Praxis Assessment for the Busy Therapist

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What is Praxis?

- Praxis is the ability of the brain to conceive of, organize, and carry out a sequence of unfamiliar actions. (Ayres, 1973)

Praxis…

- Enable(s) adaptive interaction with the physical world. (Ayres, 1985)

Components of Praxis Assessment

- Sensory Processing - Discrimination
- Ideation
- Motor Organization
  - Motor Planning – Tactile/ Prop
  - Bilateral Coordination – Vestibular/ Prop
  - Projected Action Sequences - Vestibular/ Prop
- Feedback and Ability to Make Adaptive Responses

Traditional Praxis Assessments

- Sensory Integration and Praxis Tests
  - Imitation of Postures
  - Oral Praxis
  - Sequencing Praxis
  - Bilateral Motor Coordination
  - Constructional Praxis
  - Design Copying
  - Praxis on Verbal Command
- Miller Assessment for Preschoolers
- Formal Clinical Observations
  - Diadokokinesis
  - Sequential Thumb-Finger Touching
- Informal Clinical Observations

Problems with Praxis Assessment

- Expense of assessments
- Many children not able to do long standardized assessments
- Age ranges may be restrictive
- Not comprehensive assessment of all components of praxis
- Time consuming
- Does not address adaptive response to environment

Suggested 1 Hour or Less Assessment Battery for Praxis

- Movement Assessment Battery for Children
  - 20 minutes; 8 items
  - Assesses fine motor coordination and bilateral skill, balance, ball skills (projected action sequences)
- Finger Identification and Graphesthesia
  - 5- 10 minutes
  - Use SIPT or parts of Quick Neurological Screening
  - Assesses tactile discrimination

- Sensory Processing Measure (Parent Measure)
- Test of Ideational Praxis
  - 5 minutes
  - Assesses ideation through perception and action on object affordances
- Assessment of Imitation
  - 10 minutes
  - Assesses imitation of postures and praxis to verbal command

- Motor Planning Maze Assessment
  - 5 minutes
  - Assesses motor planning, spatial skills, visual motor skills, manipulation of objects, & adaptive response
- Additional Clinical Observations
  - Prone extension/ Supine flexion
  - PRN – all 6 positions
  - Oculo-motor control
  - Other Co's as needed

TIP – Test of Ideational Praxis (Short Form)

- Assesses ideational abilities through child's ability to recognize and act upon object affordances
- Developed currently for children 5-8 years but applicable to older if suspect ideation problems
- Originally was 6 items and took 40 min to administer
- Current version is 1 item, 5 minutes

- All six items of the TIP contributed approximately equally to the total variance of the test.
- Two items considered for short form of test
  - Hoop
  - String
- String Item chosen as most discriminative among groups and ages and easiest to obtain and use clinically

Preliminary Psychometrics of TIP (Short Form)

- ANOVA- significant differences between children with Ideational Dyspraxia, and children with Dyspraxia and Typical Peers, $p < .000$.
- No difference between children with Dyspraxia and Typical Peers, $p = .824$

- Discriminative Ability- String Item alone able to classify 64% to 83% of cases accurately when divided by age

- Age Trends identified by full test maintained with Short Form

Preliminary TIP (Short Form) Means & SD

- Age 5 - M = 16.2, SD = 1.8
  - Ideation Group: M = 8.6, SD = 3.8
- Age 6 - M = 17.2, SD = 2.7
  - Ideation Group: M = 11.0, SD = 1.4
- Age 7 - M = 21.2, SD = 2.9
  - Ideation Group: M = 11.0, SD = 3.6
- Age 8 - M = 20.0, SD = 5.8
  - Ideation Group: M = 15.3, SD 1.7

Test Administration and Scoring

- Administration: Hand child string and ask child to show you every thing he/she can think of to do with the string.
- Directions and Special Considerations in Handouts
- Count each demonstration of novel affordance or variation to obtain a total score
- Affordances and variations in handouts.

Test of Ideational Praxis Scoring Sheet

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Name: **Date:**

Affordance	Score	Scoreable Variations
Bite-able		
Flip-able		
Go-over-able		Raised On Floor
Hang-down-able		
Hang-on-able		Arm Hand Nose Head
Pull against body part		Head Nose Foot Trunk Leg
Scrunch-able		
Shake-able		
Shape-able		
Stretch out between two hands		
Swing-able		One hand R L Two hands
Throw-able		
Tie-able		Head Arm Leg Body Neck Ends of String
Twirl-able		One hand R L Two hands
Whip-able		
Wrap-around-able		Finger Wrist/Arm (R L) Neck Head Body Leg (R L B) Weave fingers
Other:		
Total		
Scoring: Mean = 18 ± 6		

Scoring Criteria

Affordance	Item Description
Bite-able	Child puts any portion of rope in mouth
Flip-able	Child stretches string between two hands and flips one end out of one hand
Go-over-able	Child moves body over string in any fashion, may jump over like a jump rope or lie on floor and jump over
Hang-down-able	Child holds string by one end and allows other ends to hang freely down
Hang-on-able	Child hangs string on any body part
Pull against body part	Child holds string between two hands and pulls string tautly against or over a body part, usually face, head or back
Scrunch-able	Child folds string into a compact unit, may resemble a ball
Shake-able	Child shakes string in short, rapid arcs
Shape-able	Child uses string to outline any shape either in air or on floor, e.g. may lie on floor to make a snake or hold as circle in front of face as mirror. Do not score shape-able in addition to go-over-able unless child clearly indicates lying string on floor is a different action
Stretch out between two hands	Child holds two ends of string taughtly between the hands
Swing-able	Child swings string in the air in large arcs or circles using full arm movements, may hold string by one end and swing in circles with arm or hold two ends and swing back and forth like a playground swing
Throw-able	Child throws entire string away from the body (does not retain one end)
Tie-able	Child ties or attempts to tie any two portions of the string together, may tie around any body part, may tie a knot in center
Twirl-able	Child holds string with one or two ends and twirls string in rapid circular motions
Whip-able	Child whips string in large arm movements like a whip or lasso
Wrap-around-able	Child wraps string around any body part, may be wrapped around fingers or forearm multiple times or around waist once like a belt, or woven through fingers

Avi: 19 years old - TIP

Gestural Assessment

- Traditional adult apraxia assessment is through use of imitation of gestures, use of objects and following verbal command
  - E.g. Florida Apraxia Battery
- Pediatric Imitation of Postures testing a type of imitation of gestures
- Neuropsychologist often use gestural imitation of limb movements to identify praxis problems in children

- Research suggests differences in children's performance when doing imitation that is:
  - representational versus non-representational
  - bilateral or asymmetrical
  - moving or not moving actions
  - with whole body or body parts.
- So is important to examine gesture use in all these aspects

Type of gesture use varies by age

- Age 2 – point to body part
- Age 4 – use body part as object
- Age 8 – represent object with no space
- Age 12 – mature response, represent object with space

Errors in Gesture Use

- Approximate Errors
  - Delay
  - Action
  - Position
- Incorrect Errors
  - Posture
  - Movement
  - Additions

Development of the Assessment of Imitation

- Item suggestions from SIPT, Florida Apraxia Battery, Berges-Lezine, Balcones Assessment and others
- A longer form has been developed and a shorter form presented for this conference
- Generally applicable from age 4 to teens
- Test is under development so no norms yet available

Administration the Assessment of Imitation

- Administration:
  - Verbal- Ask child verbally to show you how to do items through Representational
  - Imitation- Ask child to “Do this One” and demonstrate item
  - Administer each section verbally, then administer by Imitation
  - Do not count as incorrect if child mirrors movements or not

Scoring

- Enter scores-2 pts Correct; 1-pt for any Approximate Error; 0- pt for any Incorrect Error
- Record all errors to calculate an error subscore
- Note if completes representative items at age level or not and if does so differently to verbal command or imitation
- Calculate Subscores and Total Scores
- Compare Verbal Command and Imitation scores as well as examine Error scores

Assessment of Imitation

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Name: Date:	Verbal Command							Imitation							Area
	2 - Correct	1-Approximate			0 -Incorrect			2 - Correct	1-Approximate			0-Incorrect			
		Delay	Action	Position	Posture	Movement	Additions		Delay	Action	Position	Posture	Movement	Additions	
Facial Movements															
1. Blow bubbles															
2. Protrude tongue															
3. Sniff flower															
4. Close your eyes															
5. Lick upper lip															
6. Puff out cheeks															
7. Wrinkle nose															
8. Cluck tongue															
Representative Movements															
1. Salute															
2. Throw kiss															
3. Wave goodbye															
4. Beckon															
5. Snap fingers															
6. Brush teeth															
7. Comb hair															
8. Shave															
9. Wash Hands															
10 Thread a needle															
Non-Representational Movements															
1. Hand under chin															
2. Touch index finger to ear															
3. Put hand behind head															
4. Touch thumb to forehead															
5. Two fists															
6. MP's bent finger tips touching [ ]															
7. Hands on hips															
8. Slanting \ \															
9. Manual sign for left turn !															
10. Traffic cop !/															
11. Palms forward, index fingers pointed, thumbs touching ! _ _ !															
12. Left hand palm up, right fisted on left with thumb up															
Sub-Totals															
Total Scores	**Verbal Command:**							**Imitation:**							

Interpretation

- Higher Verbal or Imitation Subscores or Total Score is more typical
- High Error Subscores indicate dysfunction
  - High scores in Delay, Posture, & Additions suggest motor planning difficulties
  - High scores in Action suggest poor proprioception, force, timing of movements
  - High scores in Position and Movement suggest poor spatial awareness
- High Age Errors suggest general motor planning delay

Avi – Assessment of Imitation

Development of the Motor Planning Maze Assessment

- Wire mazes of many types have been used to develop motor planning and spatial skills for many years
- Dr. Ayres used versions of wire mazes in her original factor analytic studies as a measure of fine motor planning

Relation to Praxis

- In early studies, Wire Mazes were bilateral, correlated with:
  - Imitation of Postures - r =.56
  - Motor Accuracy- r =.70
  - Finger Identification- r = .61
  - Graphesthesia- r = .65
- Was identified as a primary indicator of dyspraxia (Ayres, 1965)

- Wire mazes can inform us about
  - Motor planning especially in with object manipulation
  - Adaptive response to environmental demands
  - Fine motor control
  - Visual motor control
  - Spatial awareness

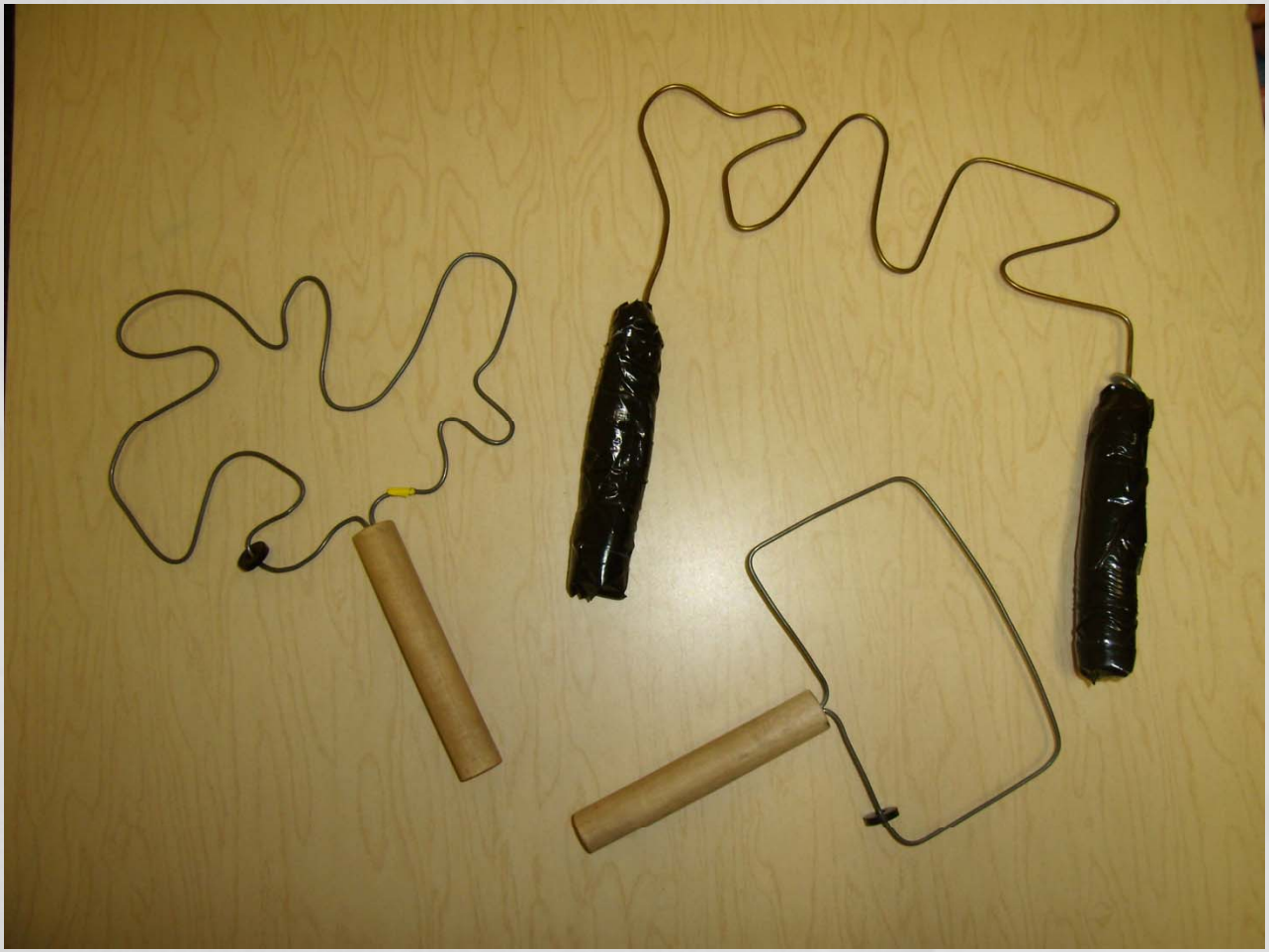
Development of Motor Planning Maze Assessment

- Desired fast and informative assessment of motor planning
- Mazes modified from Dr. Ayres, Virginia Scardinia, Jane Koomar
- No previous formal scoring criteria
- Generally applicable from age 4 to teens
- Test is under development so no norms yet available

Administration

- 5 minutes to administer
- Hand the child each of 3 mazes and ask them to move the grommet from one side to the other
- Record Time needed to complete each maze
- Record Errors made with each maze

Mazes



Scoring

- Time – score 0, 1 or 2 depending on time
- Errors – score 1 point for each error
  - Shaking maze
  - Swapping hands
  - Using other hand to manipulate bead
  - Uses whole arm or body instead of wrist
- Calculate total score
- High Scores indicate more dysfunction

Motor Planning Maze Assessment Teresa A. May-Benson, ScD, OTR/L	
Name:	Date:
1. Level I Maze – Rectangle	Score
Time: (record actual time) 0 - ≤ 5 seconds 1- 6-10 seconds 2- ≥ 11 seconds	
Observations: (Score 1 for each observation)	
1. Child shakes maze to move grommet	
2. Child changes the maze to other hand	
3. Child uses other hand to move grommet	
4. Child uses whole arm or body instead of wrist	
	Total Item Score :
5. Other observations:	
2. Level II Maze – Single Hand Maze	Score
Time: (record actual time) 0 - < 10 seconds 1- 11-15 seconds 2- 16-20 seconds	
Observations: (Score 1 for each observation)	
1. Child shakes maze to move grommet	
2. Child changes the maze to other hand	
3. Child uses other hand to move grommet	
4. Child uses whole arm or body instead of wrist	
	Total Item Score :
4. Other observations:	
3. Level III Maze – Two-Hand Maze	
Time: (record actual time) 0 - < 10 seconds 1- 11-15 seconds 2- 16-20 seconds	
Observations: (Score 1 for each observation)	
1. Child shakes maze to move grommet	
2. Child removes one hand from maze	
3. Child uses one hand to move grommet	
4. Child uses whole arm or body movements	
	Total Item Score :
4. Other observations:	
	Total Test Score:

Interpretation

- Total High Scores indicated dysfunction
- Observe if child has concept of motor plan for task
- Observe if has difficulty with spatial awareness of tasks
- Observe if child needs to use two hands
- Observe adaptive responses

Avi- Motor Planning Maze

For More Information

www.tmbeducationalenterprises.com

(Coming Soon)