)

Enhanced Revenue Streams

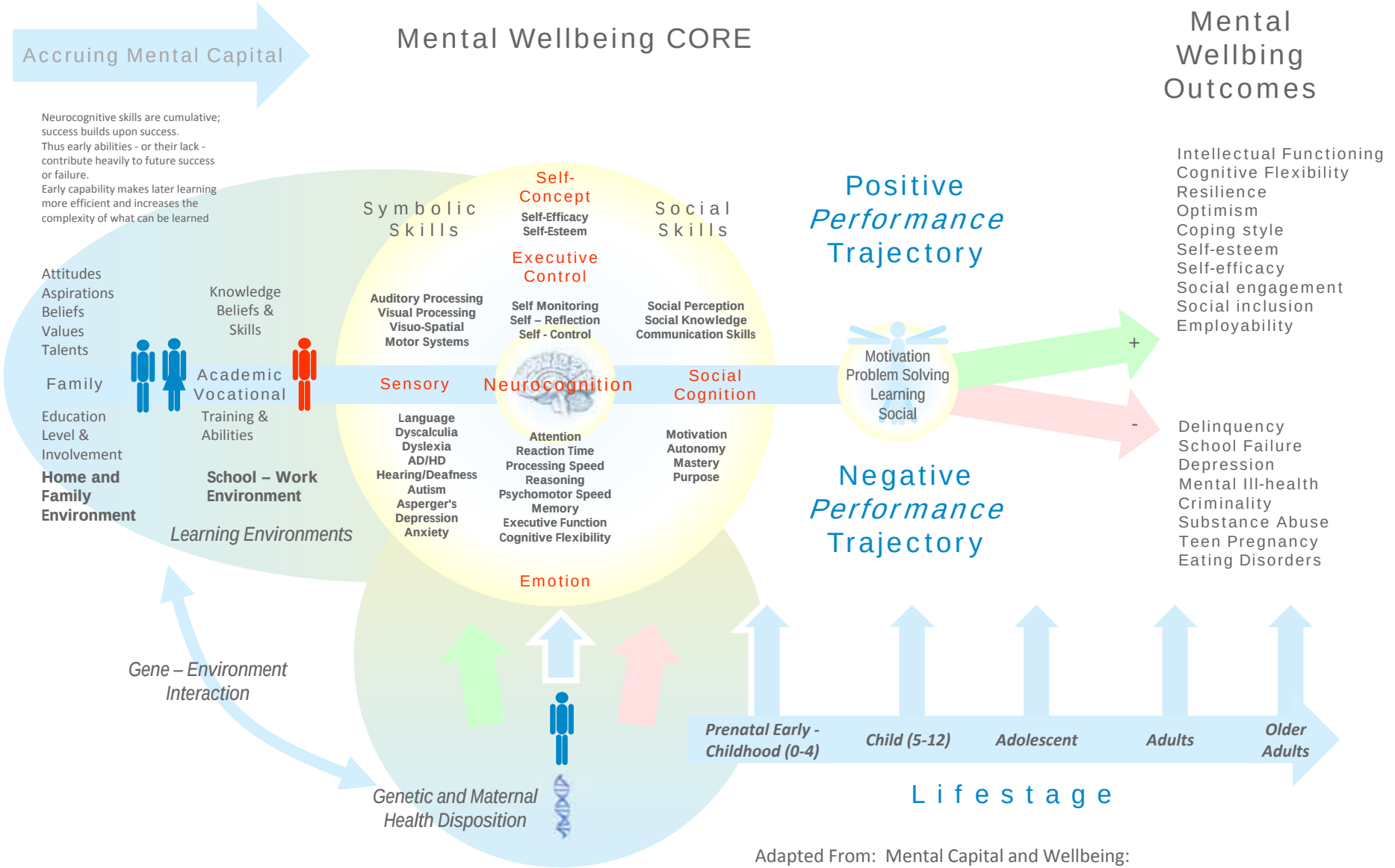
Expanded Services with Well Established Billing Codes to Improve Practice Performance

CNS Vital Signs Vision:
Advancing Neurocognitive Assessment Across the Lifespan



Adapted From: Mental Capital and Wellbeing:
Making the most of ourselves in the 21st century

Advancing Neuro-Psychiatric Care... Assessing Neurocognition is a Key Factor



Adapted From: Mental Capital and Wellbeing: Making the most of ourselves in the 21st century

NEXT STEPS:

Contact Us...

Getting Started

Step One: Register at www.CNSVS.com

After registering download the VSX 'Brief-Core" Assessment Software with 5 FREE Test Sessions… Take it for a test drive.

Step Two: ***Schedule a FREE One-on-One In-Service Webinar…*** Contact CNS Vital Signs Support support@cnsvs.com with dates and times that you will be available.

After the webinar the total CNS Vital Signs Assessment platform (Web & Local) can be configured to meet your practice needs.

Learn More

Contact me to receive report examples, case studies, administration guides etc.

- Website: www.CNSVS.com
- Phone: 888.750.6941
- Email: support@cnsvs.com
- Address:
  598 Airport Blvd.
  Suite 1400
  Morrisville, NC 27560

"The webinar training was terrific… it covered the Validity & Reliability of the platform, the interpretation of results, billing and coding, testing protocol, and the integration of the CNS Vital Signs platform into our practice." ***Practice Administrator***