Understanding, Evaluating and Treating Autism Spectrum Disorders

New Data, New Ideas and the ASRS

Sam Goldstein, Ph.D.
Assistant Clinical Professor
University of Utah
School of Medicine

www.samgoldstein.com

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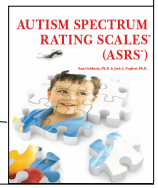
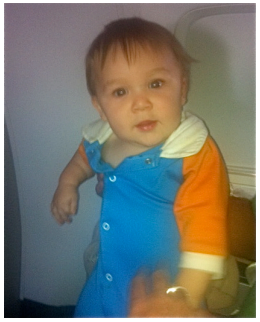


Relevant Disclosure

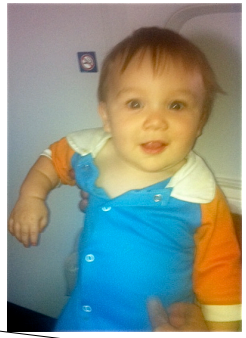
- Co-author Autism Spectrum Rating Scales (MHS,2009)
- Co-author Assessment of Autism Spectrum Disorders text (Guilford, 2009)
- Co-author/presenter Assessment of Autism Spectrum Disorders CEU (APA, 2009)

Reina and Her Mother

Adrian, my seatmate on a recent flight.



Adrian



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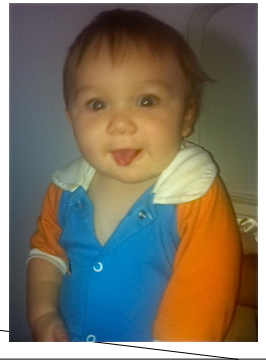

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Where are Autism's Roots?

- In the bible?
- In ancient cultures?
- In history?
- In religion?
- Portrayed in art?

Leon Frederic 1895

Is this child portrayed as autistic?

Which woman is her mother?

Kanner's Description (1943)

- first physician in the world to be identified as a child psychiatrist
- founder of the first child psychiatry department at Johns Hopkins University Hospital
- Wrote Child Psychiatry (1935), the first English language textbook to focus on the psychiatric problems of children.

Leo Kanner who introduced the label earl infantile autism in 1943 in his paper : Kanner, L. (1943). Autistic disturbances of affective contact. Nervous Child,

Kanner's Description (1943)

- His seminal 1943 paper, "Autistic Disturbances of Affective Contact", together with the work of Hans Asperger, forms the basis of the modern study of autism.
- Leo Kanner was the Editor for Journal of Autism and Developmental Disorders, then called Journal of Autism and Childhood Schizophrenia

Leo Kanner who introduced the label early infantile autism in 1943 in his paper : Kanner, L. (1943). Autistic disturbances of affective contact, Nervous Child, 2

Kanner's Description (1943)

- Inability to relate to others
- Disinterest in parents and people
- Language difficulties
- Fascination with inanimate objects
- Resistance to change in routine
- Purposeless repetitive movements
- A wide range of cognitive skills
- Where they possess an innate inability for emotional contact

Leo Kanner who introduced the label early infantile autism in 1943 in his paper : Kanner, L. (1943). Autistic disturbances of affective contact. Nervous Child, 2, 217-250.

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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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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

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.

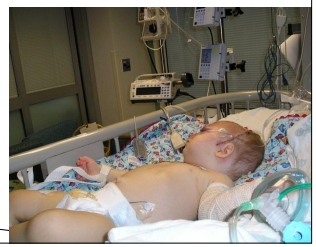
Crick and Dodge (1994)

Core DSM and ICD Autistic Symptoms

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

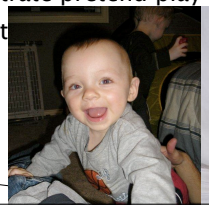
Symptoms Present Before 24 Months: Failure To:

- 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 demonst



Joint Attention

- Behaviors that focus the attention of the self and others on the same object (e.g. pointing,sharing emotion, etc.)
- Develops between 6 and 9 months
- Precursor of more advanced social and communication skills

Joint Attention

- This abnormality thought to be one of the earliest signs of autism
- Present in children with developmental delays absent autism
- This ability when present in preschoolers with autism predicts better prognosis for language development

Pretend Play in Autism

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

Theory of Mind

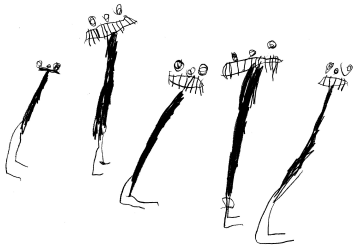
A line of research has proposed thatthe social deficits in autism represent a specific, innate cognitive capacity to attribute mental states to others and oneself and use these to explain and predict another person's behavior.

Executive Dysfunction Hypothesis

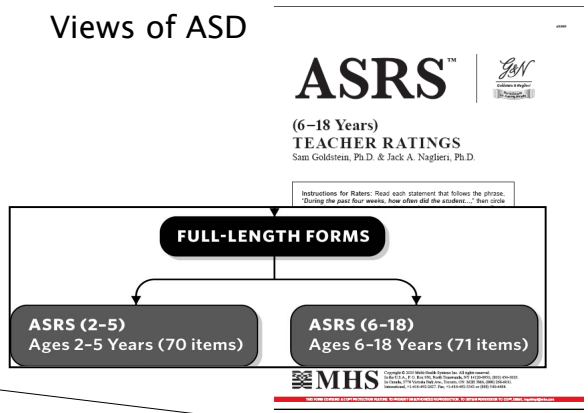
Problems with self-regulation and perseveration make it difficult to cope with changing social situations.

Pennington and Ozonoff (1996)

Level of cognitive functioning and useful language by five years of age are the best predictors of outcome.



Views of ASD



Factor Analysis for 2-5 Years

- A two-factor solution was best for parent and teacher raters
  - Factor I was defined by items that involved both social and communication behaviors
  - Items ...

Social/Communication Factor

Table 8.18. Exploratory Factor Analysis Results: ASRS (2–5 Years) Parent Ratings

Item		Social/Communication	Unusual Behaviors
29.	keep a conversation going?	-.916	.128
28.	start conversations with others?	-.909	.149
3.	understand how someone else felt?	-.908	.245
40.	respond when spoken to by other children?	-.873	.000
54.	share his/her enjoyment with others?	-.865	.038
50.	show an interest in the ideas of others?	-.859	.039
14.	understand the point of view of others?	-.831	.153
4.	play with others?	-.830	-.052
16.	share fun activities with others?	-.829	.004
52.	understand age-appropriate humor or jokes?	-.820	.043
49.	seek the company of other children?	-.816	-.073
19.	care about what other people think or feel?	-.812	.153
21.	respond when spoken to by adults?	-.802	-.007
5.	look at others when talking with them?	-.778	-.050
61.	show good peer interactions?	-.768	-.145
13.	look at others when interacting with them?	-.766	-.156
57.	follow instructions that he/she understood?	-.735	.019
7.	point to objects when asked to?	-.730	.057
18.	use make believe play?	-.708	-.018
25.	listen when spoken to?	-.707	-.044
15.	have trouble talking with other children?	.698	.123

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

Unusual Behaviors Factor

Item	Social/Communication	Unusual Behaviors
27. focus too much on details?	-.052	.735
8. insist on doing things the same way each time?	.114	.730
56. insist on certain routines?	.166	.698
9. need things to happen just as expected?	.177	.698
10. have a strong reaction to any change in routine?	.221	.689
70. repeat or echo what others said?	-.058	.683
39. become fascinated with parts of objects?	.079	.660
12. overreact to common smells?	.034	.653
47. focus on one subject for too much time?	.220	.651
20. become upset if routines were changed?	.286	.617
53. repeat certain words or phrases out of context?	.012	.608
2. become bothered by some fabrics or tags in clothes?	.118	.586
65. twirl, spin, or bang objects?	.144	.573
46. overreact to loud noises?	.352	.559
26. talk too much about things that other children don't care about?	-.093	.558
64. flap his/her hands when excited?	.148	.535
69. overreact to touch?	.337	.533
11. line up objects in a row?	-.065	.530
41. talk too much about things that adults don't care about?	-.169	.518
42. use an odd way of speaking?	.353	.512
45. resist being touched or held?	.329	.468

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 -Unusual Behaviors

Social / Communication Factor

Table 8.20. Exploratory Factor Analysis Results: ASRS (6–18 Years) Parent Ratings

Item	Unusual Behaviors	Self-Regulation	Social/ Communication
56. start conversations with others?	.051	.082	.861
42. share his/her enjoyment with others?	.113	-.074	.827
23. keep a conversation going?	.027	.012	.803
43. show an interest in the ideas of others?	.038	-.141	.765
70. respond when spoken to by other children?	-.070	.012	.759
8. share fun activities with others?	.006	-.038	.752
31. play with others?	-.072	.019	.740
69. show good peer interactions?	-.072	-.165	.690
39. care about what other people think or feel?	.066	-.090	.686
3. seek the company of other children?	-.092	.157	.666
28. understand how someone else felt?	-.044	-.173	.616
9. look at others when talking with them?	-.144	-.076	.608
45. understand age-appropriate humor or jokes?	-.263	.008	.602
61. look at others when interacting with them?	-.108	-.067	.599
33. respond when spoken to by adults?	-.006	-.167	.599
55. smile appropriately?	-.131	-.032	.590
32. notice social cues?	-.160	-.083	.573
12. play with toys appropriately?	-.173	.047	.466

Unusual Behaviors Factor

Table 8.20. Exploratory Factor Analysis Results: ASRS (6–18 Years) Parent Ratings

Item	Unusual Behaviors	Self-Regulation	Social/ Communication
51. insist on certain routines?	**.842**	.001	.023
24. insist on doing things the same way each time?	**.785**	.056	.063
63. become upset if routines were changed?	**.755**	.089	-.015
22. become obsessed with details?	**.745**	-.011	-.016
40. focus too much on details?	**.736**	-.035	.070
49. need things to happen just as expected?	**.722**	.087	.029
62. overreact to loud noises?	**.680**	.019	-.089
13. have a strong reaction to any change in routine?	**.677**	.172	-.024
54. line up objects in a row?	**.670**	-.120	.001
26. repeat or echo what others said?	**.637**	.047	-.025
21. repeat certain words or phrases out of context?	**.637**	.050	-.113
29. overreact to common smells?	**.636**	.001	-.015
48. focus on one subject for too much time?	**.628**	.058	-.067
65. insist on keeping certain objects with him/her at all times?	**.628**	-.100	-.181
25. overreact to touch?	**.590**	.051	-.106
2. become bothered by some fabrics or tags in clothes?	**.560**	.120	.088
68. reverse pronouns (eg, you for me)?	**.521**	-.019	-.128
46. flap his/her hands when excited?	**.484**	-.059	-.183
50. talk too much about things that other children don't care about?	**.481**	.298	-.006
67. twirl, spin, or bang objects?	**.473**	.071	-.177
20. use an odd way of speaking?	**.456**	.078	-.305

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 - 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.

Self-Regulation Factor

Table 8.20. Exploratory Factor Analysis Results: ASRS (6–18 Years) Parent Ratings

Item	Unusual Behaviors	Self-Regulation	Social/ Communication
57. fail to complete tasks?	-.081	**.852**	-.060
44. leave homework or chores unfinished?	-.141	**.847**	-.012
35. have problems paying attention when doing homework or chores?	-.053	**.800**	-.116
36. make careless mistakes in school work?	-.079	**.783**	-.055
30. become distracted?	.027	**.743**	-.063
1. appear disorganized?	-.054	**.728**	-.056
18. get into trouble with adults?	.001	**.681**	.006
60. interrupt or intrude on others?	.256	**.647**	.113
71. appear fidgety when asked to sit still?	.194	**.609**	-.040
7. have problems waiting his/her turn?	.162	**.595**	-.064
58. ask questions that were off-topic?	.365	**.545**	.104
6. argue and fight with other children?	.118	**.476**	.096
52. have problems paying attention to fun tasks?	.085	**.464**	-.255
16. learn simple tasks but then forget them quickly?	.116	**.445**	-.204
34. avoid looking at an adult when there was a problem?	.142	**.441**	-.192
5. follow instructions that he/she understood?	-.048	**-.418**	.276
66. have social problems with adults?	.205	**.380**	-.294

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

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Current View of ASD In ASRS

- Based on the factor analysis, we suggest that ASD is best described as having two clusters of behaviors for children ages 2–5 and three for those aged 6 to 18 years of age
  - Ages 2 – 5 years
    - Social / Communication
    - Unusual Behaviors
  - Ages 6 – 18 years
    - Social / Communication
    - Unusual Behaviors
    - Self-Regulation
- This is the organizational form of the ASRS

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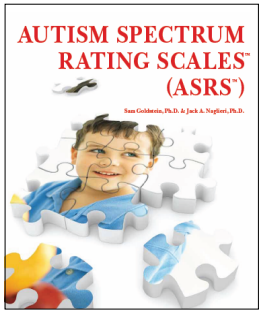
Goals of the ASRS

Goldstein & Naglieri (2009)



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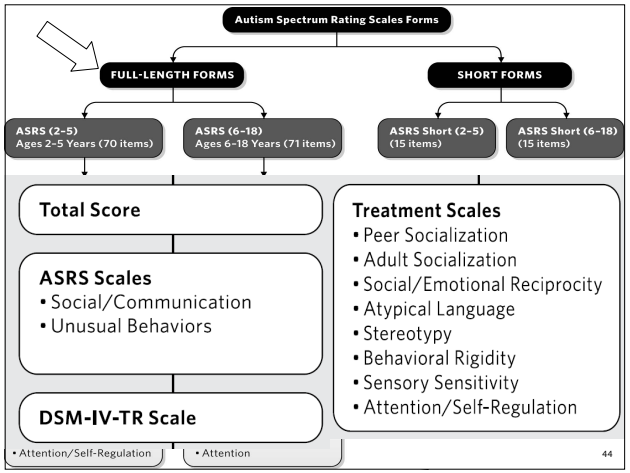
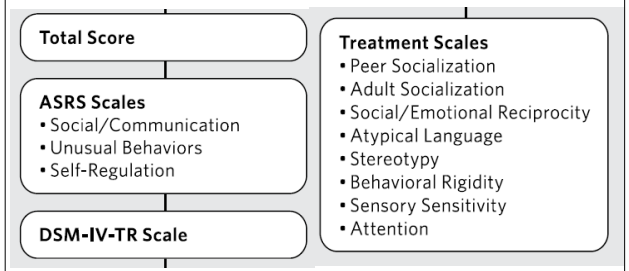
ASRS Scale Goal #1

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
  - Treatment Scales
- Empirical Scales
  - Ages 2-5
    - Social / Communication
    - Unusual Behaviors
  - Ages 6 - 18 years
    - Social
    - Communication
    - Self -Regulation



ASRS Ages 6-18 (70 items)



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

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

- The way we calibrate a psychological test or rating scale score has a direct impact on the reliability and validity of the instrument
- The composition of the comparison and characteristics of the group is especially important whenever diagnostic decisions are being made.
- What is the current state of the art?

Importance of a National Norm

- What is the problem with not having a national norm?
  - You don't know how typical children perform
    - Typical means a wide variety of individuals who vary on important demographic variables
- What is the problem with not having a standard score like a T-score (mean of 50 and SD of 10)?
  - You don't know how similar a child's behavior is in relation to the norm
  - Let's look at some data …

Importance of a National Norm

- Ratings on the ASRS were collected from across the U.S
- Two samples of children were rated using the Autism Spectrum Rating Scale

	Raw Score		
	Mean	SD	N
Normative Sample	40.1	35.2	960
ASD Sample	130.2	50.3	186

Calibration of T scores

RAW SCORE	STANDARD SCORES	
	T Score Based on ASD Sample (Mean Raw Score = 130.2)	T Score Based on Typical Sample (Mean Raw Score = 40.1)
170	58	
160	56	
150	54	
140	52	
130	**50**	
120	48	
110	46	
100	44	
90	42	
80	**40**	
70	38	
60	36	
50	34	
40	32	
30	30	

Mean

-1 SD

A Raw Score of 130 is a T of 50 based on ASD sample

A Raw Score of 80 (1 SD below the mean (SD= 50.3) is a T of 40 based on the ASD sample). Does that mean ASD is unlikely?

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Calibration of T scores

RAW SCORE	STANDARD SCORES	
	T Score Based on ASD Sample (Mean Raw Score = 130.2)	T Score Based on Typical Sample (Mean Raw Score = 40.1)
170	58	87
160	56	84
150	54	81
140	52	78
130	**50**	76
120	48	73
110	46	70
100	44	67
90	42	64
80	**40**	**61**
70	38	58
60	36	56
50	34	53
40	32	**50**
30	30	47

Mean

-1 SD

A Raw Score of 80 is a T of 61 based on TYPICAL sample

The average Raw Score for Typical sample was 40.1 (SD = 35.2); that is a T Score of 50

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ASRS with GARS-2

	Rater	Age in Years	Obt *r*	Corr *r*	*N*	GARS-2 *M*	GARS-2 *SD*	ASRS *M*	ASRS *SD*
GARS Autism Index	Parent	2–5	.83	.61	78	100.9	25.7	74.5	11.4
	Teacher	2–5	.76	.41	53	100.1	30.5	75.3	12.7
	Parent	6–18	.80	.63	104	93.9	24.4	69.3	10.0
	Teacher	6–18	.82	.68	116	88.6	23.3	69.8	10.0

Note: GARS-2 standard scores are mean of 100, SD of 15; 80+ = concern.

Note: almost 1 SD below GARS mean = ASRS T of 70 (+2 SD)

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ASRS with CARS

	Rater	Age in Years	Obt *r*	Corr *r*	*N*	CARS *M*	CARS *SD*	ASRS *M*	ASRS *SD*
CARS Total Raw Score	Parent	2–5	.50	.66	34	36.8	9.7	76.7	6.6
	Teacher	2–5	.06	.06	36	36.9	10.3	78.4	10.1
	Parent	6–18	.35	.40	109	35.3	10.5	69.5	8.7
	Teacher	6–18	.50	.51	122	35.7	10.8	71.3	9.9

Note: CARS Manual: scores >29 may indicate Autism

Importance of a National Norm

- Conclusions
  - The diagnostic conclusions we reach are greatly influenced by the tools we use.
  - The composition of the reference group can make a substantial difference in the conclusions reached
  - Norms that represent a typical population are needed for all assessment tools
  - We have an obligation to use the highest quality tests

Importance of a National Norm

- Only tests that yield standard scores based on a representative normal sample should be used in clinical practice.
- A comparison of ASD symptoms to a normative group is very helpful.
- Comparisons to children with symptoms of Autism only can be misleading.
- The use of raw scores should be avoided in all tests (especially achievement tests).

ASRS Reliability

ASRS Reliability Ages 2-5 Parents & Teachers (or caregivers)

Scale		Parent Ratings			Teacher Ratings		
		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 Scales	Social/ Communication	.94	.98	.96	.95	.98	.97
	Unusual Behaviors	.91	.96	.94	.85	.97	.92
DSM-IV-TR Scale		.91	.97	.94	.91	.98	.95
Treatment Scales	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
	Atypical Language	.71	.77	.74	.59	.79	.69
	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

ASRS Reliability Ages 6-18 : Parents

Scale		6 to 11 Years			12 to 18 Years		
		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 Scales	Social/ Communication	.91	.97	.94	.92	.95	.93
	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	.95
Treatment Scales	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
	Atypical Language	.81	.85	.82	.82	.85	.83
	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

ASRS Reliability Ages 6-18 : Teachers

Scale		6 to 11 Years			12 to 18 Years		
		Normative Sample (*N* = 480)	Clinical Sample (*N* = 167)	Average	Normative Sample (*N* = 480)	Clinical Sample (*N* = 325)	Average
Total Score		.97	.98	.97	.97	.97	.97
ASRS Scales	Social/ Communication	.93	.96	.94	.92	.96	.94
	Unusual Behaviors	.93	.95	.94	.94	.95	.94
	Self-Regulation	.94	.93	.94	.93	.91	.92
DSM-IV-TR Scale		.94	.96	.95	.94	.96	.95
Treatment Scales	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
	Atypical Language	.75	.87	.79	.80	.85	.82
	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

ASRS Validity

- And an updated view of ASD

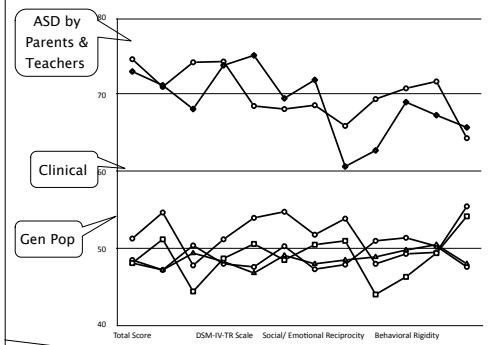
Validity of the Factors

- 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.

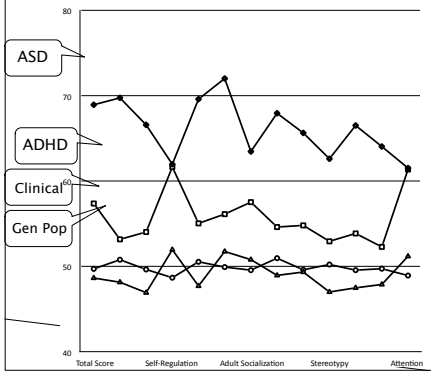
ASRS Profiles

- 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 .

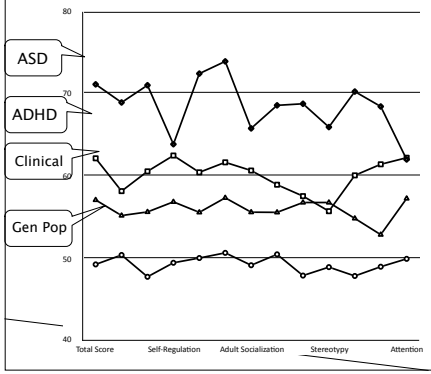
ASRS Validity for ages 2-5



ASRS Validity: Ages 6-18 Parents



ASRS Validity: Ages 6-18 Teachers



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(SRI) although the rest of the values are presented to 1 decimal place, Gail would like Kappa presented to 2 decimal places.

Classification Accuracy ages 2-5 Parents

		ASRS Scales		
	Total Score	Social/ Communication	Unusual Behaviors	DSM-IV-TR 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**
Kappa	**0.80**	**0.87**	**0.90**	**0.95**
Autism Spectrum Disorder *(N)*	**126**	**132**	**129**	**127**
General Population *(N)*	**115**	**115**	**124**	**121**

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Classification Accuracy ages 2-5 Teachers

		ASRS Scales		
	Total Score	Social/ Communication	Unusual Behaviors	DSM-IV-TR 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**
Kappa	**0.79**	**0.76**	**0.70**	**0.79**
ASD *(N)*	**114**	**124**	**113**	**117**
General Sample *(N)*	**112**	**110**	**124**	**116**

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Classification Accuracy ages 6–18 Parents

		ASRS Scales			
	Total Score	Social/ Communication	Unusual Behaviors	Self-Regulation	DSM-IV-TR 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
Kappa	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

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Classification Accuracy ages 6–18 Teachers

		ASRS Scales			
	Total Score	Social/ Communication	Unusual Behaviors	Self-Regulation	DSM-IV-TR 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 (%)	90.3	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
Kappa	0.83	0.78	0.85	0.70	0.88
ASD *(N)*	206	210	231	217	215
General Sample *(N)*	212	229	212	221	227

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Components of an ASD Evaluation

- History
- Questionnaires
- Observation
- Interaction
- Cognitive and language data
- Adaptive functioning
- Emotional functioning
- Consideration of differential diagnosis and/or comorbidity
- Rating Scale (ASRS)
- Direct measures (e.g., ADOS)

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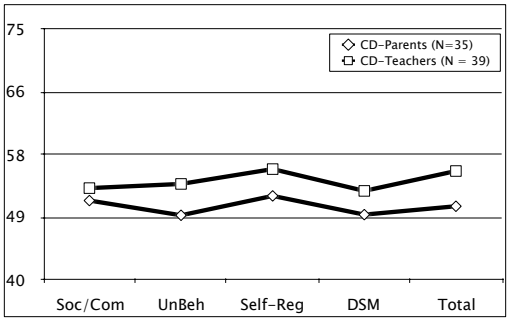
Autism Rating Scales

- Gilliam Autism Scale
- Childhood Autism Rating Scale
- Autism Behavior Checklist
- Checklist for Autism in Toddlers
- Gilliam Asperger Rating Scale
- Autism Spectrum Rating Scale

- Choose wisely…

ASD vs Communication Disorders

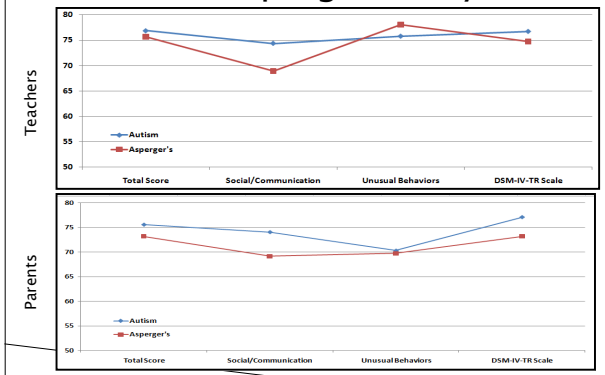
ASD vs Communication Disorders



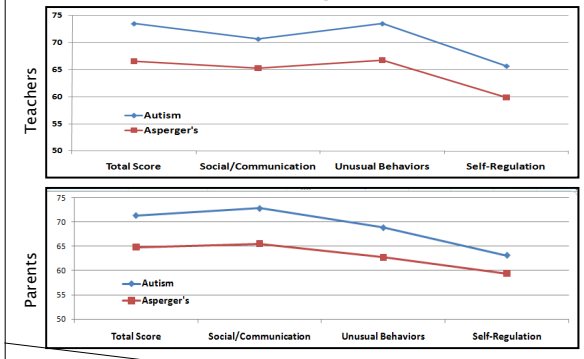
Autism and Asperger Syndrome

ASRS preliminary findings

Autism vs Asperger 2-5 years



Autism vs Asperger 6-18 Years



Autism vs Asperger

- ASRS means for ages 2-5 years were typically somewhat higher for children with Autism than those with Asperger's syndrome
  - Exception being Unusual Behaviors where the two groups were similar
- ASRS means for ages 6-18 years were consistently higher for children with Autism than those with Asperger's syndrome

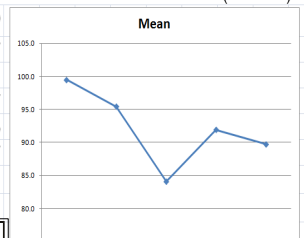
Cognitive Ability Profiles for Children with ASD

Planning, Attention, Simultaneous, Successive (PASS) Cognitive Processes from Cognitive Assessment System (Naglieri & Das, 1997)

PASS Processing Scores

Cognitive Assessment System Scores for Children with ASD (N = 52)

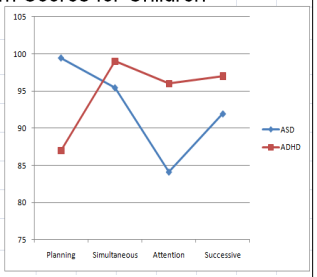
	Mean	SD
Planning	99.5	27.7
Simultaneous	95.4	19.1
Attention	84.1	20.7
Successive	91.9	21.5
Full Scale	89.7	26.7



ASD vs ADHD

Cognitive Assessment System Scores for Children with ASD and ADHD

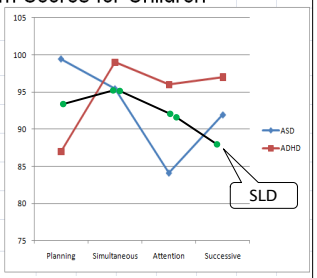
	ASD	ADHD
Planning	99	87
Simultaneous	95	99
Attention	84	96
Successive	92	97



ASD vs ADHD vs SLD

Cognitive Assessment System Scores for Children with ASD and ADHD

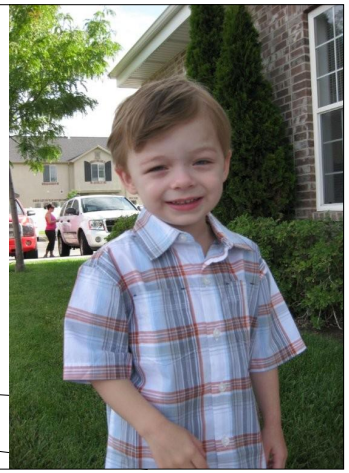
	ASD	ADHD
Planning	99	87
Simultaneous	95	99
Attention	84	96
Successive	92	97



Important Conclusions

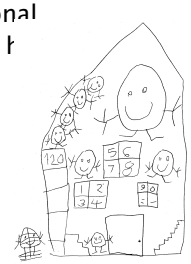
- Clearly what is needed is well developed tools that
  - Are standardized on a typical sample that represents the US population
  - Represent current understanding of ASDs, especially the role of self-regulation
  - Have good reliability and validity
  - Have relevance to intervention
  - Are relatively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

Making the Diagnosis of ASD

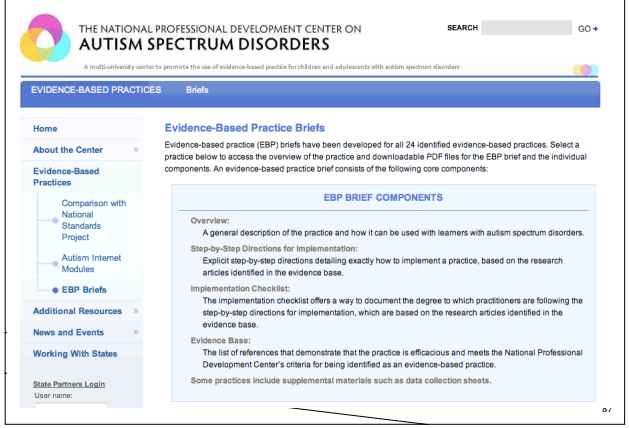


Intervention

- 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 h studied.



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



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

EVIDENCE-BASED PRACTICES FOR CHILDREN AND YOUTH WITH ASD

- Antecedent-Based Interventions (ABI)
- Computer-Aided Instruction
- Differential Reinforcement
- Discrete Trial Training
- Extinction
- Functional Behavior Assessment
- Functional Communication Training
- Naturalistic Intervention
- Parent-Implemented Interventions
- Peer-Mediated Instruction and Intervention
- Picture Exchange Communication System (PECS)
- Pivotal Response Training
- Prompting
- Reinforcement
- Response Interruption/Redirection
- Self-Management
- Social Narratives
- Social Skills Groups
- Speech Generating Devices/VOCA
- Structured Work Systems
- Task Analysis
- Time Delay
- Video Modeling
- Visual Supports

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

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Treatment Evaluation with ASRS

- Total Score of 73 by 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)

Table 3.3 Case of Donny: parent and teacher ASRS *T* values needed for significance

	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 italic text
[a]*Note* Differences needed for significance when comparin
Table 4.5 of the ASRS Manual

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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: parent and teacher ASRS *T* values needed for significance

	Parent	Teacher
Total score	*73*	*73*
Social communication	*77*	*78*
Unusual behavior	*60*	53
Self-regulation	*70*	*74*
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Stereotypy	49	54
Behavioral rigidity	72	48
Sensory sensitivity	*44*	48
Attention	*71*	*73*

T-scores greater than 59 appear in italic text
[a]*Note* Differences needed for significance when compari
Table 4.5 of the ASRS Manual

Treatment Evaluation with ASRS

- Raters agree except for Unusual Behavior and Behavioral Rigidity scales

	Parent	Teacher	Difference	Difference needed[a]	
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
Attention	*71*	*73*	2	7	NS

T-scores greater than 59 appear in italic text
[a]*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.

Treatment Evaluation with ASRS

- Consistently high scores on Peer Socialization, Social/Emotional Reciprocity and Attention

	Parent	Teacher	Difference	Difference needed[a]	
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
Attention	*71*	*73*	2	7	NS

T-scores greater than 59 appear in italic text

[a]*Note* Differences needed for significance when comparing Parent and Teacher ratings are found in Table 4.5 of the ASRS Manual

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Treatment Evaluation with ASRS

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

3 Evaluation of Treatment Effectiveness in the Field of Autism 51

Fig. 3.7 Item level analysis from ASRS interpretive report (shaded items indicate scores that are more than 1 *SD* from the normative mean)

Peer Socialization	
Item	**Score**
3. seek the company of other children? (R)	1
14. have trouble talking with other children?	3
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**

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Treatment Evaluation with ASRS

Quick Solution Finder

Peer Socialization

Peer Socialization	
Item	**Score**
14. have trouble talking with other children?	3
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

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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

Treatment Evaluation with ASRS

Table 3.4 Parent *T*-scores for ASRS scales obtained over three time periods

	Time 1	Time 2	Time 3	Progress monitoring (Time 2 − 1)		Progress monitoring (Time 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					Sig	0	Sig
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

T-scores greater than 59 appear in italic text

Note Differences needed for significance when comparing scores over time for Parent and Teacher ratings are found in Table 4.11 of the ASRS Manual ($p = 0.10$ with Bonferroni correction)

ert
elf
, 2008

Were They but There at Night

There is a bolder field where every stone
Is a glazed, glittering gem, like stars fallen from the sky
All except one, a plain grey rock alone in the center
Feeling excluded and shunned
People come, tourists, painters, photographers, collectors
To view each shining bolder, a pleasure to the beholder
Ooh! Ahh! Look at this one! Come quick!
Pockets bulge with fragments and paint cans run dry
But the grey rock remains ignored
An ugly blotch on a sweeping mural
The sun sets, everyone leaves
And they miss the centerpiece of the field
For when night falls, the grey rock in the center
It glows in the dark

www.samgoldstein.com
info@samgoldstein.com