



Assessment of Autism
Spectrum Disorders: Birth to Three

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Agenda

- Introduction
- Snapshot of current research re:
assessment/diagnostics
- Planning and Conducting an Assessment
 - Important Domains
 - Examples of Assessment
- Concluding Remarks

Please note: This free session is sponsored by Pearson Clinical Assessment. The presenter is the director of training and Consultation; therefore, Pearson Clinical Assessment Examples of products relevant to ASD will be shared.




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What is Autism?


- Common definitions of autism all include mention of:
 - > Impairment in social skills and social interactions
 - > Impairment in communication skills
 - > Restricted and repetitive behavior
- Key indicators of autism include issues regarding:
 - > Joint Attention
 - > Executive Function
 - > Social Reciprocity
 - > Language Acquisition
 - > Theory of Mind
 - > Behavior Control
 - > Sensory Integration



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Key Findings: Research Scan


- Prevalence approximately 6 per 1000 births
- Average age of diagnosis = 48 months (CDC)
- Evidence for a single or dominant type or cause is not emerging.
 - multiple types of genetic abnormalities can lead to the chemical abnormalities that produce the syndromes.
 - Current evidence has not pointed to a single genetic marker.



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Key Findings: Research Scan

- Focus on specific markers
- Much research is in the area of screening younger children (12-26 months)
 - Focus on parental concerns, emerging language, unusual/repetitive behaviors
- Effort toward early diagnosis
 - American Academy of Pediatricians recommend screening all 18-24 months
- Growing interest in assessing comorbid disorders (e.g. ADHD, anxiety, etc.)



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Other Findings

- Abnormal amygdala development (Mosconi et al, 2009; Archives of General Psychiatry) - enlargement of the amygdala is related to (does not necessarily cause) atypical social orienting behaviors and joint attention.
- Wolf JM, Tanaka JW, & Klaiman C (2008) Autism Research: These findings indicate that the face-processing deficits in ASD reflect a category-specific impairment of faces characterized by a failure to form view-invariant face representations and discriminate information in the eye region of the face.

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Are Their Brains Different?

- Special brain mechanisms have evolved for perceiving faces: for ASD children objects are recognized as quickly as faces; faces carry no special status and are seen as component parts, not wholes
- Typically developing children focus on eyes, ASD children focus on mouths or incidental objects
- See recent CNN reports from Children's Hospital of PA.

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Other Findings

Ozonoff S, Macari S, Young GS et al (2008)
Autism: Studied object exploration behavior in 66 12-month-old infants. The autism/ASD outcome group displayed significantly more spinning, rotating, and unusual visual exploration of objects than two comparison groups. The average unusual visual exploration score of the autism/ASD group was over four standard deviations above the mean of the group with no concerns at outcome.

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Other Findings

- Numerous IMFAR presentations reported on the predictive validity of screening during the second year, with generally positive results.
 - An Australian longitudinal study found that receptive language at 12 months was predictive. (IMFAR)
 - A study of early screening found that parents' concerns (especially regarding social and communication) become predictive of later diagnosis starting at about 12 months; concerns at 6 months are not predictive. (IMFAR)

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Nature and Nurture -

"A careful history is the most powerful weapon in the arsenal of every clinician, whether generalist or specialist. Brain-behavior relations are extremely complex and involve many different moderator variables, such as age, level of premorbid functioning, and amount of education. Without knowledge of values for these moderator variables, it is virtually impossible to interpret even specialized, sophisticated test results." (p. 47)

Berg, R., Franzen, M., & Wedding, D. (1987). Screening for brain impairment: A manual for mental health practice. New York: Springer.

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Key Developmental Domains to Watch (Assess)

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Cognitive Development

- At 9 and 18 months major shifts in representational competence
- At 18 months increase in communication symbols, pretend play and the ability to solve object permanence problems
- ASD children perform well on mental problem solving and object permanence, but pretend play, communicative words and gestures and imitation are delayed or absent
- ASD children do well on seriation, conservation and classification but impaired on appearance-reality problems

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Executive Functions

- The organization of goal directed behavior
- Integration of information from a variety of sources such as perception and memory to select an appropriate response
- Planning, inhibiting pre-potent responses, controlling impulses, engaging in organized search, maintaining or flexibly switching response sets

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Social and Emotional Development

- Babies particularly responsive to faces and voices and they engage in face to face affective sharing and turn taking
- By the end of 1st year, become more active in attachment relationships
- Retrospective research suggests that these social interactions are disrupted from the start, disrupting later social exchanges

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Social Development, cont.

- Baby begins to communicate with parents regarding aspects of external world
 - Requesting behavior
 - Affiliative interaction
 - Joint attention (eye contact, gestures to coordinate attention)
 - Social referencing (learns about the world by observing the emotional reaction of caregiver)
 - ASD children do make advances but they are not well integrated

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Self-Awareness

- 2nd and 3rd years the emergence of self-recognition and awareness
- Self conscious emotions emerge: embarrassment, shame, pride
- Empathy and attempts to influence the emotions of others
- Self recognition is generally intact but complex emotional regulation is impaired
-

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Language Functioning

- The acquisition of vocabulary and grammar (when it occurs) emerges similarly to typically developing children
- But they show a lack of flexibility in language use
- Greatest impairments are seen in pragmatics: the integrations of language within the social context in order to achieve effective communication (prosody, echolalia, pronoun reversals, volume modulation, stilted, awkward conversation)

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Autism Can Be Reliably Diagnosed Prior to 36 Months

- Differences in ASD are measurable by 18 months of age.
 - problems with eye contact,
 - orienting to one's name,
 - pretend play,
 - imitation,
 - nonverbal communication,
 - language development

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DSM-IV criteria for Autism (1994)

- A. A total of six or more items from (1), (2) and (3) with at least two from (1) and one each from (2) and (3).
- 1. Qualitative impairment in social interactions:
 - a. marked impairment in the use of nonverbal behaviors such as eye to eye gaze, facial expressions, body posture or gestures to regulate social interactions.

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DSM-IV criteria contd.

- b. failure to develop peer relations appropriate to developmental level
- c. lack of spontaneous seeking to share enjoyment, interests, or achievements with other people
- d. lack of social or emotional reciprocity.

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DSM-IV Criteria contd.

- 2. Qualitative impairment in communication:
 - a. delay in or total lack of the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gestures or mime)

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DSM-IV Criteria contd.

- b. in individuals with adequate speech, marked impairment in the ability to initiate or sustain conversation with others
- c. stereotyped and repetitive use of language or idiosyncratic language
- d. Lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level

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DSM-IV Criteria cont.

- 3. Restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
 - a. encompassing preoccupation with one or more stereotyped and restricted patterns of interests that is abnormal in intensity and /or focus
 - b. apparently inflexible adherence to specific nonfunctional routines and rituals

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DSM-IV criteria cont.

- c. stereotypic and repetitive motor mannerisms, such as hand flapping, twisting, or whole body movements.
- d. persistent preoccupation with parts of objects

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Autism DSM-IV, Continued

- B. Delays or abnormal functioning in at least one of the following with onset prior to age 3 years
 - 1. Social interaction,
 - 2. Language as used in social communication, or
 - 3. symbolic or imaginative play

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Autism DSM-IV, Continued

- C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder

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New Diagnostic Criteria

- **Autism Spectrum Disorder**
- **Must meet criteria 1, 2, and 3:**
 - 1. Clinically significant, persistent deficits in social communication and interactions, as manifest by all of the following:
 - a. Marked deficits in nonverbal and verbal communication used for social interaction:
 - b. Lack of social reciprocity;
 - c. Failure to develop and maintain peer relationships appropriate to developmental level
 - 2. Restricted, repetitive patterns of behavior, interests, and activities, as manifested by at least TWO of the following:
 - a. Stereotyped motor or verbal behaviors, or unusual sensory behaviors
 - b. Excessive adherence to routines and ritualized patterns of behavior
 - c. Restricted, fixated interests
 - 3. Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities)

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PsychCorp

Assessment of ASD a Process

Rule in and Rule out Disorders

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PsychCorp

ASD Suspected—These are the Important Assessment Areas

- Autism/Aspergers specific and sensitive
- Developmental/Adaptive
- Motor
- Sensory
- Language
- Social Emotional Behavior (recognition and interaction)
- Executive Function

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PsychCorp

WHY Assess a Variety of Domains? Secondary Symptoms, Identify Treatment

- Mental Retardation
- Uneven profile on IQ tests
- Savant abilities
- Abnormalities in Attention
- Impaired cross modal integration e.g. affect and language
- Self injurious behavior

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Co-morbidities: Conditions to Rule-out/Rule-in

- Mental retardation (60-75%)
- Epilepsy (5% in children, 30% in adults)
- Phenylketonuria if untreated (5%)
- Tuberous sclerosis (<1%)
- Learning disabilities
- Tics
- Congenital malformations
- Cerebral palsy
- Down syndrome
- Hearing impairments
- Vision impairments

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Stage 1: Primary Care Screener

- Typically used in a pediatric or family practice setting but can be used as a screening for child find
- Screening Question: "Is this child typically developing?"
- Screening may be prompted when the parent/caregiver raises concerns over child's achievement of developmental milestones—including teachers and educators
- Locate children with a likelihood of a developmental delay, possibly ASD, but can be other types of delays

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Pervasive Developmental Disorders Screening Test-II

- Birth to 48 months
- The older the child the more specific
- Test Components
 - Manual
 - 3 Response Forms = 3 "Stages"
 - 3 Stages of Screening



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Do parents provide reliable information regarding their child's development?

- In several studies (n=737 children), parental concerns about speech and language development, behavior, or other developmental issues were highly sensitive (i.e., 75% to 83%) and specific (79% to 81%) in detecting global developmental deficits.
- The absence of such concerns had modest specificity in detecting normal development (47%).
- In a study that combined parental concern with a standardized parental report found this to be effective for early behavioral and developmental screening in the primary care setting.

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Here is what parents have seen-

- "Even as an infant, our daughter liked being alone.... She never cried for me when she awoke. I would either have to wake her, or she would be awake, lying sweetly looking at the ceiling. She did not make eye contact when breastfed, but looked at ceiling fans or something behind me. I could feel the disconnect, but, as mothers do, I blamed myself, and tried to be a more perfect mom. The disconnect only grew."
- "He began screaming when showering, claiming that the water felt like needles, became highly overwhelmed in loud or public places, and he also started having problems maintaining eye contact."

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Stage 2: Developmental Clinic Screener

- Typically the point of entry to developmental services for most children - Early Start, Child Find, special education services
- Screening question: "Does this child have an ASD or some other developmental delay?"
- Objective: Separate the children with a possible ASD from those who have a non-autistic development delay

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PDDST-II Level 3 Uses

- Typically used at an autism-specific center or clinic
- Screening question: "Where is this child likely to fall in the autistic spectrum?"
- Parents are often concerned about severity after the initial diagnosis
- Objective of screening is to begin to differentiate autism from other pervasive developmental disorders in order to provide an estimate of severity

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PDDST-II Item Examples

- Birth to Six Months:
 - Was it hard to get your baby to smile back at you when you smiled at him/her?
- 12 to 18 Months:
 - Did anyone ever express concern that your baby may have a hearing loss?
- 30 to 36 Months:
 - Did you begin to worry that your child was not as interested in other children as you would have expected?

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Planning and conducting an evaluation for a student with a suspected ASD:

- Avoid removing the student from preferred planned activities
- Determine motivators ahead of time through discussion with classroom staff and parents, and have these items readily available for use
- Consider seeing the youngster at the same time each day versus a variety of times, depending on what is being assessed and the student's need for consistency
- Address potential safety concerns by having another trusted adult present during testing, if necessary.

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Relevant Assessment Domains to Consider

- Ages birth through 2
 - Cognition
 - Language and communication
 - Receptive language
 - Expressive language
 - Social/emotional behavior
 - Adaptive behavior
 - Behavior and self-regulation
 - Motor skills
 - Sensory-motor abilities
 - Feeding and swallowing
- Ages 3-4
 - Cognition
 - Language and communication
 - Receptive language
 - Expressive language
 - Pragmatics
 - Social perception
 - Adaptive behavior
 - Working memory
 - Behavior and self-regulation
 - Motor skills
 - Sensory-motor abilities
 - Visual-perceptual skills

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Important Speech and Language Factors

- Social communication home and school
- Emotional signaling
- Receptive language and communication
- Nonverbal/Preverbal and verbal
- Expressive language and communication
- Voice and speech production
- Pragmatics
- Collection and analysis of spontaneous language samples
- Parent checklist on home use of communications across social, family, pragmatic and other areas
- Focus on functions of communication
- Analyze preverbal communication (gestures, gaze, vocalizations)
- Permit observation of initiated and spontaneous communication
- Directly involve caregivers during the assessment when possible

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Samples of Domain Assessments

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NEPSY-II SOCIAL PERCEPTION SUBTESTS

- Social Perception Domain
 - Affect Recognition - tests the ability to recognize affect from photographs of children's faces
 - Theory of Mind -
 - Part A - assesses the ability to understand mental functions such as belief, deception, etc. and the fact that others have their own thoughts, ideas, etc.
 - Part B - assesses the ability to understand how emotions relate to social context

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Theory of Mind

- To Be Able To Reflect on One's Own and Other's Minds.
- Another Person Can Have Differing Thoughts and Beliefs from One's Own.
- Understanding That Others Don't Know What You Are Doing If They Have Not Been Present.

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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

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KABC-2 Autism-Points to Consider

- Face recognition
- Object recognition
- Cognitive shift
- Executive functioning

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**Subtest: Face Recognition
Scale: Simultaneous/Gv**

Start: All Ages

Begin timing.

See this person?

Expose the picture for 5 seconds, then immediately turn the page.

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**Subtest: Face Recognition
Scale: Simultaneous/Gv**

Find that person here.

Correct:
Go on to Item 1.

Incorrect or no response:
This is the person I showed you (point to person). Let's try again. Turn back to the exposure page and repeat the item.

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Children With Pervasive Developmental Disorder - Bayley-III									
Subtest/ Comp.	PDD		Matched Control		N	Group Mean Comparison			
	Mean	SD	Mean	SD		Difference	t value	p value	Standard Diff.
Cog	5.7	2.9	11.0	3.0	70	5.31	10.88	<.01	1.81
RC	4.3	2.6	11.1	2.4	70	6.80	16.20	<.01	2.72
EC	4.4	2.6	11.1	2.7	70	6.71	15.67	<.01	2.55
FM	5.8	2.6	10.9	3.0	70	5.07	11.43	<.01	1.83
GM	6.2	2.3	11.0	3.0	70	4.83	11.10	<.01	1.81
SE	3.8	1.9	11.2	3.4	61	7.43	14.63	<.01	2.71
Lang	67.0	14.8	106.6	14.0	70	39.63	16.74	<.01	2.75
Mot	PEARSON		105.9	15.0	70	29.90	14.23	<.01	2.17


Motor Skills

- Children with ASD may have weak motor skills
- Motor skills are heavily interdependent with cognitive and social skills
 - Imitation
 - Social understanding (adjustment to another person's posture)
 - Social gracefulness (adjustment of gait pattern to conversational partner's movements)
 - Miller Function and Participation Scales, NEPSY, Bayley-III, Behavioral Observations, OT assessment

Motor Skills

- Miller Function and Participation Scales
 - Norm referenced
 - 2005
 - 2:6 through 7:11 (there are others that go to 9)
 - Scaled scores: Fine motor, Gross motor, Visual motor
 - Simulates school and home activities well in addition to getting a motor measure
 - Hands on and fun for kids
 - Covers lower range of function

Behavioral/Social-Emotional



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Adaptive skills comprise everyday competence.

- Adaptive skills are defined as
 - practical, everyday skills
 - needed to function and
 - meet the demands of one's environment
 - necessary to effectively and independently take care of oneself
 - to interact with other people
 - Patterns Emerge with ASD
 - Multiple raters should be used

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Vineland-2 Supplemental Norms Study

- Results confirm previous findings of:
 - relative weaknesses in Socialization
 - relative strengths in Daily Living Skills
 - intermediate scores in Communication.

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Plotting Social-Emotional Development on the Greenspan or Bayley-3

- The Social-Emotional Growth Chart allows the practitioner and caregiver to see a visual representation of how the child is progressing according to milestones.

Supplemental Analysis for the Social-Emotional Scale

- Items 1-8 of the Social-Emotional Scale assess the child's sensory processing capacities (e.g., sensitivity to colors, sounds, touch, or movement) and is called the Total Sensory Processing Score.
- Table B.5 allows you to convert the Total Sensory Processing Score to the age-appropriate category: Full Mastery, Emerging Mastery, or Possible Challenges.
- Note the Highest Stage Mastered (highest stage with scores of 4 or 5 for preceding items)

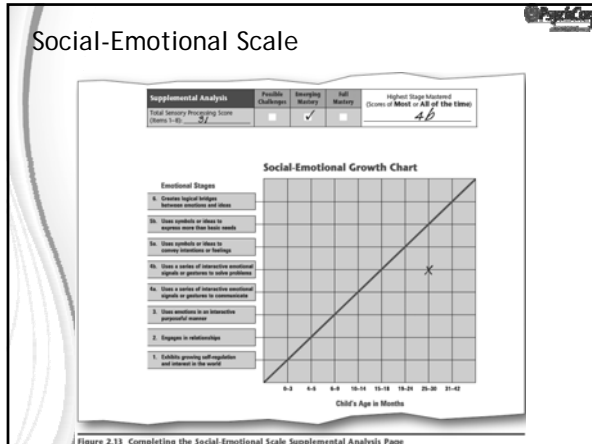


Figure 2.11. Completing the Social-Emotional Scale Supplemental Analysis Page.

Performance of the Special Groups On the Social-Emotional Scale of the Bayley-III (Greenspan)

Percentage With Social-Emotional Scaled Scores ≤ 4

Clinical Group	Clinical	Matched Control	<i>n</i>
Asphyxia	17.95	2.56	39
At Risk	13.89	0.00	72
Cerebral Palsy	21.31	1.64	61
Down Syndrome	20.00	0.00	85
FAS/FAE	9.30	0.00	43
Language Impairment	9.88	1.23	81
Premature	3.70	1.23	81
PDD	67.21	0.00	61
SGA	4.65	2.33	43

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ITSEA

Developmentally Age-Appropriate Measure

- Profiles problems & competencies in terms of four domains
 - Externalizing
 - Internalizing
 - Dysregulation
 - Competence
- Measures a variety of other child behaviors:
 - Social relatedness, maladaptive behaviors
 - And other "red flag" indicators

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ITSEA
Developmentally Age-Appropriate Measure

- Identifies key indicators of:
 - Autism
 - pervasive development disorders
- Assists in formulating intervention plans
 - identify areas of concern
 - use strengths to overcome weaknesses
- National normative model based on 2002 Census

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ITSEA
Domains, Scales, Sample Items

- Externalizing
 - Aggression/Defiance:
 - Activity/Impulsivity:
 - Peer Aggression:

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ITSEA
Domains, Scales, Sample Items

- Internalizing
 - Depression/Withdrawal:
 - General Anxiety:
 - Separation Distress:
 - Inhibition to Novelty:

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ITSEA
Domains, Scales, Sample Items

- Dysregulation
 - Sleep:
 - Negative Emotionality: “
 - Eating:
 - Sensory Sensitivity:

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ITSEA
Domains, Scales, Sample Items

- Competence
 - Compliance:
 - Attention:
 - Imitation/Pretend Play:
 - Mastery Motivation:
 - Empathy:
 - Prosocial Peer Relations:

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Between Groups Validity: ASD on ITSEA


- Children with autism compared to:
 - developmentally delayed
 - typically developing children
 - matched for mental age and socio-demographic factors.
- As hypothesized, children with autism show significant elevations relative to both contrast groups on ITSEA scales and indices below:
 - Atypical Behaviors
 - Social Relatedness
 - Maladaptive Index
 - Depression/Social Withdrawal



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Between Groups Validity: Autism

- Also, children with autism significantly delayed relative to other groups in these Competence areas:
 - Empathy
 - Prosocial Peer Relations
 - Imitation/Play
 - Mastery Motivation



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BASC-2

- Psychological Profiles on the BASC-2 related to Autism Spectrum
 - Withdrawal Scale
 - Atypicality Scale
 - Developmental Social Disorders Content Scale
 - Adaptive Scale Composite
- DSM-IV items on ASSIST Plus
- Autism/Asperger's group profile

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Atypicality Scale Interpretation

Score Range	Interpretation
70+	Potentially: Serious emotional disturbance, serious thought disorder, schizophrenia process, poor ego strength
60-69	Potentially: Serious emotional disturbance, confused thought, decompensation process, immaturity, developmental delay, mental retardation, PDD, conduct disorder
45-59	Appropriate thought processes, connected to world around him/her
<45	Appropriate thought processes, perhaps rigid conformity

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BASC-2 ASSIST-Plus:
Developmental Social Disorders Content Scale

- The tendency to display behaviors characterized by deficits in social skills, communication, interests, and activities. Such behaviors may include self-stimulation, withdrawal, and inappropriate socialization
- May be due to deficits in social reasoning, social efficacy, social opportunities, social behaviors, social acceptance, empathy
- High scores may indicate symptoms of Asperger's
- Autism could be suspected if Atypicality, Withdrawal, and Attention Problems scales also elevated
- May be indicative of Autism when this scale is elevated but Conduct Problems and Aggression are not

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Sensory Issues

- Individuals with ASD may exhibit sensory issues
 - Rituals
 - Easy upset by noises
 - Distractibility
 - Difficulty filtering out irrelevant
 - Trouble with regulation
- Sensory Profile Family



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Sensory Processing Problems are Important to Assess and Address

- Sensory processing abilities are aberrant in 42% to 88% of autistic individuals
- Sensory Problems Include
 - over- or under responsiveness to environmental stimuli
 - preoccupation with sensory features of objects
 - paradoxical responses to sensory stimuli
- Learning and social functioning can be affected if these are not addressed

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Clinical Reasoning Process

- What are the child's sensory processing patterns?
- How do the patterns affect desired activities?
- What creates the best match of
 - Activity,
 - Environment
 - Sensory processing pattern
- *Understanding affects success of child and helps the teacher or caregiver adapt and help*

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In conclusion-

- Understanding the needs and strengths of a child suspected of having an ASD is a complex process that requires:
 - A careful analysis of individual characteristics across key domains
 - To plan appropriate treatment
 - Ruling in and ruling out various explanations/conditions
- Working with parents and a multi-disciplinary team using numerous approaches to assessment (understanding needs) comprises "best practice"

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Examples of Pearson Tools for ASD Assessment (0-3)

- **Screening:** PDDST-II, Greenspan Social and Emotional Growth Chart, BITSEA
- **Cognitive Development/Functioning:** Bayley III Cognitive Scale, Mullen Scales of Early Learning, DAS-II, KABC-2
- **Language Domain:** Bayley III Language, PLS-4, Mullen Scales of Early Learning
- **Social Emotional Domain:** Bayley III Social Emotional Scale, ITSEA, Greenspan Social Emotional Scale (same as Bayley III Social Emotional Scale)
- **Adaptive Behavior Domain:** Bayley III Adaptive Behavior Scale, Vineland Adaptive Behavior Scale

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Suggested Pearson Tools-

- **Motor Domain:** Bayley III Fine Motor Scale, Bayley III Gross Motor Scale, Mullen Scales of Early Learning
- **Behavior/Regulation:** BITSEA/ITSEA, BASC Teacher Rating Scale (age 2+), BASC Student Observation System (age 2+), BASC Parent Rating Scale
- **Social Perception Area:** NEPSY-II
- **Sensory Domain:** Infant/Toddler Sensory Profile
- **Feeding and Swallowing Disorders:** Feeding and Swallowing Disorders in Infancy, Pre-Feeding Skills, Second Edition

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Specific Webinar-Related Comments or Questions

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