

Chapter 2- Assessing and Understanding the Whole Child: The Complete Neuropsychological Evaluation

In Chapter 2 of *Integrating Neuropsychological and Psychological Evaluations: Assessing and Helping the Whole Child*, the current usage of neuropsychological evaluations in the school setting is discussed. Also included in the chapter is a brief description of the various domains evaluated by this type of assessment. Here you will find vignettes that provide real world examples of the usefulness of a complete Neuropsychological Evaluation and some examples of how functional domains may be described in and out of the evaluation environment.

The following story, about a young girl is a good example of the importance of assessing both cognitive and emotional functioning in school aged children.

At barely seven years old, Lucy was failing spectacularly in the first grade. In spite of being placed in a small, language based classroom in her local public school, and even with the support of a one on one aide, she was regularly out of control.

Though Lucy's developmental milestones were generally within normal limits, she had been a difficult baby who hardly slept and who was constantly on the move. Her history with school was problematic from the start. In preschool, she was allowed to "do her own thing", otherwise she would tantrum, throw objects, crawl under furniture or bolt, mostly during transitions. The pre-school was able to "manage" her using this hands off approach. At five and a half, she began kindergarten and, the imposition of more structure, immediately increased her bolting and tantrums. By first grade, she was on an Individualized Education Program (IEP- see Chapter 11) with Occupational Therapy, counseling and reading and math special education services. Still, her behavior deteriorated over the course of the year and parents would receive frequent calls to pick her up. By the middle of the year, they were receiving daily incident reports from the school. A behavior plan was put in place that included time out in a "breakroom." However, this plan made no dent in decreasing her behaviors.

Academic evaluations completed by school personnel in the fall of her first grade year indicated that Lucy was delayed in reading and math skills. An OT evaluation documented sensory issues including tactile, taste/smell, sensory seeking and auditory filtering. A psychological evaluation conducted by an outside agency gave her a Verbal Reasoning score of 102, a Perceptual Reasoning score of 88 and Processing Speed score of 94 on the Wechsler Primary and Preschool Scale of Intelligence, Second Edition (WPPSI-III- see Chapter 2). It was noted that executive functioning issues, regulation problems and variability in mood impacted her performance and that these issues were also felt to be impeding her ability to access the curriculum in school. A speech and language evaluation found that her core language skills were below average. Her progress report in the middle of first grade indicated that Lucy's "inappropriate behaviors (had) impeded her progress in the regular education classroom". These behaviors included "refusing to work, growling, screaming, throwing

herself on the floor, throwing items, disrobing, spitting, blowing mucus out of her nose, etc.". It was further noted that Lucy had a difficult time interacting with her peers.

At home, parents were particularly concerned about her emotional outbursts and running away. She tended to hoard objects and would fixate on things. She had no close friends and had no awareness of the impact of her behavior or of danger when she wandered off. They saw her strengths as her love of animals, music, dancing and books. They described her as a very curious and social young girl who loved to be outside. Family history was significant for ADHD.

Despite all of the difficulties Lucy was having, no one had completed a comprehensive neuropsychological evaluation that included a careful analysis of her emotional functioning. The school system was content with conducting regular behavioral analyses and implementing a series of behavioral plans that were ineffective. Even though she had undergone a series of evaluations assessing numerous domains of functioning, there was no serious attempt to integrate the findings. The teachers and her parents were running out of ideas and she was becoming increasingly overwhelmed by the demands of the world and isolated from it as a means to cope. What was driving her dysregulation? How was she being impacted emotionally? How did her emotional response to her profound difficulties further manifest in her behavior and, more importantly, how was it affecting her self esteem, self image and relationships. It was time to complete a comprehensive evaluation that took into account not only her neuropsychological profile, but her academic, behavioral, social and emotional profiles as well.



Figure 2. Lucy's sense of being overwhelmed was evident in her drawing of a girl in which the girl was being eaten by a lion who was going to "crunch her into little pieces."

In spite of the best efforts of Lucy's family and her school, she was unable to progress until she received neuropsychological testing that evaluated her functioning in all domains and integrated these findings into a picture of the whole child. With these results, it was then possible to place her in a program that carefully integrated all of her needs. The thoughtful *integration* of both her strengths and her vulnerabilities was required to address the whole picture of who she was, how and why she was struggling and what she needed most to succeed.

The following vignette provides an example of and the results from a cognitive assessment that takes place during a neuropsychological evaluation.

Cognition/IQ

Jamie had been evaluated in seventh grade. Since that time, he had graduated from his middle school and had just begun his freshman year in high school. The previous February, he sustained a cerebral concussion when he fell skiing. Although he seemed fine at the time, he began experiencing severe headaches, visual disturbances, fatigue and notable lapses in memory that worsened over a period of months. He was seen at a Sports Medicine Concussion clinic and an EEG and MRI were performed with results within normal limits. A trial of amitriptyline (a tricyclic antidepressant that has been useful in treating concussions) was initiated and there was some relief in symptoms. However, some headaches, fatigue and difficulties with memory persisted. Jamie's parents decided to have him re-evaluated.

One of the instruments employed in the repeat evaluation was the WISC-IV, a test that had been administered in his previous evaluation and which could be used to compare his level of cognitive functioning pre and post concussion. On this and his previous administration of the WISC-IV, because of the variability in the subtest scores contributing to the Full Scale score, the Full Scale IQ was rendered meaningless and was not considered to be an accurate measure of Jamie's overall intelligence and, therefore, was not reported.

For his age group, Jamie's verbal abilities fell in the Superior range (VCI = 124; 95th percentile). His perceptual organizational abilities fell in the Average range (PRI = 96; 39th percentile). His working memory was in the Low Average range (WMI = 83; 13th percentile) while his processing speed was in the Extremely Low range (PSI = 68; 2nd percentile). Jamie's current Verbal Comprehension score was not significantly different than his Verbal Comprehension score in seventh grade. However, relative to his scores then, there was a significant sixteen point drop in his Perceptual Reasoning score, a thirty three point drop in his Working Memory score and a ten point drop in his Processing Speed Score.

Consistent with his scores in seventh grade, there was no significant variability between subtest scores within both the Verbal Comprehension and Perceptual Reasoning areas, suggesting that his performance in these domains was even. There

was, however, variability between subtest scores within the areas of Working Memory and Processing Speed.

There was a statistically significant twenty eight point difference between the Verbal Comprehension Index and the Perceptual Reasoning Index, indicating that Jamie's verbal skills were a strength relative to his perceptual skills. This discrepancy was greater than it had been in seventh grade. Furthermore, the gap between his superior verbal skills and his low average working memory and extremely low processing speed had also widened.

IQ and Index Scores have a mean of 100 and a standard deviation of 15; scores at 90, 100 and 110 represent levels of performance at the 25th, 50th, and 75th percentile for age, respectively. Subtest Scores have a mean of 10 and a standard deviation of 3; scores at 8, 10 and 12 represent levels of performance at the 25th, 50th, and 75th percentile for age, respectively. The findings are summarized in the table below:

	Score (Percentile)	Score (Percentile)
	High School	Seventh Grade
Verbal Comprehension:	124 (95)	126 (96)
Perceptual Reasoning:	96 (39)	112 (79)
Working Memory:	83 (13)	116 (86)
Processing Speed:	68 (2)	78 (7)

Clearly, the consequences of Jamie's concussion continued to resonate and he was going to need additional intervention to begin to mitigate his decrement in functioning.

The following vignette provides an example of the importance of memory skills in the classroom setting. It also discusses a child's difficulties with academic tasks as well as his emotional reaction to academic demands. His struggles with memory affected him emotionally, which in turn, impacted his self-esteem and ability to complete homework.

Tests of Memory

Mark was a bright cheerful boy, with an ability to remember esoteric information, and tell one about it at length. He enjoyed reading and writing, presented with an excellent vocabulary and was crafty at writing stories and reports. His abstract reasoning was average, if not above average. Up until 4th grade, he considered himself a math whiz and identified with this skill, taking pride in being a "math geek." However, as math lessons grew more complex, requiring multi-step problem solving, he began to struggle. When learning long division, he frequently lost track of the numbers, placing them in the wrong column and forgetting what step occurred next. While manipulating fractions, changing improper fractions into a mixed number, he would lose track of the process, become distracted and stare into space sullenly. Slowly, he became resistant

to completing math homework, avoiding it by arguing with his parents about unrelated topics. Mark was struggling with working memory. Despite his strengths in understanding abstract reasoning and advanced verbal skills, it was difficult for him to hold numbers in his mind and manipulate them. It was also difficult to track multi-step operations, forgetting what he had completed or skipping steps altogether.

During a complete neuropsychological evaluation, the individual's ability to apply their cognitive skills to academic pursuits is assessed. The following vignette is an example of how the results of a neuropsychological evaluation can provide suggested accommodations that meet the individual child's needs and help him or her achieve greater academic success.

Tests of Achievement

Andrew was a ten year old mixed caucasian/asian boy who had spent the first six years of his life in different U.S. and European capitals, always being educated in private, English speaking schools. For the last few years, he had landed with his family in a Boston metropolitan community and was attending a local private day school for boys. He had been diagnosed with Dyslexia in Europe and was now placed part time in a language based classroom in his current school, a school and a specific program with a very good reputation for supporting boys with learning disabilities. Despite the extra care and attention he was receiving, Andrew was feeling overwhelmed, increasingly frustrated and depressed and was withdrawing socially, preferring video games to real people. A Neuropsychological Evaluation supported his diagnosis of a specific reading disability and also revealed that executive functioning difficulties, including difficulties with working memory and attention, were exacerbating his problems with phonological processing, reading accuracy and comprehension. Andrew was a very bright boy who was self aware and feeling more and more out of step with his peers who did not appear to be struggling as much. He required a much more intensive, multi-sensory, structured, and systematic approach to reading. In order to succeed, Andrew was going to need placement in a school that was dedicated to such an approach. One that was populated by children with a similar level of difficulty. One in which Andrew could feel less alone.

The following vignette provides an example of the importance for integrating information gathered during a psychological evaluation with information from the cognitive and academic results, in order to understand the behaviors of a teenage girl. The information gathered from assessing her emotional status provides important information that can be utilized in developing an effective treatment plan.

The Complete Neuropsychological Evaluation- The need for integration

Julia was nearly sixteen and over the last year had been acting out sexually, posting sexualized pictures of herself on the internet. Once a popular and academically successful student, she was becoming more isolated and failing a number of her subjects. She had also recently developed an eating disorder that would soon land her

in a hospital. The school had recommended behavior modification services based on their diagnosis of an Oppositional Defiant Disorder and she was placed on an SSRI (a Selective Serotonin Re-uptake Inhibitor used to treat anxiety and depression) by her psychiatrist that actually appeared to increase her sexual acting-out. A complete Neuropsychological Evaluation revealed that she did not have the necessary psychological resources to cope with both internal and external demands in her life. Vulnerabilities in Executive Functioning were also contributing to her difficulty meeting external demands and had been exacerbated by the demands she placed on herself to be perfect; a situation that led to her tendency to somaticize her distress and which contributed to the development of her eating disorder. Evidence also suggested these factors were exacerbated by a significant mood disorder that presented as depression. Because Julia was unable to take full responsibility for her imperfections, she tended to externalize blame and projected her anger onto those around her in a passive aggressive fashion that manifested as oppositionality and sexual acting out. This was negatively impacting her self image and relationships with her family and peers. Her misuse of fantasy and her poor judgement within the context of relationships was very concerning and ultimately posed an even greater risk to her self image and safety. Unfortunately, her anger at those who she perceived as having let her down was further clouding her judgement and made it difficult to make use of the resources she would invariably need as she attempted to move forward in her life. She required a much more intensive program that would contain her unsafe behavior and help her manage a more appropriate medication. She also required a therapeutic approach that would allow her to better understand and work with her self image and provide her with more effective psychological and emotional resources.