Slide 1

NEPSY-II

SECOND EDITION

How to Administer and Interpret the NEPSY-II - Part 1

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2015 TASP Fall Conference

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Slide 2

Presentation Outline

- NEPSY-II Overview
- How to Administer the NEPSY-II tests
- How does the NEPSY-II fit within a school neuropsychological conceptual model?
- A case study illustration

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Slide 3

NEPSY-II Authors

- **Dr. Marit Korkman** - Professor of Neuropsychology Department of Psychology, University of Helsinki, Helsinki, Finland & Abo Academy University, Turku, Finland

- **Dr. Ursula Kirk** - Retired Chair of the Neuroscience and Education Program, Teachers College, Columbia University, New York, N.Y.

- **Dr. Sally Kemp** - Retired from Private Multidisciplinary Practice, specializing in developmental disorders; Adjunct Associate Professor, University of Oklahoma College of Medicine, Tulsa, OK & Adjunct Professor, Health Psychology Department, University of Missouri - Columbia

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Slide 4

NEPSY-II Development

- When many different tests comprise a pediatric neuropsychological battery, the tests are normed on different children.
- Differences in scores for a child may be due to differences in the norm groups?
- All of the tests in NEPSY-II were co-normed, allowing scores to be compared across domains in a test profile: shows child's strengths/weaknesses & performance relative to age-mate peers.
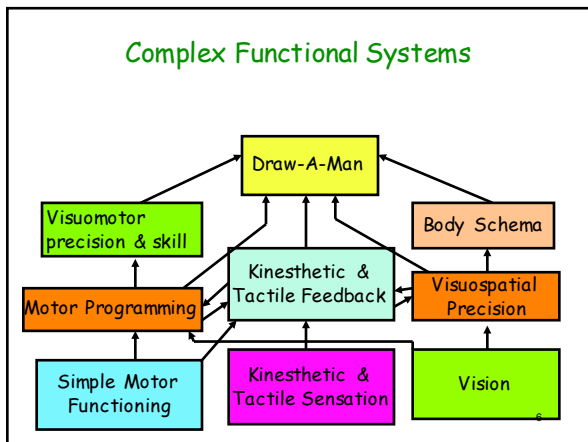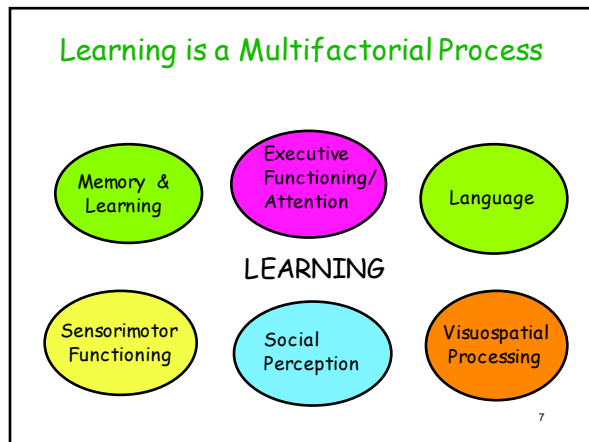
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Slide 5

Lurian Tradition (Luria 1973, 1980)

NEPSY and NEPSY-II are theoretically-based on Luria's principles: Complex cognitive functions can be impaired in ways that are comparable to that which occurs in the breakdown of a complicated system.

- If one sub-component is impaired then complex functions may be impaired.
- Identify deficits underlying impaired performance in one functional domain that affect performance in other functional domains
- Both impaired performance and qualitative behavioral observations are necessary to detect and distinguish between primary and secondary deficits.

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Slide 6

Complex Functional Systems

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Learning is a Multifactorial Process

Memory & Learning

Executive Functioning/ Attention

Language

LEARNING

Sensorimotor Functioning

Social Perception

Visuospatial Processing

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NEPSY-II Model

Clinician chooses the level of administration:

– **Core Assessment**- Basic, brief overview of a child's neuropsychological status across all six domains, looking beyond global scores to subtest performances that capture deficits more clearly.

– **Diagnostic & Selective Assessment** - In-depth assessment of areas relevant to diagnostic categories or areas desired by examiner

– **Comprehensive Assessment –** Evaluation of neuropsychological status with all subtests for age.

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Psychometric Issues in Neuropsychological Assessments

- Neuropsychological tests are designed to <u>measure constructs that are not normally distributed in the general population</u> as they are in measures of general cognitive ability.
  - (e.g. Most motor tasks mastered by 9 years of age - Korkman, Kirk, & Kemp, 2001)
- The focus is on <u>differentiating cases in the lower end of the distribution to determine the severity of impairment.</u>
  - (The findings are of interest when child cannot complete motor task at 9 yr.).

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Scoring Features of the NEPSY-II

Score Summary:

Single Scaled Scores for each subtest can be used Additional Diagnostic Scores are available.

Combined Scores can be used to place: Two scores on the same metric as in time and error or weight one variable more than another

Contrast Scores can be used to compare one score to another across ability levels

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NEPSY-II Test Batteries

- General Assessment Battery

- Diagnostic Assessment Batteries

- Selective Assessment Batteries

- Full NEPSY-II Administration

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General Assessments

- A General Assessment Battery of tests is generally recommended as a starting point in most school-based assessments.
- The General Assessment provides samples of behavior form each of the five functional domains.
- The selection of the subtests for inclusion on the General Assessment Battery was determined by psychometric and clinical considerations.

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General Assessments

Ages 3-4	Ages 5-16
• Comprehension of Instructions • Design Copying • Geometric Puzzles • Narrative Memory • Speeded Naming • Statue • Visuomotor Precision	• Auditory Attention and Response Set • Comprehension of Instructions • Design Copying • Geometric Puzzles • Inhibition • Memory for Faces (Delayed) • Narrative Memory • Speeded Naming • Statue (ages 5-6) • Visuomotor Precision (5-12) • Word List Interference (7-16)

Diagnostic Assessments

The NEPSY-II Scoring Assistant and Assess Planner can used used to develop an assessment plan based on the referral question (see Table 2.5 in Manual).

- **Learning Differences - Reading**
- **Learning Differences - Math**
- **Attention/Concentration**
- **Behavior Management**
- **Language Delays/Disorders**
- **Perceptual and/or Motor Delays/Disorders**
- **School Readiness**
- **Social/Interpersonal Differences**

Example of Diagnostic Assessment for Learning Differences - Reading

Attention and Executive Functioning
- Aud. Attn & Resp. Set (5-16)
- Inhibition (5-16)
- Statue (3-6)

Language
- Comp. of Instr. (3-16)
- Oromotor Sequences (3-12)
- Phonological Process. (3-16)
- Speeded Naming (3-16)

Memory and Learning
- Memory of Names/Delayed (5-16)
- Word List Interference (7-16)

Sensorimotor
- Manual Motor Seqs (3-12)

Social Perception (N/A)

Visuospatial Processing
- Design Copying (3-16)
- Picture Puzzles (7-16)

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Example of Diagnostic Assessment for Perceptual/Motor Delays/Disorders

Attention and Executive Functioning
- Aud. Attn & Resp. Set (5-16)
- Clocks (7-16)
- Design Fluency (5-12)
- Statue (3-6)

Language
- Oromotor Sequences (3-12)

Memory and Learning
- Memory for Designs/Delayed (3-16)

Sensorimotor
- Finger Tapping (5-16)
- Imitating Hand Positions (3-12)
- Manual Motor Seqs (3-12)
- Visuomotor Precision (3-12)

Social Perception
- Affect Recognition (Opt) (3-16)

Visuospatial Processing
- Block Construction (3-16)
- Design Copying (3-16)
- Geometric Puzzles (3-16)

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Selective Assessment Batteries

- If the referral question is specific to a neurocognitive deficit such as attentional processes, a selective assessment battery may be used.
- Subtest selection should be based on theory and research findings concerning characteristics of various disorders and the primary deficits that may underlie the impairment in question.

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Selective Assessment Batteries

- A word of caution: children often do not fit neatly into diagnostic boxes.
- Example: a child with an attentional processing disorder - you would not want to limit the assessment just to the attention and executive functions domain - attention affects all aspects of learning.
- It is always a delicate balance in finding the right amount of testing to choose to answer the referral question(s).

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Full Assessment of the NEPSY-II

- Children with known or suspected brain damage or dysfunction:
  - cerebral palsy, epilepsy, hydrocephalus, or TBI
- Neurodevelopmental risk factors:
  - very low birth weight, birth asphyxia, or drug or alcohol exposure
- Medical treatments that affect the central nervous system:
  - Chemotherapy, or radiation.

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Presentation Outline

- NEPSY-II Overview
- How to Administer the NEPSY-II tests
- How does the NEPSY-II fit within a school neuropsychological conceptual model?
- A case study illustration

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Subtest Order of Administration

- After the examiner has chosen which tests are to be administered (e.g., general battery, diagnostic assessment, etc), the order of the subtests must be determined.
- The NEPSY-II Test Record Form presents the tests in alphabetical order but the tests should not be automatically administered in that order.

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Subtest Order of Administration

The order of the subtest administration is dependent upon:

- Ability of the child to sustain interest in the tasks.
- The time lapse between immediate and delayed memory tasks is accounted for.
- The referral question - do not start an assessment battery with a task that measures the child's known of suspected neurocognitive deficits. Try to start with a task that will be interesting and too challenging for the child in order to build some rapport.

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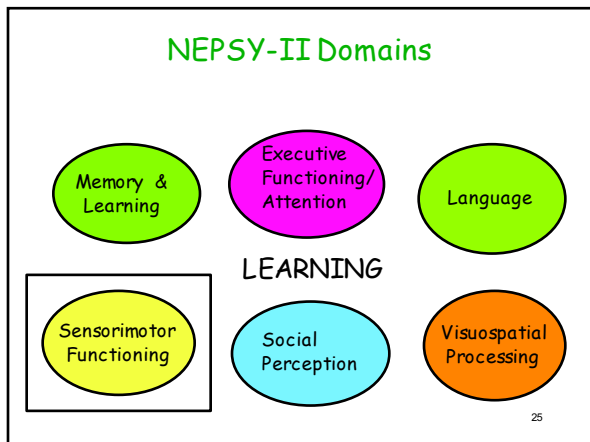## Subtest Order of Administration

Suggestion:
- Sequentially number at the top of the page in the the NEPSY-II Test Record Form the subtests that you have chosen to administer.
- Make allowances for the factors identified on the previous slide, specifically the 20-30 minutes required between the immediate and delayed memory tasks.

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What will you need to administer the NEPSY-II?

- The NEPSY-II Test Kit

- A CD player

- A couple of sharpened pencils

- A clipboard

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NEPSY-II Domains

Memory & Learning

Executive Functioning/ Attention

Language

LEARNING

Sensorimotor Functioning

Social Perception

Visuospatial Processing

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Motor Skills in NEPSY-II

In NEPSY-II, assessment in this area limited to:

- Fine-Motor Coordination and Programming
  - Capacity to control finger and hand movements quickly, smoothly, and with precision/ may vary across functions.
  - Necessary for writing, drawing, crafts, some games. May appear awkward and clumsy.
  - Programming involves learning and producing smooth motor sequences.
- Speech Production - oromotor control
  - Comprehensible speech essential for communication in academic and social settings (assessed in Language Domain).

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NEPSY-II Subtests:
Sensorimotor Functions

Subtest	Age
• Fingertip Tapping	5-16
• Imitating Hand Positions	3-12
• Manual Motor Sequences	3-12
• Visuomotor Precision	3-12

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Fingertip Tapping

<u>Description</u>: This timed subtest has two parts. The first part is designed to assess the child's finger dexterity and motor speed. The second part is used to assess rapid motor programming.

<u>Task</u>: The child copies a series of finger motions demonstrated by the examiner as quickly as possible.

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Fingertip Tapping

- <u>Repetitions</u>: The tips of the thumb and index fingers must touch then open about an inch. This counts as one discrete movement. Touching the pads of the thumb and index fingers do not count (how long for 20 sequences).
- <u>Sequences</u>: Touch the tips of the index finger then middle finger, then the ring finger, then the little finger to the tip of the thumb to count as one discrete movement (how long for 5 sequences?).

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Fingertip Tapping Scores

- **Dominant Hand Combined (Completion Time)**
  - Dominant Hand *Repetitions* Completion Time
  - Dominant Hand *Sequences* Completion Time
- **Nondominant Hand Combined (Completion Time)**
  - Nondominant Hand *Repetitions* Completion Time
  - Nondominant Hand *Sequences* Completion Time
- Dominant vs. Nondominant Contrast
- Repetitions vs. Sequences Contrast
  - Repetitions Dominant and Nondominant Combined
  - Sequences Dominant and Nondominant Combined

In the report, only report the scores in the blue boxes in a table – all others are reported in the narrative if needed.

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Behavioral Observations

- **Visual Guidance:** the child looks at fingers for the majority of the time for an item.
- **Incorrect Position:** the fingers and hand assessed are positioned incorrectly (e.g., finger overlaps thumb rather than touching tip of it; or pincer movement instead of finger and thumb forming an "o" during tapping).
- **Posturing:** the finger of hand not being assessed is extended stiffly at any point during the item.
- **Mirroring:** the finger or hand not being assessed moves involuntarily at any point during an item, The finger movements resemble finger tapping or sequential finger movement.

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Behavioral Observations

- **Overflow:** the the lips, tongue, jaw, or mouth move involuntarily at any point during an item.

- Rate change in motor movements is seen in dyspraxic individuals who have problems with motor programming.
- Posturing, mirroring, and overflow are often seen in individuals with ADHD, SLD, and other developmental disorders.

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Base Rate Example:
8 year old child referred for ADHD

Behavior	Score/ Present	Age Related Base Rate	ADHD Base Rate
Rate Change	5	3-10% Below Expect	3-10% Below Expect
Visual Guidance	Yes	69% of children this age	65% of ADHD children
Incorrect Position	Yes	Only 32% of children this age	47% of ADHD children
Posturing	Yes	Only 37% of children this age	36% of the ADHD children
Mirroring	Yes	Only 27% of children this age	27% of the ADHD children
Overflow	Yes	Only 19% of children this age	31% of the ADHD children

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Clinical Use of Fingertip Tapping

Subtest recommended for children referred for:
- poor handwriting
- clumsiness or do poorly in sports
- suspected Autistic disorder
- suspected Asperger's disorder
- suspected emotional disturbance

This test is useful when there is a history of occupational therapy services or motor delays.

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NEPSY-II Subtests:
Sensorimotor Functions

Subtest	Age
• Fingertip Tapping	5-16
• Imitating Hand Positions	3-12
• Manual Motor Sequences	3-12
• Visuomotor Precision	3-12

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Imitating Hand Positions

Description: designed to assess the ability to imitate hand/finger positions.

Task: The child imitates various hand positions as demonstrated by the examiner; first for the child's dominant hand, than for the child's nondominant hand.

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Imitating Hand Positions Scores

- <u>Imitating Hand Positions Total Scaled Score</u> – indicates possible difficulty with the fine-motor coordination and the sensorimotor differentiation required to reproduce the positions. This is often based on inefficient processing of tactile or kinesthetic feedback.
- <u>Dominant Hand Cumulative Percentage and Nondominant Hand Cumulative Percentage</u> – poorer performance on one hand than on the other in combination with similar findings on fingertip tapping could indicate lateralized sensorimotor impairments.

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Imitating Hand Positions Scores

- <u>Behavioral Observations</u>:
  - <u>Mirroring</u> - the child uses the left hand when the examiner uses the right, or the right hand is used when the examiner uses the left.
  - <u>Other Hand Helps</u> - the child uses the other hand to help model the position.
  - Use Table D.2 for base rate of normative sample or Table D.5 for the percentage of a clinical sample comparison group.

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Imitating Hand Positions Example

Instrument / Subtest	Well Below Expected Level	Below Expected Level	Slightly Below Expected Level	At Expected Level	Slightly Above Expected Level	Above Expected Level	Well Above Expected Level
Coordinated Finger/Hand Movements							
NEPSY-II: Imitating Hand Positions: Imitating hand positions shown by examiner.				(9)			
• With Dominant Hand				26- 75%			
• With Nondominant Hand		4-6 %					

The child used the Other Hand to help position the target hand as a compensatory aid to position hands. Only 34% of children his age in the normative sample used this the other hand to perform this task. [Base rates are found in the tables in the manual]

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Behaviors to Observe

- Are there significant performance differences in the two hands?
- Does the child for the hand position quickly without checking back to the model?
- Does the child study the model carefully, but form the position inaccurately. If he/she use the wrong fingers, or reverses the fingers used (index and middle instead of ring and little fingers), there may be a visuospatial deficit. Or is the child very awkward and cannot seem to make the correct fingers move into place, suggesting dyspraxia?

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Behaviors to Observe

- When a child forms an incorrect hand position, does he/she appear to perceive that the position is wrong? The child may or may not be able to fix it, but indicates that it is wrong (good at self-monitoring).
- Can the child sequence the fingers into the position fluidly or in motor control poor?

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Clinical Use of Imitating Hand Positions

Subtest recommended for children referred for:
  - poor motor difficulties
  - suspected ADHD
  - suspected Autistic disorder
  - suspected Asperger's disorder

This test is useful to identify potential difficulties with motor coordination and it is sensitive to difficulties with imitation (a deficit found in autism spectrum disorders).

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NEPSY-II Subtests: Sensorimotor Functions

Subtest	Age
• Fingertip Tapping	5-16
• Imitating Hand Positions	3-12
• Manual Motor Sequences	3-12
• Visuomotor Precision	3-12

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Manual Motor Sequences

Description: designed to assess the ability to imitate a series of rhythmic movements sequences using one or both hands.

Task: The child repeats a series of hand movements as demonstrated by the examiner until the required number of movements is completed.

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Manual Motor Sequences

- Example: Right fist - left fist (movement) - one movement per second.
- The child is asked to repeat the action and keep going until the examiner says stop.
- The examiner should silently count the completed sequences.
- On the Record Form, circle the sequence number if no error occurred or put an X on the sequence if an error occurred.
- Errors - an incorrect order of movements or an interruption longer than the time of one sequence.

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Manual Motor Sequences Scores

- Manual Motor Sequences Total Percentile Rank – poor score indicates that the child has a deficit in learning motor sequences. Such problems occur in children often described as clumsy and frequently co-occur with attentional problems. These children may do poorly in sports and dancing. Use confirming reports from teachers and parents to validate deficits in this area.

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Manual Motor Sequences Behavioral Observations

- Overflow: associated movement of another part of the body (e.g., mouth) in conjunction with the production of the movement sequences.
- Perseveration: movements continue for three or more sequences after being told to stop.
- Loss of Asymmetrical Movement: asymmetrical hand positions become identical (for items 5, 6, 10, 11, & 12 only), or identical hand movements are performed simultaneously when alternation is required.

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Manual Motor Sequences Behavioral Observations

- Body Movement: extraneous whole body movements in conjunction with the production of movement sequences (e.g., rhythmic rocking, rising from the seat).
- Forceful tapping: the tapping becomes louder during the production of the movement sequences.
- Use Table D.1 (Base Rate for Rate Change in the Normative Sample by age); use Table D.2 (percentage of normative sample displaying any of the other behavioral observations); and use Table D.5 (percentage of a specific clinical sample displaying any of the other behavioral observations).

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Behavior to Watch For

Note the following behaviors if they occur:
- General rhythm and smoothness of sequences.
- Lack of fluid movements in the hands, jerky movements with hesitations.
- Inattentiveness when the movements are being demonstrated, causing poor performance later.

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Clinical Use of Manual Motor Sequences

Subtest recommended for children referred for:
- poor motor difficulties
- suspected ADHD
- suspected Fetal Alcohol Syndrome
- suspected Autistic disorder
- suspected Asperger's disorder

Children with visuoconstructional difficulties (e.g., Design Copying and Block Construction), should be given this test to see if the source of difficulty may be a motor impairment.

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NEPSY-II Subtests:
Sensorimotor Functions

Subtest	Age
• Fingertip Tapping	5-16
• Imitating Hand Positions	3-12
• Manual Motor Sequences	3-12
• Visuomotor Precision	3-12

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Visuomotor Precision

Description: designed to assess graphomotor speed and accuracy.

Task: The child uses his or her preferred hand with a pencil to draw lines inside of tracks as quickly as possible.

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Visuomotor Precision Example

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Visuomotor Precision Example

11 Errors

If the tip of a pencil fits in the white space outside of a line segment, that counts as an error.

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Visuomotor Precision Scores

- <u>Visuomotor Precision Combined Scaled Score</u> – reflects time, precision, and how successfully the child combines speed and precision. A poor score on this measure together with better performance on purely perceptual subtest such as Geometric Puzzles, Arrows, or Picture Puzzles, would support a hypothesis of manual fine-motor problems. This would be also supported by poor scores on the manual motor subtests: Imitating Hand Positions, Manual Motor Sequences, and Fingertip Tapping.
- <u>Visuomotor Precision Total Completion Time Scaled Score</u> – this score reflects the speed with which the child carries out the manual motor task. Slow performance may be related to a general rate problem.
- <u>Visuomotor Precision Total Errors Percentile Rank</u> – this score reflects the child's accuracy. Problems with precision are likely reflected in the Design Copying subtest and other manual motor subtests.

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Visuomotor Precision Scores

- <u>Visuomotor Precision Pencil Lift Total</u> – a high pencil lift score would reflect a failure to follow directions (poor receptive language skills) or failure to maintain a cognitive set (an executive dysfunction).
- <u>Behavioral Observation (pencil grip)</u> – report the percentage of the standardization (D.2) or clinical sample (D.5).
  - Pencil Grip rates as Mature, Intermediate, Immature, or Variable

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Reporting Visuomotor Precision Behavioral Observations

Behavior	Score/ Present	Age Related Base Rate	ADHD Base Rate
Pencil Lift Total	5	3-10% Below Expect	3-10% Below Expect
Quality of Pencil Grip	Mature	69% of children this age	65% of ADHD children

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Behavior to Watch For

- Does the child begin drawing the line through the track impulsively without attention to accuracy, or is he/she fast, but accurate? Is performance slow, but good graphomotor control is observed, or is performance slow with numerous errors due to poor graphomotor control? Note the style in the Speed and Efficiency of Cognitive Processing section of the report.
- Does the child lift the pencil frequently (if so mark the behavior on the record form) or try to turn the Response Booklet (not allowed) in order to follow the curve of the track?

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Behavior to Watch For

- Is the child excessively fast if if trying to compensate for poor precision? Or does the child display anxiety about being fast enough? (e.g., often wants to know if his or her time is "good").
- Observe associated movements when the child is executing a line within the track. Overflow movements around the mouth or of the tongue may be especially important.

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Clinical Use of Visuomotor Precision

Subtest recommended for children referred for:

- poor visuomotor difficulties (e.g., handwriting or drawing skills).
- suspected social and behavioral difficulties to assess for comorbid motor control problems.
- poor performance on graphomotor tasks in general.

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Good Narrative Example

The majority of Peter's scores on tasks measuring fine motor coordination were at an expected level for his age. Basic coordination through finger tapping was adequate and equal in both hands. On increasingly more complex imitation of motor sequences, Peter's performance was slightly below an expected level. On this task, he sometimes struggled to initially coordinate the movement, so he slowed his pace to obtain accuracy. At other times, he had difficulty with maintaining the sequence of movements in a repetitive manner. Complex coordination can impact daily tasks, such as buttoning and using eating utensils, which are reported by his parents as challenging for Peter.

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Good Narrative Example

When asked to imitate hand positions, Peter's performance was considerably stronger when using his dominant, right hand than when using his left hand, as he tended to transpose the position of his fingers on his left hand for the more complex items. When required to trace a path within a given visual framework, his completion time and accuracy were at an expected level for his age, but Peter frequently lifted his pencil in order to maintain accuracy to stay within the lines upon changing directions. He was highly determined to stay within the track and occasionally used his non-dominant hand in an attempt to avoid lifting the pencil from the page (in order to follow the rules), while adjusting the grip of his dominant hand. Thus, pencil control for forming letters and maintaining alignment with handwriting is challenging.
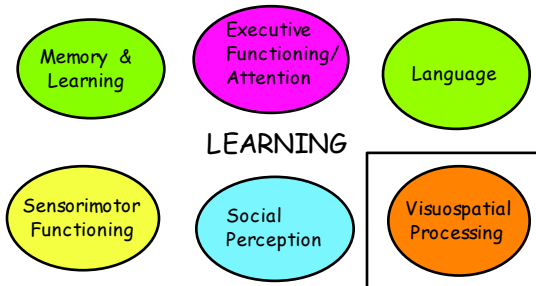
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Relate the Child's Test Performance to Real World Examples

- The goal of a school neuropsychological assessment is to take samples of behavior to determine a child's functional strengths and weaknesses and relate that information to actual classroom behaviors.

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NEPSY-II Domains

Memory & Learning

Executive Functioning/ Attention

Language

LEARNING

Sensorimotor Functioning

Social Perception

Visuospatial Processing

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Visuospatial Skills in NEPSY-II

- **Visual Perception** - the capacity to perceive and recognize shapes and objects accurately (e.g., matching, identifying gestalts). Acuity is relatively intact, but visual perception impaired.
- **Spatial Processing** - the capacity to understand the orientation of visual information in 2- and 3-dimensional space.
  - At a high level, it permits visualization of elements in 3-dimensions, the estimation of distances, and mental rotation or construction in 3-D space.
- **Visuoconstructional Skills** - the capacity to combine visual and spatial processing with manual skills. Problem can be spatial-perceptual and/or manual-motor.
  - Occasionally good individual skills but cannot combine.

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Visuospatial Skills in NEPSY-II

- **Local and Global Processing** - Processing information for detail (local) and the overall gestalt (global)
  - **Deficit in Local Processing** - the child shows intact capacity to imitate or create general shapes; perceives the general configuration, but confuses or leaves out pertinent details.
    - Drawings will reflect limited visual details or they will be disorganized, but outside configuration will be intact.

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Visuospatial Skills in NEPSY-II

- **Deficit in Global Processing** - Problems organizing information into meaningful wholes. Over-focuses on the details or parts of the object, but constructions or drawings lack the general shape or outside configuration of the object.
  - In a complex design, the child might draw each element separately without reproducing the overall gestalt of the design.

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NEPSY-II Subtests: Visuospatial Processing

Subtest	Age
• Arrows	5-16
• Block Construction	3-16
• Design Copying	3-16
• Geometric Puzzles	3-16
• Picture Puzzles	7-16
• Route Finding	5-12

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Arrows

Description: designed to assess the ability to judge line orientation.

Task: The child looks at an array of arrows arranged around a target and indicates the arrow(s) that point to the center of the target.
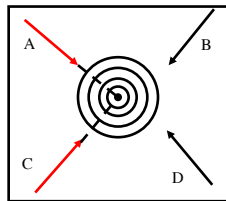
Which arrows point straight To the center of the target?

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Arrows Scores

- Arrows Total – a low score suggests poor visuospatial skills in judging line orientation. The child may have difficulty in judging direction, in estimating distance, orientation, and angularity if line. Lack or previewing or advance planning (impulsivity) may also affect a child's performance.

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Behaviors to Watch for

- Impulsivity: if the child is impulsivity or inattentive, direct the child's attention to each of the arrows before allowing a choice to be made. If the child consistently chooses impulsively, note this on the Record Form, interpret results cautiously, and discuss this observation in your report.
- Does the child continue to try to trace the path to the center of the target despite reminders not to?
- Does the child make significantly more errors on one side of space than on the other? Have you noted visual field errors in any other testing?

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Clinical Use of Arrows

- Primarily a measure of visuoperception; although maintaining mental images in working memory contributes to the performance on the test.
- Children with attention difficulties often perform poorly on this test, not due to poor visuoperception, but rather due to poor attention to detail and impulsive responding.
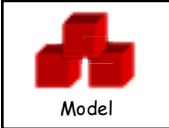
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NEPSY-II Subtests:
Visuospatial Processing

Subtest	Age
• Arrows	5-16
• Block Construction	3-16
• Design Copying	3-16
• Geometric Puzzles	3-16
• Picture Puzzles	7-16
• Route Finding	5-12

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Block Construction

Description: designed to assess the visuospatial and visuomotor ability to reproduce three-dimensional construction from models or form two-dimensional drawings.

Task: The child constructs block designs based on picture or 3-dimensional models.

Model

Child's Response

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Block Construction Scores

• Items 11-19 - time bonus awarded if completed quickly.
• Block Construction Total – a low score reflects poor visuoconstructional skills on a three-dimensional task.

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Behaviors to Watch for

• The child performs well on the 3-dimensional model but fails to transition to the two-dimensional stimulus.
• Does the child reflect on the model or stimulus picture before beginning his or her construction?
• Is the child precise and obsessive about lining up each block perfectly with the others and perhaps running out of time because he or she keeps adjusting blocks?

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Clinical Use of Block Construction

Subtest recommended for children referred for:
– poor visuospatial difficulties
– poor visuomotor difficulties
– suspected visuoperceptual deficits
– suspected motor deficits
– suspected math problems in older children age > 7
– school readiness
– suspected Asperger's disorder

In young children, the main problem may be drawing difficulties; in older children, mathematics and geometry may also be difficult for the child.

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---

NEPSY-II Subtests:
Visuospatial Processing

Subtest	Age
• Arrows	5-16
• Block Construction	3-16
• Design Copying	3-16
• Geometric Puzzles	3-16
• Picture Puzzles	7-16
• Route Finding	5-12

78

Design Copying

Description: designed to assess motor and visual-perceptual skills associated with the ability to copy two-dimensional geometric figures.

Task: The child copies figures displayed in the Response Booklet.

Model

Child's Response

79

Design Copying

19   20   21

80

Design Copying Scoring

• General:
  – 1 point if the drawing meets all of the criteria for the item (see Appendix B in Administration Manual & also use scoring templates as needed).
  – 0 points if the drawing does not meet all of the criteria for the item

• Design Copying General Total – a low score reflects poor visuoconstructional skills on two-dimensional tasks.

81

Design Copying Process Scoring

• Motor:
  – Assesses straightness of lines
  – significant gaps or overshoots at intersections of lines
  – the presence of line without interruption (stops and restarts)
  – difficulties with fine motor control (e.g., tremor)
  – inappropriate directional changes (bumpy or wavy lines).

82

Design Copying Process Scoring

• Motor:
  – 1 point if the drawing meets all of the criteria. (see Appendix B in Administration Manual & also use scoring templates as needed).
  – 0 points if the drawing does not meet all of the criteria.

• Design Copying Process Motor – a low score suggest that the child may have difficulty with the fine motor which could interfere with the drawing accuracy. (This is more of a sensorimotor deficit than a visuospatial deficit).

83

Design Copying Process Scoring

• Global:
  – ability to reproduce the general gestalt or idea of the design stimulus (e.g., a drawing of a square looks generally like a square, with four sides of approximately equal length).
  – the ability to understand figure-ground effects and part-whole relationships.
  – the directionality of lines.
  – the orientation of the designs on the page or features of the design compared to a guide-point
  – relative location of multiple objects.
  – relation of the size of the design reproduced by the child to the size of the design stimulus.

84

Design Copying Process Scoring

- Global:
  - 1 point if the drawing meets all of the criteria. (see Appendix B in Administration Manual & also use scoring templates as needed).
  - 0 points if the drawing does not meet all of the criteria.
- Design Copying Global Score - a low score suggests that the child may have difficulty representing the overall gestalt of the design, resulting in problems identifying the overall configuration of the design.

85

Design Copying Process Scoring

- Local:
  - assesses the presence of design features that make the design reproduced by the child appear exact: the presence of correct relationships between the features of the design and the accuracy of the number of details, shapes, and sizes of the drawing.
- Design Copying Local Score – a low score suggests that the child has difficulty accurately representing the design features, which results in distorted representations of the designs.
- Design Copying Process Global versus Local – this contrast score will indicate whether there is a significant difference between the global and local process scores.

86

Design Copying Process Scoring

- Design Copying Process Total (Motor Score + Global Score + Local Score = Total Process Score) – should be similar to the Design Copying General Total with a low score suggesting poor visuoconstructional skills on two-dimensional tasks.

87

Design Copying Example

Instrument / Subtest	Well Below Expected Level	Below Expected Level	Slightly Below Expected Level	At Expected Level	Slightly Above Expected Level	Above Expected Level	Well Above Expected Level
Visual-Motor Copying Skills							
Design Copying General Score Copying simple to complex designs on paper.				26-50%			
Design Copy Process Total: The fine motor contribution to the overall visual-motor task.			(7)				
• **Design Copying Process Motor:** This score represents the motor output portion of the overall score.			(6)				
• **Design Copying Process Global:** Ability to recognize the overall configuration of the design.				(10)			
• **Design Copying Process Local:** Ability to recognize details of the design.				(9)			

A low Design Copying Process score suggests that the child may have difficulty with the fine motor which could interfere with the drawing accuracy. (This is more of a sensorimotor deficit than a visuospatial deficit).

88

Behaviors to look for on Design Copy

- Does poor performance seems to be due to regulatory factors (executive functions) rather than spatial, detail, or fine motor processing deficits?
- Notice to see if the child approaches the task deliberately or impulsively.
- Watch for the ordering and sequencing required to ensure the reproduced designs fit within the allotted space.
- Watch for overflow movements of head and shoulders, around the mouth, or involuntary tongue movements.
- Note the quality of the pencil grip.

89

Clinical Use of Design Copying

Subtest recommended for children referred for:
  - a wide range of developmental disorders.
  - suspected mathematics disorder
  - suspected reading disorder
  - suspected ADHD
  - suspected behavioral problems
  - suspected language problems
  - suspected motor and visuospatial difficulties

Design Copying correlates with reading and writing measures, indicating that children referred for general academic issues should be administered the test.

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NEPSY-II Subtests:
Visuospatial Processing

Subtest	Age
• Arrows	5-16
• Block Construction	3-16
• Design Copying	3-16
• Geometric Puzzles	3-16
• Picture Puzzles	7-16
• Route Finding	5-12

91

Geometric Puzzles

Description: designed to assess mental rotation, visuospatial analysis, and attention to detail.

Task: The child is presented with a picture of a large grid containing several shapes. For each item, the child matches two shapes outside of the grid to two shapes within the grid.

92

Geometric Puzzles Directions

I will show you some pages of pictures like this one. Each page has a large box with black shapes in it. On the side of the page are two black shapes that exactly match two shapes in the large box. The shapes may have been turned around to another position but they still match exactly. Point to the two shapes in the large box that match the shapes on the side.
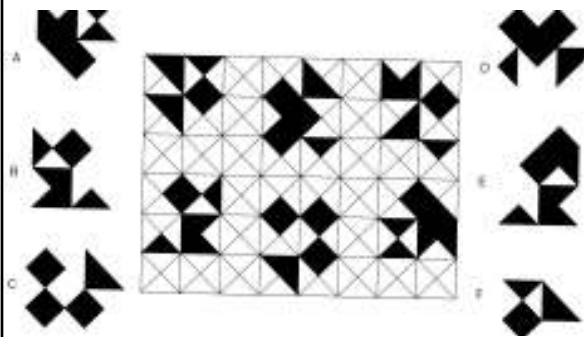
93

Geometric Puzzles
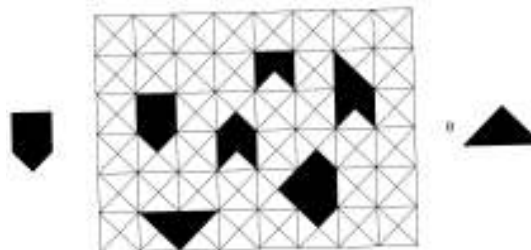
94

Geometric Puzzles

Geometric Puzzles Scoring

- Record the completion time in the Record Form and circle the shapes that the child pointed to.
- 2 points if two correct responses are given with the time limit.
- 1 point if only one correct response is given with the time limit.
- 0 points if no correct responses are given with the time limit or for no response.
- Geometric Puzzles Total Score – a low score suggests difficulty with visuospatial perception including mental rotation.

96

Clinical Use of Geometric Puzzles

- Subtest recommended for most assessment batteries.
- Should be administered when the referral question is related to visuoperceptual or visuomotor difficulties.
- It is recommended that this subtest be administered with Design Copying. The clinician must determine if the problem is related to motor, constructional, or perceptual problems.

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NEPSY-II Subtests:
Visuospatial Processing

Subtest	Age
• Arrows	5-16
• Block Construction	3-16
• Design Copying	3-16
• Geometric Puzzles	3-16
• Picture Puzzles	7-16
• Route Finding	5-12

98

Picture Puzzles

Description: designed to assess visual discrimination, spatial localization, and visual scanning, as well as the ability to deconstruct a picture into its constituent parts and recognize part-whole relationships.

Task: The child is presented a large picture divided by a grid and four smaller pictures taken from sections of the larger picture. The child identifies the location on the grid of the larger picture from which each of the smaller pictures was taken.

99

Picture Puzzles

100

Picture Puzzles

101

Picture Puzzles Scoring

	Time Limit	Completion Time	Score	
	45"	32"	0	1

- 1 point if four correct responses are given within the time frame.
- 0 points if four correct responses are not given within the time frame or for no response or for less than four correct responses given within the time frame.
- Picture Puzzle Total Score – a low score suggests difficulty with visual perception and scanning.

102

Behaviors to Watch for

- Does the child study the whole picture and the puzzle pieces carefully before making a choice, or is he/she impulsive?
- Were you able to redirect the child to look at all of the pictures? Could the child maintain attention when directed?
- Does the child use verbal mediation to arrive at a response?
- Does the child seem to attend better to real objects in the pictures than he/she did to the Geometric Puzzles that used abstract shapes?

103

Clinical Use of Picture Puzzles

Subtest recommended for children referred for:
- – suspected perceptual difficulties
- – suspected visuoconstructive difficulties
- – suspected visuomotor difficulties
- – school readiness
- Picture Puzzles should be administered when the child performs poorly on complex tests of visuomotor or visuoconstructional abilities such as Design Copying, and it is unclear whether the problem is related to motor, constructional, or perceptual problems.
- Low performance on Picture Puzzles and/or Arrows may also be related to inattention.

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NEPSY-II Subtests:
Visuospatial Processing

| Subtest	Age
• Arrows	5-16
• Block Construction	3-16
• Design Copying	3-16
• Geometric Puzzles	3-16
• Picture Puzzles	7-16
• Route Finding	5-12

105

Route Finding

Description: designed to assess knowledge of visual spatial relations and directionality, as well as the ability to use this knowledge to transfer a route from a simple schematic map to a more complex one.

Task: The child is shown a schematic map with a target house and is asked to find that house in a larger map with other houses and streets.

106

Route Finding Example
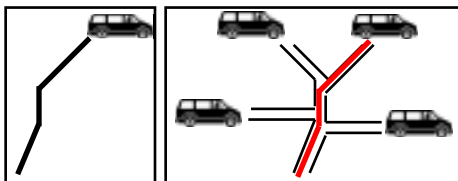
Here is the path to the right car.   *Now you trace with your pencil the same path to the correct car.*

107

Route Finding Score & Clinical Use

- Route Finding Total Score – a low score suggests difficulty with visual-spatial relations and orientation.
- This subtest can be used to:
  - – follow-up with children who demonstrate visuospatial difficulties
  - – children with poor map skills
  - – children with difficulties understanding spatial relationships (e.g., right-left confusion, problems following directions to a location).
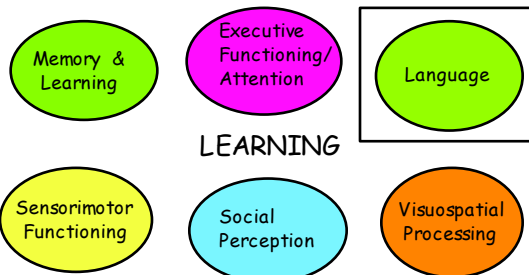
108

Behaviors to Watch for

- Does the child turn his/her head to see the stimulus from another angle?
- Does the child reflect on the task before tracing and making his/her choice, or is the child impulsive?
- Some children with good visual-spatial abilities will not trace the simple route first, but will point directly to the correct target house. This is permissible. But for the very impulsive child who is incorrect, you should remind the child to trace the simple route before making his or her choice.

109

NEPSY-II Domains

Memory & Learning

Executive Functioning/ Attention

Language

LEARNING

Sensorimotor Functioning

Social Perception

Visuospatial Processing

110

NEPSY-II Subtests: Language Functioning

Subtest	Age
• Body Part Naming & Identification	3-4
• Comprehension of Instructions	3-16
• Oromotor Sequences	3-12
• Phonological Processing	3-16
• Repetition of Nonsense Words	5-12
• Speeded Naming	3-16
• Word Generation	3-16

General Assessment Subtest

111

Clinical Use of Body Part Naming & Identification

Subtest recommended for preschool children referred for:
– Language delays

Head

Nose

Mouth

Foot

Hand

112
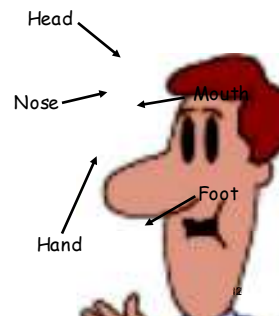
Body Part Naming and Identification

Description: designed to assess confrontation naming and name recognition, basic components of expressive and receptive language.

Task: For the Naming items, the child names the parts of the body on a figure of a child or on his or her own body. For the Identification items, the child points to corresponding parts of the body on a figure as the examiner names them aloud.

113

Body Part Naming & Identification Scores

- Body Part Naming Total Score – a low score suggests poor expressive skills, or poor vocabulary, or poor word finding. The examiner should be aware that a low score may be reflective of poor knowledge of body parts only and not global expressive or vocabulary deficits. Look to the other assessment and real life data to validate an expressive language deficit.
- Body Part Identification Total Score – a low score suggests poorly developed receptive vocabulary (general or specific to body parts).

114

Body Part Naming & Identification Scores

- Body Part Naming versus Body Part Identification Contrast Scales Score – a low contrast score indicates potential expressive language problems. The low score indicates that the child is performing lower than expected on an expressive naming task, given his or her knowledge of body parts. A high contrast score is unusual and may be related to motivation. A high contrast score may suggest that the child may not be motivated to show body parts after having named them successfully.

115

Behaviors to Watch for

- As this subtest is for younger children, it is opportune to observe the child's articulation. Are there stable misarticulations (e.g., "the" is always /f/) or do sounds that are misarticulated fluctuate?
- Poor eye contact and lack of relatedness.

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NEPSY-II Subtests:
Language Functioning

Subtest	Age
• Body Part Naming & Identification	3-4
• Comprehension of Instructions	3-16
• Oromotor Sequences	3-12
• Phonological Processing	3-16
• Repetition of Nonsense Words	5-12
• Speeded Naming	3-16
• Word Generation	3-16

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Comprehension of Instructions

Description: designed to assess the ability to receive, process, and execute oral instructions of increasing syntactic complexity.
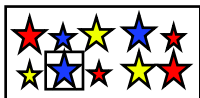
Task: For each item, the child points to appropriate stimuli in response to oral instructions.

118

Comprehension of Instructions

Point to all of the big yellow stars.

Point to the blue star that is to the left of the small red star that is below the big yellow star.

119

Comprehension of Instruction Scores

- Comprehension of Instructions Total Score – a low score suggests poor comprehension of linguistically and syntactically complex verbal instructions. Look at the types of errors made on the test. Consistent errors may be made on items that require the understanding of negation, temporal/sequential, or spatial concepts. These kinds of errors could indicate a problem with understanding spatial conceptual terms, which could relate to poor school performance in math and geography.

120

Comprehension of Instruction Scores

- <u>Behavioral Observations (Asks for Repetitions Total)</u> - report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. A high number of asking for repetitions could suggest a failure to comprehend verbal instructions, or confusion, or a hearing loss.

121

Behaviors to Watch for

- Impulsive responding, which may start before you have completed the instructions.
- Does he/she become more confused as the amount of language increases?
- Does the child appear to have a working memory problem (cannot remember the whole instruction on the longer items)?
- Does the child have more problems on one type of instruction than another (e.g., negation, visual-spatial terms)?

122

Clinical Use of Comprehension of Instructions

Subtest recommended for children referred for:
- language delays
- suspected autistic disorder
- suspected language disorder
- suspected reading disorder
- suspected emotional disturbance
- school readiness
- suspected academic difficulties

Children with overt language deficits or children presenting with aggressive, poorly controlled behavior should also be evaluated for language difficulties with this subtest.

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NEPSY-II Subtests:
Language Functioning

Subtest	Age
• Body Part Naming & Identification	3-4
• Comprehension of Instructions	3-16
• Oromotor Sequences	3-12
• Phonological Processing	3-16
• Repetition of Nonsense Words	5-12
• Speeded Naming	3-16
• Word Generation	3-16

124

Oromotor Sequences

<u>Description</u>: designed to assess oromotor coordination.

<u>Task</u>: The repeats articulatory sequences until the required number of repetitions is reached.

- <u>Example</u>: *Say this five times:*
  Sally sells seashells at the seashore

125

Oromotor Sequences Scores

- <u>Oromotor Sequences Total Score</u> – a low score is thought to indicate poor motor control of speech production. When low scores are observed on this subtest, a thorough medical history is important.
  - <u>Behavioral Observations (Oromotor Hypotonia, Stable Misarticulations, and/or Rate Changes)</u> - report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. The presence of stable misarticulations on this subtest and on the Repetition of Nonsense Words subtest, along with a number of rates changes, may indicate a dysarthia, motor incoordination, or infrequently an oromotor hypotonia. Oromotor hypotonia may be indicated if the child has problems in chewing or swallowing (as reported in the history) or may indicate a more generalized impairment such as cerebral palsy.

126

Behaviors to Watch for

- Oromotor dyspraxia may be evident as poor articulation to the degree that it diminishes the intelligibility of speech or as telegraphic speech in children who have better comprehension.
- No speech impairment, but poor performance on this subtest.
- Does this relate to classroom performance in reading or language?

127

Clinical Use of Oromotor Sequences

Subtest recommended for children referred for:

- language or motor delays to ensure basic vocal-motor coordination skills are intact.
- suspected ADHD
- suspected comorbid ADHD with learning disabilities
- suspected reading disorder
- Fetal Alcohol Syndrome
- suspected academic problems

128

NEPSY-II Subtests:
Language Functioning

Subtest	Age
• Body Part Naming & Identification	3-4
• Comprehension of Instructions	3-16
• Oromotor Sequences	3-12
• Phonological Processing	3-16
• Repetition of Nonsense Words	5-12
• Speeded Naming	3-16
• Word Generation	3-16

129

Phonological Processing

Description: Test has two parts designed to assess phonemic awareness at the level of word segments and letter sounds. Word Segment Recognition requires identification of words from word segments. Phonological Segmentation is a test of elision.

Task: The child is asked to repeat a word and then to create a new word by omitting a syllable pr a phoneme, or by substituting one phoneme in a word for another.

130

Phonological Processing

Word Segment Recognition

Where is the mouse? Doll? Car? House? Now guess which one I mean.....r-at?

131

Phonological Processing

Look at these three pictures. I will say a word that goes with each picture. Then I will say part of one of the words. Listen carefully because I can only say it once. Point to the picture that goes with it.

bite   bright   bike   bi-ke

132

Phonological Processing

- Part 2: Phonological Segmentation

  – The child creates a new word by omitting a word segment (syllable) or letter sound (phoneme) or by substituting one phoneme for another.

Say "sound" "Now say the same word but replace the "sss" with "huh"

133

Phonological Processing Scores

- Phonological Processing Total Score – a low score suggests poor phonological awareness and processing.

134

Behaviors to Watch For

- Impulsivity of choice. In Word Segment Recognition (Part 1), does the child look at all three pictures? Were you able to redirect the child to look at all three pictures?
- Guessing does not necessarily point to attention problems but may indicate real difficulty with the task.
- Does picture reinforcement help on Word Segment Recognition (Part 1)?
- Incorrect sequencing of sounds; confusion in trying to formulate the new sequence.
- Difficulty with working memory on the longer items (31-45) but success prior to that.

135

Clinical Use of Phonological Processing

Subtest recommended for children referred for:
  – language delays
  – suspected reading decoding difficulties
  – school readiness
  – suspected academic problems

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NEPSY-II Subtests: Language Functioning

Subtest	Age
• Body Part Naming & Identification	3-4
• Comprehension of Instructions	3-16
• Oromotor Sequences	3-12
• Phonological Processing	3-16
• Repetition of Nonsense Words	5-12
• Speeded Naming	3-16
• Word Generation	3-16

137

Repetition of Nonsense Words

Description: designed to assess phonological encoding and decoding.

Task: The child repeats nonsense words presented aloud. The child listens to nonsense words on audiotape and repeats each word after it is presented.
  - *dotidahma*
  - *pwaidumay*

138

Repetition of Nonsense Words Scores

- <u>Repetition of Nonsense Words Total Score</u> – a low score suggests poor ability to analyze phonologically novel words and to articulate them.
  - <u>Behavioral Observations (Stable Misarticulations)</u> - report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. The presence of stable misarticulations on this subtest and on the Oral Motor Sequences subtest may indicate a dysarthia.

139

Behaviors to Watch for

- Producing the correct syllables in the wrong order (missequencing).
- Stressing the wrong syllable frequently, although this is not an error. Discuss in the narrative of the report.
- Do results on this subtest compare in level of performance to those on Phonological Processing?

140

Clinical Use of Repetition of Nonsense Words

Subtest recommended for children referred for:
- language delays
- suspected reading difficulties (children who perform poorly on Phonological Processing may be given this test to help differentiate phonological awareness and segmentation problems from encoding of phonological information into short-term memory.
- suspected attentional problems
- suspected below normal intellectual abilities

141

NEPSY-II Subtests:
Language Functioning

Subtest	Age
• Body Part Naming & Identification	3-4
• Comprehension of Instructions	3-16
• Oromotor Sequences	3-12
• Phonological Processing	3-16
• Repetition of Nonsense Words	5-12
• Speeded Naming	3-16
• Word Generation	3-16

142

Speeded Naming

<u>Description</u>: designed to assess rapid semantic access to and production of names of colors, shapes, sizes, letters, or numbers.

<u>Task:</u> The child is shown an array of colors and shapes; colors, shapes, and sizes; or letters and numbers. He or she names them in order as quickly as possible.

143

Speeded Naming

Item 1: Color / Shape Naming

Item 2: Shape Naming

Item 3: Color / Shape Naming

Item 4: Size / Color/Shape Naming

144

Speeded Naming

8	W	7	J	5	D	4	K	2	S	6	L
9	M	1	A	8	B	7	E	4	Q	2	H
3	R	6	Y	2	J	9	W	7	F	8	X

Item 5: Letter / Number Naming

145

Speed Naming Scores

- Speeded Naming Combined Scale Score – a low score suggests poor automaticity of naming, slow processing speed, or poor naming ability.
  - Speeded Naming Total Completion Time Score - a low score suggests poor speed of processing, or difficulty with word retrieval, or difficulty in the production of verbal labels.
  - Speeded Naming Total Correct Score – a low score suggests poor self-monitoring or impulsive responding.
- Speeded Naming Total Self-Corrected Errors - Self-corrected errors are reflective of good self-monitoring behavior. High rates of self-corrected errors indicate impulsive behaviors but with some compensatory self-monitoring behavior present.

146

Speeded Naming Interpretation

Look at the interaction between speed and accuracy:

	Slow Completion Time	Fast Completion Time
Few Errors	Deliberate, careful	Good skills
Many Errors	Poor performance	Impulsive

147

Behaviors to Watch for

- Does the child recruit the whole body into the effort of accessing labels? Does voice volume increase with the effort?
- Is the child very slow, showing a labored performance, or impulsively fast, resulting in errors?
- Anxiety and/or frustration or, alternatively, enjoying the challenge, with time pressure.
- Good naming skills during the Teaching Example, when speed is not required, but poor rapid naming performance.

148

Clinical Use of Speeded Naming

Subtest recommended for children referred for:
- language delays
- suspected ADHD
- suspected reading disorder (this test should be administered when reading skills are in question)
- suspected autistic disorder
- suspected attentional problems
- suspected emotional disturbance

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NEPSY-II Subtests: Language Functioning

Subtest	Age
• Body Part Naming & Identification	3-4
• Comprehension of Instructions	3-16
• Oromotor Sequences	3-12
• Phonological Processing	3-16
• Repetition of Nonsense Words	5-12
• Speeded Naming	3-16
• Word Generation	3-16

150

Word Generation

<u>Description</u>: designed to assess verbal productivity through the ability to generate words within specific semantic and initial letter categories.

<u>Task:</u> The child is given a semantic or initial letter category and asked to produce as many words as possible in 60 seconds.

151

Word Generation

<u>Item 1: Animals</u> - name as many animal names in 60 seconds.

<u>Item 2: Food or Drink</u> - name as many examples of food or drink in 60 seconds.

<u>Item 3: "S" words</u> - name as many words that start with the letter "S"

<u>Item 4: "F" words</u> - name as many words that start with the letter "F"

152

Word Generation Scoring

- The repetition of a word generated by the child should not be considered a correct response for that item.
- If the child states a word in two different items (animal and an "S" word - snake), count both as correct.
- The repetition of a plural word or different tense should not be considered a correct response for that item (e.g., only 1 point for pie and pies).
- The repetition of a word in a diminutive form should not be considered a correct response for that item (e.g., only 1 point for pig and piggy).
- The repetition of a word using an adjective that does not distinguish it as a different member of the category is incorrect (e.g., only 1 point for bear, furry bear, and big bear).

153

Word Generation Scores

- <u>Word Generation Semantic Total Score</u> – low scores may indicate poor executive control of language production, poor inhibition and ideation, or poor vocabulary knowledge. Look for loss of set errors (producing words outside of the specific category) or a lack of monitoring to avoid repeating words. A poverty of words produced may reflect a poor vocabulary as well.
- <u>Word Generation Initial Letter Total Score</u> – the initial letter categories require more efficient executive functions than semantic word generation.

154

Word Generation Scores

- <u>Word Generation Semantic versus Initial Letter Contrast Scaled Score</u> – high scores indicate that the child is able to produce language adequately and out forth effort on the task but does not have a good search strategy to retrieve information that is not categorically organized. Low scores are unusual, and would indicate less developed semantic association networks relative to overall word knowledge. Children with very good verbal repetition skills but poor comprehension may show this unusual pattern.

155

Behaviors to Look for

- Does the child produce all of his/her responses within the first 20-30 seconds and very little afterwards? Is there a long period of silence and then the child begins producing words in the last 30 seconds, or is there a steady production of the words throughout the 1-minute period?
- Does the child look at objects around the room to cue him or herself for words?
- Does the child's performance on the Phonemic section compare to level of performance on Phonological Processing or with Repetition of Nonsense Words?
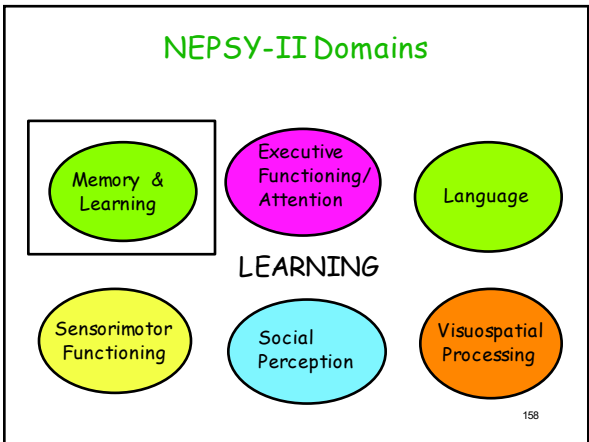
156

Clinical Use of Word Generation

Subtest recommended for children referred for:
- difficulty with initiating or sustaining verbal behavior (e.g., children with low verbal output in general)
- suspected ADHD
- suspected comorbid ADHD with learning disabilities
- suspected autistic disorder

The clinical groups that show deficits on this test suggest that executive functioning deficits in combination with language deficits contribute to poor performance on this test.

157

NEPSY-II Domains

- Memory & Learning
- Executive Functioning/ Attention
- Language

LEARNING

- Sensorimotor Functioning
- Social Perception
- Visuospatial Processing

158

Memory in the NEPSY-II

- Memory is the capacity to acquire and retain information. The ability to retain the information is influenced by the child's development in that area. Memory problems can be secondary to problems with EF/Atten., Language, & Visuospatial Processing.
  - Poor language skills = Poor Verbal Memory
- Generalized memory deficits are rarely seen in children, unless they have significant cognitive deficits.
- Different aspects of verbal and nonverbal memory and learning are assessed, making NEPSY-II's domain more comprehensive than NEPSY's
- Immediate and delayed memory are assessed to test memory decay in several areas.

159

NEPSY-II Subtests: Memory and Learning

Subtest	Age
• List Memory / List Memory Delayed	7-12
• Memory for Designs / Delayed	3-16
	5-16
• Memory for Faces / Delayed	5-16
• Memory for Names / Delayed	5-16
• Narrative Memory	3-16
• Sentence Repetition	3-6
• Word List Interference	7-16

160

List Memory / List Memory Delayed

Description: designed to assess verbal learning, rate of learning, and the role of interference in recall for verbal material.

Task: The child is read a list of words several times, recalling them after each presentation. A delayed task assesses long-term memory for words.

161

List Memory

- 15 words are read to the child by the examiner at a rate of one word per second.
- The child is instructed to "Tell me all the words you remember. Say the words in any order you want".
- Record the child's responses verbatim on the Record Form.

List	Trial 1
store	water
puppy	boat
finger	finger
window	puppy
grass	store
letter	cat
fish	fish
pupil	boat
winter	kitten
cat	
pencil	
fence	
teacher	

162

List Memory

List	Trial 1
store	water
puppy	boat
finger	finger
window	puppy
grass	store
letter	cat
fish	fish
pupil	boat (R)
winter	~~kitten~~
cat	
pencil	
fence	
teacher	

- Boat was repeated twice in the same list - repetition error
- Non-List Word (Novel) - a word that is not on either the word list of the interference list (e.g., kitten).
- Count the number of correct words recalled for each trial (trials 1-5).

163

List Memory / List Memory Delayed Recall

- Trial 6 (Interference) - the child is read a new list of words and asked to recall them.
- Trial 7 (Immediate Recall) - the child is asked to recall the words from the first list.
- Delayed Recall - after a 25-35 minutes delay after completing Trial 7, the child is asked to recall the words from the first list.

164

List Memory Curve Analysis

2 Children Age 9

Plotting out the learning curve for List Memory and comparing the child to the age norms can provide interesting results.

165

List Memory / List Memory Delayed Recall Scores

- List Memory & List Memory Delayed Total Correct Score – a low score indicates poor rote memory for verbal information that is not meaningfully organized.
  - List Memory Repetitions (sum of repeated words across Trials 1-7) – a high number of repetitions (a low percentile rank) suggests difficulty monitoring recall for redundant information.
  - List Memory Non-List Words (Novel) (sum of non-words across Trials 1-7) – a high number of non-list novel word errors (a low percentile rank) suggests difficulty monitoring recall for erroneous information not presented to the child during the task.

166

List Memory / List Memory Delayed Recall Scores

- List Memory Wrong List Words (Interference) (sum of wrong list words across Trials 6 & 7) – a high number of interference errors (words from the interference list recalled on the first list) indicates that recall accuracy is negatively impacted (high error rates) by presentation of information that is similar to the target words (interference).
- List Memory Learning Effect (correct words Trial 5 minus correct words Trial 1) - a high learning effect (high percentile rank) suggests a good ability to memorize verbal material and benefit from repeated exposure. A low learning effect (low percentile rank) suggests that recall does not improve despite repeated exposure to stimuli, perhaps due to low effort or a auditory processing deficit.

167

List Memory / List Memory Delayed Recall Scores

- List Memory Interference Effect (difference between correct words Trial 5 minus correct words Trial 7) – a high interference percentile indicates that presentation of new, similar information reduces recall of previously learned information. A low interference percentile indicates that the presentation of new, similar information does not reduce recall of previously learned information.
- List Memory Delayed Effect (difference between correct words Trial 5 minus correct words Delayed Recall) – a large negative delay effect represents a high rate of forgetting; the child loses more information over time than expected. A large positive delay effect suggests that the child's memory improves as information is given time to consolidate.

Behaviors to Watch for on List Memory

- Is the child focused on listening to the list as it is being administered?
- Does the child present overt signs of active memorizing, such as silent rehearsal, closing his/her eyes, or putting head down when listening to the words in order to shut out distractions? Or was the child's performance characterized by more automatic production of the words as they come to mind?
- Does the child use clustering techniques as a good memory strategy?
- Does the child seem to try to recall the words in order, though it is not required?

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Behaviors to Watch for on List Memory Delayed

- Does the child seem to struggle to recall words? Is performance significantly worst than on Trial 5 (compute LM Delay Effect), suggesting memory decay/?
- Does he/she have a strategy for recall?
- Does the child make self-deprecating remarks about his/her memory before attempting to recall the list?
- Does the child perform better then on the immediate List Memory, suggesting slow consolidation of the information?

170

Clinical Use of List Memory / List Memory Delayed

Subtest recommended for children referred for:
- suspected language delays
- suspected ADHD
- suspected traumatic brain injury
- suspected autistic disorder

Poor memorization skills may interfere with a variety of academic functions.

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NEPSY-II Subtests: Memory and Learning

Subtest	Age
• List Memory / List Memory Delayed	7-12
• Memory for Designs	3-16
• Memory for Designs Delayed	5-16
• Memory for Faces / Delayed	5-16
• Memory for Names / Delayed	5-16
• Narrative Memory	3-16
• Sentence Repetition	3-6
• Word List Interference	7-16

172

Memory for Designs

Description: designed to assess spatial memory for novel visual material.

Task: The child is shown a grid with four to ten designs on a page, which is then removed from view. The child selects the designs from a set of cards and places the cards on a grid in the same location as previously shown. A delayed task assesses long-term visuospatial memory.

173

Memory for Designs
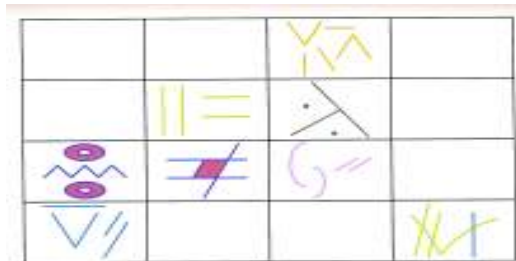
174

Memory for Designs / Memory for Designs Delayed Grid

Examinee

After the child finishes the his/her response, look at the back of the Memory Grid and check to see if the cards were placed in the correct positions based on their numbers.

175

Memory for Designs Scores

- **Content Score**: assesses the child's ability to recall which designs were shown for each trial.
  - There are target designs and distracter designs which look very similar to the target designs.
- **Spatial Score**: assesses the child's ability to recall where a design was shown for that trial.
- **Bonus Score**: reflects the child's ability to recall which designs were in which locations for that trial.

176

Memory for Designs Content Score

Both designs have green lines but are in different configurations.

Example of a Target Design

Example of a Distracter Design

177

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

This is how the response booklet looks for a single item before the examiner records the child's responses.

Target	Distracter	Content Score			Spatial Score		Bonus Score	
1	5	0	1	2	0	1	0	2
2	6	0	1	2	0	1	0	2
3	7	0	1	2	0	1	0	2
4	8	0	1	2	0	1	0	2
9	n/a	0		2	0	1	0	2
10	n/a	0		2	0	1	0	2

Content (Max = 12) + Spatial (Max =6) + Bonus (Max = 30) = Total (Max = 30)

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Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

The numbers in the grid are the correct target card locations

Target	Distracter	Content Score			Spatial Score		Bonus Score	
1	5	0	1	2	0	1	0	2
2	6	0	1	2	0	1	0	2
3	7	0	1	2	0	1	0	2
4	8	0	1	2	0	1	0	2
9	n/a	0		2	0	1	0	2
10	n/a	0		2	0	1	0	2

Content (Max = 12) + Spatial (Max =6) + Bonus (Max = 30) = Total (Max = 30)

179

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

Write the numbers (designed in green) from the back of the cards that the child placed in the grid on the response booklet .

Target	Distracter	Content Score			Spatial Score		Bonus Score	
1	5	0	1	2	0	1	0	2
2	6	0	1	2	0	1	0	2
3	7	0	1	2	0	1	0	2
4	8	0	1	2	0	1	0	2
9	n/a	0		2	0	1	0	2
10	n/a	0		2	0	1	0	2

Content (Max = 12) + Spatial (Max =6) + Bonus (Max = 30) = Total (Max = 30)

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Slide 181

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

Top
	9	9
2	1	
4	3	10

For the Target Card #1, the child choose the Distracter Card #5 and put that one in the #1 position. Circle the #5 below.

Target	Distracter	Content Score	Spatial Score	Bonus Score
1	5	0 1 2	0 1	0 2
2	6	0 1 2	0 1	0 2
3	7	0 1 2	0 1	0 2
4	8	0 1 2	0 1	0 2
9	n/a	0 2	0 1	0 2
10	n/a	0 2	0 1	0 2

Content (Max = 12) Spatial (Max =6) Bonus (Max = 30) Total (Max = 30)

☐ + ☐ + ☐ = ☐

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Slide 182

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

Top
	9	9
2	1	
4	3	10

Since the child choose the Distracter card instead of the Target card, the Content Score = 1.

Target	Distracter	Content Score	Spatial Score	Bonus Score
1	5	0 1 2	0 1	0 2
2	6	0 1 2	0 1	0 2
3	7	0 1 2	0 1	0 2
4	8	0 1 2	0 1	0 2
9	n/a	0 2	0 1	0 2
10	n/a	0 2	0 1	0 2

Content (Max = 12) Spatial (Max =6) Bonus (Max = 30) Total (Max = 30)

☐ + ☐ + ☐ = ☐

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Slide 183

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

Top
	9	9
2	1	
4	3	10

Since the child placed any card in that part of the grid, the Spatial Score = 1.

Target	Distracter	Content Score	Spatial Score	Bonus Score
1	5	0 1 2	0 1	0 2
2	6	0 1 2	0 1	0 2
3	7	0 1 2	0 1	0 2
4	8	0 1 2	0 1	0 2
9	n/a	0 2	0 1	0 2
10	n/a	0 2	0 1	0 2

Content (Max = 12) Spatial (Max =6) Bonus (Max = 30) Total (Max = 30)

☐ + ☐ + ☐ = ☐

183

Slide 184

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

Top
	9	9
2	1	
4	3	10

If the Content Score = 2 and the Spatial Score = 1, then the child would have been assigned a Bonus Score of 2 (not on this item).

Target	Distracter	Content Score	Spatial Score	Bonus Score
1	5	0 1 2	0 1	0 2
2	6	0 1 2	0 1	0 2
3	7	0 1 2	0 1	0 2
4	8	0 1 2	0 1	0 2
9	n/a	0 2	0 1	0 2
10	n/a	0 2	0 1	0 2

Content (Max = 12) Spatial (Max =6) Bonus (Max = 30) Total (Max = 30)

☐ + ☐ + ☐ = ☐

184

Slide 185

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

Top
	9	9
2	1	
4	3	10

For this item: content score = 2 (correct target card) in the proper location (spatial score = 1), thus bonus score = 2.

Target	Distracter	Content Score	Spatial Score	Bonus Score
1	5	0 1 2	0 1	0 2
2	6	0 1 2	0 1	0 2
3	7	0 1 2	0 1	0 2
4	8	0 1 2	0 1	0 2
9	n/a	0 2	0 1	0 2
10	n/a	0 2	0 1	0 2

Content (Max = 12) Spatial (Max =6) Bonus (Max = 30) Total (Max = 30)

☐ + ☐ + ☐ = ☐

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Slide 186

Memory for Designs Scores

Trial 3

Cards 1-10 Only
6 Designs MAX

Rule Violation
☐ Y ☐ N

Top
	9	9
2	1	
4	3	10

Rest of the items and the summary scores.

Target	Distracter	Content Score	Spatial Score	Bonus Score
1	5	0 1 2	0 1	0 2
2	6	0 1 2	0 1	0 2
3	7	0 1 2	0 1	0 2
4	8	0 1 2	0 1	0 2
9	n/a	0 2	0 1	0 2
10	n/a	0 2	0 1	0 2

Content (Max = 12) Spatial (Max =6) Bonus (Max = 30) Total (Max = 30)

8 + 5 + 6 = 19

186

Memory for Designs

On the last trial of Memory for Designs the examiner says to the child:

"Remember where you saw the designs in the page because I will ask you about them again in a little while."

This prompt alerts the child to the delayed portion of the test.

187

Memory for Designs Scores

- Memory for Designs Total Score (Content + Spatial + Bonus) – a low score suggests difficulty with rote memorization for the detail and location of visual stimuli details in two-dimensional space.
  - Memory for Designs Content Score – a low score suggests difficulty learning visual details.
  - Memory for Designs Spatial Score – a low score suggests difficulty learning the location of objects in two-dimensional space.
  - Memory for Designs Content versus Spatial Contrast Score – A low contrast score suggests difficulty with immediate spatial recall relative to visual detail. A high contrast score suggests that the child has difficulty with immediate recall of visual details relative to spatial memory.

188

Behaviors to Watch for on Memory for Designs

- Does the child attend closely to directions or is he/she impulsive in reaching for the cards and placing them before the direction are complete?
- If the child has to be reminded to out the designated number of cards in the grid , is he/she more attentive to this number on the next trial?
- How does the child's ability to remember the design (Content) compare to the child's ability to recall the location (Spatial)? How does this relate to classroom performance?

189

Memory for Designs Delayed

- This subtest is designed to assess long-term visuospatial and visual detail memory 15-25 minutes after Memory for Designs.
- Materials Needed:
  - Record Form
  - Memory for Designs Cards (20)
  - Memory Grid
- Do not discontinue

190

Memory for Designs Delayed

- Shuffle the cards 1-20 and place them in a stack in front of the child.
- Say: *"Remember the page I showed you earlier with ten designs? Pick the designs you saw on these cards. Put the cards in the same place here (point to the grid) as you saw them on the page. Do not remove the cards when you are done".*
- If the child places more than 10 cards say, *"Remember, do not put more than 10 tens in the grid."*

191

Memory for Designs Delayed Scores

- Memory for Designs Delayed Total Score – a low score suggests difficulty with long-term recall for the location of visual details in two-dimensional space.
  - Memory for Designs Delayed Content Score – a low score suggests difficulty with long-term recognition and recall for visual details.
  - Memory for Designs Delayed Spatial Score – a low score suggests difficulty with long-term recall of locations of objects in two-dimensional space.
  - Memory for Designed Delayed Content versus Spatial Score:
    - Low contrast score suggests difficulty with delayed spatial memory recall relative to visual detail.
    - High contrast score suggests that the child has difficulty with delayed recall of visual details relative to delayed spatial memory.

192

Memory for Designs / Memory for Designs Delayed Scores

- <u>Memory for Designs versus Memory for Designs Delayed Contrast Score</u>:
  - Low Memory for Designs versus Memory for Designs Delayed suggests a high rate of forgetting for visual details and spatial location.
  - High Memory for Designs versus Memory for Designs Delayed Contrast Score suggests that memory for visual information consolidates over time, yielding better memory functioning over time.

193

Memory for Designs / Memory for Designs Delayed Scores

- <u>Behavioral Observations (Memory for Designs and Memory for Designs Delayed Rule Violations)</u> - report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. Rule violations suggest a failure to comprehend the instructions (receptive language deficit), or a failure to maintain the cognitive set of instructions to complete the task (an executive dysfunction), or poor attention and impulsivity.

194

Behaviors to Watch for on Memory for Designs Delayed

- Is the child confident in his/her ability to remember or does the child state he/she will not be able to remember?
- How does the child's ability to perform on an immediate visuospatial memory task compare to the child's delayed recall ability for visuospatial information? Is memory decay observed or does the child appear to consolidate more information over time? How does this relate to classroom performance?

195

Clinical Use of Memory for Designs

Subtest recommended for children referred for:
- suspected local or global perceptual deficits.
- suspected mathematic disorder
- suspected autistic disorder
- suspected Asperger's disorder
- suspected acquired brain injury

196

NEPSY-II Subtests: Memory and Learning

Subtest	Age
• List Memory / List Memory Delayed	7-12
• Memory for Designs	3-16
• Memory for Designs Delayed	5-16
• Memory for Faces / Delayed	5-16
• Memory for Names / Delayed	5-16
• Narrative Memory	3-16
• Sentence Repetition	3-6
• Word List Interference	7-16

197

Memory for Faces / Memory for Faces Delayed

<u>Description</u>: designed to assess encoding of facial features, as well as face discrimination and recognition.

<u>Task:</u> The child looks at a series of faces and is then shown three photographs at a time from which he or she selects a face previously seen. A delayed task assesses long-term memory for faces.

198

Memory for Faces

The child looks at the face for 5 seconds & states if it is a boy or a girl.

Cropped picture provides fewer cues from extraneous details than those in NEPSY

199

Revised Subtests
Memory for Faces - Delayed

Which face have you seen before?

200

Memory for Faces / Memory for Faces Delayed Scores

• Memory for Faces Total Score – a low score suggests difficulties with initial encoding or discrimination of novel facts.
• Memory for Faces Delayed Total – a low score suggests difficulties with recognition of newly learned faces from long-term memory.

201

Behaviors to Watch for on Memory for Faces

• Discomfort in looking at the faces, or averting his/her eyes after looking at them. Does this correlate with poor or fleeting eye contact with the examiner or others?
• Wanting to move on before the 5 second exposure is complete. As opposed to reflecting on them in a focused manner.

202

Memory for Faces / Memory for Faces Delayed Scores

• Memory for Faces versus Memory for Faces Delayed Contrast Scaled Score:
  – Low Memory for Faces versus Memory for Faces Contrast Score suggests a higher rate of forgetting than expected for newly learned faces.
  – High Memory for Faces versus Memory for Faces Delayed Contrast Score suggests that face recognition improves with consolidation over time.

203

Memory for Faces / Memory for Faces Delayed Scores

• Behavioral Observations (Memory for Faces and Memory for Faces Delayed Spontaneous Comments) - report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. The presence of spontaneous comments can indicate that the child has difficulty maintaining the cognitive set required to work within the demands of the task. Spontaneous comments can also reflect impulsivity or socially inappropriate behaviors. The base rate of this behavioral observation should be considered in combination with the child's case history and presenting problems.

204

Clinical Use of Memory for Faces

Subtest recommended for children referred for:
  – suspected ADHD
  – suspected mathematic disorder
  – suspected autistic disorder
  – suspected Asperger's disorder
  – suspected emotional disturbance
  – suspected language disorder

If the referral question concerns symptoms of an autism spectrum disorder or problems with social skills (including children with unusual, explosive, or aggressive behavior), the Memory for Faces subtest should be administered.

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NEPSY-II Subtests: Memory and Learning

Subtest	Age
· List Memory / List Memory Delayed	7-12
· Memory for Designs	3-16
· Memory for Designs Delayed	5-16
· Memory for Faces / Delayed	5-16
· Memory for Names / Delayed	5-16
· Narrative Memory	3-16
· Sentence Repetition	3-6
· Word List Interference	7-16

206

Memory for Names / Memory for Names Delayed

Description: designed to assess the ability to learn the names of children over three trials.

Task: The child is shown six or eight cards with drawings of children on them while being read the child's name. The cards are then shown again and the child is asked to recall the name of the child on the card. A delayed task assesses long-term memory for names.

207

Memory for Names Example

This is Ben

Who is this?

208

Memory for Names / Memory for Names Delayed Scores

· Memory for Names (Immediate) Total Score – a low score suggests difficulties with verbal-visual associative learning.
· Memory for Names Delayed Total Score – a low score suggests that the child has difficulty retaining verbal-visual associative learning pairs.
· Memory for Names Immediate and Memory for Names Delayed Total Scaled Score - a low score for suggests poor learning and retrieval of verbal labels for visual information.

209

Behaviors to Watch for on Memory for Names

· Does the child recall a correct name but pair it with an incorrect face, suggesting a problem in paired associate learning?
· Does the child perseverate on the same few names and show little learning across Learning Trials?
· If the child does not attend to the name, he or she may fail to encode the information.

210

Clinical Use of Memory for Names

Subtest recommended for children referred for:

- – suspected language impairments
- – suspected learning disabilities

Memory for Names is an important measure related to the development of early language skills (e.g., naming).

211

NEPSY-II Subtests: Memory and Learning

Subtest	Age
· List Memory / List Memory Delayed	7-12
· Memory for Designs	3-16
· Memory for Designs Delayed	5-16
· Memory for Faces / Delayed	5-16
· Memory for Names / Delayed	5-16
· Narrative Memory	3-16
· Sentence Repetition	3-6
· Word List Interference	7-16

212

Narrative Memory

Description: designed to assess memory for organized verbal material under free-recall, cued recall, and recognition conditions.

Task: The child listens to a story and then is asked to repeat it. The child is then asked questions to elicit missing details from his or her recall of the story.

213

Narrative Memory

Cookie Story for ages 3-4: Free Recall, Cued Recall & Recognition

214

Narrative Memory

Brain Story - Part One

215

Narrative Memory

- Narrative Memory Free Recall Total – a good score suggests that the child has well developed abilities to encode and understand prose and to express the salient points that he/she has heard. Poor performance might suggest developmental or acquired receptive or expressive language deficits, poor access to language, or poor ability to organize and sequence language.

216

Narrative Memory

- Narrative Memory Free & Cued Recall Total Score:
  - Low Free Recall and Low Free & Cued Recall Total Scores – indicates poor ability to express organized information; encoding deficits may also exist.
  - Low Free Recall and Average to High Free & Cued Recall Total Score – indicates adequate encoding of information into memory but needs verbal prompts to help access that information, reflecting a problem of memory search or expressive language.

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Narrative Memory

- Low Recognition Total Score (ages 3-10 only) – a low recognition score suggests that providing information in a format that does not require active recall and expressive language skills does not improve memory functioning; in conjunction with a low Free & Cued Recall Total score indicates significant encoding difficulties.

218

Narrative Memory

- Free & Cued Recall versus Recognition Contrast Score (ages 3-10 only):
  - *Low Free & Cued Recall versus Recognition Contrast Scaled Score* – suggests that recognition memory is significantly better than free recall, indicating a retrieval deficit or an expressive language problem. The child's performance on Free & Cued Recall was lower than expected given his or her recognition performance.
  - *High Free & Cued Recall versus Recognition Contrast Scaled Score* – an unusual finding that suggest superior free recall versus recognition; may suggest fading effort.

219

Behaviors to Look for on Narrative Memory

- The child remembers only the beginning or the end of the story.
- The child remembers the gist of the story but not the details.
- Failing to recall many details in Free Recall, but recalling well with cueing. This suggests an accessing or expressive problem, or a problem with executive functions. The information is there, but the child cannot access it or cannot organize the narration. This may occur developmentally in young children.
- Failing to recall efficiently on either the Free Recall or the Cued Recall trials. This suggests that the child did not encode the information as it was being processed. Attention? Language Delay?

220

Clinical Use of Narrative Memory

Subtest recommended for children referred for:
- suspected language impairments
- suspected learning disabilities
- suspected brain injured
- suspected autism spectrum disorder
- suspected reading disabled

Narrative Memory relates to reading and language comprehension and oral and written expression. This test is helpful when children are referred for general language comprehension problems or when reading and writing concerns are present.

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NEPSY-II Subtests: Memory and Learning

Subtest	Age
• List Memory / List Memory Delayed	7-12
• Memory for Designs	3-16
• Memory for Designs Delayed	5-16
• Memory for Faces / Delayed	5-16
• Memory for Names / Delayed	5-16
• Narrative Memory	3-16
• Sentence Repetition	3-6
• Word List Interference	7-16

222

Sentence Repetition

Description: designed to assess the ability to repeat sentences of increasing complexity and length.

Task: The child is read a series of sentences and asked to recall each sentence immediately after it is presented.

Scoring:

2 points for no errors

1 point for one or two errors

0 points for three or more errors or for no response

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Sentence Repetition Scores

• Sentence Repetition Total Score – a low score suggests poor verbal short-term or immediate memory for meaningful sentences.

– Behavioral Observation (Asks for Repetitions Total) - report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. A high number of asking for repetitions could suggest a failure to comprehend verbal instructions, or confusion, or a hearing loss.

224

Behaviors to Look for

• Does there seem to be a working memory problem? The child's recall may be fine at first, but he/she may make more errors as the sentences become longer and more complex.

• Does the child recall just the first of the sentence (primacy) or just the last part (recency)?

225

Clinical Use of Sentence Repetitions

Subtest recommended for children referred for:

– suspected language delays or disorders

– school readiness

Sentence Repetition correlates with school readiness, and early reading and writing skills.

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NEPSY-II Subtests: Memory and Learning

Subtest	Age
• List Memory / List Memory Delayed	7-12
• Memory for Designs	3-16
• Memory for Designs Delayed	5-16
• Memory for Faces / Delayed	5-16
• Memory for Names / Delayed	5-16
• Narrative Memory	3-16
• Sentence Repetition	3-6
• Word List Interference	7-16

227

Word List Interference

Description: designed to assess verbal working memory, repetition, and word recall following interference.

Task: The child is presented with two series of words and asked to repeat each sequence following its presentation. Then he or she recalls each series in order of presentation.

228

Word List Interference

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Word List Interference Scoring

- <u>Repetition Items</u>:
  - 2 points if the child repeats all words for both Repetition Trials in the correct order
  - 1 point if the child repeats all words for one Repetition Trial in the correct order.
  - 0 points if the child does not repeat all words for both Repetition Trials in the correct order or for no response.
- <u>Recall Trials</u>:
  - 2 points if the child recalls all words for the Recall Trial in the correct order
  - 1 point if the child recalls all words for the Recall Trial but not in correct order
  - 0 points if the child does not recall all words for the Recall Trial or for no response

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Word List Interference Scores

- <u>Word List Repetition Total Score</u> – a low repetition total score suggests a limited capacity in working memory, possibly related to language difficulties.
- <u>Word List Interference Recall Total</u> – a low recall score suggests limited capacity to maintain information in working memory in the presence of interfering stimuli and multitasking requirements.
- <u>Word List Repetition versus Recall Contrast Score</u> – a low contrast score indicates that for the level of memory span, the child has difficulty managing competing information in working memory. A high contrast score is an atypical finding as it would suggest that the child has very good ability to manage the interfering effects of competing information in working memory at their span level. This could be related to poor attention or inconsistent effort.

231

Word List Interference Scores

- <u>Behavioral Observation (Asks for Repetitions Total)</u> - report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. A high number of asking for repetitions could suggest a failure to comprehend verbal instructions, or confusion, or a hearing loss.

232

Clinical Use of Word List Interference

Subtest recommended for children referred for:
  - suspected working memory impairments
  - suspected receptive language disorder

- The repetition function provides an estimate of the integrity of the initial verbal registration and the phonological loop.
- The recall component is useful in determining the degree to which competing information disrupts working memory performance and the ability of the child to dual-task.

233

NEPSY-II Domains

234
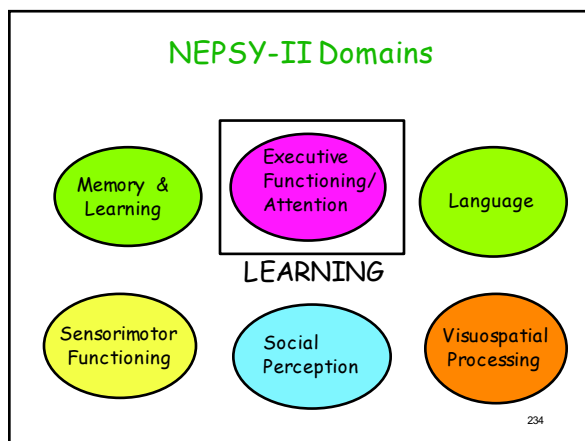
Executive Functions and Attention

Executive Functions (EF) and **Attention** are multidimensional concepts that contain related processes. Both concepts require **Self-Regulation** and have some common subprocesses.

The Executive Functions are subserved by the frontal areas & connections. They include:
  Activities that are necessary for achieving an objective:
- Strategic Planning
- Flexibility
- Regulation of Action based on feedback from the environment (Barkley, 1997)

235

NEPSY-II Subtests:
Attention and Executive Functioning

Subtest	Age
• Animal Sorting	7-16
• Auditory Attention and Response Set	5-16
• Clocks	7-16
• Design Fluency	5-12
• Inhibition	5-16
• Statue	3-6

General Assessment Subtest

236

Animal Sorting

<u>Description</u>: Designed to assess the ability to formulate basic concepts, to transfer those concepts into action (sort into categories), and to shift set from one concept to another.

<u>Task</u>: Child sorts 8 cards into two self-initiated categories of 4 each.

<u>Timing</u>: The child is allowed 360 seconds to complete as many sorts. Time is cumulative - stop the time between sorts if instructions are given.

237

Correct Animal Sorts

Cards are numbers on the back - the zebras are always #1. Look at the group of four cards that has the zebras in it and record the numbers from that group only on the test booklet.

238

Correct Animal Sorts

Have page 40 of the Administration Manual open to see the list of all of the correct sorts.

239

Animal Sorting Scoring

- <u>Novel Sort Error</u> is recorded when the child sorts the cards into groups that are not recognized as a correct sort.
- <u>Repeated Sort Error</u> is recorded when the child sorts the cards into groups the same way as previously completed (includes correct and novel sorts).
- A <u>Correct Sort</u> is recorded (1 point for correct, 0 points for incorrect) when the child's sorting matches one of the correct sorts listed on page 40 of the Administration Manual.

240

Animal Sorting

- Animal sorting does not require the child to respond verbally.
- Do not ask for a description of the 4 card sorting classification/categorization used by the child (note: this is different from the D-KEFS Card Sorting task).
- Do not write down on the test booklet any of the child's verbal responses because it may encourage the child to talk more.
- Correct sorting is based solely on the card numbers and not what the child says.

241

Interpreting Animal Sorting Scores

- Animal Sorting Combined Scaled Score – a low score suggests poor initiation, cognitive flexibility, and poor self-monitoring; poor conceptual knowledge.
  - Animal Sorting Total Correct Sorts – a low score suggests poor initiation or sustained effort, poor conceptual reasoning or semantic knowledge.
  - Animal Sorting Total Errors – a high number of errors suggests poor self-monitoring of responses for redundant behaviors or rule violations, or idiosyncratic conceptual reasoning.

242

Interpreting Animal Sorting Scores

- Process Scores
  - Animal Sorting Total Novel Sort Errors – a high number of novel sort errors suggests idiosyncratic or immature reasoning.
  - Animal Sorting Total Repeated Sort Errors – a high number of repeated sort errors suggests poor cognitive flexibility and self-monitoring.

243

Behaviors to Look for

- Does the child grasp the concept of the four-card sort easily?
- Does the child sort impulsively without reflection?
- Does the child make many Repeated Sort Errors, suggesting working memory problems or perseverative tendencies?
- Does the child make numerous Novel Sort Errors, suggesting problems with concept formation?
- Is the child significantly slow in processing the task, suggesting a problem with fluency?

244

Clinical Use of Animal Sorting

Subtest recommended for children referred for:
- suspected Autistic Disorder
- suspected language disorder
- suspected emotional disturbance
- reading comprehension difficulties
- written expression difficulties

Children with overt language deficits or atypical or aggressive behaviors should be evaluated for difficulties with cognitive flexibility.

Children who have difficulty generating conceptual links may have difficulty composing and comprehending written text, especially text of an abstract, inferential nature.

245

NEPSY-II Subtests: Attention and Executive Functioning

Subtest	Age
• Animal Sorting	7-16
• Auditory Attention and Response Set	5-16
• Clocks	7-16
• Design Fluency	5-12
• Inhibition	5-16
• Statue	3-6

General Assessment Subtest

246

Auditory Attention and Response Set

Description: Part 1: Auditory Attention - designed to assess selective and sustained auditory attention. Part 2: Response Set - designed to assess selective, sustained, and an added shifting attention component.

Task: The child listens to words from the CD and touches the appropriate colored circle.

Timing: The CD controls the timing of the test.

247

Auditory Attention Item Recording

listen			c	
RED	1	o	c	
square			c	
now			c	
yellow			c	i
but			c	
blue			c	i
RED	1	o	c	
there			c	
take			c	
yellow			c	i

- Put the record form on a clip board and look over the top of it to see the child's responses.
- Write "R" for red, "Y" for yellow, "B" for blue, and K for black in the square next to the word spoken on the CD.

248

Auditory Attention Item Recording: Correct Responses

listen			c	
RED	1	o	c	
square	(R)		c	
now			c	
yellow			c	i
but			c	
blue			c	i
RED	(1)R	o	c	
there			c	
take			c	
yellow			c	i

- On Part 1 of the task, the child is instructed to only touch the Red circle when the word is spoken.
- The child can get a point if the red circle is touched within two words (see example).

249

Auditory Attention Item Recording: Commission Errors

listen			c	
RED	1	(o)	c	
square			c	
now	R		(c)	
yellow			c	i
but			c	
blue	B		c	i
RED	1	o	(c)	
there			c	
take			c	
yellow			c	i

Commission errors:

- response that is not within the 2-second interval
- correct response 2 times in 2 secs.
- An incorrect response.

250

Auditory Attention Item Recording: Omission Errors

listen			c	
RED	1	(o)	c	
square			c	
now	R		(c)	
yellow			c	i
but			c	
blue	B		c	i
RED	1	o	(c)	
there			c	
take			c	
yellow			c	i

Omission errors:

- Child fails to provide a correct response to a target word within the 2-second interval associated with the target word.

251

Auditory Attention Item Recording: Inhibitory Errors

listen			c	
RED	1	o	c	
square			c	
now			c	
yellow	Y		c	(i)
but			c	
blue			c	i
RED	1	o	c	
there			c	
take			c	
yellow			c	i

Inhibitory errors:

- Child responds to a color word by touching the corresponding color when it is not a correct response for the task.

252

Response Set Item Scoring

- On **Part B – Response set**, the child is instructed to touch the yellow circle when the word "red" is heard, touch the red circle when the word "yellow" is heard, and touch the blue circle when the word "blue" is heard.

253

Response Set Item Recording: Correct Responses

listen			c	
BLUE	(1)	o	c	
but	B		c	
take			c	
that			c	i
RED	1	(o)	c	
put			c	i
Yellow	(1)	o	c	
empty	R		c	
thing			c	
row			c	i

Commission and inhibitory errors are scored similarly as on Part 1: Auditory Attention.

254

Auditory Attention and Response Set Scores

Auditory Attention:
- Combined Scaled Score
  - Total Correct
  - Commission Errors
- Supplemental Scores:
  - Omission Errors
  - Inhibitory Errors
- Behavioral Observations:
  - Inattentive/Distracted Off-Task Behaviors
  - Out of Seat Physical Movement in Seat Off-Task Behaviors

Response Set:
- Combined Scaled Score
  - Total Correct
  - Commission Errors
- Supplemental Scores:
  - Omission Errors
  - Inhibitory Errors
- Behavioral Observations:
  - Inattentive/Distracted Off-Task Behaviors
  - Out of Seat Physical Movement in Seat Off-Task Behaviors

Auditory Attention vs. Response Set Contrast Scaled Score -

255

Interpreting Auditory Attention and Response Set Scores

- Behavioral Observations:
  - inattentive/distracted off-task behaviors
  - physical movement in seat off task behaviors
  - Report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors.

256

Interpreting Auditory Attention and Response Set Scores

Auditory Attention vs. Response Set Contrast Scaled Score:
- Low Contrast Scaled Score (Response Set < Auditory Attention) may suggest that the child has greater difficulty on tasks that provoke impulsive reactions. The attentional load of working memory and executive control worsens sustained attention abilities.
- High Contrast Scaled Score (Response Set > Auditory Attention) is atypical and suggests improved sustained attention when the cognitive load is increased; may be related to inattention on simple tasks but challenged by harder tasks.

257

Behavior to Watch For

- Salient behaviors (focused attention, excited, or frustrated expressions or remarks, oppositional responses) on the two portions of the test. Complex, rapid tasks may be causing similar behavioral responses in the classroom.
- Record boredom, impulsivity, and slips in attention during the tasks.

258

Clinical Use of Auditory Attention and Response Set

Subtest recommended for children referred for:
- attentional difficulties
- problems with behavioral regulation when additional multitasking demands or competing stimuli (e.g., distracters) are present.
- ADHD (poor response set)
- suspected Mathematics Disorder (poor auditory attention)
- suspected Language Disorder (poor auditory attention)
- suspected Asperger's Disorder (poor auditory attention)
- suspected Emotional Disturbance (poor auditory attention)

259

NEPSY-II Subtests:
Attention and Executive Functioning

Subtest	Age
• Animal Sorting	7-16
• Auditory Attention and Response Set	5-16
• Clocks	7-16
• Design Fluency	5-12
• Inhibition	5-16
• Statue	3-6

General Assessment Subtest

260

Clocks

Description: designed to assess planning and organization, visuoperceptual and visuospatial skills, and the concept of time in relation to analog clocks.

Task: The child is asked to draw the image of a clock and place the hands for a particular time or reads the time on clocks that either have or do not have numbers.

261

Clocks
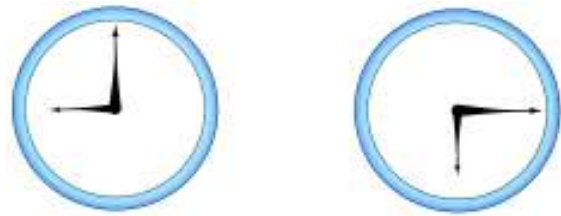
Clock reading without numbers

262

Scoring Clocks

- For items 1-2 and 9-10, record the manner in which the child draws the numbers on the clock.
  - Under the Sequencing (Seq) column circle A if the child draws the anchor numbers first (12, 3, 6, & 9) or
  - Circle S if the child draws the numbers in serial order (1-2-3-4....12) or reverse serial order (12-11,10-9,,,,1).
- Use the scoring guide in Appendix A and the scoring templates for numbers, contour, hands, and center scores.
- Clock Total Scaled Score is generated.

263

Interpreting the Clocks Score

- Clocks Total Score – performance on the Clocks subtest may be affected by a childs knowledge of and exposure to analog clocks. A low score suggests poor visual planning and organization, or poor visuospatial abilities or clock reading ability.

264

Behaviors to Look for

- Is planning apparent or is performance random in arranging numerals on the clock face?
- Are numbers very large or very small, suggesting poor motor control or expansiveness on the former or anxiety/obsessiveness on the latter?
- After the child has completed the test you may wish to ask how many minutes the space between numbers represents in order to determine knowledge of time concepts on the analogue clock.

265

Clinical Use of the Clocks Test

Subtest recommended for children referred for:
– suspected ADHD
– suspected Reading and Language Disorder
– suspected Emotional Disturbance
And to a lesser degree:
– suspected Asperger's Disorder
– suspected Autistic Disorder
– suspected Mathematic Disorder

Clocks correlates with math computational and reasoning skills and written and oral expression, and should be used when children present with math or writing difficulties.

266

NEPSY-II Subtests:
Attention and Executive Functioning

| Subtest	Age
• Animal Sorting	7-16
• Auditory Attention and Response Set	5-16
• Clocks	7-16
➡ • Design Fluency	5-12
• Inhibition	5-16
• Statue	3-6

General Assessment   Subtest

267

Design Fluency

Description: designed to assess the behavioral productivity in the child's ability to generate unique designs by connecting up to five dots, presented in either a structured or random array.

Task: The child is asked to draw as many designs on each array within 60 seconds each.

268

Design Fluency

Structured Array
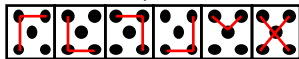
Random Array
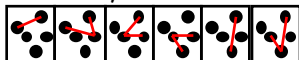
269

Design Fluency Scores

- Design Fluency Total Score – a low score suggests impaired initiation and productivity; poor cognitive flexibility; poor nonverbal fluency; and working memory (since the recall of the rules for a drawing throughout the task is required).
  – Design Fluency Structured Array Score – a low score reflects the child's poor performance on the more structured stimuli.
  – Design Fluency Random Array Score – a low score reflects the child's poor performance on the less structured stimuli.

270

Behaviors to Look for

- Do poor graphomotor skills appear to affect performance negatively?
- Does the child appear to forget the rules?
- Does the child monitor his/her work to catch errors? Is the child anxious or impulsive?
- Does the child use strategies (e.g., varying designs in a systematic fashion)?
- Does the child draw complex and elaborated figures? This may reduce the number of figures produced.

271

Clinical Use of Design Fluency

Subtest recommended for children referred for:
- executive dysfunction (difficulty with mental flexibility)
- suspected Autistic Disorder (a core deficit in autistic children - poor cognitive flexibility)
- suspected language delay of disorder
- suspected learning disability and comorbid ADHD

The test should be administered when difficulty with cognitive flexibility and processing speed are suspected.

272

NEPSY-II Subtests:
Attention and Executive Functioning

| Subtest	Age
• Animal Sorting	7-16
• Auditory Attention and Response Set	5-16
• Clocks	7-16
• Design Fluency	5-12
• Inhibition	5-16
• Statue	3-6

General Assessment Subtest

273

Inhibition

Description: designed to assess the ability to inhibit automatic responses in favor of novel responses and the ability to switch between response types.

Task: The child looks at a series of black and white shapes or arrows and names either the shape or direction or an alternative response, depending upon the color of the shape or arrow.

274

Inhibition

Item 1 - Shapes (Circles or Squares)
- Part 1: Naming of Shapes (circle or square)
- Part 2: Inhibition (the circle is named as square and the square is named as circle)
- Part 3: Switching (When black, names that shape; when white says name of other shape)

275

Inhibition

Item 2 - Arrows
- Part 1: Naming of Direction (up or down)
- Part 2: Inhibition (the up arrow is named as down and the down arrow is named as up)
- Part 3: Switching (When black, says *up* or *down* for arrow. When white says *up* if down & *down* for up)

276

Inhibition (Naming) Scores

- Naming Combined Scaled Score – integrates error rate and time with an emphasis on accuracy of performance over speed. A low score may indicate slow speed or very poor accuracy.
  - Naming Total Completion Time & Naming Total Errors – low scores may reflect poor naming ability, or slow processing speed, or may reflect a high number of self-corrected errors.
    - Slow Naming Total Completion Time & low or average number of Naming Errors – indicates slow psychomotor speed or a specific problem related to accessing semantic information.
    - Slow Naming Total Completion Time & high number of Naming Errors – indicates naming problem or poor self-monitoring.

277

Inhibition (Naming) Scores

Naming Process Scores:
- Naming Uncorrected Errors – When the Naming Errors Score is high, evaluate for uncorrected and self-corrected errors. A high number of uncorrected errors suggests that the child fails to recognize errors as they occur. The inability to recognize errors may suggest poor language skills or poorly developed self-monitoring.
- Naming Self-Corrected Errors – A high number of self-corrected errors indicates that the child recognizes a mistake when he or she hears it and that self-monitoring of performance is occurring. These children may be impulsive and make simple mistakes in their work but have the ability to catch themselves.

278

Inhibition (Inhibition) Scores

- Inhibition Combined Scaled Score – integrates error rate and time with an emphasis on accuracy of performance over speed. A low score indicates poor inhibitory control; however, performance could be due to very slow speed with few impulsive errors or a very high error rate with relatively good speed.
  - Inhibition Total Completion Time & Inhibition Total Errors – low completion time scores suggest slow processing speed and high error rates must be interpreted in light of uncorrected and self-corrected errors.
    - Slow Inhibition Total Completion Time and low or average number of Inhibition Errors – suggests that inhibitory demands slow down cognitive processing speed.
    - Slow Inhibition Total Completion Time and high number of Inhibition Errors – suggests an impulsive response style with poorly controlled output.

279

Inhibition (Inhibition) Scores

Inhibition Process Scores:
- Inhibition Uncorrected Errors – When the Inhibition Total Errors Score is high, evaluate for uncorrected and self-corrected errors. A high number of uncorrected errors suggests that the child fails to recognize errors as they occur. The inability to recognize errors may suggest poor language skills or poorly developed self-monitoring.
- Inhibition Self-Corrected Errors – A high number of self-corrected errors indicates that the child recognizes a mistake when he or she hears it and that self-monitoring of performance is occurring. These children may be impulsive and make simple mistakes in their work but have the ability to catch themselves.

280

Inhibition (Switching) Scores

- Inhibition Switching Combined –The Switching score from the Inhibition test are to be reported here in the shifting attention section. Low Inhibition Switching Combined score integrates error rates and completion time with more weight given to accuracy than speed. High scores indicate good control of switching (shifting attention) skills. Low scores could indicate very slow switching speed or poor control over switching behavior. Time and error scores should be evaluated separately to determine the reason for poor performance.
  - Switching Total Completion Time and Switching Total Errors – Slow switching time and low or average number of switching errors suggests that cognitive processing is slowed by switching demands. Slow switching time and a high number of switching errors suggests switching demands can result in poor inhibition due to an impulsive approach. The child may have problems with impulsivity and cognitive flexibility.

281

Inhibition (Switchig) Scores

Switching Process Scores:
- Switching Uncorrected Errors – when high errors rates are observed, evaluate the corrected versus uncorrected error rates. High uncorrected errors indicate that the child has poor self-monitoring skills.
- Switching Self-Corrected Errors - Self-corrected errors are reflective of good self-monitoring behavior. High rates of self-corrected errors indicate problems controlling switching behavior but with some compensatory self-monitoring behavior present.

282

Inhibition Contrast Scores

- Naming versus Inhibition Contrast Score – a low scores indicate that the child performed poorly on the inhibitory task compared to children with similar levels of initial naming speed.
- Inhibition versus Switching (see Attentional Processes – Shifting Attention section) Contrast Score – low scores indicate that a child did poorly on the switching aspect of the test relative to his or her level of inhibitory control. Sometimes low scores are a result of the increased cognitive load and the child lose the cognitive set to perform the task.
- Total Errors – a low score is the sum of all errors across all three conditions and must be interpreted in light of uncorrected and self-corrected errors.

283

Inhibition Scores

Behavioral Observations:
- Points to Stimuli on Naming Items
- Points to Stimuli on Inhibition Items
- Points to Stimuli on Switching Items
- These behavioral observations are not addressed in the NEPSY-II Manuals. It is surmised that when the child chooses to point to the stimuli as they are being named it is a compensatory act to help the child keep track of each stimulus item as it is being named.

284

Behaviors to Watch For

- Did problems occur in only one condition (Naming, Inhibition, or Switching) or did they occur across conditions? Was the child able to inhibit response in the Inhibition condition, but not able to inhibit and shift set in the Switching condition?
- Did problems occur in Naming condition only (could be naming or language problems). Compare performance to Speeded Naming and Memory for Names and other language tests.
- Did inattentiveness when directions were given or during the test influence performance?

285

Clinical Use of the Inhibition Test

Subtest recommended for children referred for:
- ADHD
- suspected mathematics disorder
- suspected language disorder
- suspected emotional disturbance

The test performance is effected by additional cognitive functions such as naming speed, working memory, and oromotor fluency.

286

NEPSY-II Subtests:
Attention and Executive Functioning

Subtest	Age
• Animal Sorting	7-16
• Auditory Attention and Response Set	5-16
• Clocks	7-16
• Design Fluency	5-12
• Inhibition	5-16
• Statue	3-6

General Assessment Subtest

287

Statue

Description: designed to assess motor persistence and inhibition.

Task: The child is asked to maintain a body position with eyes closed during a 75 second period and to inhibit the impulse to respond to sound distracters.

288

Statue Scores

- <u>Statue Total</u> – a low score is thought to reflect poor inhibitory control and motor persistence.
  - <u>Body Movement Inhibitory Error</u> – a low percentile rank indicates that the child was not able to remain still for the prescribed period of time without exhibiting extraneous body movements. This is a good predictor of hyperactivity.
  - <u>Eye Opening Inhibitory Error</u> – a low percentile rank indicates that the child was not able to follow the directions to keep his or her eyes closed (poor receptive language skills) or had trouble maintaining his or her cognitive set.
  - <u>Vocalization Inhibitory Error</u> - a low percentile rank indicates that the child was not able to follow the directions to keep his or her eyes closed (poor receptive language skills) or had trouble maintaining his or her cognitive set.

289

Behaviors to Look for

- Does the child become anxious with his/her eyes closed? If the child's upset, discontinue the test and note the behavior.
- Other children who have difficulty standing still may keep opening their eyes a bit or moving slightly as if to test the examiner. Such performance may be scored in a standard way, assuming that the score reflects the child's real performance. However, the interpretation of the score should be guarded – did the child's motivation influence the score?

290

Behaviors to Look for

- Was the child distracted constantly, and showed poor inhibition, resulting in many errors?
- Does the child sway noticeably when eyes are closed and he/she ceases to get visual input to judge his/her position in space?
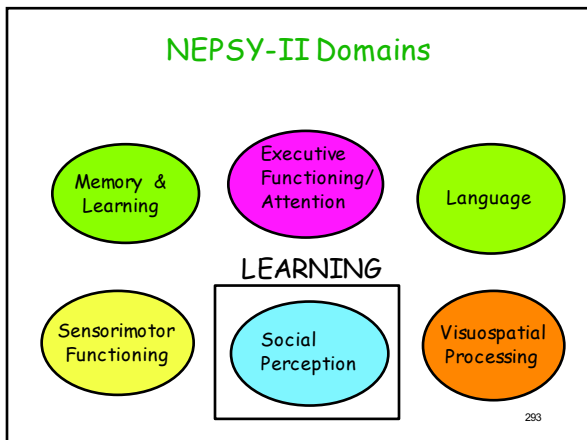
291

Clinical Use of the Statue Test

Subtest recommended for preschool children referred for:
- ADHD
- suspected autism
- neurological disorders (e.g., Fetal Alcohol Syndrome)

292

NEPSY-II Domains

Memory & Learning

Executive Functioning/ Attention

Language

LEARNING

Sensorimotor Functioning

Social Perception

Visuospatial Processing

293

NEPSY-II Subtests: Social Perception

Subtest	Age
• Affect Recognition	3-16
• Theory of Mind	3-16

294

Affect Recognition

Description: designed to assess the ability to recognize affect (happy, sad, anger, fear, disgust, and neutral) from photographs of children's faces in four different tasks.

Task: In one task, the child simply states whether or not two photographs of children's faces depict faces with the same affect. In a second task, the child selects two photographs of faces with the same affect from 3-4 photos. In a third task, the child selects one of the four faces that depicts the same affect as a face at the top of a page. Finally, the child is briefly shown a face and from memory selects two photos that depict the same affect as in the face previously shown.

295

Affect Recognition
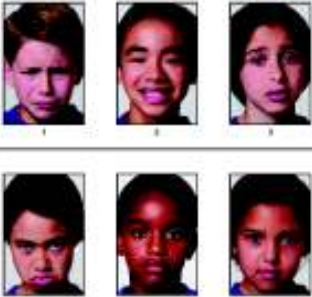
Do these two children look as if they <u>feel</u> the same way?

296

Affect Recognition

Show me two children who look as if they feel the same way.

297

Affect Recognition

Show me the child down here (point) who feels the same way as the child at the top.

298

Affect Recognition Subtest

Find two faces like the first one you saw (on previous page)

299

Affect Recognition Scoring

Item	Response	Score
9.	①② 3	0 ①
	N	
10.	1 ②③	⓪ 1
	H	

In the Record Form the correct answers are printed in green.

1 point for all correct answers identified.

Beneath each incorrect response for Items 9-35, there is a letter that corresponds to the emotion expressed by the child for that response (e.g., Item #10(2) = H for Happy). When an error is made, as in item #10, the examiner should total the "emotion letters" across items.

Affect Recognition Scores

- <u>Affect Recognition Total</u> – a low score suggests poor recognition of emotion in facial expressions. Children with low scores may have trouble with reciprocal relationships. Low scores may occur in children with poor visual attention, visual discrimination, or face recognition.

301

Affect Recognition Scores

- Low percentile ranks on any of these scores indicate a high number of errors. These score may be used to assist in intervention planning.
  - Total Happy Errors
  - Total Sad Errors
  - Total Neutral Errors
  - Total Fear Errors
  - Total Angry Errors
  - Total Disgust Errors

A child may produce a pattern of errors that relates to just one or a few emotions.

302

Affect Recognition Scores

- <u>Behavioral Observations (Spontaneous Comments)</u> – report the percentage of the standardization (D.2) and/or clinical sample (D.5) that exhibited one of both of these clinical behaviors. A high base rate compared to either the standardization or clinical samples indicates that the child had difficulty inhibiting extraneous responses.

303

Behaviors to Look for

- Impulsivity; not attending to faces before identifying emotions.
- Apparent confusion in identifying neutral faces, misinterpreting them as mad.
- Mediating each of his/her choices by talking his/her way through the identification of emotions.

304

Clinical Use of Affect Recognition

- The test is designed for use with children displaying aberrant social behaviors such as atypical behaviors, social avoidance, or very poor social skills.
- The test is useful for testing children with aggressive behaviors to determine if they are able to read emotional responses in others.
- This test is useful when evaluating children for possible autism spectrum disorders or Childhood/Adolescent Onset Schizophrenia.

305

NEPSY-II Subtests: Social Perception

Subtest	Age
• Affect Recognition	3-16
• Theory of Mind	3-16

306

Theory of Mind

Description: designed to assess the ability to understand mental functions such as belief, intention, emotion, imagination, and pretending, as well as the ability to understand that others have their own thoughts, ideas, and feelings that may be different from one's own and the ability to understand how emotion relates to social context and to recognize the appropriate affect given various social contexts.

Task: In the Verbal task, the child is read various scenarios or shown pictures and is then asked questions that require knowledge of another individual's point of view to answer correctly. In the Contextual task, the child is shown a picture depicting a social context and asked to select a photo from 4 options that depicts the appropriate affect of one of the people in the picture.

307

Theory of Mind - A Core Deficit in Autism Spectrum Disorders

"Theory of Mind" refers to the ability to infer the full range of mental states:

Beliefs	Desires
Emotions	Deception
Imagination	Intentions

308

Theory of Mind

- To Be Able To Reflect on One's Own and Other's Minds.
- Deficits Cause Problems Understanding:
  - Another Person's Intentions
  - When Someone is Joking, Lying, or Deceiving
  - That Others Don't Know What You Are Doing If They Have Not Been Present.
  - Figurative language

309

Theory of Mind Subtest - The Appearance-Reality Distinction

What is this?

310

Theory of Mind - First Order False Belief & Understanding Another Point of View

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Theory of Mind Subtest - The Mental/Physical Distinction

Who can hug a dolphin in real life: Ming, Sheryl, or Luz?

Ming lives by the ocean (point). Her daddy lets her swim with the dolphins. Sheryl had a dream last night (point). In her dream she hugged a dolphin. Luz loves to read about dolphins (point).

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Theory of Mind Subtest - Figurative Language (*Two Peas in a Pod*)

Denise and Emily are sisters. Mama says they are like two peas in a pod. What does that mean?

313

Theory of Mind Subtest – Seeing Leads to Knowing

When Andre opened the cookie box, he saw that Mom had put some spaghetti in there. He was sad and put back the box. His brother cam in and saw the cookie box. What did his brother think was in the box?

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Recognizing Other's Emotion through Context

How does Julia feel?

5

Theory of Mind Scoring

- Record verbatim the child's responses to the items (scoring criteria are in the easel).
- 1 point for each correct response.
- Two Parts: Verbal Tasks & Contextual Tasks.

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Theory of Mind Scores

- Theory of Mind Total Score – a low score suggests poor ability to comprehend perspectives, experiences, and beliefs of others; or poor ability to match appropriate affect to contextual cues.
  - Theory of Mind Verbal Score – a low score suggests that any deficits in the ability to comprehend perspectives, experiences and beliefs of others may be related to language deficits.

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Behaviors to Look for

- Does the child attend well to the examiner's instructions and test stimuli? Is attention better on the Contextual (pictures) than the Verbal Task or vice versa.
- Does the child provide concrete responses for abstract questions (e.g., "They aren't peas" in response to Item 13 describing the girls as "two peas in a pod")?
- If you prompt the child to use hand gestures on Item 4, does he or she understand that the gestures act out the rhyme.

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Clinical Use of Theory of Mind

Part of the referral battery for:
– Social/Interpersonal Differences
– Attention/Concentration
– Behavior Management
– Any concerns about social perception

This test is useful for evaluating a child with atypical/stereotypical behavior, social avoidance, poor social skills, and/or aggressive behavior to determine if he or she is able to understand another's perspective.

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The Diagnosis of Autism Spectrum Disorders Should Be Advanced By Standardized Assessment of a Child's:

– Theory of Mind,
– Affect Recognition
– Facial Recognition - Memory for Faces - more sensitive format

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Presentation Outline

• NEPSY-II Overview
• How to Administer the NEPSY-II tests - continued
• How does the NEPSY-II fit within a school neuropsychological conceptual model?
• A case study illustration

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Reporting NEPSY-II Scores

• The NEPSY-II generates many scores.
• To the untrained examiner, it would be difficult to know how to interpret all of the scores.
• The question arises - what scores should be reported in a psychoeducational / school neuropsychological assessment report?

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Reporting NEPSY-II Scores

• General Suggested Guidelines:
– Some of the overall performance indicators for each test should be reported in an integrated table. A table can be generated for each conceptual area that was assessed (e.g., memory and learning).
– Some of the process-related scores (error analyses) should be reported in the narrative only if they are significant.
– The behavioral observations should be reported in the narrative only if they are significant.

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Interpreting the NEPSY-II Scores within a School Neuropsychological Conceptual Model

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Integrated School Neuropsychology/ CHC Conceptual Model (Miller, 2013)

Facilitators/Inhibitors	Allocating and Maintaining Attention	Working Memory	Speed and Efficiency of Cognitive Processing

Cognitive Processes:
• Visuospatial
• Auditory
• Learning and Memory
• Executive

Acquired Knowledge:
• Acculturation Knowledge
• Language Abilities
• Reading Achievement
• Written Language Achievement
• Mathematics Achievement

Basic Sensorimotor Capabilities:	Sensory Functions	Fine Motor Functions	Visual-Motor Integration Skills	Visual Scanning	Gross Motor Functions

Social-Emotional, Cultural, and Environmental Factors

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NEPSY-II vs. School Neuropsychological Model

School Neuropsycholog-ical Model (Miller, 2007)
• Sensorimotor
• Attention
• Visual-Spatial
• Language
• Memory and Learning
• Executive Functions
• Speed and Efficiency of Cognitive Processing
• Social-emotional

NEPSY-II Structure
• Attention and Executive Functions
• Language
• Memory and Learning
• Sensorimotor
• Social Perception
• Visuospatial Processing

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Subcomponents of Sensory-Motor Functions

Sch Neuro Model:	NEPSY Coverage:

Sensory Functions
  Visual
  Auditory
  Kinesthetic
  Olfactory
	• Not directly measured; supplement with Dean-Woodcock if needed.
	• Fingertip Tapping does involve some somatosensory processing.

Motor Functions
  Fine Motor Coordination
  Gross Motor Coordination
	• Design Copying (General Total and Motor Process scores)
	• Fingertip Tapping
	• Imitating Hand Positions
	• Manual Motor Sequences
	• Visuomotor Precision

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Attentional Skills

• Attentional processing is not synonymous with the ADHD subtypes (inattentive, hyperactive-impulsive, and combined type).
• Attention is multidimensional and must be looked at in that fashion.
• Attentional skills are viewed as a facilitator or inhibitor.

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Subcomponents of Attention

Sch Neuro Model:	NEPSY Coverage:
• Selective/focused attention	• Auditory Attention and Response Set
• Sustained attention	
• Executive Functions: Cognitive Flexibility	• Response Set part of AARS • Inhibition (Switching)
• Attentional Capacity	• Not assessed
• Attention measured on Behavioral Rating Scales	• Not assessed: supplement with BASC-2 or equivalent

Subcomponents of Visual-Spatial Processing

• Visual Attention (covered under attentional processes)
• Visual-Motor Integration (covered under sensory-motor processes)
• Visual Motor Planning (covered under executive functions)
• Visual (Spatial) Memory (covered under memory and learning)
• Visual Perceptual Reasoning (covered under executive functions)

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Subcomponents of Visual-Spatial Processing

Sch Neuro Model:	NEPSY Coverage:
Visual-Spatial Perception: Visual Motor Constructions and error analyses	• Block Construction
Visual-Spatial Perception: Visual Discrimination and Spatial Localization	• Arrows • Picture Puzzles • Route Finding
Visual-Spatial Reasoning: Visuospatial Analyses with and without Mental Rotations	• Geometric Puzzles
Sensorimotor Skills: Visual Scanning/Tracking	• Picture Puzzles
Sensorimotor Skills: Visual-Motor Integration Skills	• Design Copying

Subcomponents of Language Processing

Sch Neuro Model:	NEPSY Coverage:
• Auditory/Phonological Processing	• Phonological Processing
• Speed, Fluency, and Efficiency of Processing Facilitator/Inhibitor: Performance Fluency: Oral Motor Fluency	• Oromotor Sequences • Repetition of Nonsense Words
• Speed, Fluency, and Efficiency of Processing Facilitator/Inhibitor: Performance Fluency: Naming Fluency	• Speeded Naming
• Speed, Fluency, and Efficiency of Processing Facilitator/Inhibitor: Performance Fluency: Retrieval Fluency	• Word Generation
• Acquired Knowledge: Language Skills: Oral Expression	• Body Part Naming and Identification
• Acquired Knowledge: Language Skills: Receptive Language	• Body Part Identification • Comprehension of Instructions

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Subcomponents of Memory & Learning

Sch Neuro Model:	NEPSY Coverage:
• Verbal Immediate Memory	• List Memory • Narrative Memory • Sentence Repetition
• Visual Immediate Memory	• Memory for Designs • Memory for Faces
• Verbal-Visual Associative Memory	• Memory for Names
• Verbal Long-Term (Delayed) Memory	• List Memory (Delayed)

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Subcomponents of Memory & Learning

Sch Neuro Model:	NEPSY Coverage:
• Visual Long-Term (Delayed) Memory	• Memory for Designs (Delayed) • Memory for Faces (Delayed)
• Verbal-Visual Associative (Delayed) Long-Term Memory	• Memory for Names (Delayed)
• Working Memory Facilitators/Inhibitors	• Word List

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Subcomponents of Executive Functioning

Sch Neuro Model:	NEPSY Coverage:
• Cognitive Flexibility (Set Shifting): Verbal Set Shifting	• Inhibition (Condition 2 – Switching)
• Cognitive Flexibility (Set Shifting): Verbal and Visual Set Shifting	• Auditory Attention and Response Set: Response Set (Condition 2)
• Concept Generation	• Animal Sorting
• Planning, Reasoning, & Problem Solving: Visual Deductive Reasoning	• Clocks
• Response Inhibition	• Inhibition (Condition 2 - Inhibition) • Statue
• Speed, Fluency, and Efficiency of Processing Facilitators/Inhibitors: Performance Fluency: Figural Fluency	• Design Fluency

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Speed of Cognitive Processing

Sch Neuro Model:	NEPSY Coverage:
• Speed, Fluency, and Efficiency of Processing Facilitators/Inhibitors: Performance Fluency: Fluency and Accuracy	• Completion Time scores (compared to error scores): – Inhibition Naming – Inhibition Inhibition – Inhibition Switching – Speeded Naming – Visuomotor Precision

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Evaluating Possible Processing Speed Deficits

	Low Number of Errors	High Number of Errors
Fast completion time	Indicates that the child has excellent processing speed and accuracy.	Reflective of impulsive behaviors.
Average completion time	Indicates a child with good inhibitory skills.	The child is attempting to balance speed with control but lacks the inhibitory skills to keep his or her error rate within normal limits.
Below average completion time	Indicates that the child may have chosen to slow down to increase accuracy or may have slow processing speed.	Indicates that despite the child slowing down accuracy did not improve, usually indicative of low ability in the tested area.

Presentation Outline

- NEPSY-II Overview
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NEPSY-II Case Study

- Jane Doe
- Age 9 years - 0 months
- Language Spoken at Home - English
- Grade 3
- Educational Placement: Alternative Day Treatment School for SED children.

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Reason for Referral

- Jane was referred for a school neuropsychological evaluation o determine if there was a neuropsychological explanation for her severe behavioral problems.
- Jane has been determined to be eligible for special education services under the classifications of emotionally disturbed and specific learning disabled.

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Background Information
Family History

- Jane lives with her natural mother and maternal grandfather.
- Jane's grandfather is retired and stays at home. Jane's mother works a third shift as a factory worker, so she is at home during the day.
- Jane has had no contact with her natural father since 2011. When Jane was 3 years old, the parents separated and a year later divorced. According to Mrs. Doe, Jane's father had a history of drug use/addiction, which was the cause of the eventual separation.

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Background Information
Birth & Developmental History

- Jane's mother reported that she received doctor's care during the pregnancy.
- The mother was reported she smoked a pack of cigarettes a day during her pregnancy and she reportedly used crack cocaine and marijuana occasionally during her first trimester.
- Jane was born in a hospital after being labor induced. She weighed 7 pounds 13 ounces and was in good health at delivery.
- Jane's developmental milestones were within normal limits.

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Background Information
Health History

- Jane's medical history was reported by the mother to be unremarkable. She has not had any major medical illnesses as a child.
- She has never taken any medications.
- Her vision was last checked in September 2006 and her vision was within normal limits. The school records did indicate that Jane wore glasses earlier for vision correction.
- School screening of her vision and hearing also indicate that they are within normal limits.

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Background Information
Health History

- Jane did see a counselor, Mrs. Smith in 2005-06 for treatment of emotional and behavioral problems.
- The mother reported that these problems stemmed from an abusive relationship with a teacher's aide at school.

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Background Information
Health History

- Jane has never been hospitalized for psychiatric or medical reasons.
- The medical disorders in the extended family include: diabetes (mother), cancer (grandfather), stroke (great-grandfather), alcohol/drug abuse (mother), ADHD (uncle), bipolar (mother), and hepatitis C (father).

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Background Information
School History

- It was reported in the student records that Jane has never been retained or skipped a grade in school.
- Jane has had a history of behavioral problems that started when she came to kindergarten and has continued through her current educational placement.
- Previous educational records indicated that Jane was suspended several times from school for fighting, lying, kicking, stealing, and cursing.

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Background Information
School History

- Jane has been placed in alternative educational settings and received support services from an in-class consultant.
- In the fall of 2007, Jane was placed in the No Name Elementary School in Somewhere, Texas, which is a Day treatment school for children with severe behavioral disorders.

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Background Information
Social History

- Jane has difficulty playing with other children in the school environment but plays with other children with fewer problems outside of school.
- Jane is a leader when she plays with others. Jane likes baseball, basketball, and running track. Her hobbies include drawing, music, and dance.
- She is easily over stimulated in play activities; has a short attention span; lacks self-control; has fears (fear of losing mother and grandfather, afraid of the dark); seems overly energetic in play; seems impulsive; overacts when faced with a problems; gets angry when she does not get her own way; and requires a lot of parental attention.

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Background Information
Previous Test Results

- Jane was originally referred for special education services through the School District X Head Start program in August, 2009 when she was 3 years old.
- The initial referral for services was related to speech and language delays that were observed. The initial referral also mentioned that Jane's preschool teacher reported that she hits, is very stubborn, and throws temper tantrums.
- A speech and language evaluation was conducted in February 2013 by the School District X speech and language therapists and Jane was dismissed from speech and language services because she no longer qualified.

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Background Information
Previous Test Results

- Jane received a Psychological Evaluation from Dr. Psychologist in December 2013.
- Jane "was referred for a psychological evaluation due to a pattern of inappropriate social behaviors demonstrated in the classroom and other areas of the campus and to assess her current emotional and cognitive status in order to assist in educational planning".
- A brief intelligence test, the Kaufmann Brief Intelligence Test – 2nd Edition (KBIT-2) was administered to Jane and she achieved an estimate of cognitive abilities within the average range for her age.

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Background Information
Previous Test Results - WIAT-III

Subtest	Standard Score	Percentile
Word Reading	87	19
Reading Comprehension	83	13
Pseudoword Decoding	79	8
Numerical Operations	84	14
Math Reasoning	85	16
Written Expression	112	79
Listening Comprehension	99	47
Oral Expression	108	70

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Background Information
Previous Test Results

- In January, 2014, an Admission, Review, and Dismissal (ARD) Committee determined that Jane met eligibility for special education services under the classifications of serious emotional disturbance and specific learning disabled in the areas of reading accuracy, reading comprehension, math calculation, and math reasoning.
- Jane was determined to be eligible for serious emotional disturbance as a result of her: 1) inability to learn which intellectual, sensory, or health factors cannot explain; 2) an inability to build satisfactory interpersonal relationships with peers and teachers; 3) inappropriate types of behaviors or feelings under normal circumstances; and 4) a general pervasive mood of unhappiness.

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Current Assessment Instruments and Procedures

- Record Review
- Behavior Assessment System for Children – Second Edition: Developmental History Form
- School Neuropsychological Processing Concerns Checklist
- NEPSY-II – A Developmental Neuropsychological Assessment – Second Edition (NEPSY-II)
- Behavior Assessment System for Children – Second Edition: Parent Rating Scale (BASC-2 PRS)
- Behavior Assessment System for Children – Second Edition: Teacher Rating Scale (BASC-2 TRS)
- Behavior Assessment System for Children – Second Edition: Self-Rating Scale (BASC-2 SRS) 353

Sensorimotor Functions

- **Presenting Concerns**. The Neuropsychological Processing Concerns Checklist for School-Aged Children & Youth (NPCC) was completed separately by Jane's mother and her current classroom teacher. Jane's teacher, Mrs. Jones did not report any concerns about Jane's sensorimotor functions. Jane's mother only expressed a mild concern about Jane's complaints of visual problems (e.g., cannot see close or far).

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Sensorimotor Sample Scores

Refer to Handout for a sample copy of the report tables

NEPSY-II Subtests	Scaled Score	% Rank	Classification
• Design Copying General Total		> 75	Above Expected Level
• Design Copying Process Motor	8	25	At Expected Level
Imitating Hand Positions Total	8	25	At Expected Level
• Dominant Hand		26-75	At Expected Level
• Nondominant Hand		26-75	At Expected Level

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Sensorimotor Functions

- Visuomotor Precision subtest - Jane's completion time and accuracy on this task was average but she had difficulty following the rule of not lifting her pencil from the paper.
- Jane had too many pencil lifts compared to other children her age, which lowered her score in this area significantly.
- A high pencil lift score reflects a failure to follow directions (poor receptive language skills) or failure to maintain a cognitive set (an executive dysfunction).

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Sensorimotor Functions

- In summary, Jane's sensorimotor functions are within in the normal range for her age and do not appear to be a contributing factor in her current behavioral and emotional difficulties.
- Jane's rule violation behavior on the Visuomotor Precision test is consistent with her current behavioral and emotional difficulties.

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Attentional Processes

- Neuropsychological Processing Concerns Checklist for School-Aged Children & Youth (NPCC) was completed separately by Jane's mother and her current classroom teacher.
- Jane's mother reported moderate concerns about Jane's attention across all areas. Jane's teacher only expressed mild concerns about Jane's distractibility and appearing to be overwhelmed with difficult tasks.

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Attentional Processes

- Auditory Attention -"omission errors" caused her overall score to be low and were caused by her occasional inattention or distractibility during the task.
- Response Set - Jane performed better on this portion of the test than the earlier Auditory Attention portion. She liked the increased challenge of the task and focused her attention well. Her overall accuracy for touching the correct colors was good. She made no commission errors (touching the wrong color at the wrong time) or inhibitory errors (not touching the black circle at any time).

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Attentional Processes

- Inhibition (Switching) - Jane made multiple errors on the task. High uncorrected errors indicate that the Jane has poor self-monitoring skills. The complexity of the task was too challenging for her and she did not put forth good effort.

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Attentional Processes

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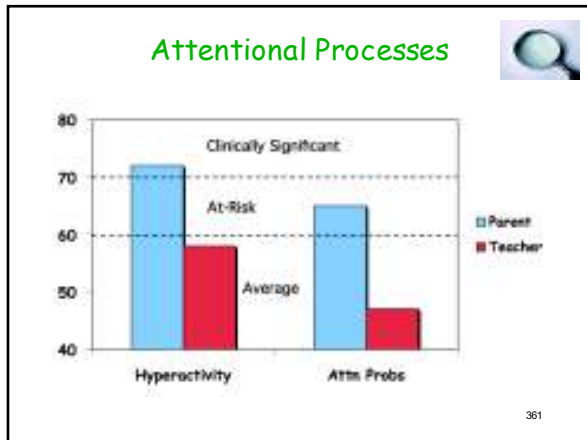
Attentional Processes

- Jane's performance of tasks which require various types of attentional processing suggest that she is able to selectively attend to material, sustain her attention, and shift her attention when she is motivated to do so. Any attentional difficulties that she shows are probably related to poor motivation and effort on her part. Jane does not have symptoms consistent with a diagnosis of Attention Deficit Disorder.

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Visual-Spatial Processes

- On the Neuropsychological Processing Concerns Checklist for School-Aged Children & Youth (NPCC), neither rater expressed any concerns about Jane's visual-spatial processes.
- Consistent with what is being observed at home and at school, Jane performed all visual-spatial tasks within the average to above average range compared to other children her same age.

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Language Functions

- On the Neuropsychological Processing Concerns Checklist for School-Aged Children & Youth (NPCC) the mother and teacher expressed only a few concerns about Jane's language functions.
- The teacher indicated that Jane may have some mild difficulties with understanding what others are saying and sometimes finding the right word to say.
- The mother indicates that Jane has some moderate difficulties understanding verbal directions.

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Language Functions

- **Phonological Processing** - Jane's low score on the Phonological Processing subtest reflects a poor effort on her part rather than a deficit in this area. The score should be viewed as a minimal estimate of her phonological processing skills.
- **Speeded Naming** - Her verbal fluency speed was average but she did make a few mistakes. Jane frequently sacrifices accuracy for speed; she wants to complete tasks quickly. Also a low score on the total correct suggests poor self-monitoring or impulsive responding.

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Language Functions

- **Word Generation** - Jane was also able generate words that belonged to categories like food, or words that started with a particular letter within the at-expected level compared to children her same age.
- **Oromotor Sequences** - She had a little difficulty with repeating the tongue twisters, because she gave up as the items became more difficult.

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Language Functions

- **Comprehension of Instructions** - Jane achieved a below average or borderline score on this test. Jane may have some mild receptive language weakness but it is hard to separate out the influences of her distractibility and to her behavioral effort on the task.
- **Language Processes Summary**. Given her history and past reading achievement scores, Jane may have some mild phonological processing difficulties and some mild receptive language deficits. Her oral expressive skills represent a strength for Jane although she does focus on verbal fluency sometimes at the expense of accuracy.

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Memory and Learning

- On the Neuropsychological Processing Concerns Checklist for School-Aged Children & Youth, both Jane's mother and teacher expressed some mild concerns about Jane's memory and learning in the areas of short-term memory, active working memory, and long-term memory.

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Memory and Learning

- Verbal Immediate Memory - List Memory - Overall Jane has verbal immediate memory skills within the at-expected level compared to other children her same age.
  - She did have a tendency to recall a few words that were not on the list of words to be recalled and she had some difficulty recalling the original list of words when an interference list of words was presented.
  - A high number of non-list novel word errors (a low percentile rank) suggests difficulty monitoring recall for erroneous information not presented to the child during the task.

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Memory and Learning

- **Visual Immediate Memory** - Memory for Faces - average
- **Verbal-Visual Associative Learning** - Memory for Names - Jane did not like this task and she gave up easily. Her performance may be related to a true deficit in this area.
- **Verbal Long-Term Memory** - List Memory Delayed - average.
- **Visual Long-Term Memory** - Memory for Faces Delayed - below average.
- **Verbal-Visual Delayed Associative Memory** - Memory for Names Delayed - very poor.

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Memory and Learning

- **Working Memory** - Word Interference Test - Jane did not always respond in a manner in which she appeared to be paying attention to the initial presentation of the words, but she was able to recall both word lists even with the interference effect of the second word list.
  - A low repetition total score suggests a limited capacity in working memory, possibly related to language difficulties.

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Memory and Learning

- **Memory and Learning Processes Summary**.
  - Jane has average verbal and visual immediate memory, and verbal long-term memory.
  - She has some below average skills in working memory, visual long-term memory, verbal-visual associative learning and long-term memory.

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Executive Functions

- On the Neuropsychological Processing Concerns Checklist for School-Aged Children & Youth, Jane's mother and teacher reported some mild to moderate concerns about Jane's executive functions.
- The concerns expressed by Jane's mother and teacher are consistent with Jane's poor behavioral and emotional control on the classroom.

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Executive Functions

- **Concept Generation (Animal Sorting)** - The correct number of sorts that she generated was within the above expected level for her age. She did make a few sorting errors and she repeated one incorrect sort twice. A high number of errors suggests poor self-monitoring of responses for redundant behaviors or rule violations.

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Executive Functions

- **Inhibition (Inhibition Parts 1 & 2)** - average. Part 3 (Switching) was a weak area for her. Sometimes low scores are a result of the increased cognitive load and the child lose the cognitive set to perform the task. Jane's Total Errors was low which suggests some poorly developed self-monitoring.
- **Retrieval Fluency** (Design Fluency - non-verbal; Word Generation - verbal) - both average.

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Executive Functions

- **Executive Functions Summary**. Jane has a history of behavioral problems in school. She has not learned to regulate her behaviors internally; therefore she has difficulties with executive functions such as impulse control, shifting her attention, self-monitoring, planning and organizing her behavior, and showing signs of preservation (getting stuck on one idea or activity and having difficulty moving on to another idea or activity). Jane has good concept generation skills within the executive functions domain and average inhibition skills.

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Processing Speed

- On the Neuropsychological Processing Concerns Checklist for School-Aged Children & Youth, Jane's mother and teacher expressed some concerns about Jane's speed and efficiency of cognitive processing (how quickly and accurately she can get her work done).

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Processing Speed

- The NEPSY-II does not have a section entitled Speed and Efficiency of Cognitive Processing but there are several measures on the test that indirectly measure processing speed.
- Completion Time scores by themselves are not accurate predictors of processing speed because sometime a child slows down to improve accuracy. The number of errors in combination with the task completion time must be interpreted together.
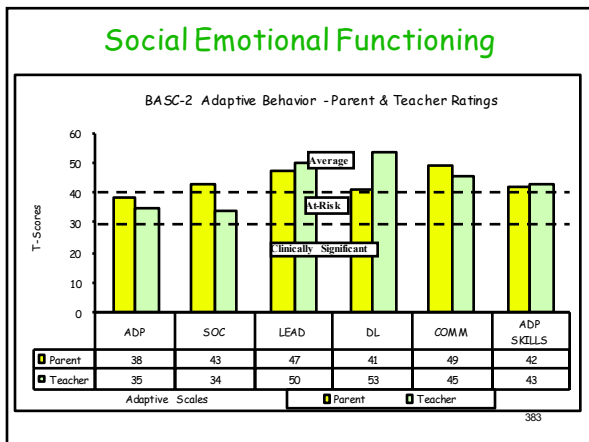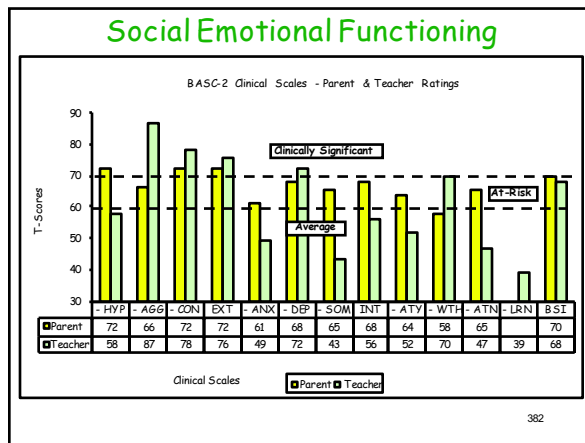
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Processing Speed

Subtest	Combined Score	Completion Time	Total Errors
Inhibition (Naming)	Above Expected	At Expected	Above Expected
Inhibition (Inhibition)	At Expected	At Expected	At Expected
Inhibition (Switching)	Below Expected	At Expected	Well Below Expected
Speeded Naming	Borderline	At Expected	Borderline*
Visuomotor Precision	At Expected	At Expected	At Expected

* Total Correct

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Processing Speed

- Jane's Completion Time scores are within the at-expected level compared to other children her same age. Jane does not have difficulty completing tasks on time; rather she has a tendency to want to rush through a task in order to get it done quickly.
- As a result of her impulsive style of responding, she has a tendency to make careless errors.
- As previously mentioned in this report, Jane does not self-monitor her behavior well. She does not benefit from feedback well and she does not think about what she is doing in order to improve the quality of her work.

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Social Emotional Functioning

- The Social Perception Domain tests from the NEPSY-II were designed to measure how children process social information about individuals, groups, and social context and the attribution of intention in social interactions.
- Difficulty in social interactions is a major feature of some developmental disorders in children such as autism. Jane performed well on each of these tasks. She is able to take the perspective of other people well.
- Jane does not have characteristics of autistic spectrum disorder behaviors.

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Social Emotional Functioning

BASC-2 Clinical Scales - Parent & Teacher Ratings

	- HYP	- AGG	- CON	EXT	- ANX	- DEP	- SOM	INT	- ATY	- WTH	- ATN	- LRN	BSI
Parent	72	66	72	72	61	68	65	68	64	58	65		70
Teacher	58	87	78	76	49	72	43	56	52	70	47	39	68

Clinical Scales

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Social Emotional Functioning

BASC-2 Adaptive Behavior - Parent & Teacher Ratings

	ADP	SOC	LEAD	DL	COMM	ADP SKILLS
Parent	38	43	47	41	49	42
Teacher	35	34	50	53	45	43

Adaptive Scales

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Social Emotional Functioning

- **Summary of Social-emotional Functioning**. Jane has many externalizing behaviors within the classroom (Hyperactivity, Aggression, and Conduct Problems). Jane's mother sees Jane as at-risk for all of the internalizing behaviors (Anxiety, Depression, and Somatization) whereas, the teacher sees more symptoms of depression in the classroom. Finally, both raters have concerns about Jane's poor adaptability (ability to adapt to change), and the teacher expressed concerns about Jane's social skills.

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Diagnostic Impression

- The purpose of this evaluation was to determine if there are any overt neuropsychological determinants to her current behavioral difficulties.
- Jane's current behavioral difficulties seems to stem from psychological issues rather than neuropsychological issues.

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Diagnostic Impression

- Serious emotional disturbance diagnosis as a result of her: 1) inability to learn which intellectual, sensory, or health factors cannot explain; 2) an inability to build satisfactory interpersonal relationships with peers and teachers; 3) inappropriate types of behaviors or feelings under normal circumstances; and 4) a general pervasive mood of unhappiness.
- Jane does not meet diagnostic criteria for Attention Deficit Hyperactivity Disorder, or for any Autistic Spectrum Disorders.
- Question the educational diagnosis of specific learning disability.

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Diagnostic Impression

- For the purposes of any outside mental health professionals who may work with Jane, she meets diagnostic criteria for a DSM-IV-TR classification of **313.81 – Oppositional Defiant Disorder**.
- Jane's psychological functioning needs to be monitored closely over the next few years through formal and informal evaluations.

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Recommendations

- Continue educational placement.
- Book recommendations.
- Suggestions to improve working memory and long-term memory.
- Social skills training & counseling.
- Re-evaluate in a couple of years.
- Strong home-school collaboration recommended.

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NEPSY-II Summary

- The selective batteries is a strength but needs to be continually validated by research.
- The test provides a wealth of clinical data which requires advanced training in interpretation.
- The tests are generally easy to administer, some take some time to score.
- Try to interpret the NEPSY-II scores within a school neuropsychological conceptual model.

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References

- Kemp, S. (July, 2007). Introduction to the clinical development and applications of the NEPSY-II. 2nd National School Neuropsychology Conference, Grapevine, TX.
- Korkman, M., Kirk, U., & Kemp. S. (2007). NEPSY-II Second Edition: Administration manual. San Antonio, TX: PsychCorp.
- Korkman, M., Kirk, U., & Kemp. S. (2007). NEPSY-II Second Edition: Clinical and interpretation manual. San Antonio, TX: PsychCorp.
- Miller, D. C. (2013). Essentials of school neuropsychological assessment – Second Edition. Hoboken, NJ: Wiley.

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School Neuropsychology
Conceptual Model
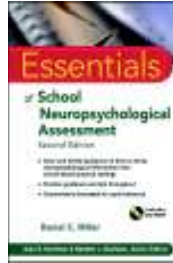
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