

CMPE 80A: Universal Access: Disability, Technology, and Society



Therapies and Assessments



Musculoskeletal Tests

- ▶ Vertebral Artery Test → dizziness, blurred vision or slurred speech indicates complete or partial occlusion of vertebral artery
- ▶ Distraction
- ▶ Compression
- ▶ Valsalva Test → pain may indicate herniated disc
- ▶ Swallowing/cough → pain may indicate cervical spine pathology or soft tissue swelling
- ▶ Adson Test
- ▶ Spurling's Sign (Foraminal Compression)
- ▶ Grip Strength
- ▶ Wiggle Fingers and Toes
- ▶ Pinch/Reaction to Pain



Distraction Test

- ▶ Examiner begins by placing the open palm of one hand under the pt's chin with the other hand on the occipital bone at the base of the skull
- ▶ Gentle, linear, traction-like pressure is then exerted to lift pt's head
- ▶ Positive test yields a relief of pain
- ▶ May be indicative of nerve root compression



Compression Test

- ▶ Examiner presses down on the crown of the pt's head, looking for apprehension or signs of pain
- ▶ Pt should be either seated or supine
- ▶ Positive test yields pain upon compression and may be indicative of narrowed neural foramen causing nerve root compression



Grip Strength

- ◆ The patient is instructed to grasp examiner's index and middle fingers of both hands and squeeze maximally
- ◆ Check for obvious bilateral or unilateral strength deficiencies, possibly indicating motor nerve involvement



Wiggle Fingers & Toes

- ◆ The examiner instructs the patient to quickly flex and extend the fingers and toes.
- ◆ If patient is unable to perform task, it may indicate motor nerve involvement



ASD/Autism Assessments

- ▶ Main purposes
 - Provides a frame of reference for the individual child's strengths and weaknesses
 - Helps narrow down diagnostic possibilities
 - Provides a basis for help/teaching strategies
- ▶ More than one "testing" appointment
 - clinical genetics; neurological status, and sensory/motor functioning)
- ▶ Use of several sources of data/observations
 - home, clinic, school
- ▶ Parent feedback with an interactive and therapeutic emphasis
- ▶ Some of the best assessments are ones that
 - require less language mediation and imitative skills
 - are more dependent on visual than auditory skills



Recommended Instruments

| | |
|---|-------------------|
| WPPSI-III (Wechsler Preschool and Primary Scale of Intelligence, third edition) | 2y-6m to 7y-3m |
| WISC-IV (Wechsler Intelligence Scale for Children, fourth edition) | 6y-16m to 16y-11m |
| K-ABC-II (Kaufman-Assessment Battery for Children, second edition) | 3y - 18 y |
| DAS (Differential Ability Scales) | 2y-6m to 17y-11m |
| Leiter-R (Leiter International Performance Scale -Revised) | 2y to 20y-11m |
| Vineland | 0 to 18y-11m |



Additional Screening Measures

- ▶ *Beery Buctenica Developmental Test of Visual-Motor Integration (VMI)* to screen grapho-motor skills, perceptual accuracy, and hand-eye coordination
- ▶ *Projective Drawings (DAP, KFD)* for further verbal accounts of social relationships
- ▶ *Child Behavior Checklist (CBCL, parent and teacher/caregiver versions)* for general emotional and behavioral screening
- ▶ *Conners' Rating Scales* (parent and teacher versions) to screen for ADHD
- ▶ *Children's Depression Inventory (CDI)* to screen for co-morbid depression
- ▶ *Play Observations* to screen ability of pretend play, self-understanding, capacity for taking the perspective of others, etc.



Screening Instruments for ASD

- ▶ Checklist for Autism in Toddlers (**CHAT**) 18 months Interview and interactive; 18 months+
- ▶ Autism Diagnostic Observation Schedule (**ADOS**); span of ages
- ▶ Gilliam Autism Rating Scale (**GARS**); 3-22 years
- ▶ Screening for Autism in 2- Year-Olds (**STAT**); 24-36 months
- ▶ Autism Behavior Checklist (**ABC**); 18 months+
- ▶ Parent's questionnaires
 - Modified Checklist for Autism in Toddlers (**M-CHAT**); 18 months up
 - Pervasive Developmental Disorders Screening Test 1- Stage 1 and 2 (**PDDST** Stage 1 and Stage 2)
 - Autism Screening Questionnaire/Social Communication Questionnaire (**ASQ/SCQ**); 4 years up



ADOS Triggers for Language and Communication

- ▶ Greeting and small talk
- ▶ Tell me about your school/job
- ▶ Tell me about your friends
- ▶ What makes you happy? afraid? angry? annoyed? proud?
- ▶ Tell a story from a wordless picture book
- ▶ Describe action in a comic strip
- ▶ What would you do if you won a million dollars?
- ▶ Observe:
 - Frequency of vocalizations directed at others
 - Stereotyped or Idiosyncratic use of words or phrases
 - Use of others' body to Communicate
 - Pointing
 - Gestures
 - Reporting of events
 - Conversation



ADOS Triggers for Reciprocal Social Interaction

- ▶ Providing inviting activities that typically pull for enjoyment (e.g. bubble or balloon play)
- ▶ Providing play materials that lend themselves to sharing or showing
- ▶ Activities the participants do on their own to provide for ample observation time
- ▶ Engaging the participant in conversations about the nature of social relationships and their current experiences
- ▶ Observe
 - Unusual eye contact
 - Facial expressions directed to Others
 - Sharing enjoyment in interaction
 - Showing
 - Spontaneous initiation of joint attention
 - Response to joint attention
 - Quality of social overtures
 - Insight
 - Amount of reciprocal social comm



ADOS Triggers for Restricted and Repetitive Behaviors

- ▶ Inviting the participant to engage in an open-ended conversation for social purpose only for further observations of participants interests in topics or objects or behaviors
- ▶ Time/Space for general observations of participant's unusual sensory interests or compulsions or rituals or hand and finger or other mannerisms or self-injurious behaviors
- ▶ Observe
 - Intonation of vocalizations of verbalizations
 - Stereotyped/idiosyncratic use of words or phrases
 - Unusual sensory interest in play material/person
 - Hand and finger and other complex mannerism
 - Unusually repetitive interests or stereotyped behaviors
 - Excessive interest in or reference to highly specific topics



Aphasia

- ▶ An acquired communication disorder
 - Impairs ability to process language or to speak
 - Does not impact intelligence
- ▶ Caused by:
 - Stroke: about 23 – 40% of stroke survivors acquire aphasia.
 - Severely head-injured: about 33%
- ▶ About 1M people in the USA
- ▶ Prolonged therapy period
 - 100 hours of therapy over 5-8 weeks
 - Expensive and sometimes not covered by insurance
- ▶ Need immediate intervention
 - If delayed for more than 3 months, complete recovery becomes difficult



Typical training for patients with Aphasia

- ▶ Step 1: Q&A on things that do not require short-term memory
 - What's your name?
 - Where are you from?
 - Who took you here?
- ▶ Step 2: Given an object, name it
 - Object of daily life (food, drink, etc)
 - Object that are more rarely used
 - Choice of object (give an array of food items, ask them to say the one they would like to eat)
- ▶ Step 2a: Exercises at home
 - During mealtimes (give choice of food, tell me how much / when to stop)
 - Getting dressed (what do you want to wear today?)
 - In choosing activities (shall we go for a drive / to visit Aunt X?)



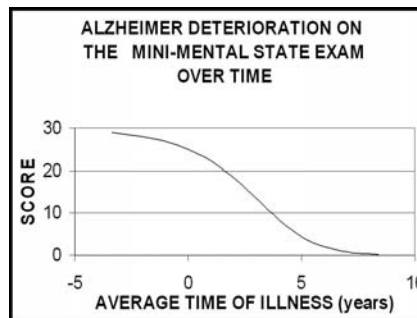
Typical training for patients with Aphasia

- ▶ Step 3: Q&A based on a scenario
 - At night, before going to sleep, you pick up a toothbrush. What other object do you need to brush your teeth?
 - It's cold at night. What can you use to make yourself warm?
 - It's very hot today. What shall we bring to a picnic not to get sunburnt?
- ▶ Step 4: Storytelling exercises
 - What did you do this weekend?
 - Tell us about your grandchildren



Alzheimer Signs (Alz Assoc)

1. Recent memory loss affecting job
2. Difficulty performing familiar tasks
3. Problems with language
4. Disorientation to time or place
5. Poor or decreased judgment
6. Problems with abstract thinking
7. Misplacing things
8. Changes in mood or behavior
9. Changes in personality
10. Loss of initiative



Mini Mental State Exam (Folstein's)

1. What date is today? (5)
 2. Where are we? (5)
 3. Repeat 3 common objects (3)
 4. Spell WORLD backward (5)
 5. Repeat the objects in 3 (3)
 6. Name these 2 objects (2)
 7. Repeat "no ifs, ands, or buts." (1)
 8. Do: "Take a paper in you right hand, fold it in half, and put it on the floor." (3)
 9. Read and obey "Close your eyes" (1)
 10. Write a sentence (1)
 11. Copy this drawing (1)
- ▶ Scores
- 24 – 30: "normal" range
 - 20 – 23: mild cognitive impairment or possible early-stage/mild Alzheimer's disease
 - 10 – 19: middle-stage/moderate Alz
 - 0 – 9: late-stage/severe Alz



ADHD Tests

- ▶ Problems with ADHD
 - Attention
 - Disinhibition of behavioral responses
 - Working memory
 - Planning
 - Verbal fluency
 - Perseveration
 - Motor frequency
- ▶ Disinhibition of behavioral responses
 - Stroop, CPT, Go No-Go
- ▶ Working memory
 - Arithmetic, Digit Span, Trails
- ▶ Verbal fluency
 - FAS (generate words)
- ▶ Perseveration
 - WCST (Wisconsin Card Sorting Test), Trails
- ▶ Motor frequency
 - CPT (Continuous Performance Test)

