

# ASSESSMENT FOCUS

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## New Understanding of Attention Deficit Disorders in Children, Adolescents, and Adults: Assessment and Treatment

Thomas E. Brown, Ph.D.

Important changes are occurring in research-based understanding of Attention Deficit Disorders (ADD). Current research is recognizing impairments of “executive functions” as core problems of ADD (Tannock & Schachar, 1996; Barkley, 1997) rather than just hyperactive and impulsive symptoms.

“Executive functions” (EF) are management functions of the mind that activate, regulate, and integrate a wide variety of other mental functions. Without adequate executive functioning, an individual’s ability to perform many important daily tasks of school, work, family, and social interaction may be markedly impaired relative to others of the same age and mental development (Denckla, 1996).

Researchers have not yet reached consensus in defining EF as related to ADD, but individuals diagnosed with ADD tend to report chronic impairments in six clusters of functions related to EF:

1. organizing, prioritizing, and activating for work tasks
2. focusing and sustaining attention to tasks
3. sustaining alertness, effort, and processing speed
4. managing frustration and modulating affect
5. utilizing working memory and accessing recall
6. inhibiting and regulating verbal and motoric action (Brown, 1995, 1996, 1999).

While everyone occasionally has difficulty with these functions, persons with ADD manifest chronic impairments in these EF, especially in comparison with their peers. They also tend to have more close blood-relatives who suffer from ADD or related disorders.

What confuses many observers is that *ADD impairments are chronic, but not constant.*

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## Using the Process Approach in Cognitive Assessment

Edith Kaplan, Ph.D., ABPP/ABCN

In 1937, Heinz Werner wrote a seminal article, *Process and Achievement: A Basic Problem of Education and Developmental Psychology*, which appeared in the Harvard Educational Review. He argued that careful, systematic observations of a child’s problem-solving behavior (whether correct or incorrect) could yield significantly more useful information about cognitive functioning than simple binary scoring (right or wrong) of the final solution (achievement).

The *WISC-III® as a Process Instrument* (WISC-III® PI) is predicated on the process-oriented approach that emphasizes analysis of the quality of responses and the processes or strategies by which they are achieved. Because most subtests, like those on WISC-III, are multifactorial, the component factors must be parsed

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to permit the identification of the underlying process(es) affecting performance. Thus two individuals with identical overall scores may have deficits on one or more distinctively different component processes tapped by a particular subtest.

WISC-III PI, a standardized extension and modification of WISC-III, was designed to be administered either along with or following WISC-III. The examiner only needs to select those WISC-III PI subtests that will enable him or her to better understand the nature of the underlying difficulty contributing to a relatively poor performance on a given WISC-III subtest.

WISC-III PI offers school psychologists, child neuropsychologists, and clinical psychologists an instrument standardized on a population of non-clinical and major clinical groups of children, which provides a systematic and comprehensive evaluation of the cognitive domains assessed in WISC-III.

Applications of the WISC-III PI include:

- Investigating reasons for low scores on WISC-III, (e.g., Arithmetic)
- Documenting educational needs
- Establishing a cognitive profile
- Generating prescriptive recommendations for interventions

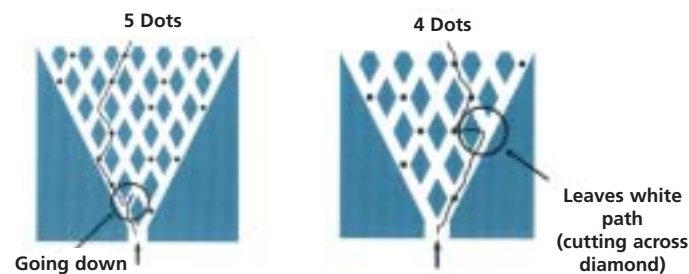
The types of subtests included in WISC-III PI are:

- Subtests given as part of WISC-III with recommended qualitative observations that have alternative and supplemental scoring procedures, for example, frequency of requests for repetition; no response on Information, Arithmetic, Vocabulary and Digit Span; pointing as the only responses on Picture Completion.
- Subtests given as part of WISC-III but with add-on procedures, for example, Coding-Incidental Learning (Paired Associate Symbol Recall, Free Recall, and Paired Associate Recall) and Arithmetic (paper and pencil addendum, computations).
- Subtests that are equivalent in content to WISC-III subtests but have alternative administration formats, for example, multiple choice versions of Information and Vocabulary, Picture Vocabulary, PI Block Design (unstructured, structured, and motor-free).
- New subtests, similar in administration format to WISC-III subtests, but different in content (e.g., Spatial Span, Letter Span, Sentence Arrangement, Elithorn Mazes).

Scores include Frequencies, Base Rates and Cumulative Percentages (derived from the WISC-III PI standardization sample) provided for qualitative error analyses and Supplemental scores, as well as Scaled Scores for comparability with WISC-III subtests.



### SAMPLE OF ELITHORN MAZES



Everyone diagnosed with ADD has some activities in which they have no difficulty paying attention or working intently. A child or adolescent with ADD may be chronically unable to sustain attention in school, yet engage intently for hours in sports or video games. An adult with ADD may have little difficulty in playing chess, but may be unable to recall recent conversations or sustain alertness during a meeting.

The ability to activate and sustain attention, alertness, and effort in situations not intrinsically interesting is a key component of EF. The problem of persons with ADD is not that they can never pay attention, but that they are chronically unable to “turn on” and sustain their attention, alertness, effort, and working memory when needed for less interesting, albeit important tasks.

This new understanding of impaired EF has important implications for assessment. When ADD was understood simply as hyperactive and impulsive behavior, assessment was relatively easy. Extremely disruptive behavior is not difficult to recognize. Assessment of the impaired EF of ADD is more complex. It requires a more sophisticated approach to recognize ADD impairments and differentiate these from other psychiatric and learning disorders at various ages. Such an assessment should include the following:

**Clinical Interviews:** There is no single instrument sufficient for diagnosis of ADD; a comprehensive, systematic approach is required. This begins with a well-conducted semi-structured clinical interview in which a patient can describe the history of presenting complaints, current and past psychosocial functioning, health history, family psychiatric history, and other relevant information. Formats for such interviews have been published by Barkley (1998), Brown (1996, 1999), Robin (1999), and Weiss & Hechtman (1999).

**Systematic Symptom Report:** Because many EF impairments of ADD are not overt, a systematic symptom report is essential. In addition to querying for DSM-IV symptoms of ADHD, clinicians should use more detailed rating scales to assess patients and, where possible, parents, spouses, teachers or others who can provide useful information about ADD impairments. Age-appropriate, normed rating scales published by Barkley (1998), Brown (1996, 1999), and Conners (1997) can be useful.

**IQ Subtest Analysis:** Verbal IQ and Performance IQ scores cannot contribute to an ADD diagnosis, but many individuals with ADD tend to show impairments on specific IQ index scores relative to their other IQ index scores. On the *Wechsler Intelligence Scale for Children®—Third Edition* (WISC-III®), Freedom from Distractibility and/or Processing Speed Index scores tend to be significantly lower for children with ADD than other index scores. On the *Wechsler Adult Intelligence Scale®—Third Edition* (WAIS-III), many adults with ADD show significantly lower scores on the Working Memory Index and/or Processing Speed Index relative to their other index scores.

**Verbal Memory Assessment:** Many persons with ADD demonstrate impairments of short-term verbal memory. These can be assessed briefly in adults with the Logical Memory I subtest of the *Wechsler Memory Scale®—Third Edition* (WMS-III); the Story Memory subtest of the *Children’s Memory Scale* (CMS) is useful for assessing children aged 4 to 16 years. With all age groups, the relevant comparison is between the individual’s verbal memory and verbal comprehension index or verbal IQ.

**Screening for Comorbidities:** Since more than 50% of individuals with ADD meet diagnostic criteria for at least one other psychiatric disorder, it is essential that assessment for ADD include screening for possible comorbid disorders. Students should also be screened with the *Wechsler Individual Achievement Test®* or a comparable measure of academic achievement to evaluate for a possible learning disorder.

**Integration of Data:** Since no single standardized measure is sufficient to make or rule out a diagnosis of ADD, adequate evaluation requires carefully weighing all the assessment data. Here the experience and clinical skills of the evaluating clinician are critical for assessing adaptive strengths and EF impairments that may be consistent with a diagnosis of ADD, some other disorder, or both.

**Treatment:** When an individual has been carefully assessed and diagnosed as having ADD, appropriate treatment can be very helpful. The most effective treatment of ADD for most of those affected is stimulant medication. More than 150 randomized-controlled studies including more than 5,000 patients have demonstrated that stimulant medication can effectively alleviate ADD symptoms for 65 to 75% of those diagnosed with ADD. Most of the research on medication treatment of ADD has been focused on children, but additional studies have demonstrated that the same medications can be helpful to adolescents and adults when the doses are carefully adjusted to the individual’s needs (Spencer et al., 1996; Greenhill et al., 1999).

Although stimulant medications may cause some side-effects, these are generally transient and not severe. A recent report from the American Medical Association concluded that “...the risk-benefit ratio of stimulant treatment in ADHD is...in general, highly favorable” (Goldman et al., 1998). Dietary restrictions, herbal preparations, diet supplements and other alternative treatments have been proposed for ADHD, but little or no scientific evidence for their safety or effectiveness has been provided thus far.

**Accommodations:** In school or work settings, some persons diagnosed with ADD have extraordinary difficulty in completing tests within conventional time limits; some need extended time or other accommodations to demonstrate their knowledge and skills.

**Monitoring Treatment:** Assessment is important not only in making an initial diagnosis, but also in monitoring the effects of medications or other treatments. Continuing assessment using systematic symptom rating scales and semi-structured clinical interviews is needed to monitor treatment effectiveness in alleviating cognitive and behavioral impairments targeted for intervention and to guide “fine-tuning” of medication.

Careful assessment is essential for guiding diagnosis and treatment. It is also an important way to increase our evolving understanding of the many children, adolescents, and adults who suffer from this complex disorder currently known as ADD.



Note: In this article the terms ADHD and ADD are used interchangeably.  
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## California Verbal Learning Test— Second Edition to be Published

Dean C. Delis, Ph.D., ABPP

The *California Verbal Learning Test—Second Edition* (CVLT-II) is scheduled for publication in February of 2000. This represents the first revision of CVLT, originally published in 1987.

CVLT-II contains numerous improvements and additions to the first edition of CVLT. Normative data are based on a national standardization sample of subjects between the ages of 16 and 89. Clinical data from patients with various neurological and psychiatric disorders are included, as well as new, more sensitive measures of semantic clustering, intrusion types, and recognition discriminability.

Other new measures are designed to distinguish between the memory disorders of patients with frontal versus nonfrontal brain damage, and to provide greater sensitivity in distinguishing between patients with Alzheimer's disease versus other neurological and psychiatric disorders.



A new, forced-choice recognition trial is designed to detect individuals who may be malingering or exerting inadequate effort on memory testing. In addition to the standard form, CVLT-II also contains an alternate form with normative data and a short form (a nine-word list for screening purposes or for testing patients with more severe brain damage) with normative data.

A new scoring program in both CD-ROM and 3.5 disk versions is available for all three forms and offers highly developed response input and automatic scoring and norming of the multiple learning and memory variables. And finally, CVLT-II was co-normed with the recently published *Wechsler Abbreviated Scale of Intelligence™* (WASI™) and the forthcoming *Delis-Kaplan Executive Function System* (DKEFS).

These and other improvements available in CVLT-II enhance the utility of these memory instruments in your clinical and research work. Additional information on CVLT-II is available from The Psychological Corporation.

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Dr. Dean C. Delis is a staff clinical psychologist at the San Diego Veteran Affairs Medical Center and professor of psychiatry at the University of California at San Diego Medical School. He is board certified in clinical neuropsychology by the American Board of Professional Psychology.

## Assessing Traumatic Brain Injury with the Neurobehavioral Functioning Inventory

Jeffrey S. Kreutzer, Ph.D., ABPP

John's wife Marie felt that since suffering a Traumatic Brain Injury, he had a short attention span and very little patience for their two daughters. John himself was concerned about memory and fatigue, but disagreed with his wife about his irritability and lack of patience with their children.

John was referred to a clinician who had experience in neurological settings. The clinician wanted to know about the changes in John's cognitive ability, communication skills, emotional well-being, and physical condition. The clinician was also concerned about the apparent differences between John's and Marie's perceptions of John's problems since the accident.

Scores from the *Neurobehavioral Functioning Inventory* (NFI™) (Kreutzer, Seel, & Marwitz, 1999) were useful to the clinician in quantifying and describing John's degree of dysfunction across six areas empirically demonstrated to be problematic for persons with a neurological disability. To identify potential problems with self-awareness, John's scores were compared with his wife's, and both their scores were compared to a normative sample.

Designed for neurological and trauma populations, NFI is composed of six independent scales reflecting symptoms and problems commonly encountered following the onset of disability: Depression, Somatic, Memory/Attention, Communication, Aggression, and Motor. Two parallel forms of the NFI were developed, one for completion by patients (first-person format), the other for completion by family members (third-person format).

Common uses of scores from NFI include the following:

- As an assessment instrument, NFI can be used to describe functional aspects of cognitive and communication skills, behavior, emotions, and physical symptoms. NFI is especially useful to characterize changes in daily living activities and to complement measures of ability (e.g., memory, intelligence).
- NFI results can serve as the foundation for treatment planning. Repeated administration is useful for measuring change and monitoring the effectiveness of clinical intervention.
- In a therapeutic setting, NFI can be helpful in identifying discrepancies between respondents' perceptions (i.e., perceptions of the patient versus those of his or her family

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NFI, continued from page 4

members). These perceptual discrepancies often underlie family and marital discord.

- The instrument may also be used for research to study issues such as describing the problems most frequently encountered by patients, comparing everyday living problems to performance on neuropsychological assessment instruments, and comparing patients' and family members' perceptions of everyday living problems.
- NFI can also be used as a quality of life (QOL) measure. The scores from the six NFI scales reflect functioning in areas important to an individual's overall quality of life. Lower scores are associated with higher quality of life levels.

NFI is a self-report inventory that can usually be completed in 20 minutes or less by the patient or family member. When completed prior to interview, the inventory saves time and helps focus the interview process. A broad range of health professionals working in the rehabilitation arena can quickly and easily administer NFI to adults ages 17 to 80.

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Dr. Jeffrey S. Kreutzer is a professor at Virginia Commonwealth University's Medical College of Virginia campus in Richmond, with appointments in the Department of Physical Medicine and Rehabilitation and the Division of Neurological Surgery. He is also the Director of Rehabilitation, Psychology, and Neuropsychology.

## Flexible Assessment of Neurocognitive Functioning

Clinical psychologists and neuropsychologists have often expressed a desire for an assessment instrument with greater flexibility because their needs in regards to assessing neurocognitive functioning vary. On some occasions, they need to obtain a general overview of neurocognitive abilities. Other times, a detailed analysis of neurocognitive functioning is required. The challenge of finding a single psychometrically sound instrument with maximum clinical utility will be met with the upcoming publication of the *Kaplan Baycrest Neurocognitive Assessment™* (KBNA™).

### Flexibility in Assessment

KBNA assesses several domains of function in a comprehensive manner within an efficient administration time. Each individual subtest that comprises KBNA primarily assesses a principal domain or cognitive process. The subtests are sensitive to a range of neuropsychological and neurological disorders. Furthermore, the scoring provides information with regards to the positive and negative prediction of impairment. KBNA's versatility will enable clinicians to further analyze underlying processes of cognitive functioning at the subtest level. A detailed analysis of neurocognitive functioning can be obtained by also calculating process scores that are banded into percentile categories indicating low, medium, and high risk of cognitive impairment.

### Qualitative and Quantitative Approaches to Neuropsychological Assessment

The qualitative approach emphasizes careful observation of the examinee's performance on various behavioral tasks. Tasks are selected to assess various domains of interest, such as language, attention, memory or motor functions. The psychometric approach to neuropsychological function relies on standardized administration, instruction, and procedures. Knowing how demographic variables can affect test scores will enable the clinician to make decisions with respect to individual differences. Thus, combining the best of the behavioral neurology and psychometric approaches to a neuropsychological assessment, KBNA will give the clinician vital information to evaluate general functioning, and to facilitate in-depth diagnosis, treatment planning, and monitoring.



### Evaluate Major Areas of Cognition

KBNA allows examiners to choose among a general overview of neurocognitive abilities by calculating Index scores. KBNA's index scores represent functioning in several domains. The indexes associated with each domain represent several aspects of cognitive functioning. **Attention/Concentration Index** includes subtests that assess the examinee's ability to focus attention and to manipulate information in short-term memory. **Immediate Memory-Recall Index** and **Delayed Memory-Recall Index** consist of subtests that evaluate learning strategies and recall for visuospatial and auditory learning as well as auditory and visuospatial retrieval strategies. To assess the ability to discriminate auditory and visuospatial targets from nontargets, **Delayed Memory-Recognition Index** evaluates recognition without retrieval. **Verbal Fluency Index** is comprised of subtests that examine the ability to express language and remote memory. To obtain an assessment of an examinee's visuospatial and spatial working memory, **Spatial Processing Index** is used. The **Reasoning/Conceptual Shifting Index** is comprised of subtests that evaluate flexibility, problem solving and shifting of set. Results are presented as standard scores for the Indexes.

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To order or for more information, please call 1-800-211-8378.

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### Incorporating Theory and Practice

The authors of the *Kaplan Baycrest Neurocognitive Assessment* include the renowned neuropsychologist Edith Kaplan in close collaboration with her colleagues at the Baycrest Centre for Geriatric Care, Larry Leach, Dmytro Rewilak, Brian Richards, and Guy Proulx. Incorporating both strong theoretical and practical knowledge, KBNA is designed to be a comprehensive screening test that combines behavioral and psychometric approaches to assessment. It is an individually administered assessment for adults ages 20 through 89 and can be administered in its entirety in about 60 minutes. KBNA is correlated with the *Wechsler Abbreviated Scale of Intelligence* (WASI), providing valuable clinical information about the effects of general cognitive ability on KBNA subtests. KBNA is also correlated with other commonly administered neuropsychological tests, such as the *California Verbal Learning Test*, *The Boston Naming Test*, the upcoming *Delis-Kaplan Executive Function System*, and the *California Verbal Learning Test—Second Edition*. KBNA is scheduled for publication in February 2000. More information about KBNA is available from The Psychological Corporation.

## Conventions

Be sure to come see us at our booths when you are at the following events:

- Children and Adults with Attention Deficit Disorders (CH.A.D.D.) Washington, D.C. . . . .10/7-9/99
- Council of Educational Diagnostic Services (CEDS) San Antonio, TX . . . . .11/4-6/99
- National Academy of Neuropsychology (NAN) San Antonio, TX . . . . .11/10-13/99
- National Association of State Directors of Special Education (NASDSE) Lake Tahoe, NV . . . . .11/14-17/99
- International Neuropsychological Society (INS) Denver, CO . . . . .2/9-12/00
- National Association of School Psychologists (NASP) New Orleans, LA . . . . .3/28-4/1/00

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