#### Understanding, Evaluating and Treating Autism Spectrum Disorders: New Data, New Ideas, and the ASRS

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#### Relevant Disclosure

- Co-author of the Autism Spectrum Rating Scales (MHS, 2009).
- Co-author of Assessment of Autism Spectrum Disorders 1<sup>st</sup> and 2<sup>nd</sup> Editions (Guilford, 2009, 2018).
- Co-author/presenter Assessment of Autism Spectrum Disorders CEU (APA, 2009).
- Co-author of Raising a Resilient Child With Autism Spectrum Disorders (2011, McGraw Hill).
- · Co-author of Treatment of Autism Spectrum Disorders (2012, Springer).
- Co-author of the Autism Spectrum Evaluation Scales (in development, MHS).
- · Compensated speaker.

#### Goals

- Briefly discuss the historical theories of Autism Spectrum Disorders (ASD).
- Define ASD and new DSM 5 criteria.
- Briefly discuss symptoms of ASD by age.
- Briefly discuss a core theory of ASD.
- Briefly review hypothesized causes.
- Discuss data from the ASRS, the largest epidemiological/standardization sample collected of normal children and those with ASD.
- Discuss the ASRS and other methods for assessment, diagnosis and treatment of autism.
- Discuss issues of diagnosis versus eligibility

# We are social beings.

What Benefits Do We Derive From Socialization?



- Support
- Survival
- Affiliation
- Pleasure
- Procreation
- KnowledgeFriendship

The social development of autistic children is qualitatively different from other children.



In normal children perceptual, affective and neuroregulatory mechanisms predispose young infants to engage in social interaction from very early on in their lives.























#### Where are Autism's Roots?

- In the bible?
- In ancient cultures?
- In history?

- In religion?
- Portrayed in art?

















A Brief Research Update

Psychiatric comorbidity in autism spectrum disorder: Correspondence between mental health clinician report and structured parent interview

This study (1) examined correspondence between psychiatric diagnoses reported by mental health clinicians and those derived from a structured diagnostic interview and (2) identified predictors of agreement between clinician-reported and diagnostic interview-derived diagnoses in a sample of 197 children aged 4-14 years with autism spectrum disorder receiving mental health services

Cohen's kappa was calculated to examine agreement between Mini-International Neuropsychiatric Interview, parent version and clinician-reported diagnoses of comorbid conditions. Children met criteria for an average of 2.83 (standard deviation = 1.92) Mini–International Neuropsychiatric Interview, parent version diagnoses. Agreement was poor across all diagnostic categories (к values: 0.06-0.18).

Results underscore the need for training mental health clinicians in targeted assessment of specific psychiatric disorders and prioritizing treatment development and testing for specific diagnoses to improve care for children with autism spectrum disorder served in publicly funded mental health settings.

Autism spectrum disorders and their treatment with psychotropic medications in a nationally representative outpatient sample: 1994-2009

Rates of visits with coded-ASD per 100 outpatient medical visits increased from 0.04% to 0.82% from 1994 to 2009. Factors associated with an ASD diagnosis included male gender, lack of private insurance, white race, and later study period. The most frequent comorbid behavioral diagnoses were ADHD, anxiety, disruptive behavior, and mood disorders. Older age was linked to an increased likelihood of having a comorbid behavioral diagnosis and using psychotropic medications. Geographic region was also associated with having a comorbid behavioral diagnosis, and psychotropic use was linked to have a behavioral comorbidity. Comorbidities with the highest rates of psychotropic use were ADHD, mood, and anxiety disorders.

Conclusions

Pediatric outpatient visits with an ASD diagnosis have increased dramatically from 1994 to 2009. Further study is needed to determine the reasons for the observed sociodemographic disparities in ASD diagnosis.

Annals of Epidemiology Volume 27, Issue 7, July 2017, Pages 448–453.e1 23

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Use of complementary and alternative medicine in children and adolescents with autism spectrum disorder: A systematic review

disorder: A systematic review Despite limited evidence, complementary and alternative medicine treatments are popular in autism spectrum disorder. The aim of this review was to summarize the available evidence on complementary and alternative medicine use frequency in autism spectrum disorder. A systematic search of three electronic databases was performed. All research studies in English or German reporting data on the frequency of complementary and alternative medicine use in individuals with autism spectrum disorder were included. Two independent reviewers searched the literature, extracted information on study design and results, and assessed study quality using an established quality assessment tool. Twenty studies with a total of 9540 participants were included. The prevalence of any complementary and alternative medicine use ranged from 28% to 95% (median: 54%). Special diets or dietary supplements (including vitamins) were the most frequent complementary and alternative medicine treatments, ranking first in 75% of studies. There was some evidence for a higher prevalence of complementary and alternative medicine use in autism spectrum disorder compared to other psychiatric disorders and the general population. Approximately half of children and adolescents with autism spectrum disorder use complementary and alternative medicine. Doctors should be aware of this and should discuss complementary and alternative medicine use with patients and their carers, especially as the evidence is mixed and some complementary and alternative medicine treatments are potentially harmful. Autism. Published May 25, 2016

Autism, Published May 25, 2016

Social Skills Training for Children and Adolescents With Autism Spectrum Disorder: A Randomized Controlled Trial

Social skills group training (SSGT) for children and adolescents with autism spectrum disorder (ASD) is widely applied, but effectiveness in real-world practice has not yet been properly evaluated. This study sought to bridge this gap.

This 12-week pragmatic randomized controlled trial of SGCT compared to standard care alone was conducted at 13 child and adolescent psychiatry outpatient units in Sweden. Twelve seasins of manualed SGCT (KONTART) were delivered by regular clinical staff. Participants (N = 256, 88 females and 208 males) were children (n = 172) and adolescents (n = 124) aged 8 to 17 years with ASD without intellectual disability. The primary outcome was the Social adolescents (n = 124) aged 8 to 17 years with ASD without intellectual disability. The primary outcome was the Social adolescents (n = 124) aged 8 to 17 years with ASD without intellectual disability. The primary outcome was the Social adaptive behaviors, trainer-steed global functioning and clinical sevenity, and self-reported child and caregiver stress. Assessments were made at baseline, posttreatment, and 3-month follow-up. Moderator analyses were conducted for age and gender.

Significant treatment effects on the primary outcome were limited to parent ratings for the adolescent subgroup (posttreatment – 8.3, 95% Cl = – 14.2 to – 1,9, p = .012, effect size [ES] = 0.32; follow-up: – 8.6; 95% Cl = – 15.4 to – 1.8; p = .015, E = 0.33) and females (posttreatment: – 8.6; 95% Cl = – 15.2 to – 1.6; p = .019, ES = 0.40). Secondary outcomes indicated moderate effects on adaptive functioning and clinical severity.

SSGT for children and adolescents with ASD in regular mental health services is feasible and safe. However, the modest and inconsistent effects underscore the importance of continued efforts to improve SSGT beyond current standards.

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Psychiatry Volume 56, Issue 7, July 2017, Pages 585-592

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Can findings from randomized controlled trials of social skills training in autism spectrum disorder be generalized? The neglected dimension of external validity

Systematic reviews have traditionally focused on internal validity, while external validity often has been overlooked. In this study, we systematically reviewed determinants of external validity in the accumulated randomized controlled trials of social skills group interventions for children and adolescents with autism spectrum disorder. We extracted data clustered into six overarching themes: source population, included population, context, treatment provider, treatment intervention, and outcome. A total of 15 eligible randomized controlled trials were identified. The eligible population was typically limited to high-functioning school-aged children with autism spectrum disorder, and the included population was provided, and details about treatment providers and settings were sparse. It was not evident from the trials to what extent acquired social skills were enacted in everyday life and maintained over time. We conclude that the generalizability are often inadequately reported. At this point, more effectiveness oriented randomized controlled trials of equally high internal and external validity are needed. More attention to the determinants of external validity are needed. More attention to the determinants of external validity are needed. More attention to the determinants of external validity are meeded. More attention to the determinants of external validity is new generation of randomized controlled trials are planned and reported.

Autism, First Published May 11, 2015

Does sex influence the diagnostic evaluation of autism spectrum disorder in adults?

This study reports sex differences in clinical outcomes for 1244 adults (935 males and 309 females) referred for autism spectrum disorder assessment. Significantly, more males (72%) than females (66%) were diagnosed with an autism spectrum disorder of any subtype (x2 = 4.09, p = 0.04).

Males had significantly more repetitive behaviors/restricted interests than females (p = 0.001, d = 0.3). A multivariate analysis of variance indicated a significant interaction between autism spectrum disorder subtype (full-autism spectrum disorder/partial-autism spectrum disorder) and sex: in full-autism spectrum disorder, males had more severe socio-communicative symptoms than females; for partial-autism spectrumel.

There were no sex differences in prevalence of co-morbid psychopathologies. The sexes may present with different manifestations of the autism spectrum disorder phenotype and differences vary by diagnostic subtype. Understanding and awareness of adult female repetitive behaviors/restricted interests warrant attention and sex-specific diagnostic assessment tools may need to be considered.

Telehealth delivery of cognitive-behavioral intervention to youth with autism spectrum disorder and anxiety: A pilot study

This study details the pilot testing of a telehealth version of an empirically supported intervention targeting anxiety in youth with autism spectrum disorders. The primary focus of this study was on feasibility, with evaluation of outcomes as a starting point for future randomized trials. In all, 33 families of youth with autism spectrum disorders and significant anxiety symptoms participated in this study.

youth with autism spectrum disorders and significant anxiety symptoms participated in this study (Flehealth Facing Your Fears (FYF) Intervention: n = 17; Wait–list control: n = 16). Youth of all functioning levels were included. Acceptability was strong; however, the usability of the technology was problematic for some families and impeded some sessions significantly. Fidelity of the telehealth version to the critical elements of the original, in vivo version was excellent. More work is needed to improve delivery of exposure practices and parent coaching. Preliminary efficacy analyses are promising, with improvements observed in youth anxiety over time (relative to a comparison group waiting for live intervention) and parent sense of competence (within group). Clearly, stronger designs are necessary to evaluate efficacy sufficiently; however, this study does provide support for further investigation of clinic-to-home videoconferencing as a direct intervention tool for youth with autism spectrum disorders and their parents.

Open-trial pilot study of a comprehensive outpatient psychosocial treatment for children with high-functioning autism spectrum disorder

This study examined the feasibility and initial outcomes of a comprehensive outpatient psychosocial treatment (MAXout) for children aged 7-12 years with high-functioning autism spectrum disorder. The 18-week treatment, two 90minute sessions per week, included instruction and therapeutic activities targeting social/social communication skills, facial emotion recognition, nonliteral language skills, and interest expansion.

A behavioral system was implemented to reduce autism spectrum disorder symptoms and problem behaviors and increase skills acquisition and maintenance. Feasibility was supported via high levels of treatment fidelity and parent, child, and staff satisfaction. Significant post-treatment improvements were found for the children's non-literal language skills and facial emotion recognition skills, and parent and staff clinician ratings of targeted social/social communication skills, broad social skills, autism spectrum disorder symptoms, and problem behaviors.

Results suggested that MAXout was feasible and may yield positive outcomes for children with high-functioning autism spectrum disorder.

The mental health of individuals referred for assessment of autism spectrum disorder in adulthood: A clinic report

High rates of mental health problems have been reported in young people and adults with autism spectrum disorder. However, sampling and methodological issues mean prevalence estimates and conclusions about specificity in psychiatric co-morbidity in autism spectrum disorder remain unclear.

A retrospective case review of 859 adults referred for assessment of autism spectrum disorder compares International Classification of Diseases, Tenth Revision diagnoses in those that met criteria for autism spectrum disorder (n = 474) with those that did not (n = 385). Rates of psychiatric diagnosis (>57%) were equivalent across both groups and exceeded general population rates for a number of conditions.

The prevalence of anxiety disorders, particularly obsessive compulsive disorder, was significantly higher in adults with autism spectrum disorder than adults without autism spectrum disorder. The implications of this study highlight the need for careful consideration of mental health needs in all adults referred for autism spectrum disorder diagnosis.

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Effects of an employer-based intervention on employment outcomes for youth with significant support needs due to autism

The purpose of this study was to develop and investigate an employer-based 9month intervention for high school youth with autism spectrum disorder to learn job skills and acquire employment. The intervention modified a program titled Project SEARCH and incorporated the use of applied behavior analysis to develop Project SEARCH plus Autism Spectrum Disorder Supports.

A randomized clinical trial compared the implementation of Project SEARCH plus Autism Spectrum Disorder Supports with high school special education services as usual. Participants were 49 high-school-aged individuals between the ages of 18 and 21 years diagnosed with an autism spectrum disorder and eligible for supported employment. Students also had to demonstrate independent selfcare. At 3 months post-graduation, 90% of the treatment group acquired competitive, part-time employment earning US\$9.53-US\$10.66 per hour. Furthermore, 87% of those individuals maintained employment at 12 months post-graduation. The control group's employment outcomes were 6% acquiring employment by 3 months post-graduation and 12% acquiring employment by 12 months post-graduation. The positive employment outcomes generated by the treatment group provide evidence that youth with autism spectrum disorder can gain and maintain competitive employment.

Employment programs and interventions targeting adults with autism spectrum disorder: A systematic review of the literature

In this systematic review, empirical peer-reviewed studies on employment programs, interventions and employment-related outcomes in individuals with autism spectrum disorder over 18 years with and without intellectual disability were identified and evaluated.

From 32,829 records identified in the initial search, 10 review and 50 empirical articles, comprising N = 58,134 individuals with autism spectrum disorder, were included in the review. Selected articles were organized into the following themes: employment experiences, employment as a primary outcome, development of workplace skills, non-employment-related outcomes, assessment instruments, employer-focused and economic impact. Empirical studies were limited by poor participant characterization, small sample size and/or a lack of randomization and use of appropriate controls. Poor conceptualization and measurement of outcomes significantly limited study quality and interpretation.

Future research will require a multidisciplinary and multifaceted approach to explore employment outcomes on the individual, the family system, co-workers and the employer, along with the impact of individual differences on outcome.

#### DSM 5

- Combine social and communication categories.
- Tighten required criteria reducing the number of symptom combinations leading to a diagnosis.
- Omit Retts and Childhood Disintegrative Disorder.
- Clarify co-morbidity issues
- Eliminate PDD NOS and Aspergers in favor of Autism Spectrum.

#### DSM 5

- Five criteria.
- Seven sets of symptoms in the first two criteria - Social/Communication and Restrictive/Repetitive behaviors, interests or activities.
- All three symptoms are required to meet the first criteria (although a typo omits this).
- Two out of four are needed for the second criteria.
- Some symptoms have been combined.
   Sensory sensitivity has been added.

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#### Normally Developing Children:

- Show interest in the human face.
- Demonstrate a differential preference for speech sounds.
- Possess imitative capacity.
- Seek physical comfort.
- Attach to caretakers.



Social competence is an ability to take another's perspective concerning a situation and to learn from past experience and to apply that learning to the ever changing social landscape.

Margaret Semrud-Clikeman

Social competence has been scientifically linked to mental and physical health.

### Impairment in Social Competence Caused By:

• Aggressive, hostile behavior.

- Perceptual deficits in interpreting social behavior.
- Executive and self-regulation deficits



#### Social Information Processing

- Encoding of relevant stimuli.
- Interpretation of cues (both cause and intent).
- Goal setting.
- Comparison of the present situation to past experience.
- Selection of possible responses.
- Acting on a chosen response.

Crick and Dodge (1994)

Between September 23, 2009 and October 12, 2009, Massachusetts Advocates for Children conducted an online survey in hopes of learning more about the extent of bullying of children on the autism spectrum in Massachusetts schools. Parent respondents were informed that data and examples provided would be used to support the passage of H.3804, An Act Addressing Bullying of Children with ASD. Almost 400 parents responded.

88% reported their children had been bullied.

Autism is increasingly referred to as a spectrum disorder in which individuals can present problems ranging from total impairment to near reasonable functioning.

In a Spectrum Disorder genetic and phenotypic factors predispose certain individuals to express certain Central Nervous System vulnerabilities leading to poorly adapted variations in development and behavior. In a Spectrum Disorder all symptoms are considered relevant to the extent they present in each disorder. Thus a symptom is not exclusive to a disorder.

The form that a Spectrum Disorder assumes is determined by its composite symptoms. These symptoms often have complex relationships.

Core DSM and ICD Autistic Symptoms

- Impaired social relations.
- Impaired communication skills.
- Impaired behavior.



#### Symptoms Present Before 24 Months: Failure To:

- Orient to name
- Attend to human voice
- Look at face and eyes of others
- Imitate
- Show objects
- Point
- Demonstrate interest in other children



### Symptoms Present Before 36 Months

- Use of other's body to communicate or as a tool
- Stereotyped hand/finger/body mannerisms
- Ritualistic behavior
- Failure to demonstrate pretend play
  Failure to demonstrate joint attention











#### Pretend Play in Autism

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- Limited, often absent
- When present usually characterized by: repetitive themes, rigidity, isolated acts, one-sided play, limited imagination.





#### Factor Analysis for 2-5 Years

- A two-factor solution was best for parent and teacher raters
  - Factor I: included primarily items related to both socialization and communication (e.g., keep a conversation going, understand how someone else felt) - Social/Communication
  - Factor II: included items related to behavioral rigidity (e.g., insist on doing things the same way each time), stereotypical behaviors (e.g., flap his/ her hands when excited), and overreactions to sensory stimulation (e.g., overreact to common smells)- Unusual Behaviors

#### Factor Analysis for 6-18 Years

- A three-factor solution was best for both parent and teachers versions of the ASRS
  - Factor I: included primarily items related to both socialization and communication -Social/ Communication
  - Factor II: included items related to behavioral rigidity, stereotypical behaviors and overreactions to sensory stimuli – Unusual Behaviors
- Factor III: included items related to attention problems (e.g., become distracted), impulsivity (e.g., have problems waiting his/her turn), and compliance (e.g., get into trouble with adults, argue and fight with other children) – Self-Regulation.

#### Factor Consistency

- The consistency of the ASRS scale structure across several demographic groups (gender, age group, race, and clinical status) was studied
- The factor loadings for the groups were correlated using the coefficient of congruence
   results revealed a very high degree of consistency
- between all groups
   indicating that the factor structure of the forms
- generalized across the demographic groups





#### ASRS Scale Goal #1

- 1. Develop a multi-dimensional scale to adequately reflect the Autism Spectrum based on statistical as well as logical organization of items
- Content Scales
- DSM Scales
- Empirical Scales
- Treatment Scales

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- Ages 2-5 Social / Communication
- Unusual Behaviors
- Ages 6 18 years Social/Communication
- Unusual Behavior
- Self -Regulation









#### ASRS Empirical & Treatment Scales

Treatment Scales

- Peer Socialization
- Adult Socialization
- Social/Emotional Reciprocity • Atypical Language
- Stereotypy · Behavioral Rigidity
- Sensory Sensitivity
- · Attention (Attention/Self-Regulation)
- Items were grouped based on content
- similarity and treatment utility of the groups.

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#### **ASRS** Interpretation

- The DSM-IV-TR Scale includes items that represent the symptoms used as part of the diagnostic criteria for ASD.
- + Additional criteria (e.g., age of onset, differential diagnosis, and level of impairment) must be met before a DSM-IV-TR diagnosis can be assigned.
- Remember the DSM and ASRS Total scores may be different due to slightly different content.

#### ASRS Scale Goal #2

- Base the ASRS standard scores on a national sample of individuals aged 2 - 18 years who represent the US on a number of key variables.
- Why compare children's scores to a nationally representative sample?

#### Importance of a National Norm

• Sample was stratified by

- Sex, age, race/ethnicity, parental education level (PEL; for cases rated by parents), geographic region
- Race/ethnicity of the child (Asian/Pacific Islander, Black/African American/African Canadian, Hispanic, White/Caucasian, Multi-racial by the rater • Parents provided PEL of both parents

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- the higher of the two levels was used to classify the parental education level of the child
- All raters completed the ASRS via the paper-andpencil or online methods.

ASRS Standardization Samples by Age and Rater						
Age Groups	Parent Raters	Teacher Raters				
2 - 5 Years	320	320				
6 - 11 Years	480	480				
12 - 18 Years	480	480				
Sub Total n	1,280	1,280				
TOTAL N		2,560				



#### • Validity samples were collected

- a single primary diagnosis was indicated
- a qualified professional (e.g., psychiatrist, psychologist) had made the diagnosis
- Criteria were made using DSM-IV-TR or ICD-10
- Clinical samples include:
- ASD (N = 580)
- ADHD (*N* = 250)
- Communication Delay (N = 180)
- Developmental Delay (N = 140)
- Anxiety / Depression (N = 100)

Imp	oortar	nce o	of a N	ation	al No	orm			
	Calibration o	f Standard S	Scores (Mn =	100; SD = 15	) Across Pare	ental			
	Educational I	evels for CEFI Parent Ratings.							
			s	tandard Score	es				
	Raw Score	<hs< td=""><td>HS Grad</td><td>Some Coll</td><td>Coll Grad</td><td>National</td></hs<>	HS Grad	Some Coll	Coll Grad	National			
	230	96	91	88	85	90			
	235	97	92	89	87	91			
	240	98	93	90	88	92			
	245	99	95	92	89	93			
	250	100	96	93	90	94			
	255	101	97	94	92	95			
	260	102	98	95	93	97			
	265	103	99	96	94	98			
	270	104	100	98	95	99			
	275	105	101	99	96	100			
	280	106	102	100	98	101			
	285	107	103	101	99	102			
	290	108	105	102	100	103			
	295	109	106	103	101	105			
	300	110	107	105	103	106			
	305	111	108	106	104	107			
	310	112	109	107	105	108			
	315	113	110	108	106	109			

#### ASRS Scale Goal #3

- Produce a rating scale that includes behaviors associated with ASRS that meets the various needs of the clinician.
- Has different forms for early childhood and school aged populations
- Uses the same set of questions for parents and teachers

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- $^{\circ}$  Is easy to administer and score
- $^{\circ}$  Have reliability and validity
- . Let's look at the forms and their use...

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99	83	233-235	60-61	96	•	119-121	34	22	-44				20	42	83	99	
99	82	230-232	58-59	94-95	67-68	116-118	33	21	43	24	20	•	19	41	82	99	
99	81	227-229	56-57	92-93	65-66	113-115	32	•	42	23	•	32	18	40	81	99	
99	80	224-226	54-55	90-91	64	110-112	31	20	40-41	22	19	31	17	39	80	99	
99	79	221-223	52-53	88-89	63	108-109	30		38-39			30	16		79	99	
99	78	218-220	50-51	86-87	61-62	105-107	29	19	37	21	18	29	15	38	78	99	Very
30	11	215-216	40-49	84-05	59-60	102-104	20		30	2			14		77	99	Elevated
30	76	213-214	40-47	01-03	57-50	20-101	21	10	35	20	17	20		37	76	39	
39	75	211-212	40	72-70	00	94-97	24	47	34	10	10	- 26	13	36	75	39	
50	73	207-208	42.41	66-71	54	87-89	21		33	17	.0	25	12		73	99	
50	73	205-206	41	61-65	53	84.86	22	16	33	16	15	24	55	38	72	99	
98	71	203-204	39-40	58-60	52	81-83	21		31	15		23	11	34	71	98	
98	70	201-202	38	55-5X	50-51	78-80	(20)	15	30	14	14	22	•	33	70	98	
97	69	199-200	37	52-54	49 0	75-77	19		29	13	1	21	10	32	69	97	
96	68	198	35-36	48-51	47-48	72-74	18	14	28	12	13	20	•	31	68	96	
96	67	195-197	34	46-47	46	69-71	17	•	27	•		19	9	30	67	96	Elevated
96	66	192-194	33	44-45	45	66-68	16	13	26	11	12	18	•	29	66	96	
93	65	189-191	32	42-43	44	63-65	15	•	25	•	•	17	•	28	65	93	
62	64	187_188	31	40-41	41.43	60-82		12	24	10	11	16	8	27	84	92	













		Pa	rent Rating	S	Tea	acher Rating	s
Scale		Normative Sample (N = 320)	Clinical Sample (N = 243)	Average	Normative Sample (N = 320)	Clinical Sample (N = 249)	Average
Total Score		.95	.98	.97	.94	.99	.97
ASRS	Social/ Communication	.94	.98	.96	.95	.98	.97
Scales	Unusual Behaviors	.91	.96	.94	.85	.97	.92
DSM-IV-TR	Scale	.91	.97	<u>94</u>	.91	.98	.95
	Peer Socialization	.77	.96	.89	.85	.95	.91
	Adult Socialization	.67	.85	.76	.78	.85	.81
_	Social/Emotional Reciprocity	.83	.96	.91	.88	.96	.93
Treatment	Atypical Language	.71	.77	.74	.59	.79	.69
Scales	Stereotypy	.75	.86	.80	.67	.86	.77
	Behavioral Rigidity	.85	.94	.90	.82	.95	.90
	Sensory Sensitivity	.71	.89	.81	.59	.90	.77
	Attention/Self-Regulation	.83	.88	.85	.83	.89	.86

		6	to 11 Years	-	12	to 18 Years	
Scale		Normative Sample (N = 480)	Clinical Sample (N = 230)	Average	Normative Sample (N = 480)	Clinical Sample (N = 185)	Average
Total Score		.97	.98	.97	.97	.97	.97
ASRS	Social/ Communication	.91	.97	.94	.92	.95	.93
Scales	Unusual Behaviors	.94	.95	.94	.93	.95	.94
	Self-Regulation	.92	.92	.92	.93	.93	.93
DSM-IV-TR	Scale	.95	.96	.95	.94	.96	.90
	Peer Socialization	.84	.92	.87	.84	.91	.86
	Adult Socialization	.77	.77	.77	.79	.77	.78
	Social/Emotional Reciprocity	.85	.94	.89	.88	.91	.89
Treatment	Atypical Language	.81	.85	.82	.82	.85	.83
Scales	Stereotypy	.79	.78	.79	.77	.79	.78
	Behavioral Rigidity	.89	.92	.90	.86	.94	.89
	Sensory Sensitivity	.79	.85	.81	.77	.82	.79
	Attention	.90	.91	.90	.89	.91	.90



		6	to 11 Years		12	to 18 Years	
Scale		Normative Sample (N = 480)	Clinical Sample (N = 167)	Average	Normative Sample (N = 480)	Clinical Sample (N = 325)	Avera
Total Score		.97	.98	.97	.97	.97	.97
	Social/ Communication	.93	.96	.94	.92	.96	.94
ASKS Scaloc	Unusual Behaviors	.93	.95	.94	.94	.95	.94
scales	Self-Regulation	.94	.93	.94	.93	.91	.92
DSM-IV-TR	Scale	.94	.96	.95	.94	.96	.95
	Peer Socialization	.84	.90	.86	.83	.90	.86
	Adult Socialization	.80	.81	.80	.77	.77	.77
	Social/Emotional Reciprocity	.89	.92	.90	.89	.92	.90
reatment	Atypical Language	.75	.87	.79	.80	.85	.82
scales	Stereotypy	.69	.77	.71	.72	.81	.76
	Behavioral Rigidity	.90	.93	.91	.90	.94	.92
	Sensory Sensitivity	.77	.87	.80	.84	.87	.85
	Attention	.92	.92	.92	.91	.92	.91



#### Validity of the Factors

- Factor analysis is a valuable tool to understand how items group.
- But we also need to know if the items have validity.
- Discriminating children with ASD from the regular population is important.
- Discriminating children with ASD from those who are not in the regular population but not ASD is very important.

#### **ASRS** Profiles

- A scale like the ASRS should differentiate children with ASD from the normal population.
- Comparison to regular children should show that those with ASDs have high scores.
- Comparisons to other clinical groups should also show differences from those with ASDs.
- Comparisons of the ASD to regular and other clinical samples gives an essential examination of validity.













	cation	Accuracy	ages a	
Parents				
		ASRS S	cales	
	$\frown$	Social/	Unusual	DSM-IV-TF
	Total Score	Communication	Behaviors	Scale
Overall Correct Classification (%)	90.0	93.5	94.8	92.7
Sensitivity (%)	89.8	94.6	95.0	92.3
Specificity (%)	90.3	92.3	94.7	93.3
Positive Predictive Power (%)	91.3	93.2	95.0	93.7
Negative Predictive Power (%)	88.7	93.9	94.7	91.7
False-Positive Rate (%)	9.7	7.7	5.3	6.7
False-Negative Rate (%)	10.2	5.4	5.0	7.8
Карра	0.80	0.87	0.90	0.95
Autism Spectrum Disorder (N)	126	132	129	127
General Population	115	115	124	121

,	

Classification	Accuracy	ages	2-5
Teachers			

		ASRS Sca	les	
	$\square$	Social/	Unusual	DSM-IV-TR
	Total Score	Communication	Behaviors	Scale
Overall Correct Classification (%)	89.4	88.0	85.2	89.7
Sensitivity (%)	90.2	90.7	83.6	89.7
Specificity (%)	88.6	85.4	86.8	89.7
Positive Predictive Power (%)	88.6	86.3	95.8	89.7
Negative Predictive Power (%)	90.2	90.0	84.7	89.7
False-Positive Rate (%)	11.4	14.7	13.2	10.3
False-Negative Rate (%)	9.8	9.3	16.4	10.3
Карра	0.79	0.76	0.70	0.79
ASD (N)	114	124	113	117
General Sample (N)	112	110	124	116



Classifi Parents	icati S	on Accu	racy a	ges 6	-18
		AS	RS Scales		
	(Tanka)	Social/	Unusual	Self-	DSM-IV-TR
	Score	Communication	Behaviors	Regulation	Scale
Overall Correct Classification (%)	91.3	91.3	88.3	86.5	91.2
Sensitivity (%)	90.3	90.0	87.7	86.1	90.5
Specificity (%)	92.2	92.5	88.9	86.9	91.9
Positive Predictive Power (%)	91.8	92.3	88.6	86.6	91.8
Negative Predictive Power (%)	90.8	90.2	88.0	86.5	90.6
False-Positive Rate (%)	7.8	7.5	11.1	13.1	8.1
False-Negative Rate (%)	9.7	10.0	12.3	13.9	9.6
Карра	0.83	0.83	0.77	0.74	0.82
ASD (N)	183	195	201	201	196
General Sample (N)	196	205	209	207	201



# Classification Accuracy ages 6-18 Teachers

	$\sim$				
, i	Total	Social/	Unusual	Self-	DSM-IV-TR
/	Score	Communication	Behaviors	Regulation	Scale
Overall Correct Classification (%)	91.4	88.8	92.6	85.2	94.1
Sensitivity (%)	92.1	87.1	95.4	85.2	92.8
Specificity (%)	90.7	90.5	89.8	85.1	95.5
Positive Predictive Power (%)	<b>\90.3</b> /	90.0	90.0	84.8	95.4
Negative Predictive Power (%)	92.5	87.8	95.3	85.5	93.0
False-Positive Rate (%)	9.3	12.9	10.2	14.9	4.5
False-Negative Rate (%)	7.9	8.9	4.6	14.8	7.2
Карра	0.83	0.78	0.85	0.70	0.88
ASD (N)	206	210	231	217	215
Conoral Sample (N)	212	229	212	221	227

#### ASD vs Communication Disorders







	able 8.26. Differences between		erences between Race/Ethnic Grot	c oroups. As	RS (6-18 1	ears) Parent Ratings	
Scale			African American	Hispanic	White	White - African American	White- Hispanie
		М	50.9	45.7	49.3		
Total Sco	re	SE	0.9	1.0	0.5	0.14	0.31
			122	128	536		
	0	M	50.8	46.4	49.1		
	Social/ Communication	SE	0.9	0.9	0.5	0.15	0.24
		N	122	128	536		
		М	50.6	45.6	49.4		0.33
ASRS Scales	Unusual Behaviors	SE	0.9	0.9	0.5	0.11	
		N	122	128	536		
		M	50.3	46.1	49.1		
	Self-Regulation	SE	0.9	1.0	0.5	0.10	0.26
		N	122	128	536		
		М	51.0	45.6	49.7		
DEM-TV-TR Scale SE		0.0	0.9	0.5	0.13	0.37	



<b>b</b> 1a	0.4.2 Fffeet of		/ <b>Fab</b> - 1 - 14				
able Age	Rater	касе	AA		WH	d-ra	itio
-		M	16.5	40.2	40.0	AA - WH	WH-HI
	Parant	M SE	40.5	49.2	49.9	-0.24	0.06
-5	racii	N	52	57	172	-0.34	0.00
ears	M	48.0	45.6	50.7			
	Teacher/Childcare	SE	17	1.9	11	-0.18	0.34
	Provider	N	47	48	195		
		M	50.6	46.2	49.6		
	Parent	SE	0.9	0.9	0.5	0.09	0.29
-18		N	133	135	560		
ears		М	50.7	51.9	49.8		
	Teacher	SE	0.9	0.9	0.6	0.07	-0.16
		N	132	152	521	1	



#### DSM IV TR Autism and Asperger Syndrome

ASRS preliminary findings



#### Gillberg & Wing (1999)

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- Autism: Not an extremely rare disorder. Acta Psychiatrica Scandinavica
- There was a marked difference in prevalence rates between studies that included children born before 1970 (.5 per 1,000) and those that included only children born in 1970 and after (1 per 1,000).
- Concluded that *autism* (including Aspergers) is considerably more common than previously believed

















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#### **ASRS** Interpretation

- For ages 2–5 years the ASRS Total T-Score (mean of 50 and SD of 10) is an equally weighted composite of

   Social/Communication
   Unusual Behaviors
- For ages 6–18 years the Total T-score is an equally weighted composite of

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- Social/Communication
- Unusual Behaviors
- Self-Regulation scales

#### ASRS Interpretation

Description of T scores

 Table 4.1. Understanding T-scores and Percentiles

 T-score
 Percentile

 Guideline
 Score

70÷	98+	Very Elevated Score (Many more concerns than are typically reported)
65-69	93-97	Elevated Score (More concerns than are typically reported)
60-64	84-92	Slightly Elevated Score (Somewhat more concerns than are typically reported)
40-59	16-83	Average Score (Typical levels of concern)
< 40	<16	Low Score (Fewer concerns than are typically reported)

• Estimated true score confidence intervals are provided for all scales





#### ASRS Interpretation

#### • What do the scales tell you?

Scale		Common Characteristics
Total Score		Has many behavioral characteristics similar to individuals diagnosed with an Autism Spectrum Disorder.
ASRS Scales	Social/Communication	Inappropriate use of verbal and non-verbal communication to initiate, engage in, and maintain social contact.
	Unusual Behaviors	Has trouble tolerating changes in routine. Engages in apparently purposeless, stereotypical behaviors Overreacts to certain sensory experiences.
	Self-Regulation (ASRS [6–18 Years] only)	Has deficits in attention and/or motor/impulse control; is argumentati∨e.
DSM-IV-TR Scale		Has symptoms associated with the DSM-IV-TR diagnostic criteria for an Autism Spectrum Disorder.

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Treatment Scales	Peer Socialization	Has limited interest and capacity to successfully engage in activities that develop and maintain relationships with other children.
	Adult Socialization	Has limited interest and capacity to successfully engage in activities that develop and maintain relationships with adults.
	Social/Emotional Reciprocity	Has limited ability to provide an appropriate emotional response to another person in a social situation.
	Atypical Language	Spoken communication may be repetitive, unstructured, or unconventional.
	Stereotypy	Engages in apparently purposeless, repeated movements, noises, or behaviors.
	Behavioral Rigidity	Has difficulty tolerating changes in routine, activities, or behavior; aspects of the environment must remain unchanged.
	Sensory Sensitivity	Overreacts to certain experiences conveyed through touch, sound, vision, smell, or taste.
	Attention/Self- Regulation (ASRS [2–5 Years]	Has trouble appropriately focusing attention on on- thing while ignoring distractions; appears disorganized. May have deficits in motor/impulse
	only) Attention (ASRS [6-	control; is argumentative. Has trouble appropriately focusing attention on one
	18 Years] only)	thing while ignoring distractions; appears

Values Ne children A	eeded for Signifi Aged 2 to 5 Years	cance	When (	Compar	ing AS	RS T-sc	ores Ac	ross R	aters fo	r
		9	0% (p = .1	0)	9	5% (p = .0	5)	Adjus	ted 90% (j	)=.
Scale		Parent to Parent	Teacher to Teacher	Parent to Teacher	Parent to Parent	Teacher to Teacher	Parent to Teacher	Parent to Parent	Teacher to Teacher	P: Te
Total Score		5	5	5	5	5	5	7	7	
1000 0	Social/Communication	5	5	5	6	5	6	8	7	
ASRS Scales	Unusual Behaviors	6	7	6	7	8	8	10	10	
DSM-IV-TR Scale		6	6	6	7	7	7	9	9	
DSM-IV-TR So	Peer Socialization	8	7	8	10	9	9	13	12	
	Adult Socialization	12	10	11	14	12	13	18	17	
	Social/Emotional Reciprocity	7	7	7	9	8	8	12	10	
Treatment	Atypical Language	12	13	13	15	16	15	19	21	
Scales	Stereotypy	11	11	11	13	13	13	17	18	
	Behavioral Rigidity	8	8	8	9	9	9	12	12	
	Sensory Sensitivity	11	12	11	13	14	13	17	18	
	Attention/Self- Regulation	9	9	9	11	11	11	15	14	



### ASRS Scoring Software

#### ASRS Scoring Software • There are three types of reports: • Interpretive

• Comparative (Parent vs Parent, Teacher vs Parent, Teacher vs Teacher)

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• Progress over time

ASRS Interpretiv	ve Report	
Once you click "Generate Report", the report appears on screen. This is the Interpretive Report. From this screen you can print and close the report and access it again later. Or you can save the report in PDF format to you computer.	Attion Spectrum Rating Scales (24 Years) Attion Spectrum Rating Scales (24 Years) Part Rating Pol 2 Jose A Hagles (24 Years) Part Rating Pol 2 Jose A H	GyN I I I I I I I I I I I I I I I I I I I

























children A	eded for Signific Aged 2 to 5 Years	cance S.	When (	Compar	ing AS	RS T-sc	ores Ac	ross <u>R</u>	aters fo	וכ
		Parent	90% (p = .1 Teacher	0) Parent	Parent	5% (p = .0 Teacher	95) Parent	Adjus Parent	ted 90% () Teacher	) = 
Scale		to Parent	to Teacher	to Teacher	to Parent	to Teacher	to Teacher	to Parent	to Teacher	١.
Total Score		5	5	5	5	5	5	7	7	H
1000	Social/Communication	5	5	5	6	5	6	8	7	F
ASKS Scales	Unusual Behaviors	6	7	6	7	8	8	10	10	Г
DSM-IV-TR SO	ale	6	6	6	7	7	7	9	9	Г
	Peer Socialization	8	7	8	10	9	9	13	12	Г
	Adult Socialization	12	10	11	14	12	13	18	17	Г
	Social/Emotional Reciprocity	7	7	7	9	8	8	12	10	Γ
Treatment	Atypical Language	12	13	13	15	16	15	19	21	Г
Scales	Stereotypy	11	11	11	13	13	13	17	18	Г
	Behavioral Rigidity	8	8	8	9	9	9	12	12	
	Sensory Sensitivity	11	12	11	13	14	13	17	18	
	Attention/Self- Regulation	9	9	9	11	11	11	15	14	

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TREATMENT SCA	LES				
	T-score	70	73		
Peer Socialization	90% CI	62-73	65-75	No significant difference	
	Percentile	98	99		
	T-score	58	63		
Adult Socialization	90% CI	49-63	54-67	No significant difference	
	Percentile	79	90	-	
	T-score	77	76		
Social/Emotional	90% CI	69-79	69-78	No significant difference	
Reciprocity	Percentile	99	99		
	T-score	52	44		
Atypical Language	90% CI	46-58	39-51	No significant difference	
	Percentile	58	27		
	T-score	49	54		
Stereotypy	90% CI	43-56	46-60	No significant difference	
	Percentile	46	66		
	T-score	72	48		
Behavioral Rigidity	90% CI	65-75	44-53	P > T	
	Percentile	99	42		
	T-score	44	48		
Sensory	90% CI	39-51	42-55	No significant difference	
Sensitivity	Percentile	27	42	-	
	T-score	72	73		
Attention	90% CI	65-75	67-76	No significant difference	
	Percentile	99	99		



#### ASRS Comparative Report

Summary of Significant Differences Between Raters The following section summarizes significant differences between raters' assessments of Joey D. Note: T = T-score, CI = Confidence Interval.

Total Score Ratings on the Total Score scale indicate the extent to which the youth's behavioral characteristics are similar to the behaviors of individuals diagnosed with an Autism Spectrum Disorder. Ratings on this scale did not result in any significant differences between raters.

AGNS Scales Ratings on the Social/Communication scale indicate the extent to which the youth uses verbal and non-verbal communication to initiate engage in and maintain social contact. Ratings on this scale did not result in any significant differences between raters.

Ratings on the Unusual Behaviors scale indicate the youth's level of tolerance for changes in routine, engagement in apparently purposelies and stereotypical behaviors, and overreaction to certain sensory experiences. Ratings on this scale did not result in any significant differences between raters.

Ratings on the Self-Regulation scale indicate how well the youth manages his behavior using a set of internalized rules to efficiently negotiate the environment. Ratings on this scale did not result in any significant differences between raters. DSM-IV-TR Scale Indicate how closely the youth's symptoms match the DSM-IV-TR criteria for an Autism Spectrum Disorder. Ratings on this scale did not result in any significant differences between raters.

			F	arent (Mrs. I	D)		T	eacher (Mr.	J)	Cimpifican
Scale		J- score	90% CI	Percentile Rank	Classification	7- score	90% CI	Percentile Rank	Classification	Difference
Total Score	1	73	70- 75	99	Very Elevated	73	70- 75	99	Very Elevated	Parent = Teacher
	Social/ Communication	77	72- 79	99	Very Elevated	79	74- 81	99	Very Elevated	Parent = Teacher
ASRS Scales	Unusual Behaviors	60	56- 63	84	Slightly Elevated	51	47- 55	54	Average	Parent > Teacher
	Self-Regulation	70	64- 73	98	Very Elevated	75	70- 77	99	Very Elevated	Parent = Teacher
DSM-IV-TR	Scale	69	65- 71	97	Elevated	68	64- 71	96	Elevated	Parent = Teacher
	Peer Socialization	70	62 73	98	Very Elevated	73	65- 75	99	Very Elevated	Parent = Teacher
	Adult Socialization	58	49- 63	79	Average	63	54- 67	90	Slightly Elevated	Parent = Teacher
	Social/Emotional Reciprocity	77	69 79	99	Very Elevated	76	69 78	99	Very Elevated	Parent = Teacher
Treatment	Atypical Language	52	46 58	58	Average	44	39 51	27	Average	Parent = Teacher
Scales	Stereotypy	49	43- 56	46	Average	54	46 60	66	Average	Parent = Teacher
	Behavioral	72	65-	99	Very Elevated	48	44-	42	Average	Parent >

ASRS (6-18 Year	s) Comparative	Report for Joey D		
Detailed S The following ta statistically sign raters. If a pair of then the different	Scores: C ble displays T- ficant (p = 10, of ratings is not noe between the	compariso scores, Confiden adjusted for mul noted in the "Sta ose two raters di	DINS ACTOSS loce Intervals, and F ltiple comparisons) atistically Significar d not reach statisti	Raters ercentiles for each scale, as well as ar changes in T-scores between pairs of t Differences Between Raters" column cal significance. Note: CI = Confidence
interval, P = Par Scale	rent and T = Te	P	т	Statistically Significant Difference Between Raters
TOTAL SCORE				
	T-score	73	73	
Total Score	90% CI	70-75	70-75	No significant difference
	Percentile	99	99	
ASRS SCALES				
0	T-score	77	78	
Social/	90% CI	72-79	73-80	No significant difference
Communication	Percentile	99	99	
	T-score	60	53	
Unusual	90% CI	56-63	49-57	No significant difference
DenaviorS	Percentile	84	62	
	T-score	70	74	
Self-Regulation	90% CI	64-73	69-76	No significant difference
	Percentile	98	99	
DSM-IV-TR Scal	e			
	T-score	69	68	
DSM-IV-TR	90% CI	65-71	64-71	No significant difference
SCALE	Percentile	97	96	
TREATMENT SC	ALES			
	T-score	70	73	~



	Obtai	Corre	N	Par	ent	Tea	cher	d-
	ned	cted	···					ratio
Scale	r	r	1	М	SD	М	SD	
Total Score	.96	.73	183	61.5	17.9	63.9	17.9	0.13
Social/Communication	.94	.71	191	62.5	16.5	63.6	16.4	0.07
Unusual Behaviors	.94	.64	189	57.0	17.4	62.2	19.2	0.28
DSM-IV-TR Scale	.95	.67	191	62.1	18.5	63.8	18.3	0.09
Across-Rater Correlations: ASRS (	2-5 Years) Ge	neral P	opul	ation	Samp	le		
	Öbt	Corr	N	Par	ent	Tead	cher	d - rati
Scale	r	r	1	М	SD	М	SD	
Total Score	.66	.63	187	45.7	10.1	48.3	10.6	0.2
Social/Communication	.66	.66	203	45.3	10.4	46.9	9.6	0.10
Unusual Behaviors	.65	.63	201	47.1	10.0	49.7	10.5	0.2



	Obt	Cor	N	Pare	ent	Tea	cher	d -
n Sample	r	r	1	м	SD	м	SD	ratic
	.51	.57	234	46.3	9.1	46.2	9.4	.01
lication	.60	.68	266	46.2	9.1	46.9	9.0	.08
ors	.44	.50	252	48.0	9.2	46.2	9.2	.20
	.57	.62	276	46.7	8.9	46.1	10.0	.06
	.55	.61	251	46.7	9.0	47.1	9.6	.04
	Obt	Cor	N	Pare	ent	Теа	cher	d -
	r	r		М	SD	м	SD	ratic
	.84	.67	210	65.4	13.0	63.0	13.1	.18
lication	.84	.61	232	62.2	14.1	62.4	14.4	.01
ors	78	63	238	64.9	12.4	60.4	12.5	36
		.00	000	00.4	44.4	00.1	40.7	
		1 / 6		6.77	177 7	เหกษ	110 /	. 11
	n Sample	n Sample 7 	n Sample 7 7 ication .60 .68 iors .44 .50 .57 .62 .55 .61 Obt Cor r r .84 .67 ication .84 .61 iors .78 .63	n Sample         r         r           .51         .57         234           lication         .60         .68         266           lors         .44         .50         252           .57         .62         276           .55         .61         251           Obt         Cor         N           r         r         r           .84         .67         210           lication         .84         .61         232           lors         .78         .63         238	n Sample         r         r         r           .51         .57         234         46.3           lication         .60         .68         266         46.2           lors         .44         .50         252         48.0           .57         .62         276         46.7           .55         .61         251         46.7           Obt         Cor         N         Pare           .44         .67         210         65.4           .60         .84         .67         210         65.4           .61         232         62.2         62.2         63.9           .60r         .84         .61         232         62.2           .60r         .78         .63         238         64.9	n Sample         r         r         m         SD           ication         .51         .57         234         46.3         9.1           iors         .60         .68         266         46.2         9.1           iors         .44         .50         252         48.0         9.2           .57         .62         276         46.7         8.9           .55         .61         251         46.7         9.0           Obt         Cor         N         Parent           r         r         M         SD           .84         .67         210         65.4         13.0           ication         .84         .61         232         62.2         14.1           iors         .78         .63         238         64.9         12.4	n Sample         r         r         m         SD         m           .51         .57         .234         46.3         9.1         46.2           ication         .60         .68         266         46.2         9.1         46.9           iors         .44         .50         252         48.0         9.2         46.2           .57         .62         276         46.7         8.9         46.1           .55         .61         251         46.7         9.0         47.1           Obt         Cor         N         Parent         Tea           r         r         M         SD         M           .64         .67         210         65.4         13.0         63.0           .601         .84         .67         210         65.4         13.0         63.0           .605         .78         .63         238         64.9         12.4         60.4	n Sample         r<

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#### Important Conclusions

- Behaviors associated with Autism Spectrum Disorders should be measured using well developed nationally standardized scales.
- DSM-IV and ICD 10 provide a good base for understanding ASDs but require revision.
- ASD is best represented by a 3 factor model: Social/Communication, Unusual Behaviors, & Self-Regulation.

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• The prevalance of ASD appears to be increasing...

#### Important Conclusions

- BUT, understanding the prevalence of ASD requires
  - Equally valid assessment procedures over time
     Standardized methods for diagnosis
  - Psychometrically sound measures of behavior
- "The question of whether there are really
- more children with ASD now than in the past cannot be answered definitely" (p. 44). • Wing and Potter's Chapter 2 in *Assessment of*
- Wing and Potter's Chapter 2 in Assessment of Autism Spectrum Disorders (Goldstein, Naglieri, & Ozonoff, 2009)

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#### Important Conclusions

- Clearly what is needed is well developed tools that
  - Are standardized on a typical sample that
  - represents the US population
  - Represent current understanding of ASDs, especially the role of self-regulation
  - Have good reliability and validity
  - Have relevance to intervention
  - Are relatively easy to administer and score
- These were our goals when we developed the ASRS





#### Determining Eligibility as an Autistic Student

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Students that have a DSM or ICD diagnosis are not automatically eligible for special education services, according to the Individuals with Disabilities Education Improvement Act (IDEIA).

Educational eligibility and subsequent services are determined by conducting assessments and testing performed by a school's multidisciplinary team and not that of medical diagnostic tests.

These can include observations, history, developmental information, behavior information and a documented prevalence over a period of time.





WAC 392-172A-03025 Review of existing data for evaluations and reevaluations. As part of an initial evaluation, if appropriate, and as part of any reevaluation, the IEP team and other qualified professionals, as appropriate, must: (1) Review existing evaluation data on the student, implained. (1) Review existing evaluation
 (a) Evaluations and information provided by the parents of the student;
 (b) Current classroom-based, local, or state assessments, and classroom-based observations; and
 (c) Observations by teachers and related services

(c) Observations by teachers and related services providers.
(2) (a) On the basis of that review, and input from the student's parents, identify what additional data, if any, are needed to determine:

(i) Whether the student is eligible for special education services, and what special education and related services the student needs; or

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(a) (i) Autism means a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a student's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences.
(ii) Autism does not apply if a student's educational performance is adversely affected primarily because the student has an emotional behavioral disability, as defined in subsection (2) (e) of this section.
(iii) A student who manifests the characteristics of autism after age three could be identified as having autism if the criteria in (a) (i) of this subsection are satisfied.

WAC 392-172A-03020 Evaluation procedures. (1) The school district must provide prior written notice to the parents of a student, in accordance with WAC 392-172A-05010, that describes any evaluation procedures the district proposes to conduct. (2) In conducting the evaluation, the group of qualified professionals selected by the school district must: (a) Use a variety of assessment tools and strategies to gather relevant functional, developmental, and academic information about the student, including information provided by the parent, that may assist in determining: (i) Whether the student is eligible for special education as defined in WAC 392-172A-01175; and (ii) The content of the student to be involved in and progress in the general education curriculum, or for a preschool child, to participate in appropriate activities; (b) Not use any single measure or assessment as the sole criterion for determining whether a student's eligibility for special education and for determinent's eligibility for special education and progress the relative contribution of cognitive and behavioral factors, in addition to physical or developmental factors.

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#### VAC 392-172A-01175 Special education. (1) Special education cluding instruction co v designed instruction, at no cost to the parents, to meet the unique needs of a student eligible for special education lassroom, in the home, in hospitals and institutions, and in other settings; and instruction in physical education. (2) Special education includes: (a) The provision of spech-hanguage pathology, occupational therapy, audiology, and physical therapy service as defined in WAC 392-172A-01155 when it re e criteria in WAC 392-172A-01035 (1)(c): (b) Travel tr (c) Vocation (3) The term (a) At no co If specially designed instruction is provided without charge, but does not preclude incic parents as a part of the general education program. ns the development of: S and patterns; and and individual and group gam individual and group gam ns; and ual and group games and sports including intramural and lifetime sports; and adapted physical education, movement education, and motor development. s adapting, as appropriate to the needs of an eligible student, the content, met tudent that result from the student schability and ss the unique ne n the ju (ii) to ensure access or the student to the at apply to all students. (d) Travel training means providing instru-struction, to enable them to: opriate, to students with significant cognitive disabili struction, to enable them to: (i) Develop an awareness of the environment in which they live; and (ii) Learn the skills necessary to move effectively and safely from place to place within that envi ent (e.g., in s

(e) \ nal education means organized educational programs that are directly related to the preparation of individuals for paid or unpaid emp paration for a career not requiring a baccalaureate or advanced degree.







#### DSM 5 Criteria A

- Persistent deficits in social communication and social interaction across multiple contexts, as manifested by the following, currently or by history (examples are illustrative, not exhaustive; see text):
- Deficits in social-emotional reciprocity, ranging, for example, from abnormal social approach and failure of normal back-andforth conversation; to reduced sharing of interests, emotions, or affect; to failure to initiate or respond to social interactions.
- Deficits in nonverbal communicative behaviors used for social interaction, ranging, for example, from poorly integrated verbal and nonverbal communication; to abnormalities in eye contact and body language or deficits in understanding and use of gestures; to a total lack of facial expressions and nonverbal communication.
- Deficits in developing, maintaining, and understanding relationships, ranging, for example, from difficulties adjusting behavior to suit various social contexts; to difficulties in sharing imaginative play or in making friends; to absence of interest in peers.

#### DSM 5 Criteria B

- Restricted, repetitive patterns of behavior, interests, or activities, as manifested by at least two of the following, currently or by history (examples are illustrative, not exhaustive; see text):
- Stereotyped or repetitive motor movements, use of objects, or speech (e.g., simple motor stereotypies, lining up toys or flipping objects, echolalia, idiosyncratic phrases).
- Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior (e.g., extreme distress at small changes, difficulties with transitions, rigid thinking patterns, greeting rituals, need to take same route or eat same food every day).
- Highly restricted, fixated interests that are abnormal in intensity or focus (e.g., strong attachment to or preoccupation with unusual objects, excessively circumscribed or perseverative interests).
- 4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of the environment (e.g., apparent indifference to pain/temperature, adverse response to specific sounds or textures, excessive smelling or touching of objects, visual fascination with lights or movement).

#### Specify if:

With or without accompanying intellectual impairment.

With or without accompanying language impairment.

Associated with a known medical or genetic condition or environmental factor.

Associated with another neurodevelopmental, mental, or behavioral disorder.

With catatonia.

#### DSM 5 Criteria C, D, E.

C. Symptoms must be present in the early developmental period (but may not become fully manifest until social demands exceed limited capacities, or may be masked by learned strategies in later life)

D. Symptoms cause clinically significant impairment in social, occupational, or other important areas of current functioning.

E. These disturbances are not better explained by intellectual disability (intellectual developmental disorder) or global developmental delay. Intellectual disability and autism spectrum disorder frequently co-occur; to make co-morbid diagnoses of autism spectrum disorder and intellectual disability, social communication should be below that expected for general developmental level.

> 14 3

#### Social (Pragmatic) Communication Disorder Criteria A

 Persistent difficulties in the social use of verbal and nonverbal communication as manifested by all of the following:

- Deficits in using communication for social purposes, such as greeting and sharing information, in a manner that is appropriate for the social context.
- Impairment of the ability to change communication to match context or the needs of the listener, such as speaking differently in a classroom than on a playground, talking differently to a child than to an adult, and avoiding use of overly formal language.
- Difficulties following rules for conversation and storytelling, such as taking turns in conversation, rephrasing when misunderstood, and knowing how to use verbal and nonverbal signals to regulate interaction.
- Difficulties understanding what is not explicitly stated (e.g., making inferences) and non-literal or ambiguous meanings of language (e.g., idioms, humor, metaphors, multiple meanings that depend on the context for interpretation).

#### Social (Pragmatic) Communication Disorder Criteria B, C, and D

- B. The deficits result in functional limitations in effective communication, social participation, social relationships, academic achievement, or occupational performance, individually or in combination.
- C. The onset of the symptoms is in the early developmental period (but deficits may not become fully manifest until social communication demands exceed limited capacities).
- D. The symptoms are not attributable to another medical or neurological condition or to low abilities in the domains of word structure and grammar, and are not better explained by autism spectrum disorder, intellectual disability (intellectual developmental disorder), global developmental delay, or another mental disorder.

14 5

#### Autism Diagnostic Observation Schedule (ADOS)

- Age range toddlers to adults.
- No speech to those who are verbally fluent.
- Semi-structured assessment.

- · Five modules across age ranges with each requiring
- 45 minutes to administer. • A module is chosen depending upon expressive
- language and age. • Non-verbal teens and adults can't be reliably evaluated.
- Autism and Autism Spectrum cut off scores are provided for two domains (Social Affective and Restricted Repetitive Behaviors).

#### Autism Diagnostic Observation Schedule

CURRENT

Social Domain

Domain

 Social Affect Domain Communication

 Restrictive Repetitive Behaviors Domain

NEW



#### Sample Description

- University of Virginia Autism Genetic Resource Exchange (AGRE) project data
- Sample selection
  - If the child met criteria for ASD or Autism on the ADOS <u>and met criteria</u> for Autism on the ADI-R, they were considered to be on the autism spectrum
     ASD or Autism - (whichever they met according to the ADOS).
  - In the AGRE dataset the ADOS is used in conjunction with the ADI to classify the child

#### Sample Description

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Sample selection (continued)

- The ADOS and ADI are used for designating the sample as ASD or Autism.
- If the child did not meet criteria on either instrument there was a case conference to discuss the case in depth - taking into consideration multiple test results (in addition to ADOS and ADI) and reviewing video of the child. At that time the clinical psychologist and the clinician who administered the ADOS and ADI would come to a decision as to what to classify the child.

#### Sample Description

→ Ages 6-18 (Mean = 10.3; SD = 3.1)

- ▶ N = 90
- ▶ 82% (N = 74) Males, 18% (N = 16) Females

ADOS (N $=$ 90	))		
	A	DOS Diagnosis	
		Classification	
Autism		63	
ASD		18	
No Diagnosis		9	
		Met Criterion	Did Not Meet
Communication Autism		64	26
Communication Autism Spec	ctrum	83	7
Social Autism		80	10
Social Autism Spectrum		86	4
Communication + Social A	utism	66	24
Communication + Social Aut	tism		
Spectrum		84	6

A	ASRS Mean T-Sco	res ( $N = 90$ )
	ASRS TOTAL	T–Score
	Value	N
	70+	35
	65+	26
	60+	19
	<60	10
ASRS Scales	Self-Regulation Unusual Behaviors Social Communication Total	56 58 60 62 64 66 68 70



		ASRS	ADOS	TOTAL
	ADOS	Total	0	69
	Diagnosis	( T > 59)	0	39
			0	62
Autism or			0	73
ASD	81	80	0	77
No			0	75
Diagnosis	a	10	0	54
Diagnosis	5	10	0	65
			0	69
			Note: 0 = N	lot
			identified of	on ADOS

#### Intervention

- Despite strong claims no curative treatment has been studied vigorously.
  "In the absence of a definitive cure there are
- a thousand treatments" (Klin).
- Behavior modification, educational intervention and pharmacology have been studied.





#### http://autismpdc.fpg.unc.edu/content/briefs

EVIDENCE-BASED PRACTICES FOR CHILDREN AND YOUTH WITH ASD

EVIDENCE-BASED PRACTICES FOR CHILDREN A Antecedent-Based Interventions (ABI) Computer-Aided Instruction Differential Reinforcement Discreta Trial Training Extinctional Communication Training Functional Behavior Assessment Functional Behavior Assessment Parent-Imgenerated Interventions Peer-Mediated Instruction and Intervention PerromPting Reinforcement Response InterruptionRedirection Self-Management Social SNIIIs Groups Task Analysis Task Analysis Task Analysis Task Analysis Time Delay Video Modeling Visual Supports

#### Components of an Effective Treatment Program

- Structured behavioral treatment
- Parent involvement
- Treatment at an early age
- Intensive intervention
- Social skill development
- Focus on generalization of skills
- Appropriate school setting
- Medication?

#### Challenges to Treatment

- · Concrete thinkers
- · Difficulty with humor
- · Problems regulating affect
- · Difficulty interpreting others' feelings
- Rule-bound
- · Diminished empathy

 Decreased desire to please significant others

#### Medications

- Symptom focused medications: stimulants for attention, anti-depressants for mood, antipsychotics for "oddities".
- Condition focused medications?



Drugs that increase serotonin transmission may be useful in reducing interfering repetitive behaviors and aggression as well as improving social relatedness (few controlled studies).

#### Promoting Social Behavior With Oxytocin in High-Functioning Autism Spectrum Disorders

- Published (2/10) online in the Proceedings of the National Academy of Sciences.
- Oxytocin is a hormone known to promote motherinfant bonds.
- A French research group investigated the behavioral effects of oxytocin in 13 subjects with autism.
- Under oxytocin, children with ASD responded more strongly to others and exhibited more appropriate social behavior and affect, suggesting a therapeutic potential of oxytocin through its action on a core dimension of autism.





Medication and Parent Training in Children With Pervasive Developmental Disorders and Serious Behavior Problems: Results From a Randomized Clinical Trial

MICHAELG. AMAN, PH.D., CHRISTOPHERJ. MCDOUGLE, M.D. et al.

Conclusions: Medication plus PT resulted in greater reduction of serious maladaptive behavior than Medication alone in children with PDDs, with a lower risperidone dose.

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J. AM. ACAD. CHILD ADOLESC. PSYCHIATRY, 48:12, DECEMBER 2009J.

#### Comorbid ADHD and Anxiety Affect Social Skills Group Intervention Treatment Efficacy in Children With Autism Spectrum Disorders

Kevin M. Antshel, PhD, Carol Polacek, PhD, NP, Michele McMahon, CSW, Karen Dygert, NP, Laura Spenceley, MA, Lindsay Dygert, BS, Laura Miller, BA, Fatima Faisal

ABSTEACT: Objective: To assess the influence of psychiatric comorbidity on social skill treatment outcomes for children with autism spectrum disorders (ASDs). Methods: A community sample d 83 children (74 males, 9 females) with an ASD (mean age = 9.5 yr; SD = 1.2) and common comorbid disorders participated in 10-week social skills training groups. The first 5 weeks of the group focused on convertainon skills and the second 5 weeks locased on sciol problem solving skills. A concurrent parter group was also included in the treatment. Social skills were assessed using the Social Skills Rating System. Ratings were completed by parents at pre-and posttreatment imperiod. Results: Children with ASD and children with an ASD and comorbid anxiety disorder improved in their parent reported social skills. Children with ASD and comorbid attention deficit/pynencitivity disorder failed to improve. Conclusion: Psychiatric comorbidity affects social skill treatment gains in the ASD population.

() Dev Behav Pediatr 32:439-446, 2011) Index terms: aufism spectrum, social skills, ADHD.

Statism	Support	gies for Based	Teaching on Autism	Research	١		
Home STAR Progra	am FACTER Home > STAR Autism I	Training Program: A Resea	Training DVDs	Products	Contact Us		
1-2-	STAR Autism P Joel Arick, Lauren with contributions	rogram: A R Loos, Ruth Fa	esearch-Based / Ico , Dave Krug,	ABA Curricu	<b>lum</b> A <u>R Program Order Form</u>		
	The STAR Autism Program teaches children with autism the critical skills identified by the 2001 National Research Council. The ABA (Applied Behavior Analysis) instructional methods of discrete trial training, pivotal response training and functional routines form the instructional base of this comprehensive program for children with autism.						
STAR Program Benefits Watch STAR Videos Purchase	The STAR Program inc plans, teaching mater curriculum-based asso six curricular areas of	ludes detailed les als, data system: ssment for teach receptive langua	son s and a ing in the ge,				
STAR Program Research	expressive language, functional routines, ac social skills.	spontaneous lang ademics, and pla	uage, y &	10	· A met		
	research based progra	m					
					10 st		



The first randomized, controlled trial for comprehensive autism treatment for children as young as 18 months old.

While certainly not a cure for the condition, the study did find that intense early treatment yields major improvements in IQ scores, language processing, and in the ability to manage everyday tasks essential for early childhood development and education.

Published in *Pediatrics* the University of Washington study was funded by the National Institute of Mental Health. It involved 48 children ages 18 to 30 months, half of whom were randomly assigned to receive the Early Start Denver Model, an intensive autism therapy protocol. The other half were assigned to a control group and received less intensive therapy.

After two years, those who participated in the Denver Model group had average IQ scores 17.6 points higher than the control group, putting them within the range of normal intelligence, while those in the other group gained just seven points, remaining in the zone of intellectual disability.

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# The SCERTS<sup>®</sup> Model (Pictart, Wetherby, Rubin & Laurent, 2007) What Is SCERTS (Second Second Second



















#### Treatment Evaluation with ASRS

- Step 1: Identify specific area or areas of need based on ASRS T-scores of 60 or more
- Which indicates many characteristics similar to individuals diagnosed with an ASD.
   Examine ASRS Total Score
- The Total Score is, however, insufficient for treatment planning because it is too general.
- Step 2: Look at the separate treatment scales

#### Treatment Evaluation with ASRS

- Total Score of 73 by Parent
   Areacher
   Table 3.3 Case of Donny: parent and teacher ASRS
   values needed for significance
   Parent
   Teacher
- Social Communication scores are high for both raters meaning he has problems with appropriate use of verbal and non-verbal communication requiring him to initiate, engage in, and maintain social contact (Social Communication *T*-scores of 77 and 78)

	Parent	Teach
Total score	73	73
Social communication	77	78
Unusual behavior	60	53
Self-regulation	70	74
DSM-IV scale	69	68
Treatment scales		
Peer socialization	70	73
Adult socialization	58	63
Social/emotional reciprocity	77	76
Atypical language	52	44
Stereotypy	49	54
Behavioral rigidity	72	48
Sensory sensitivity	44	48
Attention	71	73
<i>T</i> -scores greater than 59 appear in <sup>a</sup> Note Differences needed for sign Table 4.5 of the ASRS Manual	n italic text ificance wh	en compa
		17

#### Treatment Evaluation with ASRS

 ... and he struggles with maintaining control over his behavior (i.e., he is very argumentative) and attending in complex settings (Self-Regulation score of 70)

Table 3.3 Case of Donny: paren values needed for significance	t and teach	er ASRS 7
	Parent	Teacher
Total score	73	73
Social communication	77	78
Unusual behavior	60	53
Self-regulation	70	74
DSM-IV scale	69	68
Treatment scales		
Peer socialization	70	73
Adult socialization	58	63
Social/emotional reciprocity	77	76
Atypical language	52	44
Stereotypy	49	54
Behavioral rigidity	72	48
Sensory sensitivity	44	48
Attention	71	73
T-scores greater than 59 appear in <sup>a</sup> Note Differences needed for sign Table 4.5 of the ASRS Manual	i italic text ificance whe	en comparii
		17 8



#### Treatment Evaluation with ASRS • Raters agree except for Unusual Behavior and Behavioral Rigidity scales. Difference neededa Parent Teacher Diffe Total score 73 NS NS 73 77 60 70 69 Social communication Unusual behavior Self-regulation DSM-IV scale 78 53 74 68 Sig NS NS 7 6 $^{4}_{-1}$ DSM-IV scale Treatment scales Peer socialization Adult socialization Social/emotional reciprocity Atypical language Stereotypy Behavioral rigidity Sensory sensitivity Attention 70 NS NS NS 73 63 76 44 54 48 48 73 9 12 58 77 52 49 72 44 71 8 11 13 NS NS -8 -24 Sig NS 8 12 Attention T-scores greater than 59 appear in Italic text <sup>a</sup>Note Differences needed for significance when comparing Parent and Teacher ratings are found in Table 4.5 of the ASRS Manual

#### Treatment Evaluation with ASRS

- The difference between Donny's Unusual Behavior scores as rated by his mother (60) and teacher (51) suggests that behaviors in the home and the classroom are different; which implies that the exploration of the environmental impact on his odd behaviors could lead to good intervention options.
- The significant difference between Donny's Behavioral Rigidity scores as rated by his mother (72) and teacher (48), which also warrants further exploration.

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- reatment l	Fval	uatio	on wi	th	ASR
reactification	Lvui	autic		ci i	/ 1011.
Consistently high	scores	on Pee	r Socializ	atio	n
				atio	,
ocial/Emotional F	lecipro	city and	d Attenti	on	
	Parent	Teacher	Difference	Diffe	rence needed
Total score	73	73	0	5	NS
Social communication	77	78	1	6	NS
Unusual behavior	60	53	-7	6	Sig
Self-regulation	70	74	4	7	NS
DSM-IV scale	69	68	-1	6	NS
Treatment scales					
Peer socialization	70	73	3	9	NS
Adult socialization	58	63	5	12	NS
Social/emotional reciprocity	77	76	-1	8	NS
Atypical language	52	44	-8	11	NS
Stereotypy	49	54	5	13	NS
Behavioral rigidity	72	48	-24	8	Sig
Sensory sensitivity	44	48	4	12	NS
A 44	71	72	2	7	NC

T-scores greater than 59 appear in italic text <sup>a</sup>Note Differences needed for significance when comparing Parent and Teacher ratings are found in Table 4.5 of the ASRS Manual



#### Treatment Evaluation with ASRS

 Item level analysis within Peer Socialization helps clarify the exact nature of the behaviors that led to the high score

Fig. 3.7 Item level analysis	Peer Socialization				
(shadad itams indicate scores	Item	Score			
that are more than 1 SD from	3. seek the company of other children? (R)	1			
	14. have trouble talking with other children?				
ine normative inearly	19. have social problems with children of the same age?	2			
	31. play with others? (R)	1			
	45. understand age-appropriate humor or jokes? (R)	0			
	50. talk too much about things that other children don't care about?	4			
	64. choose to play alone?	3			
	69. show good peer interactions? (R)	2			
	70. respond when spoken to by other children? (R)	1			
	Peer Socialization Raw Score =	17			



#### Treatment Evaluation with ASRS

- The Quick Solution Guide provides the correspondence of behaviors associated with ASD and specific interventions provided by authors in the chapters that appear in the book.
- For example, Donny had a high ASRS T-score on the Social/Emotional Reciprocity scale and one of the items that addressed "looking at others when spoken to" was very high. Interventions for this behavior can be found on pages

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18 4

	Time 1	Time 2	Time 3	Prog	gress monitoring	Pro	gress monitoring
				(Tin	ne 2 – 1)	(Tin	ne 3 – 1)
Total score	73	70	63	-3	NS	10	Sig
Social communication	77	77	66	0	NS	11	Sig
Unusual behavior	60	58	58	$^{-2}$	NS	2	NS
Self-regulation	70	67	62	$^{-3}$	NS	8	NS
DSM-IV scale	69	68	63	$^{-1}$	NS	6	NS
Treatment scales							
Peer socialization	70	69	68	-1	NS	2	NS
Adult socialization	58	58	58	0	NS	0	NS
Social/emotional reciprocity	77	77	63	0	NS	14	Sig
Atypical language	52	52	52	0	NS	0	NS
Stereotypy	49	49	49	0	NS	0	NS
Behavioral rigidity	72	67	67	-5	NS	5	NS
Sensory sensitivity	44	44	44	0	NS	0	NS
Attention	71	68	58	-3	NS	13	Sig

## The "Prime Directive" is Independence

• Reduce reliance on prompts.

- Help individual's predict and control. environment and behavior.
- Increase self-esteem and self-efficacy.
- Develop independence through a "learning to swim" mindset.

#### Final Thoughts About the ASRS

- Accurate diagnosis requires well developed tools that
  - Are standardized on a typical sample that represents the US population
  - Represent current understanding of ASDs, especially the role of self-regulation
- Have good reliability and validity
- Have relevance to intervention

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- Are relatively easy to administer and score
- These were our goals when we developed the ASRS





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