AUTISM SCREENINGS AND ASSESSMENTS

OVERVIEW

Public schools are required by law to identify all children with disabilities, including those with autism spectrum disorder (AU) (IDEA, 2004). Early identification is key because early treatment leads to better outcomes (Dawson & Osterling, 1997; Eikeseth, Smith, Jahr, & Eldevik, 2007). Although it is often difficult to suggest to staff and parents that a child may have autism spectrum disorder, there is a significant risk to failing to recognize the disorder and provide intervention when it is present.

The process of evaluating for autism spectrum disorder is complex and cannot be reduced to a single score from a single test. Freeman, Cronin, and Candela (2002) highlight that "rating scales were not designed to be used in isolation to make a diagnosis. They are useful to the clinician, but are only one source of qualitative information for a comprehensive clinical assessment" (p. 148). Accurate identification of autism spectrum disorder requires analysis of both qualitative and quantitative data from a number of sources. As such, a quality assessment is dependent on the clinician – the most important component of any evaluation process.

This section discusses the importance of a thorough developmental history and reviews autism spectrum disorder screening and assessment tools.

Did You Know?

1. Autism spectrum disorder is not rare. It is ". . . more children than are affected by diabetes, AIDS, cancer, cerebral palsy, cystic fibrosis, muscular dystrophy or Down syndrome – combined" (Autism Speaks, 2012).
2. A growing body of research suggests that autism spectrum disorder can be accurately diagnosed by age 2 (Centers for Disease Control, 2014; Charman & Baird, 2002).
3. Diagnosis at age 2 is accurate and stable over time (Charman et al., 2005; Eaves & Ho, 2004; Lord et al., 2006; Turner et al., 2006).

DEVELOPMENTAL HISTORY

Autism is classified as "Neurodevelopmental Disorder" by the *Diagnostic and Statistical Manual of Mental Disorder*s (5th ed.; *DSM-5*; American Psychiatric Association, 2013); therefore, accurate assessment ***must*** include a thorough developmental history. Developmental history is best collected through an in-person interview with the child's parents/caregivers. Indeed, Filipek et al. (1999) stress the importance of parent/caregiver input to the diagnostic process.

Critical areas to include in a developmental history are summarized in the listing below. Several autism screening and assessment tools incorporate components of a developmental history questionnaire. These are denoted with an asterisk (*) on the assessment tool table.

- Birth History
- Family History (immediate and extended)
    - Pervasive Developmental Disorders
    - Genetic or Medical Disorders
    - Learning Disorders
    - Emotional/Behavioral Disorders
- Medical History
    - Medical Conditions (e.g., seizures, allergies, asthma, head injury/trauma)
    - Hospitalization
    - Sensory Differences
    - Medication
    - Hearing/Vision
    - Previous Evaluations/Other Diagnoses
- Developmental Milestones
    - Language/Communication
    - Social
    - Motor
    - History of Regression or Interruption of development
    - History of Interventions

Overview of Instruments

A number of tools are available for screening and diagnosis/identification of autism spectrum disorder/Autism or Other Pervasive Developmental Disorder. This section provides an overview of such instruments and the relevant research.

Accurate screening and diagnosis/identification requires collecting and assimilating data from a variety of sources using multiple methods. As with all data, the information collected must subsequently be interpreted. Experienced clinicians never rely strictly on a screening or diagnostic instrument. While assessment tools can provide valuable information, no tool interprets itself.

Efforts have been made in the following to distinguish between screening and diagnostic tools. For example, Charak and Stella (2001-2002) state that, “Screening instruments are intended to help clinicians identify children who present with developmental delays and/or atypical behavior for whom a diagnosis in the autistic spectrum may be considered . . . [those] who should be referred for a more intensive diagnostic evaluation” (p. 6). The term “diagnostic” instrument is misleading because no single instrument constitutes a sufficient basis for a diagnostic decision. In practice, there is no distinct line where screening ends and diagnostic assessment begins. The information gathered during screening is incorporated in the comprehensive assessment process.

This section will provide a brief review of measures designed to capture descriptive information from parents/caregivers, staff, and the student.

Asperger Syndrome Diagnostic Scale (ASDS)

The Asperger Syndrome Diagnostic Scale (ASDS; Myles, Bock, & Simpson, 2001) is a norm-referenced measure consisting of 50 yes/no items. The ASDS yields scores in five areas: cognitive, maladaptive, language, social, and sensorimotor, as well as an Asperger Syndrome Quotient (ASQ). The five subtests provide information comparing the behaviors of the individual to the behaviors of individuals diagnosed with Asperger Syndrome (AS). The ASQ indicates the probability of Asperger Syndrome. Any individual who knows the child or adolescent well may complete the ASDS.

Autism Behavior Checklist (ABC)

The Autism Behavior Checklist (Krug, Arick, & Almond, 2008) is a 57-item questionnaire completed by parents or teachers. It is one component of the Autism Screening Instrument for Educational Planning-Third Edition (Krug et al., 2008). The ABC is divided into five subscales: sensory behavior, social relating, body and object use, language and communication skills, and social and adaptive skills.

Autism Diagnostic Interview—Revised (ADI-R)

The Autism Diagnostic Interview—Revised (ADI-R; Lord, Rutter, & LeCouteur, 1994) is the 1994 revision of the ADI. The interview is conducted with parents or caretakers who have knowledge about the individual's current behavior and developmental history. The questions address the triad of symptoms related to autism spectrum disorders – Language/Communication; Reciprocal Social Interactions; and Restricted, Repetitive, and Stereotyped Behaviors and Interests. The measure consists of 93 yes/no questions followed by probe questions, which are scored on a scale of 0 to 2. Using a scoring template, the scores are converted into diagnostic criteria based on the International Classification of Diseases-10th Revision (ICD-10; World Health Organization, 1993).

Autism Diagnostic Observation Schedule—Second Edition (ADOS-2)

The ADOS-2 is an updated semi-structured, standardized observational assessment tool designed to assess autism spectrum disorders in children, adolescents, and adults (Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012). The ADOS-2 assesses communication, social interaction, play, and restricted and repetitive behaviors.

The instrument consists of five modules selected based on age and level of expressive language. The ADOS-2 has updated protocols, revised algorithms, and a Toddler Module - for children between 12 and 30 months. Observations are recorded and scored by the examiner. Modules 1 through 4 provide cutoff scores to aid in interpretation. The Toddler Module provides "ranges of concern" rather than cutoff scores. Administration time is 40 to 60 minutes.

Autism Observation Scale for Infants (AOSI)

The Autism Observation Scale (AOSI; Bryson, McDermott, Rombough, Brian, & Zwaigenbaum, 2000) is a semi-structured, play-based measure designed to identify early signs of autism in high-risk infants (those who have an older sibling with autism). The AOSI is intended for infants 6-18 months. Seven activities provide opportunities to observe behaviors in the following areas: visual tracking, disengagement of attention, orientation to name, reciprocal social smiling, differential response to facial emotion, social anticipation, and imitation. Currently, the AOSI is used as a research instrument. It is unpublished and is not commercially available.

Autism Screening Instrument for Educational Planning—Third Edition (ASEIP-3)

The ASIEP-3 (Krug, Arick, & Almond, 2008) was developed to evaluate autism spectrum disorders and assist in developing and monitoring educational programs for individuals on the spectrum. The ASIEP-3 consists of the following five standardized subtests:

- Autism Behavior Checklist: A questionnaire that is designed to assess characteristics of autism
- Sample of Vocal Behavior: An assessment of spontaneous expressive language
- Interaction Assessment: Measurement of a child's social responses and reaction to requests
- Educational Assessment: Assessment of educational skills, including remaining in seat, receptive/expressive language, body concept, and imitation of speech
- Prognosis of Learning Rate: Measures rate of learning

Autism-Spectrum Quotient (AQ)

The AQ is a parent questionnaire designed to identify the presence of the characteristics of autism spectrum disorders. There are currently two versions of the Autism-Spectrum Quotient – the school-age adolescent version (AQ-Adol; Baron-Cohen, Hoekstra, Knickmeyer, & Wheelwright, 2006) and the children's version (AQ-Child; Auyeung, Baron-Cohen, Wheelwright, & Allison, 2008). The AQ contains 50 items that describe five areas associated with autism spectrum disorders: social skills, attention switching, attention to detail, communication, and imagination. Parents rate each item on a range from "definitely agree" to "definitely disagree."

Checklist for Autism Spectrum Disorder (CASD)

The Checklist for Autism Spectrum Disorder (CASD; Mayes, 2012) is a diagnostic and screening tool. The CASD is unique because it was designed to assess autism as a spectrum rather than distinct subtypes. This approach is consistent with the DSM-5. The 30 items on the CASD were developed to describe the broad range of symptoms (organized into five categories) displayed by individuals with ASD in order to help parents and others to understand that relationship between these behaviors and ASD. Also, the CASD can be used to design a treatment program by targeting symptoms for intervention. The CASD is administered through a 15-minute semi-structured parent interview, information from a teacher or childcare provider, observations, and review of records. The examiner inquires whether or not each of the 30 symptoms were ever present.

Checklist for Autism in Toddlers (CHAT)

The Checklist for Autism in Toddlers (CHAT; Baron-Cohen, Allen, & Gillberg, 1992; Baron-Cohen et al., 1996) is a brief screening questionnaire that is completed by parents and a physician during the child's 18-month check-up. Five key items are indicative of the risk of developing autism: pretend play, protodeclarative pointing (expressing interest), following a point, pretending, and producing a point. If a child fails the initial administration of the CHAT, it is recommended that the questionnaire be re-administered one month later. Any child who fails a second time should be referred for formal autism assessment.

Childhood Asperger Syndrome Test (CAST)

The Childhood Asperger Syndrome Test (CAST; Scott, Baron-Cohen, Bolton, & Brayne, 2002) is a parent questionnaire designed to screen for Asperger Syndrome and other social and communication disorders. The test consists of a 37-item yes/no parent questionnaire and was designed for children 4 to 11 years old.

Childhood Autism Rating Scale—Second Edition (CARS-2)

The purpose of the Childhood Autism Rating Scale (2nd ed.; CARS-2; Schopler, Van Bourgondien, Wellman, & Love (2010) is to identify the presence of autism in children and to determine the severity of symptoms. The CARS-2 has two versions – the Standard form, CARS2-ST, for individuals less than 6 years of age and those with communication difficulties or

below average estimated IQs and the CARS2-HF for those 6 years and over who are verbally fluent and have IQ scores over 80. The CARS2-HF is designed to identify the more subtle characteristics of those with "high functioning" forms of ASD. The CARS2 also includes a third form, the Questionnaire for Parents or Caregivers (CARS2-QPC), for collecting information for use in making CARS2ST and CARS2-HF ratings.

Fifteen domains are rated on a 4-point scale. Based on informant or clinician observation, the clinician assigns ratings in each domain related to frequency, peculiarity, intensity, and duration. The CARS2 yields cutoff scores, standard scores, and percentiles.

Development Behavior Checklist-Autism Screening Algorithm (DBC-ASA)

The Development Behavior Checklist-Autism School Algorithm (DBC-ASA; Brereton, Tonge, Mackinnon, & Einfeld, 2002) is an autism screening instrument derived from the Developmental Checklist Parent/Primary caregiver report (DBC-P). The DBC-ASA is comprised of 29 items from the original checklist and is intended for children and adolescents 4 to 18 years old.

Developmental Checklist-Early Screen (DBC-ES)

The Developmental Checklist-Early Screen (DBC-ES; Gray & Tonge, 2005) is an autism screening instrument derived from the Developmental Checklist Parent/Primary caregiver report (DBC-P). The DBC-ES is comprised of 17 items from the original checklist and is intended for children 18 to 48 months.

Early Screening of Autistic Traits (ESAT)

The Early Screening of Autistic Traits (ESAT; Swinkels et al., 2006) is a 14-item screening checklist for parents/caregivers. The questionnaire is designed for 14-month-old infants. The tool is designed to be administered by health practitioners at well-baby visits. Failure on three or more items suggests the need for a diagnostic evaluation.

Gilliam Asperger's Disorder Scale (GADS)

The Gilliam Asperger's Disorder Scale (GADS; Gilliam, 2001) is a 32-item questionnaire designed to identify individuals with Asperger's Disorder. The tool is comprised of the following

subscales: Social Interaction, Restricted Patterns, Cognitive Patterns, and Pragmatic Skills. The GADS can be completed by parents/caregivers or teachers. Respondents indicate the frequency of behaviors from "never observed" to "frequently observed." The GADS includes a parent interview form that inquires about language and cognitive development, self-help skills, adaptive behavior, and curiosity. There is also a section of "key questions" for parents/caregivers to complete.

Gilliam Autism Rating Scale—Third Edition (GARS-3)

The Gilliam Autism Rating Scale- Third Edition (GARS-3; Gilliam, 2013) is designed for the assessment of autism in individuals aged 3 to 22. The items and subscales are based on the DSM-5 diagnostic criteria. It was normed on a sample of 1,859 individuals. The GARS-3 can be completed by parents, teachers, or clinicians. The GARS-3 consists of six subscales: Restrictive, Repetitive, Behaviours; Social Interaction; Social Communication; Emotional Responses; Cognitive Style; and Maladaptive Speech.

Krug Asperger's Disorder Index (KADI)

The Krug Asperger's Disorder Index (KADI; Krug & Arick, 2003) is a screening instrument for Asperger Syndrome. It is also a useful tool for developing goals for intervention. Two forms, elementary (6–12 years) and secondary (12–21 years), cover a wide age range. The KADI is divided into two sections. Section one is a pre-screening tool. Section two consists of additional items, which are completed only if results of the screening tool indicate need for further assessment.

Modified Checklist for Autism in Toddlers, Revised with Follow-Up (MCHAT-R/F)

The Modified Checklist for Autism in Toddlers, Revised with Follow-Up (MCHAT-R/F; Robbins, Fein, & Barton, 2009) designed to screen for autism in infants 16 to 30 months, was developed for use during well-child check-ups. It is a two-step autism-screening tool. The first step is a 20-item yes/no parent/caregiver questionnaire that yields Low, Medium, or High Risk Classifications. The second step of the process is a follow-up questionnaire, given for a child found to be at medium risk. The follow-up questionnaire consists of 20 pass/fail items used to gather further information for classification into High Risk or Low Risk categories.

Monteiro Interview Guidelines for Diagnosing Asperger's Syndrome (MIGDAS)

The Monteiro Interview Guidelines for Diagnosing Asperger's Syndrome (MIGDAS; Monteiro, 2008) is a qualitative assessment tool designed for use by school-based evaluation teams to assess Asperger Syndrome in children and adolescents. The MIGDAS consists of three tools: Pre-Interview Checklist, Parent and Teacher Interview, and Diagnostic Student Interview. Together, these tools help teams to gather qualitative information to assist in the diagnostic process. Teams first complete the Pre-Interview Checklist, a brief yes/no questionnaire to help determine the need for an evaluation. The remaining interviews (teacher, parent, and student) are completed only when a need has been identified. After completion of the evaluation, teams discuss their qualitative observations and interpret the results.

Pervasive Developmental Disorders Screening Test—Second Edition (PDDST-II)

The Pervasive Developmental Disorders Screening Test-Second Edition (PDDST-II; Siegel, 2004) is a questionnaire designed to screen for autism in young children from 12 to 48 months. Three versions were developed for different settings, referred to as stages: Stage 1: Primary Care Screener; Stage 2: Developmental Clinic Screener; and Stage 3: Autism Clinic Severity Screener. Stage one is intended for primary care settings. Stage two is intended for children who are receiving developmental services, and Stage three is designed to help differentiate autism from other pervasive developmental disorders. The PDDST-II may be administered to parents/caregivers as a questionnaire or given in an interview format. Results are interpreted by a clinician.

Screening Tool for Autism in Two-Year-Olds (STAT)

The Screening Tool for Autism in Two-Year-Olds (STAT; Stone, Coonrod, & Ousley, 2000) is an instrument for screening for autism in children between the ages of 24 and 36 months. This instrument consists of 12 interactive activities administered within the context of play. Behaviors in four social-communicative domains—play, motor imitation, requesting and directing attention—are assessed, and performance on each item is rated as Pass, Fail, or Refuse, based on specified criteria. The STAT may be given by a wide range of professionals, but training in administration and scoring is required. Administration time is approximately 20 minutes.

Social Communication Questionnaire (SCQ)

The Social Communication Questionnaire (SCQ; Rutter, Bailey, Lord, & Berument, 2003) is an instrument for screening for autism in individuals over the age of 4 with a mental age over 2 years. The SCQ contains 40 yes/no items, which can be completed in less than 10 minutes by a parent or other caregiver. The SCQ has two forms—the Lifetime Form, which focuses on behavior throughout development, and the Current Form, which focuses on behavior during the most recent three months. The instrument yields a Total Score for comparison to defined cutoff points.

Social Responsiveness Scale—Second Edition (SRS-2)

The Social Responsiveness Scale, Second Edition (SRS-2; Constantino & Gruber, 2012) is a 65-item questionnaire used to assist in screening and diagnosis of autism. The tool can be completed by parents/caregivers or teachers who are familiar with the student. Questions are rated on a 4-point Likert scale. The purpose of the SRS-2 is to reveal a wide range of symptoms from subtle to more pronounced. The test provides an overall score and five treatment subscales that can be used for program planning: Social Awareness, Social Cognition, Social Communication, Social Motivation, and Restricted Interests and Repetitive Behaviors. Two subscales, Social Communication and Interaction and Restricted Interests and Repetitive Behaviors are designed to be DSM-5 compatible.

Autism Spectrum Screening and Diagnostic/Identification Tools

Autism screening and diagnostic/identification tools are summarized in the following table. This list includes the best known and most widely used instruments available. Charak and Stella (2001-2002) identified seven instruments as screeners (ABC, ASIEP, CHAT, PDDST, STAT, ASQ, and the SCQ) and four instruments as diagnostic (ADOS, CARS, GARS, and the ASDS).

The current versions of these tools are identified accordingly in the Screening/Diagnostic column in the table. Instruments not included in Charak and Stella's selective review are identified as screening or diagnostic based on the authors' description. Several autism screening and diagnostic/identification tools incorporate components of a developmental history questionnaire. These are denoted with an asterisk (*).

Note: All summary and research tables in the remainder of this section are from Grossman, B. G., Aspy, R., & Myles, B. S. (2009). *Interdisciplinary evaluation of autism spectrum disorders: From diagnosis through program planning.* Shawnee Mission, KS: Autism Asperger Publishing Company. Used with permission.

SUMMARY OF SCREENING AND DIAGNOSTIC/IDENTIFICATION TOOLS

Name of Tool and Author	Screening/ Diagnosis	Age Range (in years except where noted)	Method of Administration/Format	Approx. Time to Administer	Subscales	Availability
*Asperger Syndrome Diagnostic Scale (ASDS) Myles, Bock, & Simpson (2001)	D	5–18	Parent/teacher/caregiver questionnaire 50 items rated for presence or absence of behaviors related to Asperger Syndrome Yields standard scores and percentiles for the five subscales. Raw scores from the subscales are summed to create the Asperger Syndrome Quotient (ASQ), which is a standard score. The ASQ indicates the probability of the diagnosis of AS based on scores of a normative sample of individuals diagnosed with AS.	10–15 min.	Cognitive Maladaptive Language Social Sensorimotor	Pearson http://bit.ly/1kL6qku
Autism Behavior Checklist (ABC) Krug, Arick, & Almond (2008)	S	3 to 14	Subtest of the ASIEP-3 A 57-item questionnaire; yes/no format Parent or teacher may complete Yields cutoff score ranges based on different diagnoses	10–20 min.	Sensory behavior Social relating Body and object use Language and communication skills Social and adaptive skills	Pro-Ed http://bit.ly/1kp6IwP

Autism Diagnostic Interview-Revised (ADI-R)** Lord, Rutter, & LeCouteur (1994)	D	Over 2	Structured interview 93 items in three functional domains Responses are coded in eight content areas Yields algorithm cutoff scores	1.5–2.5 hrs.	Early development Language and communication Reciprocal social interactions Restricted, repetitive, and stereotyped behaviors and interests	Western Psychological Services http://bit.ly/1qYt0bG
Autism Diagnostic Observation Schedule – Second Edition** (Lord, Rutter, DiLavore, Risi, Gotham, & Bishop, 2012)**.	D	12 month to adult	Clinician engages the examine in a range of activities using interactive stimulus materials	40–60 min.	Modlules 1–4 Yield algorithm cutoff scores for autism and autism spectrum. Toddler module yields "ranges of concern" to assist in forming clinical impressions.	Western Psychological Services http://bit.ly/1mpz859
Autism Observation Scale for Infants (AOSI)** Bryson, McDermott, Rombough, Brian, & Zwaigenbaum (2000)	S	.5–1.5	18-item direct observational measure Seven activities administered in an interactive, play-based format Yields indication of the presence or absence of skill in each of the areas assessed	20 min.	Visual Tracking Disengagement of Attention Orientation to Name Reciprocal Social Smiling Differential Response to Facial Emotion Social Anticipation Imitation	Bryson, S. E., McDermott, C., Rombough, V., Brian, J., & Zwaigenbaum, L. (2000). *The autism observation scale for infants* [Unpublished Scale]. Toronto, ON.

Autism Screening Instrument for Educational Planning (ASIEP-3)** Krug, Arick, Almond (2008)	S	2–14	Test consists of five components (one subtest is administered to a parent/teacher while the remaining four subtests are administered to the individual). Choice of subtests depends on the results from the Autism Behavior Checklist and the purpose of the assessment Yields standard scores and percentile ranks	Varies	Autism Behavior Checklist Sample of vocal behavior Interaction assessment Educational assessment Prognosis of learning rate	Pro-Ed http://bit.ly/1sqJMma

Name of Tool and Author	Screening / Diagnosis	Age Range (in years except where noted)	Method of Administration/ Format	Approx. Time to Administer	Subscales	Availability
Autism-Spectrum Quotient (AQ)-Adolescent version Baron-Cohen, Hoekstra, Knickmeyer, & Wheelwright (2006)	S	9.8–15.4	Parent report questionnaire 50 items, from "definitely agree" to "definitely disagree" Yields cutoff scores	Approx. 20 min.	Five subdomains: - Social skills - Attention switching - Attention to detail -Communication - Imagination	Autism Research Centre http://bit.ly/1y9p5H9
Autism-Spectrum Quotient (AQ)-Child version, Auyeung, Baron-Cohen, Wheelwright, & Allison (2008)	S	4–11	Parent report questionnaire 50 items, from "definitely agree" to "definitely disagree" Yields cutoff scores	Approx. 20 min.	Five subdomains: - Social skills - Attention switching - Attention to detail -Communication - Imagination	Autism Research Centre http://bit.ly/1y9p5H9
Checklist for Autism Spectrum Disorder (CASD; Mayes, 2012).		1–16	Thirty items scored by clinician based on semi-structured interview with the parent, information from teacher or other care provider, observations of child, and records. Symptoms are scored based on a lifetime occurrence.	15 minutes	Five categories include: Problems with social interaction Perseveration Somatosensory disturbance Atypical communication and development Mood disturbance Problems with attention and safety	Stoelting http://bit.ly/1kL6ReB

Name of Tool and Author	Screening / Diagnosis	Age Range (in years except where noted)	Method of Administration/ Format	Approx. Time to Administer	Subscales	Availability
Checklist for Autism in Toddlers (CHAT)** Baron-Cohen et al. (1992, 1996)	S	1.5	A screening tool administered through parent interview and observation 14 items (9 items asked to the parents and 5 observation items administered by the physician) 5 key items are used to identify risk of developing autism: pretend play, protodeclarative pointing, following a point, pretending, producing a point Yields cutoff scores. Failure on all 5 key items suggests high risk of developing autism while failure on two specific items suggests a "medium risk" Children who fail the initial screening should be screened again after one month. Those who fail the second screening should be referred for formal testing	5–10 min.	Joint attention Pretend play	Autism Research Centre http://bit.ly/1y9p5H9
Childhood Asperger's Syndrome Test (CAST) (Scott, Baron-Cohen, Bolton, & Brayne, 2002)	S	4–11	Parent questionnaire 37 yes/no items Yields cutoff score	Approx. 20 min.	N/A	Autism Research Centre http://bit.ly/1y9p5H9

Childhood Autism Rating Scale (2nd ed.; CARS-2) Schopler, Van Bourgondien, Wellman, & Love (2010).	D	CARS2-ST 2 years to < 6 and those with communication difficulties or below average estimated IQs CARS2-HF 6+ years for verbally fluent individuals with IQ scores over 80	Two 15 items rating scales completed by clinician on a 7-point scale based on observation, parent report, and other records Questionnaire for Parents or Caregivers (CARS2-QPC), for collecting information for use in making CARS2ST and CARS2-HF. Yields cutoff scores, standard scores, and percentiles.	5-10 min. to rate items (after gathering the information needed)	Relating to People Imitation (ST); Social-Emotional Understanding (HF) Body Use Object Use (ST); Object Use in Play (HF) Adaptation to Change (ST); Adaptation to Change/Restricted Interests (HF) Visual Response Listening Response Taste, Smell, & Touch Response & Use Fear or Nervousness (ST); Fear or Anxiety (HF) Verbal Communication Activity Level (ST); Thinking/Cognitive Integration Skills (HF) Level & Consistency of Intellectual Response General Impressions	Western Psychological Services http://bit.ly/1kp6YvG

Name of Tool and Author	Screening/ Diagnosis	Age Range (in years except where noted)	Method of Administration/Format	Approx. Time to Administer	Subscales	Availability
Developmental Behavior Checklist-Autism Screening Algorithm (DBC-ASA) Brereton, Tonge, Mackinnon, & Einfeld (2002)	S	4–18	The DBC-ASA is a subset of items derived from the DBC-P (Developmental Checklist-Parent/primary caregiver report) Yields cutoff score	5–10 min.	N/A	Monash University http://bit.ly/1kL72GD
Developmental Checklist-Early Screen (DBC-ES) Gray, K. M., & Tonge, B. J. (2005)	S	1.5–4	The DBC-ES is a subset of items derived from the DBC-P (Developmental Checklist–Parent/primary caregiver report) Yields cutoff score	5–10 min.	N/A	Monash University http://bit.ly/1kL72GD

Name of Tool and Author	Screening/ Diagnosis	Age Range (in years except where noted)	Method of Administration/Format	Approx. Time to Administer	Subscales	Availability
Early Screening of Autistic Traits (ESAT)** Swinkels, Dietz, van Daalen, Kerkhof, van Engeland, & Buitelaar (2006)	S	1	14-item screening checklist for parents/caregivers Administered by health practitioner Yes/no responses Yields cutoff score	10–15 min.	Pretend play Joint attention Interest in others Eye contact Verbal and nonverbal communication Stereotypes Preoccupations Reaction to sensory stimuli Emotional reaction Social interaction	Swinkels, S. H., Dietz, C., van Daalen, E., Kerkhof, I. H., van Engeland, H., & Buitelaar, J. K. (2006). Screening for autistic spectrum in children aged 14 to 15 months. I: The development of the Early Screening of Autistic Traits Questionnaire (ESAT). Journal of Autism and Developmental Disorders, 36(6), 723-732.
*Gilliam Asperger's Disorder Scale (GADS) Gilliam (2001)	S	322	32-item parent/caregiver, teacher questionnaire Includes a parent interview form to gather information about language and cognitive development, self-help skills, adaptive behavior, and curiosity Yields standard scores and percentiles	5–10 min.	Social Interaction Restricted Patterns Cognitive Patterns Pragmatic Skills	Pro-Ed http://bit.ly/1kL77Kw

*Gilliam Autism Rating Scale-Third Edition (GARS-3) Gilliam (2013)	D	3–22	56 items: 6 subscales Items are based on the DSM-5 diagnostic criteria. Yields standard scores, percentile ranks. severity level, & probability of Autism.	5–10 min.	Restrictive, Repetitive Behaviours; Social Interaction; Social Communication; Emotional Responses; Cognitive Style; and Maladaptive Speech	Pro-Ed http://bit.ly/1nvXFFf
Krug Asperger's Disorder Index (KADI)-Elementary form/ Secondary form Krug & Arick (2003)	S	6–11 and 12–21	32-item parent/caregiver, teacher questionnaire Respondents first complete the prescreening scale Additional items are completed based on the results of this scale Yields standard scores and percentiles	15–20 min.	N/A	Pro-Ed http://bit.ly/1pEbV35
Modified Checklist for Autism in Toddlers, Revised with Follow-Up (M-CHAT R/F) Robbins, Fein, & Barton (2009)	S	1.5–2.5	A two-step autism screening tool 1) 20-item yes/no parent/caregiver questionnaire - Yields Low, Medium, or High Risk Classifications 2) 20-item Follow-up questionnaire - given for a child found to be at medium risk to gather further information for classification into High Risk or Low Risk categories.	10–15 min.	N/A	Authors http://bit.ly/1kp74n8

Name of Tool and Author	Screening/ Diagnosis	Age Range (in years except where noted)	Method of Administration/ Format	Approx. Time to Administer	Subscales	Availability
*Monteiro Interview Guidelines for Diagnosing Asperger's Syndrome (MIGDAS)** Monteiro (2008)	D	School-aged children and teens, as well as verbal pre-schoolers	The MIGDAS provides guidelines for conducting the parent interview, teacher interview, and student diagnostic interview. The MIGDAS consists of three parts: Pre-Interview Checklist is a yes/no questionnaire for professionals to complete Parent and Teacher Interview – semi-structured interview Student Diagnostic Interview – provides prompts for the evaluators and guidelines for observations Yields qualitative descriptions in each of these areas: Language and communication, social relationships and emotional responses, and sensory use and interests	Pre-Interview Checklist: 15–30 min. Parent Interview: 60–90 min. Teacher Interview: 30–45 min. Student Diagnostic Interview: 45–60 min.	Pre-Interview Checklist Cognitive Level Academic Achievement Language and Communication History Preoccupations and Interests Organizational Skills Physical Coordination Anxiety Level Affective Vocabulary Social Skills Sensory Issues Previous and Current Diagnoses	Western Psychological Services http://bit.ly/1pZbMVi
Pervasive Developmental Disorders Screening Test, Second Edition (PDDST-II) Siegel (2004)	S	1–4	Parent/caregiver questionnaire Stage 1-Primary Care Screener (Stage 1-PCS), 22 items Stage 2-Developmental Clinic Screener (Stage 2-DCS), 14 items Stage 3-Autism Clinic Severity Screener (Stage 3-ACSS), 12 items 41 supplemental items Yields cutoff scores	15 min.	N/A	Pearson http://bit.ly/1vfEOIu

Name of Tool and Author	Screening/ Diagnosis	Age Range (in years except where noted)	Method of Administration/ Format	Approx. Time to Administer	Subscales	Availability
*Social Communication Questionnaire (SCQ) Rutter, Bailey, Lord, & Berument (2003) [formerly the Autism Screening Questionnaire (ASQ)]	S	Over 4	40-item parent questionnaire Additional Lifetime Form that examines developmental history Yields total score with cutoff points	10–15 min.	Reciprocal Social Interaction Language & Communication Stereotyped Patterns of Behavior	Western Psychological Services http://bit.ly/1mpzWXU
Social Responsiveness Scale, Second Edition (SRS-2) Constantino & Gruber (2012)	S/D	2.5–18	4 forms with 65-items each parent/caregiver, teacher rating scale Yields *T*-scores for a total (overall score), and five treatment subscales 2 subscales are designed to be DSM-5 compatible	15–20 min.	Social Awareness Social Cognition Social Communication Social Motivation Restricted Interests and Repetitive Behaviors	Western Psychological Services http://bit.ly/V4F8Jh
Screening Tool for Autism in Two-Year-Olds (STAT)** Stone, Coonrod, & Ousley (2000)	S	2–3	Interactive play-based Yields scores on four domains	20 min.	Play Motor imitation Requesting Directing attention	Vanderbilt Kennedy Center http://bit.ly/1vfF1v7

**Instrument includes information related to developmental history.*
***Instrument requires special training to administer.*

Research on Screening and Assessment Instruments

The following table summarizes the research on autism screening and assessment tools reviewed in this section.

Asperger's Syndrome Diagnostic Scale (ASDS)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome *r* = correlation
Boggs, Gross, & Gohm (2006)	5–17	76	Divergent and convergent validity Discriminative validity	Weak correlation between ASQ and AS (*r* = 0.23); AU group *r* = 0.65, Intellectually Gifted *r* = 0.49, No Ruling group *r* = 0.51; Prediction accuracy rate: 93.2% for AS and Non-AS, 72.7% for AS and AU, 87.9% for AS and AU when all three measures were used; ASQ and SSRS scores significantly highly inversely related (-0.76); ASQ is able to discriminate between clinical and non-clinical groups: *t*-test = -17.41

Autism Behavior Checklist (ABC)

Author (Year)	Age Range (in years except where noted)	Sample Size	Topic Addressed	Outcome *r* = correlation
Eaves & Williams (2006)	Mean age = 101.32 mos.	198	Reliability and construct validity	Alpha coefficients: Reliability for Total Score – adequate for screening: Krug, Arick, & Almond (1993): Total Score r = 0.89; Miranda-Linné & Melin (2002) scores: Total Score r = 0.86 Reliability for scales – not reliable: Krug, Arick, & Almond (1993): Sensory r = 0.59, Relating r = 0.75, Body & Object Use r = 0.76, Language r = 0.60, Social & Self-Help r = 0.57; Miranda-Linné & Melin (2002): Nonresponsive Behavior r = 0.81, Infant-like Behavior r = 0.68, Aggressive Behavior r = 0.66, Stereotypical Behavior r = 0.63, Echolalic Speech r = 0.74 Alternate factors identified

Eaves, Campbell, & Chambers (2006)	Mean age Autistic – 96.81 mos. Nonautistic – 126.09 months	107	Criterion-related and construct validity	Validity between ABC and PDDRS (partial coefficients) Total = 8.80; Sensitivity of ABC = 77% Specificity of ABC = 91% Overall Classification Accuracy = 80% (two x two matrix); When compared with PDDRS classifications, overall agreement = 85% with phi coefficient for nominal classifications = 0.68
Rellini, Tortolani, Trillo, Carbone, & Montecchi (2004)	1.5–11	65	Criterion validity	Sensitivity = 54% False negatives = 46%
Miranda-Linné & Melin (2002)	5–22	383	Factor analysis	No data reported for the five factors

AUTISM DIAGNOSTIC INTERVIEW-REVISED (ADI-R)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Lecavalier, Aman, Scahill, McDougle, McCracken, et al. (2006)	5-17	226	Validity	Internal consistency (coefficient alpha) of domain scores = 0.54-0.84 Convergent validity (Spearman-ranked correlation coefficients) – Social and total ADI-R had highest correlations to other instruments, range = -0.29 to 0.35, depending on scale and domain
Risi, Lord, Gotham, Corsello, Chrysler, et al. (2006)	1.5-14	1,297	Diagnostic sensitivity and specificity	Strict autism criteria used in combination with ADOS – 80% or higher for U.S. sample, 75% or higher for Canadian sample; lower for single use and use for other PDDs
Saemundsen, Magnússon, Smári, & Sigurdardóttir (2003)	2–9.5	54	Concurrent validity	ADI-R definition for autism used – 66.7% with CARS
Wiggins & Robins (2008)	1.5–3	142	Concurrent validity	Agreement improved with removal of Behavioral Domain of ADI-R (percent agreement with other measures): ADOS: AU class = 0.790, non-AU class = 0.701 CARS: AU class = 0.708 , non-AU class +0.753
LeCouter, Haden, Hammal, & McConachie (2008)	2–4	101	Concurrent validity	Agreement with ADOS: AU Social Interaction = 78% , AU Communication = 74%; Above/below AU cutoff = 81%, Above/below spectrum cutoff = 78%
Ventola, Kleinman, Pandey, Barton, Allen, Green, Robins, & Fein (2006)	1.5–2.5	45	Concurrent validity	Cohen's kappa: ADOS and clinical judgment = 0.593 ADOS and CARS = 0.619 CARS and clinical judgment = 0.691 ADI-R and ADOS = 0.066 ADI-R and CARS = 0.095 ADI-R and clinical judgment = 0.153

Constantino, Davis, Todd, Schindler, Gross, et al. (2003)	AU Group: mean age= 8.0 Asperger PDD-NOS: mean age=11.4 Non-PDD– mean age=13.2	61	Concurrent validity	Pearson's coefficient correlation: SRS and ADI-R or DSM criteria = 0.7
Mazefsky & Oswald (2006)	1.75–8	78	Discriminative validity	73% agreement with team diagnoses; improved to 77% with team diagnoses when PDD-NOS and ASP removed
Mildenberger, Sitter, Noterdaeme, & Amorosa (2001)	Mean age of 9	Group 1 – 16 children Group 2 – 11 children	Discriminative validity	2 of 27 subjects were misclassified: one subject with infantile autism did not meet cutoff scores on all three dimensions, one subject with severe receptive language disorder was classified as autistic on all three dimensions
Gray, Tonge, & Sweeney (2008)	1.5–4.5	209	Discriminative validity	ADI-R and AU = 0.46 ADOS and AU = 0.73 ADSO and AU = 0.62 ADI-R and ADOS = 0.35 (Cohen's kappa)
Frazier, Youngstrom, Kubu, Sinclair, & Rezai (2008)			Factor analysis	Mixed; subscales need revision
Moss, Magiati, Charman, & Howlin (2008)	Time 1: 2.3–4.5 Time 2: 9.1–12.1	35	Test-retest reliability	80% for all three domains; Pearson correlation = 0.59
Cicchetti, Lord, Koenig, Klin, & Volkmar (2008)	3.5	1	Interrater reliability	94-96% with weighted kappas between 0.80 and 0.88
deBildt, Sytema, Ketelaars, Kraijer, Mulder, et al. (2004)	5–20	184	Criterion validity and reliability	Sensitivity: PDD: ADOS-G = .874 PDD: ADI-R = .716 AD: ADOS-G = .917 AD: ADI-R = .771 Specificity: PDD: ADOS-G = .472 PDD: ADI-R = .787 AD: ADOS-G = .647 AD: ADI-R = .632 Agreement (percentage): Age 5-8 = 83.4 for AD, 81.0 for PDD Age 8+ = 57.8 for AD, 58.5 for PDD Total = 63.6 for AD, 63.6 for PDD

AUTISM DIAGNOSTIC OBSERVATION SCHEDULE (ADOS)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Gray, Tonge, & Sweeney (2008)	1.5–4.5	209	Discriminative validity	ADI-R and AU = 0.46 ADOS and AU = 0.73 ADSO and AU = 0.62 ADI-R and ADOS = 0.35 (Cohen's kappa)
Gotham, Risi, Pickles, & Lord (2007)	1.2–16	1,630	Diagnostic validity	Use of new algorithms: Sensitivity: AU vs. Non-Spectrum = 85-96 Non-AU AU vs. Non-Spectrum = 61-90; Specificity: AU vs. Non-Spectrum = 50-97 Non-AU AU vs. Non-Spectrum = 12-79 (lowest for Module 1 – no words) New algorithms increase specificity 12-31% in classifying Non-AU AU in lower-functioning subjects
Lord, Risi, Lambrecht, Cook, Leventhal, et al. (2000)	Module 1: 1.25–10 Module 2: 2-7 Module 3: 3–20 Module 4: 10–40	54 55 59 45 (223 *t*-total)	Interrater and test-retest reliability and discriminative validity	(Interclass correlations, weighted kappas) Interrater: Social = 0.93 Communication = 0.84 Social Communication = .92 Restricted Repetitive = 0.82 Test-Retest: Social = 0.78 Communication = 0.73 Social Communication = .82 Restricted Repetitive = 0.59 Discriminative Validity: 95% for AU 92% for Non-Spectrum 33% for PDD-NOS as having Non-AU AU (53% of PDD-NOS fell in the AU range); Specificity: AU vs. PDD-NOS and Non-Spectrum = 68-79, AU and PDD-NOS vs Non-Spectrum = 87-94, AU to Non-Spectrum = 93-100, PDD-NOS to Non-Spectrum = 88-94; Sensitivity: AU vs. PDD-NOS and Non-Spectrum = 87-100, AU and PDD-NOS vs. Non-Spectrum = 90-97, AU to Non-Spectrum = 93-100, PDD-NOS to Non-Spectrum = 80-94

deBildt, Sytema, Ketelaars, Kraijer, Molder, et al. (2004)	5–20	184	Criterion validity and reliability	Sensitivity: PDD: ADOS-G = .874 PDD: ADI-R = .716 AD: ADOS-G = .917 AD: ADI-R = .771 Specificity: PDD: ADOS-G = .472 PDD: ADI-R = .787 AD: ADOS-G = .647 AD: ADI-R = .632 Agreement (percentage): Age 5-8 = 83.4 for AD, 81.0 for PDD Age 8+ = 57.8 for AD, 58.5 for PDD Total = 63.6 for AD, 63.6 for PDD
Overton, Fielding, & Garcia (2008)	1.67–16	26	ADOS algorithm scores compared to new algorithm scores	+/- Revised algorithm resulted in better accuracy for more severe group
LeCouter, Haden, Hammal,& McConachie (2008)	2–4	101	Concurrent validity	Agreement with ADOS: AU Social Interaction = 78% , AU Communication= 74%; Above/below AU cutoff = 81%; Above/below spectrum cutoff = 78%
Risi, Lord, Gotham, Corsello, Chrysler, et al. (2006)	1.5–14	1,297	Diagnostic sensitivity and specificity	Strict autism criteria used in combination with ADI-R: 80% or higher for U.S. sample, 75% or higher for Canadian sample; lower for single use and use for other PDDs
Mazefsky & Oswald (2006)	2–8	78	Discriminative validity	77% agreement with team diagnosis

Autism Observation Scale for Infants (AOSI)

Author (Year)	**Age Range (in years)**	**Sample Size**	**Topic Addressed**	**Outcome** **r = correlation**
Bryson, Zwaigenbaum, McDermott, Rombough, & Brian (2008)	.5 1 1.5	32 34 26	Interrater reliability Test-retest reliability	Good to Excellent at 6 (0.74), 12 (0.93), and 18 months (0.94) for total scores; Across ages = 0.92 (unweighted kappas) Acceptable at 12 months (0.61) (intra-class correlations)

AUTISM SPECTRUM QUOTIENT-CHILD VERSION (AQ-CHILD)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome *r* = correlation
Auyeung, Baron-Cohen, Wheelwright, & Allison (2008)	4-9 Mean age 7.58 Mean age 9.31 No age reported No age reported	1,225 control 192 ASD 348 AS/HFA 26 PDD-NOS 4 atypical AU	Discriminative validity Specificity Internal consistency Factor analysis Test-retest reliability	Clinical groups scored significantly higher than typically developing, but not significantly different from each other; significant sex differences in control group, but not in clinical group 95% Cronbach's alpha coefficient = 0.97, subscales = 0.83-0.93 Support for four of five subscales *r* = 0.85

Wakabayashi, Baron-Cohen, Uchiyama, Yoshida, Tojo, et al. (2007)	AS/HFA: mean age of 10.4 PDD-NOS: mean age of 10.10 Controls: mean age of 10.9	81 22 372	Cross-cultural comparison: UK to Japan Reliability Validity	Cronbach's alpha coefficient = 0.84, subscales = 0.7-0.8; AS/HFA and PDD-NOS scored higher than control group (27.083 and 12.189, respectively); AS/HFA scored higher (t = 2.688) than PDD-NOS; males scored higher than females in control group (t = 2.209), but no difference in clinical group (Group 1: t = 1.585; Group 2: t = 1.791); results similar to UK data, although mean AQ score in Japan was lower

CHECKLIST FOR AUTISM SPECTRUM DISORDER (CASD)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Mayes, Black, & Tierney (2013).	1–16	125	Validity	Sensitivity: Low Functioning (DSM-5 = 98%; DSM-IV = 100%). PDDNOS (DSM-5 27% identified as ASD). Specificity: 100% for DSM-5 and 97% for DSM-IV
Murray, Mayes, & Smith. (2011).	12–17	29	Validity	Agreement between the CASD and ADI-R was 93.1%. (kappa = .70).
Mayes SD, Calhoun SL, Murray MJ, et al. (2009).	1–6	520	Validity Reliability	Validity: The CASD differentiated students with autism from those ADHD with 99.5% accuracy and students with autism from typically developing students with 100% accuracy. High diagnostic agreement was found with existing measures including the CARS (98%) and GADS (94%). Reliability: Interrater reliability was high (r = .72, p <.0001). Clinician and parent diagnostic findings were similar to one another (90% agreement).

CHECKLIST FOR AUTISM IN TODDLERS (CHAT)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Scambler, Hepburn, & Rogers (2006)	Time 1: 2–3.5 Time 2: 4–5 Time 1: 2–3.75 Time 2: 4–6	AU group: 19 Develop-mental disabilities group: 11	Test-retest reliability	Original CHAT authors' criteria = 83% Denver modification of CHAT criteria = 93%

Scambler, Rogers, & Wehner (2001)	2–3	44	Discriminative validity	Original CHAT authors' criteria: Sensitivity = 65% Specificity = 100% Slightly altered criteria: Sensitivity = 85% Specificity = 100%
Baird, Charman, Baron-Cohen, Cox, Swettenham, et al. (2000)	1.5 3 5	16,235	Discriminative validity	Sensitivity = 38% Specificity = 98% PPV: High risk = 26.3%, All PDDs = 28.9%

CHILDHOOD ASPERGER'S SYNDROME TEST (CAST)

Author (Year)	**Age Range (in years)**	**Sample Size**	**Topic Addressed**	**Outcome**
Scott, Baron-Cohen, Bolton, & Brayne (2002)	4–11	Pilot – 13 with AS; 37 neurotypical Main study – 174	Discriminative validity	Pilot: ANOVA = 150.13; significant difference between clinical sample and controls Main: (cutoff at 15) AS-PPV = 0.82, Specificity = 0.99; AS and AU Spectrum- PPV = 0.64, Specificity = 0.98
Williams, Scott, Stott, Allison, Bolton, Baron-Cohen, & Brayne (2005)	5–11	1,925	Accuracy Validity predictive criterion validity Test-retest reliability	Sensitivity = 100% Specificity = 97% PPV = 50% Scores rarely increase over time, many decrease
Allison, Williams, Scott, Stott, Bolton, Baron-Cohen, & Brayne (2007)	5–9	73	Test-retest reliability	Moderate – 0.67 (Spearman's rho)

CHILDHOOD AUTISM RATING SCALE (CARS)

Author (Year)	Age (in years except where noted)	Sample Size	Topic Addressed	Outcome *r* = correlation
Rellini, Tortolani, Trillo, Carbone, & Montecchi (2004)	1.5–11	65	Criterion validity	Sensitivity for AU = 100% False negatives = 0
DiLalla & Rogers (1994)	2–6	69	Factor analysis	Yields three factors: social impairment, negative emotionality and distorted sensory response
Pilowsky, Yirmiya, Shulman, & Dover (1998)	1.5–3.4	83	Concurrent validity	Agreement with ADI-R = 85.7%
Saemundsen, Magnússon, Smári, & Sigurdardóttir (2003)	1.8–9.5	54	Concurrent validity	Agreement with ADI-R = 66.7% when ADI-R AU definition is used
Magyar & Pandolfi (2007)	1.5–6.5	164	Factor analysis	Four factors identified: social communication, social interaction, stereotypes and sensory abnormalities, emotional regulation
Perry, Condillac, Freeman, Dunn-Geier, & Belair (2005)	2–6	274	Discriminative validity	88% agreement between CARS and clinical diagnosis; Sensitivity = 0.94; Specificity = 0.85; CARS negatively correlated with cognitive (*r* = -0.67) and adaptive (*r* = -0.69); ANOVA = 157.97; AU group mean> PDD-NOS>MR> Developmental delay and other groups
Stella, Mundy, & Tuchman (1999)	AU mean of 71.32 months; PDD-NOS mean of 50.54	90	Factor analysis	Five-factor structure: disturbances in social orienting, communication and behavioral flexibility, emotional reactivity, consistency of cognitive performance and response to environment, odd sensory experiences

Developmental Behavior Checklist-Autism Screening Algorithm (DBC-ASA)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome *r* = correlation
Brereton, Tonge, Mackinnon, & Einfeld (2002)	4–18	180	Discriminative validity	Sensitivity = 0.86 Specificity = 0.69
Witwer & Lecavalier (2007)	8.3–10.2	49	Discriminative validity Concurrent validity	Sensitivity = 0.94 Specificity = 0.46 (decreased when behavior problems present) *r* = 0.53

Developmental Checklist—Early Screen (DBC-ES)

Author (Year)	Age Range (in months)	Sample Size	Topic Addressed	Outcome
Gray, Tonge, Sweeney, & Einfeld, S. (2008)	20–51 months	207	Reliability Validity Internal consistency Interrater reliability Sensitivity and Specificity	Inter-rater reliability: between parents (interclass correlation of 0.772 $p<0.01$) Validity: Total score correlated with ADI-R Social domain ($r = 0.47$, $p < 0.01$), Verbal Communication domain ($r = 0.36$, $p<0.01$), Non-verbal Communication domain ($r=0.37$, $p<0.01$), and Restricted and Repetitive domain ($r= 0.53$, $p<0.01$) Internal consistency: Cronbach's ☒=0.87 Interrater reliability: $r=0.772$ ($p<0.01$) Sensitivity and Specificity: Using cut-off score of $\geq$ 11 sensitivity = 0.83 (95% CI: 0.76-0.89) and specificity of 0.48 (95% CI: 0.35-0.60)

Gilliam Asperger's Disorder Scale—Second Edition (GADS)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Mayes, et al. (2009)	5.5–7.6 (mean age)	520	Criterion-related validity Inter-rater reliability	Criterion-related validity: Accuracy rates based on clinician scores were: 88% of low functioning scored in the Asperger's Disorder range; 92% of high functioning accurately identified; 4% of children with ADHD were misclassified with autism. Accuracy rates based on parent scores were: 72% low functioning scored in the Asperger's Disorder range; 74% high functioning; 19% of children with ADHD were misclassified. Inter-rater reliability: parents and clinician ratings did not differ significantly ($r = 0.53$, $p < 0.0001$).

Gilliam Autism Rating Scale-Second Edition (GARS-2)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Mazefsky & Oswald (2006)	2-8	78	Discriminative validity	Mean developmental delay score and mean AU Quotient did not significantly differ

Modified Checklist for Autism in Toddlers, Revised With Follow-Up (MCHAT-R/F)

Author (Year)	Age Range (in months)	Sample Size	Topic Addressed	Outcome
Robins, Casagrande, Barton, Chen, Dumont-Mathieu & Fein (2014)	16–30.95 months	15,612	Internal consistency Sensitivity	MCHAT-R Internal consistency: Chronbach's [illegible]= 0.63 MCHAT-R-F Internal consistency: Chronbach's [illegible]= 0.79 MCHAT-R Sensitivity: .911 MCHAT-R Specificity .955 MCHAT-R/F (cutoff 2) Sensitivity: .94 MCHAT-R/F (cutoff 2) Specificity .83

Screening Tool for Autism in Two-Years-Olds (STAT)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Stone, Coonrod, Turner, & Pozdol (2004)	2–3	52	Discriminative validity	Cutoff of 2: Sensitivity = 0.92 Specificity = 0.85 PPV = 0.86 NPV = 0.92
			Concurrent validity	Cohen's kappa = 0.95
			Interrater reliability	Inter-observer agreement = 1.00 (Cohen's kappa); Test-retest = 0.90 (Cohen's kappa)

Social Communication Questionnaire (SCQ)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Oosterling, Rommelse, deJonge, Van der Gag, Swinkels, Roos, Visser, & Buitelaar (2010)	20–40 (months)	208	Sensitivity Specificity	The SCQ was not satisfactory at accurately identifying high-risk toddlers and resulted in a number of false-positives for toddlers with symptoms of ASD. Cutoff $\geq$ 11 Sensitivity = .92; Specificity = .26 Cutoff $\geq$ 12 Sensitivity = .88; Specificity = .35 Cutoff $\geq$ 15 Sensitivity = .76; Specificity = .58 Cutoff $\geq$ 22 Sensitivity = .29; Specificity = .86
Snow & Lecavalier (2008)	18–70 (months)	82	Sensitivity Specificity Internal consistency	Cutoff of 13: Sensitivity = 0.85; Specificity = 0.40 Cutoff of 15: Sensitivity = 0.70 ; Specificity = 0.52 Internal consistency: Total Score = 0.81; reciprocal social interaction = 0.70; communication = 0.47; restricted, repetitive and stereotyped patterns of behavior = 0.76.
Allen, Silove, Williams, & Hutchins (2007)	2–6	81	Discriminative validity	Cutoff of 11: Good for screening in 3- to 5-year-olds; Sensitivity = 100% Specificity = 62%; poor in 2- to 3-year-olds Sensitivity = 93% Specificity = 58%
Chandler, Charman, Baird, Simonoff, Loucas, et al. (2007)	9.8–14.5	255	Discriminative validity	AU and non-AU: Sensitivity = 0.88 Specificity = 0.72 AU and non-AU: Sensitivity = 0.90 Specificity = 0.86

Wiggins, Bakeman, Adamson, & Robins (2007)	1.5–3.75	37	Discriminative validity	Cutoff 15: Sensitivity = 0.47 Specificity = 0.89 Cutoff 11: Sensitivity = 0.89 Specificity = 0.89
Eaves, Wingert, Ho, & Mickelson (2006)	5 (mean)	151	Discriminative validity	Sensitivity = 0.71 Specificity: Preschool clinic = 0.62 AU clinic = 0.53
Witwer & Lecavalier (2007)	8.3 (mean)	49	Discriminative validity Concurrent validity	Sensitivity = 0.92 Specificity = 0.62 *r* = 53

Social Responsiveness Scale (SRS)

Author (Year)	Age Range (in years)	Sample Size	Topic Addressed	Outcome
Constantino, Davis, Todd, Schindler, Gross, et al. (2003)	AU Group: mean age = 8.0 Asperger PDD-NOS: mean age = 11.4 Non-PDD: mean age = 13.2	61	Discriminative validity Interrater reliability	Pearson's coefficient correlation: SRS and ADI-R or DSM criteria = 0.7 Teacher and father = 0.75; Mother = 0.91

Misconceptions

Myth	Reality
Autism Spectrum Disorder is a medical diagnosis.	Currently no medical tests can be used to diagnose autism spectrum disorder. The disorder is identified behaviorally.
If a student can pass the state exam and make passing grades, he/she does not have an educational need for special education.	Educational need extends beyond academics and includes communication, social, emotional, and adaptive skills.
Autism Spectrum Disorder, Level 1 means that an individual is high functioning and, therefore, does not require special education support and services (i.e., specialized instruction).	Individuals with Autism Spectrum Disorder, Level 1 (formerly referred to as Asperger's Disorder) have a pervasive developmental disorder. It is impossible to have a "pervasive" disorder and not be significantly impacted. While many of these individuals are highly intelligent and articulate, they do have significant impairments and most often require supports and services in order to make educational progress.

REFERENCES

Allen, C. W., Silove, N., Williams, K., & Hutchins, P. (2007). Validity of the Social Communication Questionnaire in assessing risk of autism in preschool children with developmental problems. *Journal of Autism and Developmental Disorders, 37*, 1272-1278.

Allison, C., Williams, J., Scott, F., Stott, C., Bolton, P., Baron-Cohen, S., & Brayne, C. (2007). The Childhood Asperger's Syndrome Test (CAST): Test-retest reliability in a high scoring sample. *Autism, 11*(2), 173-185.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: American Psychiatric Publishing.

Autism Speaks. (2012, March 29). Autism Prevalence Rises to 1 in 88. Autism Speaks. Retrieved April 21, 2014, from http://www.autismspeaks.org/science/science-news/autism-prevalence-rises-1-88

Auyeung, B., Baron-Cohen, S., Wheelwright, S., & Allison, C. (2008). The autism Spectrum Quotient: Children's Version (AQ-Child). *Journal of Autism and Developmental Disorders*, *38*, 1230-1240.

Baird, G., Charman, T., Baron-Cohen, S., Cox, A., Swettenham, J., Wheelwright, S., & Drew, A. (2000). A screening instrument for autism at 18 months of age: A 6-year follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*(6), 694-702.

Baron-Cohen, S., Allen, J., & Gillberg, C. (1992). Can autism be detected at 18 months? The needle, the haystack, and the CHAT. *British Journal of Psychiatry, 161*, 839-843.

Baron-Cohen, S., Cox, A., Baird, G., Swettenham, J., Nightingale, N., Morgan, K., et al. (1996). Psychological markers in the detection of autism in infancy in a large population. *British Journal of Psychiatry, 168*(2), 158-163.

Baron-Cohen, S., Hoekstra, R. A., Knickmeyer, R., & Wheelwright, S. (2006). The autism-spectrum quotient (AQ)-Adolescent version. *Journal of Autism and Developmental Disorders, 36*(3), 343-350.

Boggs, K. M., Gross, A. M., & Gohm, C. L. (2006). Validity of the Asperger Syndrome Diagnostic Scale. *Journal of Developmental and Physical Disabilities, 18*(2), 163-182.

Brereton, A. V., Tonge, B. J., Mackinnon, A. J., & Einfeld, S. L. (2002). Screening young people for autism using the Developmental Behaviour Checklist. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*(11), 1-7.

Bryson, S. E., McDermott, C., Rombough, V., Brian, J., & Zwaigenbaum, L. (2000). *The Autism Observation Scale for Infants* [Unpublished Scale]. Toronto, ON.

Bryson, S. E., Zwaigenbaum, L., McDermott, C., Rombough, V., & Brian, J. (2008). The Autism Observation Scale for Infants: Scale development and reliability data. *Journal of Autism and Developmental Disorders, 38*, 731-738.

Center for Disease Control and Prevention (2014). Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years – Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2010. *MMWR Surveillance Summaries MMWR 2014;63* (No. 2-1-21).

Chandler, S., Charman, T., Baird, G., Simonoff, E., Loucas, T., et al. (2007). Validation of the Social Communication Questionnaire in a population cohort of children with autism spectrum disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 46*(10), 1324-1332.

Charak, D. A., & Stella, J. L. (2001-2002). Screening and diagnostic instruments for identification of autism spectrum disorders in children, adolescents, and young adults: A selective review. *Assessment for Effective Intervention, 27*(1-2), 5-17.

Charman, T., & Baird, G. (2002). Practitioner review: Diagnosis of autism spectrum disorder in 2- and 3-year-old children. *Journal of Child Psychology and Psychiatry, 43*(3), 289-305.

Charman, T., Taylor, E., Drew, A., Cockerill, H., Brown, J. A., & Baird, G. (2005). Outcome at 7 years of children diagnosed with autism at age 2: Predictive validity of assessments conducted at 2 and 3 years of age and pattern of symptom change over time. *Journal of Child Psychology and Psychiatry, 46*, 500-513.

Cicchetti, D. V., Lord, C., Koenig, K., Klin, A., & Volkmar, F. R. (2008). Reliability of the ADI-R: Multiple examiners evaluate a single case. *Journal of Autism and Developmental Disorders, 38*(4), 764-770.

Constantino, J. N., Davis, S. A., Todd, R. D., Schindler, M. K., & Gross, M. M., et al. (2003). Validation of a brief quantitative measure of autistic traits: comparison of the Social Responsiveness Scale with the Autism Diagnostic Interview-Revised. *Journal of Autism and Developmental Disorders, 33*(4), 427-433.

Constantino, J. N., & Gruber, C. P. (2012). *Social Responsiveness Scale, Second Edition*. Los Angeles: Western Psychological Services.

Dawson, G., & Osterling, J. (1997). Early intervention in autism: The effectiveness of early intervention. In M. J. Guralnick (Ed.), *The effectiveness of early intervention* (pp. 307-326). Baltimore: Brookes Publishing Company.

deBildt, A., Sytema, S., Ketelaars, C., Kraijer, D., Mulder, E., Volkmar, F., & Minderaa, R. (2004). Interrelationship between Autism Diagnostic Observation Schedule-Generic (ADOS-G), Autism Diagnostic Interview-Revised (ADI-R), and the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR) Classification in children and adolescents with mental retardation. *Journal of Autism and Developmental Disorders, 34*(2), 129-137.

DiLalla, D. L., & Rogers, S. J. (1994). Domains of the Childhood Autism Rating Scale: Relevance for diagnosis and treatment. *Journal of Autism and Developmental Disorders, 24*(2), 115-128.

DiLavore, P., Lord, C., & Rutter, M. (1995). Pre-Linguistic Autism Diagnostic Observation Schedule (PL-ADOS). *Journal of Autism and Developmental Disorders, 25*, 355-379.

Eaves, R. C., Campbell, H. A., & Chambers, D. (2006). Criterion-related and construct validity of the pervasive developmental disorders rating scale and the autism behavior checklist. *Psychology in the Schools, 37*(4), 311-321.

Eaves, L. C., & Ho, H. H. (2004). The very early identification of autism: Outcome to age 4 1/2-5. *Journal of Autism and Developmental Disorders, 34*, 367-378.

Eaves, R. C., & Williams, T. O. (2006). The reliability and construct validity for the autism behavior checklist. *Psychology in the Schools, 43*(2), 129-142.

Eaves, L. C., Wingert, H., Ho, H. H., & Mickelson, E. (2006). Screening for autism spectrum disorders with the Social Communication Questionnaire. *Journal of Developmental and Behavioral Pediatrics, 27*(2), Supplement 2, S95-S103.

Ehlers, S., Gillberg, C., & Wing, L. (1999) A screening questionnaire for Asperger Syndrome and other high-functioning autism spectrum disorders in school age children. *Journal of Autism and Developmental Disorders, 29,* 129-141.

Eikeseth, S., Smith, T., Jahr, K., & Eldevik, S. (2007). Outcome for children with autism who began intensive behavioral treatment between ages 4 and 7: A comparison controlled study. *Behavior Modification, 31*(3), 264-278.

Filipek, P. A., Accardo, P. L., Baranek, G. T., Cook, E. H., Dawson, G., Gordon, B. et al. (1999). The screening and diagnosis of autistic spectrum disorders. *Journal of Autism and Developmental Disorders, 29*, 439-484.

Frazier, T. W., Youngstrom, E. A., Kubu, C. S., Sinclair, L., & Rezai, A. (2008). Exploratory and confirmatory factor analysis of the Autism Diagnostic Interview-Revised. *Journal of Autism and Developmental Disorders, 38*(3), 474-480.

Freeman, B. J., Cronin, P., & Candela, P. (2002). Asperger syndrome or autistic disorder? The diagnostic dilemma. *Focus on Autism and Other Developmental Disabilities, 17*, 145-151.

Gilliam, J. E. (2001). *Gilliam Asperger's Disorder Scale*. Austin, TX: Pro-Ed.

Gilliam, J. E. (2013). *Gilliam Autism Rating Scale-Third Edition*. Austin, TX: Pro-Ed.

Gotham, K., Risi, S., Pickles, A., & Lord, C. (2007). The Autism Diagnostic Observation Schedule: Revised algorithms for improved diagnostic validity. *Journal of Autism and Developmental Disorders, 37*, 613-627.

Gray, K. M., & Tonge, B. J. (2005). Screening for autism in infants and preschool children with developmental delay. *Australian and New Zealand Journal of Psychiatry, 39*(5), 378-386.

Gray, K. M., Tonge, B. J., & Sweeney, D. J. (2008). Using the Autism Diagnostic Interview-Revised and the Autism Diagnostic Observation Schedule with young children with developmental delay: Evaluating diagnostic validity. *Journal of Autism and Developmental Disorders, 38*, 657-667.

Gray, K. M., Tonge, B. J., Sweeney, D. J, & Einfeld, S.L. (2008). Screening for autism in young children with developmental delay: An evaluation of the Developmental Behaviour Checklist: Early Screen. *Journal of Autism and Developmental Disorders, 38*, 1003-1010.

Grossman, B.G., Aspy, R & Miles, B.S. (2009). *Interdisciplinary evaluation of autism spectrum disorders: From diagnosis through program planning.* Shawnee Mission, KS: Autism Asperger Publishing Company.

Individuals with Disabilities Education Act (IDEA) of 2004, 34 CF$ 300.101.

Krug, D. A., & Arick, J. (2003). *Krug Asperger's disorder index*. Austin, TX: Pro-Ed.

Krug, D. A., Arick, J., & Almond, P. (1993). *The autism screening instrument for educational planning, 2nd edition, ASIEP-2*. Austin, TX: Pro-Ed.

Krug, D. A., Arick, J., & Almond, P. (2008). *Autism Screening Instrument for Educational Planning-Third Edition*. Austin, TX: Pro-Ed.

Lecavalier, L., Aman, M. G., Scahill, L., McDougle, C. J., McCracken, J. T., Vitiello, B., et al. (2006). Validity of the Autism Diagnostic Interview-Revised. *American Journal on Mental Retardation, 111*(3), 199-215.

LeCouteur, A., Haden, G., Hammal, D., & McConachie, H. (2008). *Journal of Autism and Developmental Disorders, 38*, 362-372.

Leekam, S. R., Libby, S. J., Wing, L., Gould, J., & Taylor, C. (2002). The Diagnostic Interview for Social and Communication Disorders: Algorithms for ICD-10 childhood autism and Wing and Gould autistic spectrum disorder. *Journal of Child Psychology and Psychiatry, 43*(3), 327-342.

Lord, C., Risi, S., DiLavore, P. S., Shulman, C., Thurm, A., & Pickles, A. (2006). Autism from 2 to 9 years of age. *Archives of General Psychiatry, 63*, 694-701.

Lord, C., Risi, S. Lambrecht, L., Cook, E. H., Leventhal, B. L., et al. (2000). The Autism Diagnostic Observation Schedule-Generic: A standard measure of social and communication deficits associated with the spectrum of autism. *Journal of Autism and Developmental Disorders, 30*(3), 205-233.

Lord, C., Rutter, M., DiLavore, P. C., Risi, S., Gotham, K., & Bishop, S. (2012). *Autism diagnostic observation schedule* (2nd ed.). Torrance, CA: Western Psychological Services.

Lord, C., Rutter, M., Goode, S., Heemsbergen, J., Jordan, H., Mawhood, L., & Schopler, E. (1989). Autism Diagnostic Observation Schedule: A standardized observation of communicative and social behavior. *Journal of Autism and Developmental Disorders, 19*, 185-212.

Lord, C., Rutter, M., & LeCouteur, A. (1994). The Autism Diagnostic Interview-Revised: A revised version of a diagnostic interview for caregivers of individuals with possible pervasive developmental disorders. *Journal of Autism and Developmental Disorders, 24*, 659-685.

Magyar, C. I., & Pandolfi, V. (2007). Factor structure evaluation of the Childhood Autism Rating Scale. *Journal of Autism and Developmental Disorders, 37*, 1787-1794.

Mayes, S.D. (2012). *Checklist for Autism Spectrum Disorder.* Chicago: Stoelting.

Mayes, S.D., Black, A., & Tierney, C.D. (2013). DSM-5 under-identifies PDDNOW: Diagnostic agreement between the DSM-5, DSM-IV, and Checklist for Autism Spectrum Disorder. *Research in Autism Spectrum Disorders, 7*, 298-306.

Mayes, S.D., Calhoun, S.L., Murray, M.J., Morrow, J.D., Yurich, K.K.L. Mahr, F. . . Petersen, C. (2009). Comparison of scores on the checklist or autism spectrum disorder, Childhood Autism Rating Scale, and Gilliam Asperger's Disorder Scale for children with low functioning autism, high functioning autism, Asperger's disorder, ADHD, and typical development. *Journal of Autism and Developmental Disorders, 39*, 1682-1693.

Mazefsky, C. A., & Oswald, D.P. (2006). The discriminative ability and diagnostic utility of the ADOS-G, ADI-R, and GARS for children in a clinical setting. *Autism, 10*(6), 533-549.

Mildenberger, K., Sitter, S., Noterdaeme, M., & Amorosa, H. (2001). The use of the ADI-R as a diagnostic tool in the differential diagnosis of children with infantile autism and children with a receptive language disorder. *European Child & Adolescent Psychiatry, 10*, 248-255.

Miranda-Linné, F. M., & Melin, L. (2002). A factor analytic study of the Autism Behavior Checklist. *Journal of Autism and Developmental Disorders, 32*(3), 181-188.

Monteiro, M. (2008). *Monteiro interview guidelines for diagnosing Asperger's Syndrome: A team-based approach*. Los Angeles: Western Psychological Services.

Moss, J., Magiati, I., Charman, T., & Howlin, P. (2008). Stability of the Autism Diagnostic Interview-Revised from pre-school to elementary school age in children with autism spectrum disorders. *Journal of Autism and Developmental Disorders, 38*, 1081-1091.

Murray, M.J., Mayes, S.D., & Smith, L.A. (2011). Brief report: excellent agreement between two brief autism scales (checklist for autism spectrum disorder and social responsiveness scale) completed independently by parents and the autism diagnostic interview-revised. Journal of Autism and Developmental Disabilities 41, 1586–90.

Myles, B. S., Bock, S. J., & Simpson, R. L. (2001). *Asperger Syndrome Diagnostic Scale.* Austin, TX: Pro-Ed.

Oosterling, I., Rommelse, N., de Jonge, M., Van der Gaag, R.J., Swinkels, S., Roos, S., Visser, J., & Buitelaar, J. (2010). How useful is the social communication questionnaire in toddlers at risk of autism spectrum disorder? *Journal of Child Psychology and Psychiatry, 51*(110, 1260-1268.

Overton, T., Fielding, C., & Garcia, D. (2008). Brief report: Exploratory analysis of the ADOS Revised Algorithm: Specificity and predictive value with Hispanic children referred for autism spectrum disorders. *Journal of Autism and Developmental Disorders, 38*, 1166-1169.

Perry, A., Condillac, R. A., Freeman, N. L., Dunn-Geier, J., & Belair, J. (2005). Multi-site study of the Childhood Autism Rating Scale (CARS) in five clinical groups of young children. *Journal of Autism and Developmental Disorders, 35*(5), 625-634.

Pilowsky, T., Yirmiya, N., Shulman, C., & Dover, R. (1998). The Autism Diagnostic Interview-Revised and the Childhood Autism Rating Scale: Differences between diagnostic systems and comparison between genders. *Journal of Autism and Developmental Disorders, 28*(2), 143-151.

Posserud, B., Lundervold, A. J., & Gillberg, C. (2006). Autistic features in a total population of 7-9-year-old children as assessed by the ASSQ (Autism Spectrum Screening Questionnaire). *Journal of Child Psychology and Psychiatry, 47*(2), 167-175.

Posserud, B., Lundervold, A. J., Steijnen, M. C., Verhoeven, S., Stormark, K. M., & Gillberg, C. (2008). Factor analysis of the Autism Spectrum Screening Questionnaire. *Autism, 12*(1), 99-112.

Rellini, E., Tortolani, D., Trillo, S., Carbone, S., & Montecchi, F. (2004). Childhood Autism Rating Scale (CARS) and Autism Behavior Checklist (ABC) correspondence and conflicts with DSM-IV criteria in diagnosis of autism. *Journal of Autism and Developmental Disorders, 34*(6), 703-708.

Risi, S., Lord, C., Gotham, K., Corsello, C., Chrysler, C., Szatmari, P. et al. (2006). Combining information from multiple sources in the diagnosis of autism spectrum disorders. *Journal of the American Academy of Child and Adolescent Psychiatry, 45*(9), 1094-1103.

Robbins, D.L., Casagrande, K., Barton, M., Chen, C.A., Dumont-Mathieu, T., & Fein, D. (2014). Validation of the modified checklist for autism in toddlers, revised with follow-up (M-CHAT-R/F). *Pediatrics, 133*, 37-45.

Robbins, D., Fein, D., & Barton, M. (2009). *Modified checklist for autism, revised with follow-up (M-CHAT-R/F)*. Self-published.

Rutter, M., Bailey, A., Lord, C., & Berument, S. K. (2003). *Social Communication Questionnaire*. Los Angeles: Western Psychological Services.

Saemundsen, E., Magnússon, P., Smári, J., & Sigurdardóttir, S. (2003). Autism Diagnostic Interview-Revised and the Childhood Autism Rating Scale: Convergence and discrepancy in diagnosing autism. *Journal of Autism and Developmental Disorders, 33*(3), 319-328.

Scambler, D. J., Hepburn, S. L., & Rogers, S. J. (2006). A two-year follow-up on risk status identified by the Checklist for Autism in Toddlers. *Developmental and Behavioral Pediatrics, 27*(2), S104-S110.

Scambler, D., Rogers, S. J., & Wehner, E. A. (2001). Can the checklist for autism in toddlers differentiate young children with autism from those with developmental delays? *Journal of the American Academy of Child and Adolescent Psychiatry, 40*(12), 1457-1463.

Schopler, E., Van Bourgondien, M.E., Wellman, G.J., & Love, S.R. (2010). *Childhood Autism Rating Scale* (2nd ed.). Los Angeles, CA: Western Psychological Services. (2010).

Scott, F. J., Baron-Cohen, S., Bolton, P., & Brayne, C. (2002). The CAST (Childhood Asperger Syndrome Test): Preliminary development of a UK screen for mainstream primary-school-age children. *Autism, 6*(1) 9-31.

Siegel, B. (2004). *PDDST-II Pervasive Developmental Disorders Screening Test-II*. San Antonio, TX: Harcourt Assessment.

Snow, A.N., & Lecavalier, L. (2008). Sensitivity and specificity of the modified checklist for autism in toddlers and the social communication questionnaire in preschoolers suspected of having pervasive developmental disorders. *Autism, 12*(6), 627-644.

Stella, J., Mundy, P., & Tuchman, R. (1999). Social and nonsocial factors in the Childhood Autism Rating Scale. *Journal of Autism and Developmental Disorders, 29*(4), 307-317.

Stone, W. L., Coonrod, E. E., & Ousley, O.Y. (2000). Screening tool for autism in two-year-olds (STAT): Development and preliminary data. *Journal of Autism and Developmental Disorders, 30*, 607-612.

Stone, W. L., Coonrod, E. E., Turner, L. M., & Pozdol, S. L. (2004). Psychometric properties of the STAT for early autism screening. *Journal of Autism and Developmental Disorders, 34*(6), 691-701.

Swinkels, S. H., Dietz, C., van Daalen, E., Kerkhof, I. H., van Engeland, H., & Buitelaar, J. K. (2006). Screening for autistic spectrum in children aged 14 to 15 months. I: The development of the Early Screening of Autistic Traits questionnaire (ESAT). *Journal of Autism and Developmental Disorders, 36*(6), 723-732.

Turner, L. M., Stone, W. L., Pozdol, S. L., & Coonrod, E. E. (2006). Follow-up of children with autism spectrum disorders from age 2 to age 9. *Autism, 10*, 257-279.

Ventola, P., Kleinman, J., Pandey, J., Barton, M., Allen, S., Green, J., Robins, D., & Fein, D. (2006). Agreement among four diagnostic instruments for autism spectrum disorders in toddlers. *Journal of Autism and Developmental Disorders, 36*, 839-847.

Wakabayashi, A., Baron-Cohen, S., Uchiyama, T., Yoshida, Y., Tojo, Y., Kuroda, M., & Wheelwright, S. (2007). The Autism-Spectrum Quotient (AQ) Children's Version in Japan: A cross-cultural comparison. *Journal of Autism and Developmental Disorders, 37*, 491-500.

Wiggins, L. D., Bakeman, R., Adamson, L. B., & Robins, D. L. (2007). The utility of the Social Communication Questionnaire in screening for autism in children referred for early intervention. *Focus on Autism and Other Developmental Disabilities, 22*(1), 33-38.

Wiggins, L. D., & Robbins, D. L. (2008). Brief report: Excluding the ADI-R behavioral domain improves diagnostic agreement in toddlers. *Journal of Autism and Developmental Disorders, 38*, 972-976.

Williams, J., Scott, F., Stott, C., Allison, C., Bolton, P., Baron-Cohen, S., & Brayne, C. (2005). The CAST (Childhood Asperger Syndrome Test): Test accuracy. *Autism, 9*(1), 45-68.

Wing, L., Leekam, L., Libby, S., Gould, J., & Larcombe, M. (2002). The Diagnostic Interview for Social and Communication Disorders: Background, inter-rater reliability and clinical use. *Journal of Child Psychology and Psychiatry, 43*, 307-325.

Witwer, A. N., & Lecavalier, L. (2007). Autism screening tools: An evaluation of the Social Communication Questionnaire and the Developmental Behavior Checklist-Autism Screening Algorithm. *Journal of Intellectual and Developmental Disability, 32*(3), 179-187.

World Health Organization. (1993). *The ICD-10 classification of mental and behavioural disorders. Diagnostic criteria for research*. Geneva: Author.