ECHO IDAHO

Autism

Review of Supplemental ASD Assessments

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Project ECHO

Learning Objectives

- Recognize best practices and tools in autism telediagnostics
- Explain the diagnostic approach with the TELE-ASD-PEDS (TAP)
- To provide an overview of the Autism Diagnostic Observation Schedule, 2nd Edition (ADOS-2) and appropriate clinical usage
- To provide an overview of the Childhood Autism Rating Scale, 2nd Edition (CARS-2) and appropriate clinical usage

Autism Telediagnostics Prior to Covid-19

- Systematic Observation of Red Flags (SORF) - HOME
  - Florida State University
  - Home observation procedure to inform diagnosis
  - 16-24 months
- TELE-ASD-PEDS (TAP)
  - Vanderbilt University
  - Used as supplemental data with in-person evaluation
  - 14-36 months
  - “Can Novel Telemedicine Tools Reduce Disparities Related to Early Identification of Autism?”

Autism Telediagnostic Best Practices

- Clinicians with experience recognizing autistic features in toddlers
- Comprehensive
- Evidence-Based
- Multi-disciplinary
- Family-Centered
- Incorporate Early Intervention philosophy

Informed Diagnosis

- Parent Questionnaires
- Developmental Profile (DP-4) and Social Responsiveness Scale (SRS-2)
- Comprehensive neurodevelopmental history (ADI-R)
- Review medical records, IFSP, therapy notes
- Use evidence based telediagnostic assessment (TAP)
- Supplement with diagnostic tool (CARS-2)
- Need differential diagnostic training and clinical experience

Telemedicine Format

- Pre-visit information
- Welcome family
- Introduce the whole team and explain format
- Help parents set up the camera
- Everyone takes turns evaluating
  - DBP, ST, OT, PT, DT

TELE-ASD-PEDS (TAP)

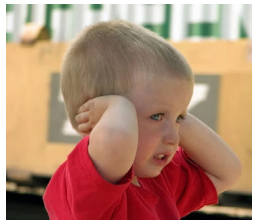
- Play and assessment tasks (not surprisingly!) have similarities and overlap with other social communication assessments (STAT, ADOS-2) and methods (PCIT)
- Open access and FREE use
- Uses affordable materials available in the home/clinic
- Brief (15-20 minutes)
- Led/implemented by non-specialists (caregivers)
- Flexible structure and administration
- Streamlined scoring centered around 7 key behaviors associated with autism

https://vkc.vumc.org/vkc/triad/tele-asd-peds

Strong Interests B3

Verbal Language A1/A2/B1

Social Interaction A3



Sensory Processing B4

Gestures A2

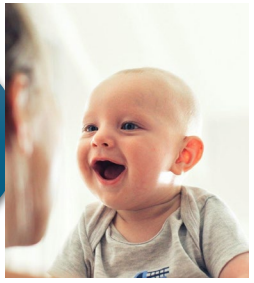
Shared Pretend Peers A3

Play

Behavior Regulation B2

Imitation A1

Facial Expressions A2

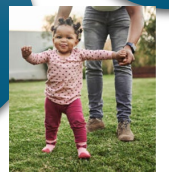


Fine Motor B1

Giving Showing Sharing A1

Gross Motor B1

Eye gaze A2



TAP - Administration

- Toy Play (child-directed):
  - Observations (2 minutes)
    - Functional play? Pretend play? Imitation? Repetitive or unusual play: lining up, scrambling/dropping/throwing toys? Preoccupied with a certain toy/activity?
    - Initiates joint attention? Directs attention? Giving? Showing?
- Responding to social bids (name, looking at picture):
  - Calling child's name and getting attention (2 trial set)
    - Does child look to caregiver with eye contact?
  - Directing the child's attention (2 trial set)
    - Does child follow caregiver's point and gaze to look at object?

TAP - Administration

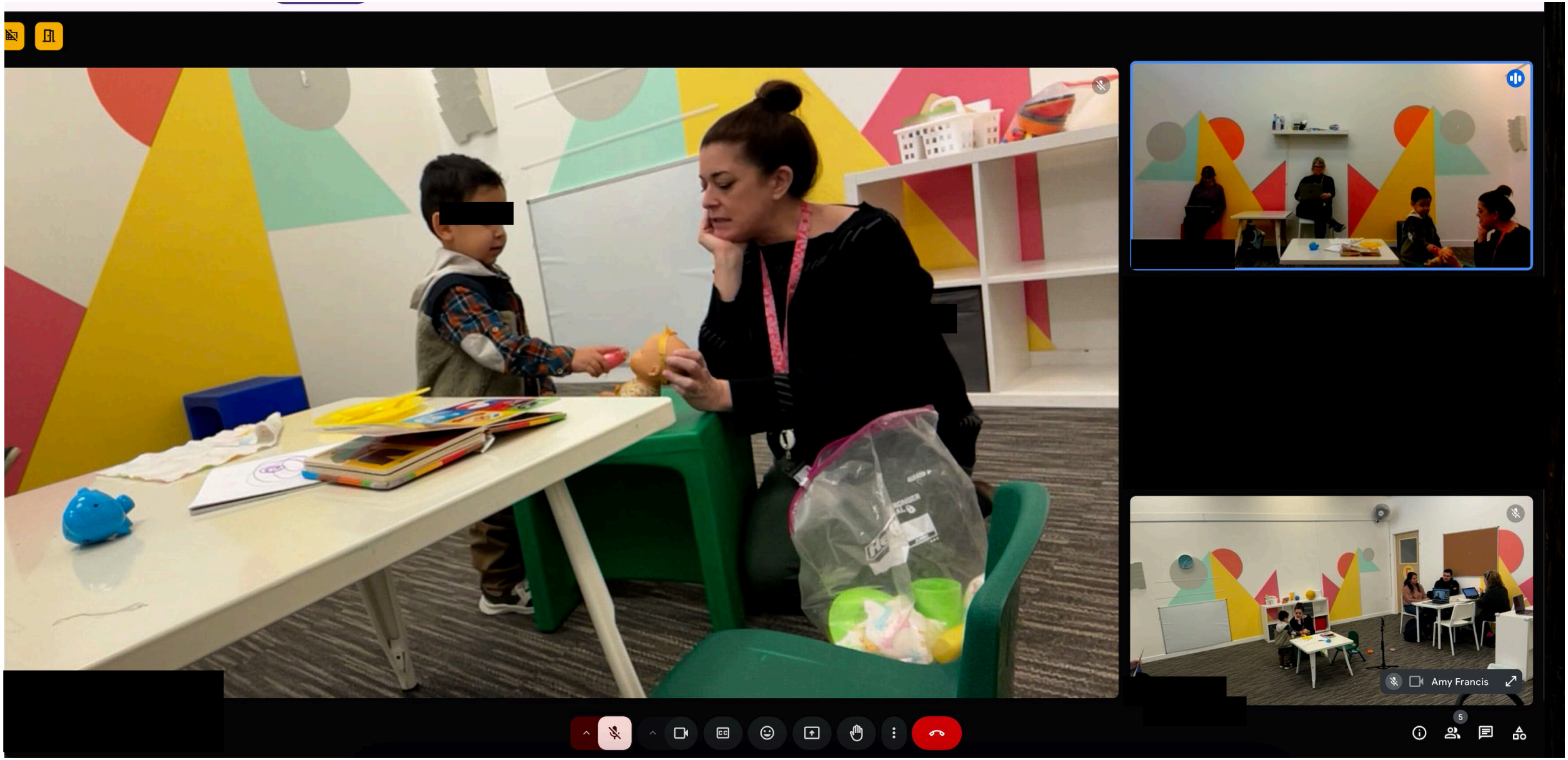
- Toy Play (parent-directed)
  - Observations (2 minutes)
    - Functional play? Pretend play? Imitation? Repetitive or atypical play: lining up, scrambling/dropping/throwing toys? Preoccupied with a certain toy/activity?
    - Initiates joint attention? Directs attention? Giving? Showing?
- Familiar Play Routine (peek-a-boo, chasing, tickling)
  - Observation (2 minutes)
  - Does child respond to caregiver's bid to play? Shared enjoyment? Requesting? Initiating routine? Joint attention?

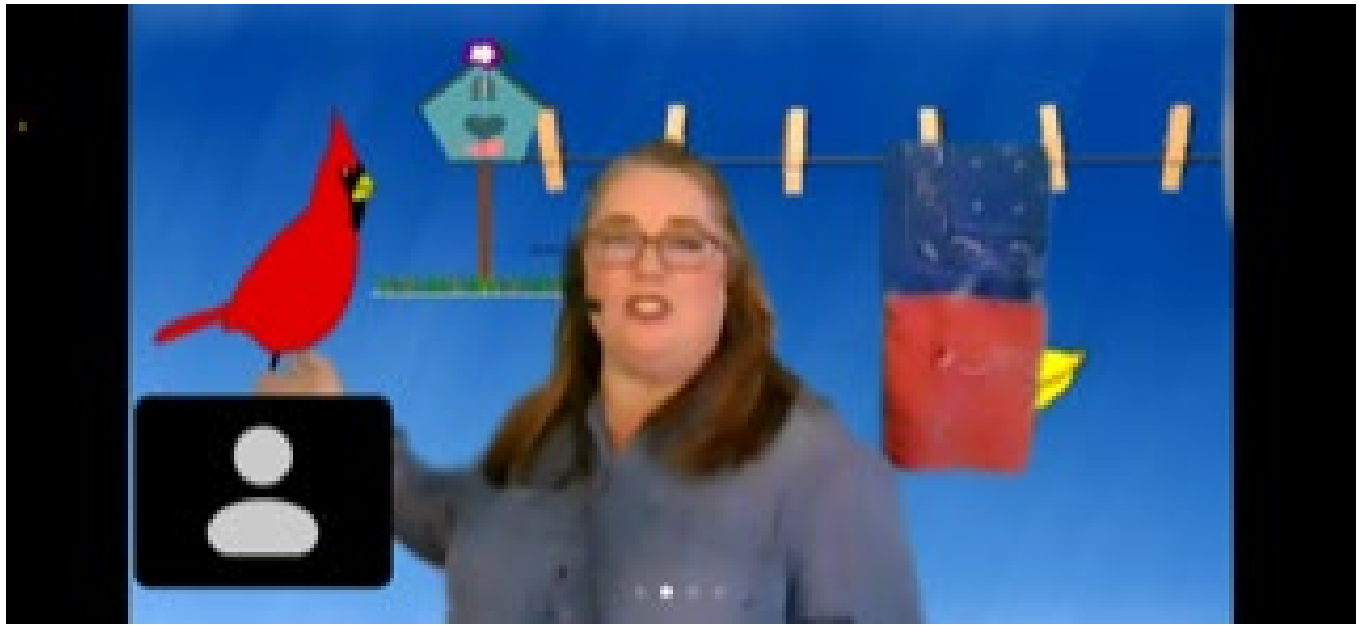
TAP - Administration

- "Ready-set-go" play:
  - Did the child request? Did the child coordinate eye contact with gestures/vocalizations? Giving, showing, shared enjoyment behaviors? Reciprocal play?
- Requesting (container with snack, sticker, toy):
  - 3 trials
  - Did the child request? Did the child coordinate eye contact with gestures/vocalizations? Hand over hand?
- Independent Play/Ignore:
  - Initiates an interaction?
- Closing:
  - Was this a good snapshot of your child's behavior?

TAP - Administration

- Administration notes/tips:
  - Clinician and parent will screw up. Roll with it:
    - It is OK to repeat things or clarify instructions.
    - It is OK for materials to be substituted or altered.
    - It is OK to ask parent what they saw.
    - It is critical to be directive about what clinician wants the parent to do, not do, & where to be in the room.
  - Unlike other standardized interactive assessments, items are not scored pass/fail.


Amy Francis



Child age: ____mos
Gender: ☐M ☐F

TAP (TELE-ASD-PEDS) Rating Form

VANDERBILT KENNEDY CENTER
TREATMENT & RESEARCH INSTITUTE FOR AUTISM SPECTRUM DISORDERS

Dichotomous score: Is the symptom present or not (1 vs. 3)
Likert score: 1 = symptom not present; 2 = symptom present but at subclinical levels; 3 = symptom obviously consistent with ASD

Item	1	2	3	Dichoto-mous 1/3	**Likert 1/2/3**
Socially directed speech and sounds	Child often uses words or other vocalizations for a variety of social purposes (e.g. requesting, protesting, directing attention, sharing enjoyment).	Inconsistent socially directed speech.	Child does not direct vocalizations (i.e., words, non-word sounds) to others. Most sounds are self-directed or undirected.		
Frequent and flexible eye contact	Child frequently makes eye contact with others across a variety of activities.	Child's eye contact seems inconsistent. Gaze seems less flexible and harder to catch than expected.	Child infrequently makes eye contact. Might only make eye contact during one activity (e.g., asking for help).		
Unusual vocalizations	No unusual qualities of speech/language observed. Most of child's vocalizations (i.e., words, non-word sounds) are appropriate for the child's developmental level.	Speech is not clearly unusual, but there are some differences (e.g., volume, slight repetitive quality of speech/language, unclear echoing, some occasional sounds that are unusual).	Child produces unusual jargon, sounds, or speech/language (e.g., undirected jargoning, speech of peculiar intonation, unusual sounds, repetitive vocalizations, echoing or repetitive speech/language).		
Unusual or repetitive play	Child plays with toys in appropriate ways (uses toys as expected for developmental level).	Child's play is not clearly unusual, but child is strongly focused on some toys, routines, or activities. May sometimes be hard to shift child's attention to something new.	Child shows clearly repetitive or unusual play, such as repeatedly pushing buttons, lining things up, or scrambling/dropping toys.		
Unusual or repetitive body movements	No unusual or repetitive body movements seen.	Unclear unusual/repetitive body movements. Some repetitive jumping or very brief posturing of fingers, hands, or arms that is not clearly atypical.	Child clearly shows unusual or repetitive body movements (e.g., hand-flapping, posturing or tensing upper body, toe-walking, facial grimacing, hand/finger mannerisms, repetitive spinning/jumping).		
Use of gestures and integration with eye contact and speech/ vocalization	Child's gestures are usually combined with vocalizations and eye contact. Child frequently points and uses other gestures to communicate.	Child does not always look at others or make a sound when gesturing. Child may sometimes point or use other gestures, but less than expected.	Child does not usually gesture to communicate. May sometimes reach or point, but does not usually combine these with eye gaze or sounds. May move your hand or push on your body to get help.		
Unusual sensory exploration or reaction	No unusual sensory behavior observed.	Unclear sensory exploration or reaction. May have a brief response to a sound, smell, or how something feels or moves.	Child shows sensory differences. May closely inspect objects, overreact to sounds, show intense interest or dislike to textures (e.g., touching, licking, biting, refusing to touch specific toys), or clear self-injurious behavior.		

ASD if forced to choose?
☐ Absent
☐ Unsure
☐ Present

Did you recommend in person evaluation for diagnostic clarification?
☐Yes ☐No

Diagnosis issued:

How certain are you of your diagnostic impression?

☐ 1	☐ 2	☐ 3	☐ 4
Completely uncertain	Somewhat uncertain	Somewhat certain	Completely Certain

Total Score

0

TAP - Scoring

- Risk classification is currently built on Likert-ratings (1, 2, 3), recommended clinical use.
- Current use suggests a score of >12 is optimal for risk- classification.
- Children with >5 ratings of 3, total of >15, are considered “at very high-risk”.

TAP in the Lab

- Participants
  - 72 children and their primary caregiver
  - Mean age: 2.54 years
  - 64% male
  - 65 children diagnosed with autism following in person evaluation
- Results
  - Diagnostic Agreement 93% (consistent with prelim studies)
  - Cutoff score of 12 resulted in sensitivity of 0.97, specificity of 0.88

Corona, L., Hine, J., Nicholson, A., Stone, C., Swanson, A., Wade, J., Wagner, L., Weitlauf, A., & Warren, Z. (2020). TELE-ASD-PEDS: A Telemedicine-based ASD Evaluation Tool for Toddlers and Young Children. Vanderbilt University Medical Center. https://vkc.vumc.org/vkc/triad/tele-asd-peds

Telemedicine

Trying to claim control in a virtual visit is not helpful

What CAN I get?

Transform the autism evaluation process and improve care access

A Note About Autism Measures

- Autism Spectrum Disorder is a clinical diagnosis assigned by a clinician using data gathered from a variety of sources, including interview, observation, and standardized measures

- No single measure is adequate to provide a diagnosis of Autism Spectrum Disorder

- Measures specific to the assessment of Autism Spectrum Disorder are tools to systematically gather information to assist clinicians in establishing a clinical diagnosis

- Autism specific measures are part of a comprehensive assessment
  - Even expert raters miss cases on short, focused observation (Gabrielsen, et. al., 2015)

ADOS-2

Description of the Instrument:

- “A set of standard activities that provide an examiner with opportunities to observe behaviors that are directly relevant to the diagnosis of ASD at different developmental levels and chronological ages” (Lord, Rutter, et. al., 2012)

- “Uses planned social activities … (“presses”) … to provide standard contexts in which social interactions, communication, and particular types of behaviors are likely to be see” (Lord, Rutter, et. al., 2012)

ADOS-2

Description of the Instrument (continued):

- Administration time: 40 to 60 minutes
- Age Range: 12 months through adulthood
- 5 modules (T, 1-4)
- Appropriate module is selected initially by language level and secondarily by chronological age

ADOS-2

Administration:

- 2 phases
  - Administration of the activities
    - Behavioral Observations
    - Note-Taking
  - Coding
    - Standardized assigning of ratings based on criteria specific to each item
    - 5 Rating Domains – Language and Communication, Reciprocal Social Interaction, Play, Stereotyped Behaviors and Restricted Interests, and Other Abnormal Behaviors
    - Use of an algorithm to determine scores, classification, and comparison score (modules 1-3)

ADOS-2

Principles of Use:

- Education, training, and experience in the use of individually administered test batteries

- "Extensive" exposure to Autism Spectrum Disorder

- Valid administration requires training specific to the instrument
  - Independent ADOS-2 trainer
  - WPS ADOS-2 Training Video Program
  - Sufficient practice on test cases
  - Consensus coding with an experienced clinician

CARS-2

Description of the Instrument:

- "Primary value lies in their providing brief, quantitatively specific and reliable yet comprehensively based summary information than can be used to help develop diagnostic hypotheses among referred individuals of all ages and functional levels" (Schopler, et. al., 2010).
- Age Range – 2 to adulthood
- 3 Forms
  - CARS2-ST - <6 years or IQ <80 or "notably impaired communication"
    - Can be used with interview or observation alone
  - CARS2-HF - 6+ years and IQ 80+ and fluent communication
    - Requires multiple sources of information – interview and observation
  - CARS2-QPC – unscored questionnaire for gathering information from parents/caregivers

CARS-2

- Ratings of 1 to 4 made on 15 items by “well-informed professionals”
- Ratings made on the frequency, intensity, peculiarity, and duration of behaviors.
- Ratings can be made in diverse settings
- Ratings yield a total score
  - Determine a severity group
    - Minimal-to-No Symptoms
    - Mild-to-Moderate Symptoms
    - Severe Symptoms
  - Symptom Level Compared to Individuals With Autism Spectrum Disorder
    - T score 50 = average number of symptoms compared to individuals with ASD

CARS-2

Clinical Utility:

- Quantitative summary rating of all data gathered over the course of an evaluation
  - Interview
  - Behavioral observations (outside of ADOS-2)
  - Narrative report from other sources (teachers, daycare providers, etc.)
  - Record review

Key Points

- Autism Spectrum Disorder specific measures do not diagnose ASD, but are tools to help gather information to assist in the formulation of a clinical diagnosis
- The ADOS-2 is a complex measure that requires significant training and extensive knowledge of Autism Spectrum Disorder to administer and interpret appropriately.
- The CARS-2 is a flexible and complex measure to help clinicians gather and quantitatively assess symptoms of Autism Spectrum Disorder

References

- Lord, C., Rutter, M., DiLavore, P.C., Gotham, K., & Bishop, S.L. (2012). *Autism Diagnostic Observation Schedule, Second Edition [Manual: Modules 1-4]*. Torrance, CA: Western Psychological Services.
- Lord, C., Luyster, R.J., Gotham, K., & Guthrie, W. (2012). *Autism Diagnostic Observation Schedule, Second Edition [Manual: Toddler Module]*. Torrance, CA: Western Psychological Services.
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- Gabrielsen TP, Farley M, Speer L, Villalobos M, Baker CN, & Miller J. Identifying autism in a brief observation. Pediatrics. 2015 Feb;135(2):e330-8. doi: 10.1542/peds.2014-1428. Epub 2015 Jan 12. PMID: 25583913.