AUTISM ASSESSMENT SCALE

According to the ***Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*** autism spectrum disorder (ASD) has been described with three categories of severity. At-home tests are opportunities for data collection and the results can be incredibly helpful for a professional who can accurately diagnose and grade autism. [1] Many children with ASDs may not be able to describe their health state reliably due to cognitive and behavioral impairments that lead to theory of mind deficits, and thus researchers must rely on parent or clinical observation for useful information. [8]

Parents can watch their child and rank symptoms like the following:

- Irritability
- Poor communication skills
- Hyperactivity
- Anxiety
- Low sociability [1]

At-home tests, such as **the Observable Behaviors of ASD Scale(OBAS)**, are accurate, researchers say. Parents give children scores on behaviors seen in the last 24 hours. The things they see, and the severity of symptoms they indicate, give experts very helpful information on what a child's home life is like. As the Child-Mind Institute explains, questionnaires are just the first step in the diagnostic process. Often, they are broad and inclusive. [1]

In reality, plenty of adults have autism. For those with technical skills, research-based tests are available. These are the same tests doctors offer patients when assessing ASD symptoms and severity, and they're available online. [1]

Before the release of the ***DSM-5***, there were four diagnosis for people with ASD symptoms:

- Autistic disorder
- Asperger syndrome
- Pervasive developmental disorder
- Childhood disintegrative disorder [1]

Per the ***DSM-5***, ASD comes with three levels of severity:

- Requiring support
- Requiring substantial support
- Requiring very substantial support [1]

According to the ***American Speech-Language-Hearing Association***, severity levels aren't rigid. Someone with autism may face escalating severity in specific situations, such as crowded rooms. Their symptoms may be more manageable or even unnoticeable in other situations. Severity levels can also fluctuate throughout the person's lifespan. [1]

The instruments are used to describe the symptoms and impairments of autism or to assess the severity of the condition for diagnostic purposes.

ASD-specific measures

The Autism Diagnostic Interview – Revised (ADI-R) is an extended structured interview conducted with a parent or caregiver to obtain the developmental history and current behaviors of an individual aged 2 years or above. It comprises 93 items, which focus on three functional domains: language/communication; reciprocal social interactions; and restricted, repetitive and stereotyped behaviors and interests. The ADI-R is an effective tool to differentiate autism from other developmental disorders. It focuses on the core deficits of ASD. Administration and scoring normally takes 90–180 min. The ADI-R focuses on behaviors that are rare in nonaffected individuals, and results are reported in a categorical manner rather than providing scales or norms. [8]

12-20/NV21-47	Factor loadings	SW21-47	Factor loadings	PH21-47	Factor loadings
Social affect		*Social affect*		*Social affect*	
C. Attention to voice	.82	C. Attention to voice	.70	C. Attention to voice	.69
C. Direct Gaze	.80	C. Direct Gaze	.79	C. Direct Gaze	.80
C. Social Smiling	.77	C. Social Smiling	.75	C. Nodding to mean yes	.69
C. Seeking to share enjoyment	.68	C. Seeking to share enjoyment	.65	C. Seeking to share enjoyment	.78
C. Range of facial expression	.80	C. Range of facial expression	.79	C. Range of facial expression	.78
C. Inappropriate facial expression	.56	C. Inappropriate facial expression	.63	C. Offers comfort	.72
C. Appropriateness of social response	.81	C. Appropriateness of social response	.73	C. Pointing	.76
C. Interest in children	.85	C. Interest in children	.71	C. Directing attention	.80
C. Response to approaches of children	.81	C. Response to approaches of children	.75	C. Quality of social overtures	.82
		C. Quality of social overtures	.77	C. Social chat	.79
				C. Use of other's body	.54
Repetitive and restricted behaviors		*Repetitive and restricted behaviors*		*Repetitive and restricted behaviors*	
E. Repetitive use of objects	.81	E. Repetitive use of objects	.89	C. Stereotyped language	.87
E. Hand mannerisms	.65	E. Hand mannerisms	.74	E. Hand mannerisms	.74
E. Complex mannerisms	.79	E. Complex mannerisms	.75	E. Complex mannerisms	.68
E. Unusual sensory interests	.75	E. Unusual sensory interests	.73	E. Unusual sensory interests	.56
		E. Unusual preoccupations	.55	E. Unusual preoccupations	.31
		E. Compulsions/rituals	.51	E. Compulsions/rituals	.42
Imitation, gestures and play		*Imitation, gestures and play*		*Reciprocal and peer interaction*	
C. Pointing	.81	C. Pointing	.80	C. Appropriateness of social response	.77
C. Gestures	.86	C. Gestures	.80	C. Interest in children	.83
C. Imitation of actions	.82	C. Imitation of actions	.76	C. Response to approaches of children	.92
C. Offering to share	.79	C. Offering to share	.67		
C. Imaginative play	.83	C. Imaginative play	.79		
C. Directing attention	.90				
CFI: .929 (.952[a], .948[b], .852[c])		*CFI:* .889 (.943[a], .908[b], .892[c])		*CFI:* .912 (.960[a],.913[b], .806[c])	
RMSEA: .060 (.069[a], .057[b], .084[c])		*RMSEA:* .063 (.062[a], .077[b], .066[c])		*RMSEA:* .055 (.053[a], .053[b], .093[c]).	

[a] Values from Kim and Lord (2012)

[b] Values from Kim et al. (2013), CPEA sample

[c] Values from Kim et al. (2013), NIMH sample

[12]

The Autism Diagnostic Observation Schedule (ADOS) is a semi-structured autism observation measure that has become the gold standard for assessing autistic behavior and diagnosing ASDs across the age span, developmental levels and language skills. It has been administered as part of autism registries (i.e., the Autism Treatment Network [ATN] initial comprehensive evaluation) and clinical trials. The ADOS Severity Score is an overall measure of autism severity that can be constructed from scores on the ADOS. The ADOS Calibrated Severity Score provides a metric to quantify ASD severity with relative independence from the child's age and IQ. The raw ADOS totals can be mapped onto a 10-point severity metric. The Severity Score ranges from 1 to 10 with scores of 1–3 indicating a nonspectrum classification on the ADOS and scores of 4 and above indicating greater severity of

autism on the ADOS. Administration and scoring of the ADOS and ADOS Severity Score generally take 30–60 min to complete. [8]

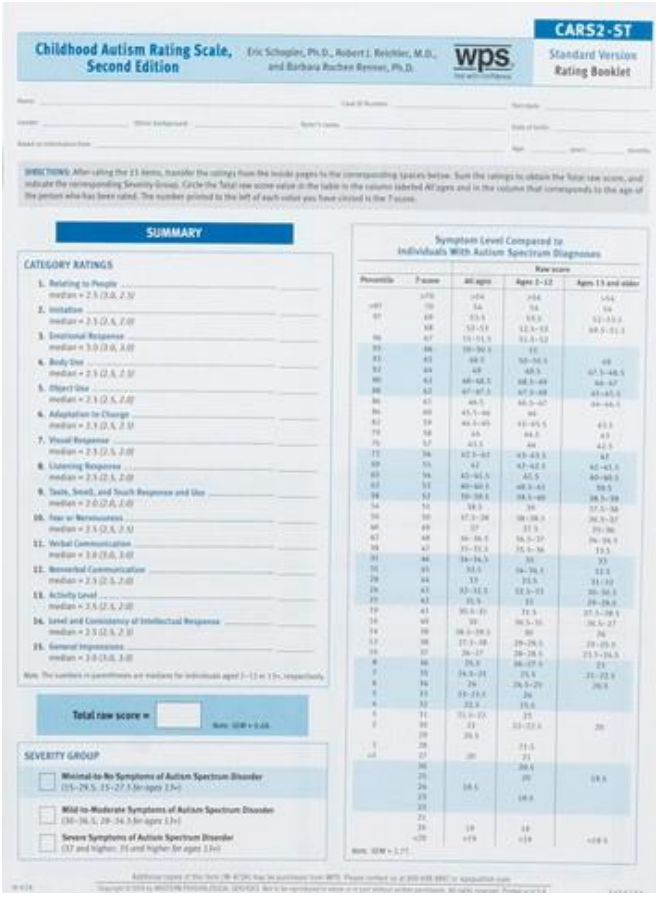
Table 7. Classification of ADOS-G items in three ranges of impact.

Range	Item	Codes
High	Showing	B9
	Shared enjoyment in interaction	B5
	Freq. of vocalization directed to others	A2
Medium	Stereotyped use of words or phrases	A5
	Unusual eye contact	B1
	Use of other's body to communicate	A6
	Pointing	A7
	Facial expression directed to others	B3
	Response to joint attention	B11
Low	Gestures	A8
	Spontaneous initiation of joint attention	B10
	Quality of social overtures	B12

[13]

The ADOS and ADI-R are both individually administered measures that focus on the core deficit behaviors of ASD; the former is administered with the person with ASD, and the latter with a parent or caregiver of the individual with ASD. [8]

The Childhood Autism Rating Scale, second edition (CARS2) is a clinician-completed behavior rating used to identify and distinguish children with ASDs from other developmental disorders, as well as to determine ASD symptom severity. The CARS2 has two different forms based on information gathered from parents or caregivers (CARS2-QPC). The two forms are **CARS2-ST**, for children younger than 6 years of age and those with communication difficulties or below-average estimated IQs, and **CARS2-HP**, which is an alternative for assessing verbally fluent individuals or children 6 years old or above, or children with IQ scores above 80. The revised edition expands the tests from the original CARS to cover high-functioning autism or Asperger's disorder. The CARS2 has 15 items that can be administered in 5–10 min. The CARS2 focuses on core deficit behaviors. Total scores can range from a low of 15 to a high of 60; scores below 30 indicate that the individual is in the non-autistic range, scores between 30 and 36.5 indicate mild to moderate autism, and scores from 37 to 60 indicate severe autism. [8]



[10]

Generic measures

The Aberrant Behavior Checklist (ABC) is a behavior rating scale that is completed by the parent or primary caregiver of the individual with ASD and is a useful tool to evaluate ASD symptoms. The ABC includes some core deficit behaviors as well as associated symptoms of ASD. It has 58 items that are scored on five subscales that include irritability, agitation, crying, lethargy, social withdrawal, stereotypic behavior, hyperactivity, noncompliance and inappropriate speech. The ABC can be used for individuals between 5 and 54 years of age with an administration time of 10–15 min. The ratings are made with consideration to the child's behavior over the previous 4 weeks. Higher scores on the ABC indicate more severe problem behaviors. [8]

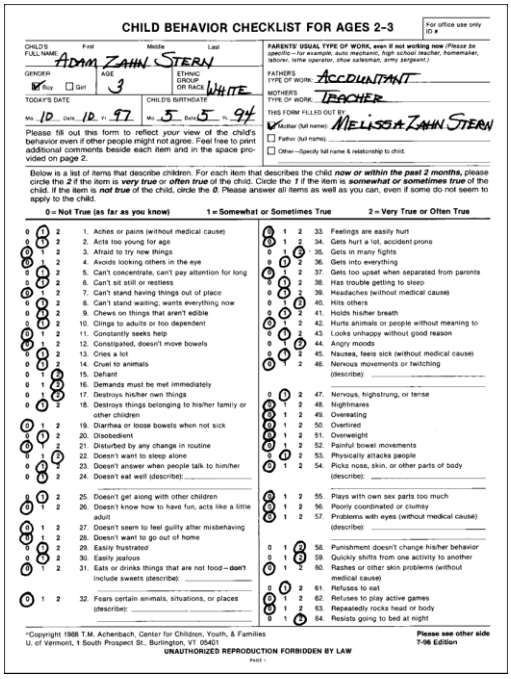
ABC Checklist

Name _____ Date _____

Time	Modifications of Setting Events/ Antecedents	Antecedent What was happening JUST prior to the behavior occurring?	Behavior	Strategies	Duration	Intensity	Consequence What happened after the behavior to resolve the problem?
8:30-9:00 Breakfast 9:00-9:30 SSP 9:30-10:00 Resource. 10:00-11:00 Classroom 11:00-11:15 Break 11:15-11:45 Lunch 11:45-12:00 Classroom 12:00-12:30 Resource 12:30-1:00 Classroom 1:00-1:30 Resource 1:30-2:00 Recess 2:00-2:15 Break 2:15-2:30 Classroom 2:30-3:25 Related Arts 3:25-3:40 Dismissal	__Visual Timer __Pre-warning __Nonverbal Reminder __Verbal Reminder __Used Proximity __Redirected __Provided "Wait Time" __Choice Given __Calming Activity __1,2,3 Count __Student Ignored __Assigned Area Within Group __Provided Fidgets __Encouraged To Use Her Words	__Alone __With Peers Transitioning __Beginning a new activity __Ending an activity __Transition between Classrooms __Participating in group __Asked to do preferred activity __Asked to do a non preferred activity __Told/Asked "not to" __Working on academics __Being ignored __Time away from others __Different Adult __Peer Interaction __Incident on Bus	__Did not follow directions __Disrupting class __Making verbal threats __Physical threats __Put downs/name calling __Profanity __Verbally disrespectful __Destroying property __Screaming/yelling __Throwing items __Hitting (peers adults) __Pinching __Head Butts __Kicking (peers adults) __Leaving area without Permission __Grabbing __Crying __Climbing Furniture	__Student ignored __Used Proximity __Gave a nonverbal cue __Gave verbal warning __Redirected __Movement Break __Changed Assignment __Directed to Calming Area __Used 1,2,3 Count __Processing	___> 1 min. ___1-5 min. ___6-10 min. ___11-15 min. ___16-20 min. ___21-25 min. ___26-30 min. ___31-35 min. ___36-40 min. ___41-45 min. ___46-50 min. ___51-55 min. ___56-60 min. ___1.25 hours ___1.5 hours ___1.75 hours ___2.0 hours ___>2 hours	1 LOW 2 3 4 5 HIGH 1 & 2 Mild (disruptive but not dangerous) 3 Moderate (Verbal/physical threats and/or destructive to physical environment) 4 & 5 Severe (Poses a physical danger to self and others)	__Student lost privilege __Went to her own desk __Time away from others __Sent to alternate classroom __Physical assist/prompt __Administration intervention

[14]

The Child Behavior Checklist (CBCL) is a standard measure of externalizing (i.e., aggressive, hyperactive, noncompliant and under controlled) and internalizing (i.e., anxious, depressive and overcontrolled) behavior problems using parents' ratings of 99 items. The total scaled scores (T-scores) can be used to report children's behavior problems including total problems, total internalizing and total externalizing scores. Parents should be able to complete it in 10 min. The CBCL focuses on associated symptoms, not core deficit behaviors. [8]



CHILD BEHAVIOR CHECKLIST FOR AGES 2–3

For office use only
ID #

CHILD'S FULL NAME: First: Adam Middle: Zahn Last: Stern
GENDER: ☑ Boy ☐ Girl
AGE: 3
ETHNIC GROUP OR RACE: White
TODAY'S DATE: Mo. 10 Date 10 Yr. 97
CHILD'S BIRTHDATE: Mo. 5 Date 5 Yr. 94

PARENTS' USUAL TYPE OF WORK, even if not working now (Please be specific—for example, auto mechanic, high school teacher, homemaker, laborer, latte operator, shoe salesman, army sergeant.)
FATHER'S TYPE OF WORK: ACCOUNTANT
MOTHER'S TYPE OF WORK: TEACHER

THIS FORM FILLED OUT BY:
☑ Mother (full name): Melissa Zahn Stern
☐ Father (full name):
☐ Other—Specify full name & relationship to child:

Please fill out this form to reflect your view of the child's behavior even if other people might not agree. Feel free to print additional comments beside each item and in the space provided on page 2.

Below is a list of items that describe children. For each item that describes the child **now or within the past 2 months,** please circle the **2** if the item is **very true** or **often true** of the child. Circle the **1** if the item is **somewhat or sometimes true** of the child. If the item is **not true** of the child, circle the **0**. Please answer all items as well as you can, even if some do not seem to apply to the child.

0 = Not True (as far as you know) 1 = Somewhat or Sometimes True 2 = Very True or Often True

0	(1)	2	1. Aches or pains (without medical cause)	0	1	2	33. Feelings are easily hurt
0	(1)	2	2. Acts too young for age	(0)	1	2	34. Gets hurt a lot, accident-prone
(0)	1	2	3. Afraid to try new things	0	1	(2)	35. Gets in many fights
(0)	1	2	4. Avoids looking others in the eye	0	(1)	2	36. Gets into everything
0	(1)	2	5. Can't concentrate, can't pay attention for long	(0)	1	2	37. Gets too upset when separated from parents
0	(1)	2	6. Can't sit still or restless	0	1	(2)	38. Has trouble getting to sleep
(0)	1	2	7. Can't stand having things out of place	0	(1)	2	39. Headaches (without medical cause)
0	(1)	2	8. Can't stand waiting; wants everything now	0	1	(2)	40. Hits others
0	(1)	2	9. Chews on things that aren't edible	0	(1)	2	41. Holds his/her breath
0	(1)	2	10. Clings to adults or too dependent	(0)	1	2	42. Hurts animals or people without meaning to
(0)	1	2	11. Constantly seeks help	0	(1)	2	43. Looks unhappy without good reason
(0)	1	2	12. Constipated, doesn't move bowels	0	1	(2)	44. Angry moods
0	(1)	2	13. Cries a lot	0	(1)	2	45. Nausea, feels sick (without medical cause)
0	(1)	2	14. Cruel to animals	(0)	1	2	46. Nervous movements or twitching (describe): _____
0	1	(2)	15. Defiant				
0	1	(2)	16. Demands must be met immediately				
0	1	(2)	17. Destroys his/her own things	0	(1)	2	47. Nervous, high-strung, or tense
0	(1)	2	18. Destroys things belonging to his/her family or other children	0	1	2	48. Nightmares
				(0)	1	2	49. Overeating
(0)	1	2	19. Diarrhea or loose bowels when not sick	(0)	1	2	50. Overtired
0	(1)	2	20. Disobedient	(0)	1	2	51. Overweight
(0)	1	2	21. Disturbed by any change in routine	0	1	2	52. Painful bowel movements
0	1	(2)	22. Doesn't want to sleep alone	0	(1)	2	53. Physically attacks people
0	(1)	2	23. Doesn't answer when people talk to him/her	(0)	1	2	54. Picks nose, skin, or other parts of body (describe): _____
0	(1)	2	24. Doesn't eat well (describe): _____				
0	(1)	2	25. Doesn't get along with other children	(0)	1	2	55. Plays with own sex parts too much
(0)	1	2	26. Doesn't know how to have fun, acts like a little adult	(0)	1	2	56. Poorly coordinated or clumsy
				(0)	1	2	57. Problems with eyes (without medical cause) (describe): _____
(0)	1	2	27. Doesn't seem to feel guilty after misbehaving				
(0)	1	2	28. Doesn't want to go out of home				
0	(1)	2	29. Easily frustrated	0	1	(2)	58. Punishment doesn't change his/her behavior
0	(1)	2	30. Easily jealous	0	1	(2)	59. Quickly shifts from one activity to another
(0)	1	2	31. Eats or drinks things that are not food—don't include sweets (describe): _____	(0)	1	2	60. Rashes or other skin problems (without medical cause)
				0	(1)	2	61. Refuses to eat
(0)	1	2	32. Fears certain animals, situations, or places (describe): _____	(0)	1	2	62. Refuses to play active games
				(0)	1	2	63. Repeatedly rocks head or body
				0	1	(2)	64. Resists going to bed at night

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7-06 Edition

[9]

The Vineland-II Adaptive Behavior Scales (VABS) is useful to capture adaptive functioning. The VABS consists of four major domains: communication, socialization, daily living skills and motor skills (age <6 years). The VABS produces an adaptive behavior composite score, domain and subdomain scores, and age equivalents. It has supplementary norms for children with autism.

The VABS can be administered by either an interview that takes approximately 45–60 min for a clinician to complete with the primary caregiver of the individual with ASD, or a parent/caregiver

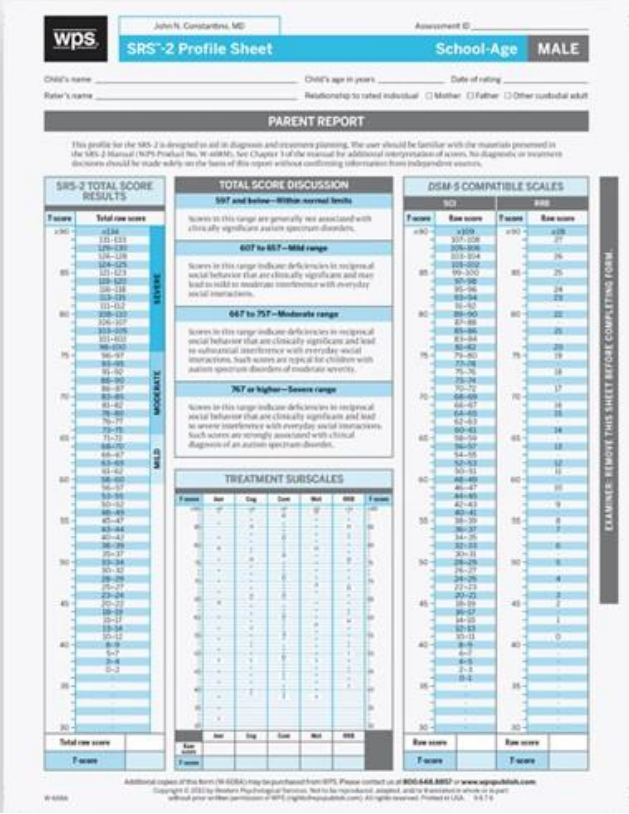
rating form. It does not require the presence of the individual being assessed. The VABS can be used across a broad range of conditions and focuses on the current level of functioning. [8]

Case Study: Results

Domain Standard Scores		Subdomain v-Scores
Communication = 100 ***Strength***	Adequate	Receptive = 16
		Expressive = 15
		Written = 14
Daily Living Skills= 93	Adequate	Personal = 14
		Domestic = 14
		Community = 14
Socialization = 85	Moderately Low	Interpersonal Relationships = 12
		Play and Leisure Time = 15*
		Coping Skills = 10*
Motor Skills = 91	Adequate	Gross = 14
		Fine = 13
Adaptive Behavior Composite = 90		

[15]

The Social Responsiveness Scale (SRS) is a 65-item rating scale completed by a parent that assesses severity of symptoms associated with ASDs. The SRS provides a picture of a child's social impairments, yielding an overall severity score (a higher score corresponds to greater impairment). It assesses social awareness, social information processing, capacity for reciprocal social communication, social anxiety/avoidance, and autistic preoccupations and traits. It is appropriate for use with children aged 4–18 years. The SRS distinguishes children with ASDs from other child psychiatric conditions. [8]



[16]

Restricted, repetitive and stereotyped behaviors are characteristic of the fixated behavior patterns that occur in children with ASDs. The behaviors can be measured using the **Repetitive Behavior Scale**

– Revised (RBS-R). The RBS-R is a quantitative, empirically derived clinical rating scale. It measures both the presence and severity of repetitive behaviors, and provides a continuous measure of the full spectrum of repetitive behaviors. Parents are asked to rate their children's behavior on 42 items. The measure contains six subscales: stereotyped behavior, self-injurious behavior, compulsive behavior, routine behavior, sameness behavior and restricted behavior. A total score is generated, with higher scores indicating more restricted, repetitive and stereotyped behaviors. The RBS-R measures some of the core deficit behaviors as well as associated behavior symptoms of ASD. [8]

RBS-R Subscales by Bishop et al. (2013)	Item	Mean Score Total Sample (SD) (*N* = 154)	Mean Score Males (SD) (*N* = 112)	Mean Score Females (SD) (*N* = 42)	Mean Differences between Males and Females	Mean Score ASD Diagnosis (*N* = 52)	Mean Score No ASD Diagnosis (*N* = 83)	Mean Differences between ASD Diagnosis
Sensory Motor	1. Whole Body	0.58 (0.91)	0.68 (0.97)	0.31 (0.68)	**0.009**[*,‡]	1.06 (1.13)	0.30 (0.62)	**0.000**[*,‡]
	2. Head	0.32 (0.66)	0.35 (0.69)	0.26 (0.59)	0.475	0.60 (0.85)	0.20 (0.54)	**0.004**[*,‡]
	3. Hand/finger	1.12 (1.03)	1.29 (0.99)	0.67 (1.00)	**0.001***	1.62 (1.05)	0.89 (0.92)	**0.000***
	4. Locomotion	0.54 (0.87)	0.67 (0.92)	0.19 (0.59)	**0.000***[‡]	0.88 (1.02)	0.36 (0.73)	**0.002**[*,‡]
	5. Object usage	0.58 (0.84)	0.74 (0.90)	0.17 (0.44)	**0.000***[‡]	0.96 (1.07)	0.36 (0.55)	**0.000**[*,‡]
	6. Sensory	0.89 (0.97)	0.96 (0.99)	0.69 (0.90)	0.121	1.35 (1.15)	0.64 (0.76)	**0.000**[*,‡]
	43. Fascination, preoccupation with movement	0.57 (0.90)	0.68 (0.94)	0.29 (0.71)	**0.006**[*,‡]	1.10 (1.14)	0.31 (0.62)	**0.000**[*,‡]
Restricted Interests	40. Fascination, preoccupation with one subject or activity	1.12 (1.00)	1.24 (0.98)	0.81 (0.99)	**0.016***	1.60 (1.03)	0.86 (0.90)	**0.000***
	41. Strongly attached to one specific object	0.92 (1.10)	0.97 (1.10)	0.76 (1.08)	0.285	1.46 (1.13)	0.61 (0.96)	**0.000**[*,‡]
Self-injury	7. Hits self with body part	0.44 (0.77)	0.50 (0.82)	0.29 (0.60)	0.072[‡]	0.78 (0.90)	0.25 (0.54)	**0.000**[*,‡]
	8. Hits self against surface or object	0.32 (0.70)	0.36 (0.75)	0.19 (0.51)	0.105[‡]	0.47 (0.76)	0.21 (0.56)	**0.035**[*,‡]
	9. Hits self with object	0.20 (0.54)	0.23 (0.59)	0.12 (0.40)	0.193[‡]	0.27 (0.56)	0.11 (0.35)	0.067[‡]
	10. Bites self	0.51 (0.86)	0.57 (0.88)	0.36 (0.79)	0.177	0.78 (1.06)	0.34 (0.67)	**0.009**[*,‡]
	11. Pulls hair or skin	0.31 (0.68)	0.32 (0.71)	0.31 (0.60)	0.963	0.37 (0.77)	0.29 (0.62)	0.492
	12. Rubs or scratches self	0.45 (0.78)	0.48 (0.82)	0.38 (0.70)	0.500	0.47 (0.86)	0.42 (0.70)	0.719

[7]

Cognitive measures

Cognitive ability for children with ASDs can range from low to high across any range of severity. Developmental patterns in children with ASDs can be influenced by age and IQ. For example, lower IQ may interact with the severity of the child's autism to increase the need for assistance with activities of daily living. [8]

The Stanford–Binet Intelligence Scales (5th Edition), **the Mullen Scales**, **the Bayley Scales** and the **Wechsler Intelligence Scales** have good psychometric properties. **The Stanford–Binet Intelligence Scale** is an individually administered formal test of general intelligence used with individuals aged 2–89 years and yields an IQ value. In young children, the **Mullen and the Bayley Scales** are commonly used measures that examine the child's cognitive development. **The Mullen Scale** is an individually administered comprehensive measure of cognitive functioning for children from birth through 68 months of age and yields a cognitive composite score, **the Early Learning Composite**. **The Bayley Scale** is an individually administered comprehensive measure of cognitive functioning for children from birth through 42 months of age and produces a cognitive score. **The Wechsler Intelligence Scales for Children – Fourth Edition** is appropriate for children and adolescents aged 6–16 years. It provides four index scores (verbal comprehension, perceptual reasoning, working memory and processing speed) and the full-scale IQ. All four cognitive measures yield an overall composite score that is expressed as a standard score with a mean of 100 and standard deviation of 15 to describe an individual's cognitive ability and are comparable measures of general intelligence. [8]

The behavior problems of children with ASDs can be categorized into two groups: core deficit behaviors and associated symptoms. The associated symptoms may include hyperactivity/inattention, aggression (i.e., tantrums, self-injury, anxiety and emotional liability), obsessive–compulsive-like behaviors and sleep disorders. These impairments impact a child's QoL and HRQL. [8]

The Paediatric Quality of Life Inventory™ (PedsQL) consists of 23 items that are designed for use in children aged 2–18 years. PedsQL was able to distinguish between children with Asperger's disorder and healthy children. The HRQL and cognitive functioning scores were significantly lower in children with Asperger's. [8]

The Functional Status II-R (FS II-R) was designed to measure behavioral manifestations of an illness or condition that interferes with a child's performance of the full range of age-appropriate activities. [8]

Although existing **HRQL** instruments have limitations in measuring HRQL for children with ASDs, they have the potential to capture some relevant behavior problems. For example, a number of the question items of the FS II-R such as play games, restless, trouble with task and sleep are relevant to ASD conditions. HRQL measures can help to evaluate the influence of interventions and services. There are several preference-based HRQL instruments including the **Quality Well-Being (QWB)**, the **EuroQol five-dimension questionnaire (EQ-5D)**, the **6-dimension Short Form (SF-6D)**, **the Health Utilities Index (HUI)** and the **Assessment of Quality of Life (AQoL).** [8]

The CHU9D was specifically developed for a paediatric population aged 7–11 years. It contains nine questions covering nine dimensions of HRQL (worried, sad, pain, tired, annoyed, school-work, sleep, daily routine and activities). The CHU9D focuses on current (today/last night) health status with five response levels in each question. [8]

If severity of autism is defined based on an individual's ability to function, then common co-occurring impairments that are not necessarily core features of autism, such as cognitive deficits and challenging behaviors, need to be considered, because these factors can have a major impact on functioning.

Gilliam Autism Rating Scale is one of the most widely used instruments for the assessment of Autism Spectrum Disorder in the world. The GARS-3 assists teachers, parents and clinicians in identifying autism in individuals and estimating its severity. The instrument consists of 56 clearly stated items describing the characteristic behaviours of persons with autism. The items are grouped into six subscales: Restrictive, Repetitive Behaviours, Social Interaction, Social Communication, Emotional Responses, Cognitive Style, and Maladaptive Speech. [4]

The Autism-Spectrum Quotient Test (AQ) is a diagnostic questionnaire designed to measure the expression of Autism-Spectrum traits in an individual, by his or her own subjective self-assessment. [3]

https://psychology-tools.com/test/autism-spectrum-quotient

The Pervasive Developmental Disorder Behavior Inventory PDDBI is an assessment designed to measure the effectiveness of treatments for children with significant developmental disabilities, including autism spectrum disorder (ASD). The test is an informant-based ratings scale that focuses on behavioral challenges, key skills and abilities. [2]

These approaches and instruments are incredibly valuable for characterizing autism; however, as highlighted by a 2009 study, there are limitations to each approach. For example, many of the rating scales correlate strongly with an individual's intelligence quotient (IQ), which reduces the focus on autism core symptoms. However, the **SRS**, which is less impacted by IQ, focuses primarily on social communication and does not include direct observation of the child. [11]

Summary scores on the **ADI-R** have often been used as severity metrics for core autism symptoms, but the ADI-R was not developed as a measure of severity. For example, higher scores generally indicate greater impairment, but non-verbal children are not administered a portion of the test, restricting the utility of the communication domain. Scores also vary based on the child's IQ and age. [11]

Similar complications arise when researchers use the **ADOS** summary scores. These are influenced by age and language level, which determine which version, or module, of the test is administered, limiting the ability of the ADOS to generalize across individuals. [11]

The newest approach, a **calibrated severity score** that is based on raw ADOS scores, attempts to provide a standardized, clinician-based metric that controls for language ability and age when determining autism severity. [11]

These measures have significantly advanced our understanding of autism, although a precise characterization of severity has remained elusive. This is to be expected, given the fact that the disorder changes during development and is very heterogeneous. The measures are also used in multiple contexts, varying from clinical to research settings. [11]

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