Atypicality, Nonverbal IQ, and Age: Seeing autism spectrum disorders in three dimensions

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Disclosures

- **Dr. Coplan is author of *Making Sense of Autistic Spectrum Disorders: Create the brightest future for your child with the best treatment options* (Bantam-Dell, 2010), and receives royalties on its sale**

- **This presentation will include a discussion of off-label drug use**

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Topics

- **Atypicality**
- **Associated features (IQ)**
- **Etiology**
- **Epidemiology (the "explosion")**
- **Prognosis (the "Natural History")**
- **Developmental Interventions**
- **Behavior Management & Medication**
- **Quackery**
- **Family Matters**

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Natural History: "The temporal course a disease from onset to resolution"

Center for Disease Control & Prevention

ASD has a *Natural History*

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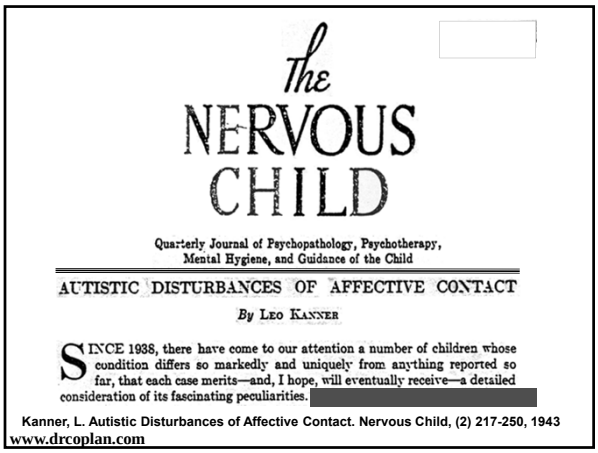

The NERVOUS CHILD

Quarterly Journal of Psychopathology, Psychotherapy, Mental Hygiene, and Guidance of the Child

AUTISTIC DISTURBANCES OF AFFECTIVE CONTACT

By Leo Kanner

SINCE 1938, there have come to our attention a number of children whose condition differs so markedly and uniquely from anything reported so far, that each case merits—and, I hope, will eventually receive—a detailed consideration of its fascinating peculiarities.

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

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Kanner, 1943

- N = 11 (M 8; F 3)
- Age: 2 to 8 yr.
- Clinical Features:
  - Impaired socialization
  - Idiosyncratic language
  - Repetitious behaviors
  - Unusual responses to sensory stimuli

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

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Impaired Socialization

- "Aloof"
- "Withdrawn"
- Limited eye contact
- Indifferent to others

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Idiosyncratic Language

- Echolalia
- Delayed Echolalia
- Pronoun Reversal
- Odd inflection

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Repetitious Behaviors

- Rigid Routines
- Stereotypies
- Lining up / spinning objects

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Unusual sensory responses

- "Petrified of vacuum cleaner"
- Drawn to, or afraid of, spinning objects
- Mouthing behavior
- Ingesting inedible materials
- Food selectivity

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Kanner, 1938 → 1943

- Gradual improvement in early childhood
  - Social skills
  - Language
  - Cognitive flexibility

www.drcoplan.com

Kanner, 1938 → 1943

"Between the ages of 5 and 6 years, they gradually abandon echolalia and learn spontaneously to use personal pronouns.

"Language becomes more communicative, at first in the sense of a question-and-answer exercise, and then in the sense of greater spontaneity of sentence formation….

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

www.drcoplan.com

Kanner, 1938 → 1943

"Food is accepted without difficulty. Noises and motions are tolerated more than previously. The panic tantrums subside. The repetitiousness assumes the form of obsessive preoccupations…

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

www.drcoplan.com

Kanner, 1938 → 1943

"Reading skill is acquired quickly, but the children read monotonously, and a story or a moving picture is experienced in unrelated portions rather than in its coherent totality...*

** "Central coherence"*

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

www.drcoplan.com

Kanner, 1938 → 1943

"Between the ages of 6 and 8, the children begin to play in a group, still never ***with*** the other members of the group, but at least on the periphery ***alongside*** the group.

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

www.drcoplan.com

Kanner, 1938 → 1943

"People are included in the child's world to the extent to which they satisfy his needs...

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

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Kanner, 1938 → 1943

All of this makes the family feel that, in spite of recognized 'difference' from other children, there is progress and improvement.

Leo Kanner, 1943

Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943

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Kanner, 1971

- **Deceased: 1**
- **Lost to follow-up: 2**
- **Institutionalized: 5**
- **Living on work farm: 1**
- **Living at home: 2**
  - **BA degree / bank teller**
  - **Sheltered workshop / machine operator**

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Kanner's contributions

- **Clinical Description**
  - **Social, Language, Repetitious behavior, & Sensory aversions / attractions**
- **Attribution: An "inborn error of affective contact"**
- **Described the *Natural History* of improvement over time**

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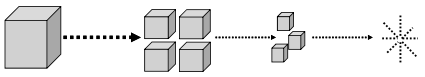
Over time, the ice melts



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Atypicality vs. Delay

- ***Delayed:* Behavior would be normal in a younger child**
  - **Ex: Pulling to stand at 18 months; normal tone & reflexes**
  - **Ex: Babbling in a 24 month old**
- ***Atypical:* Behavior would be abnormal at any age**
  - **Ex: Spasticity & hyperadduction**
  - **Ex: Reciting TV commercials but not saying "mama" or "dada"**

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Quantifying severity of ASD

Clinical Domain • Social • Language • Repetitious Behavior • Sensory	Decreasing Atypicality➔ Increasing Age➔		
	Severe / Youngest	Moderate / Older	Mild / Older

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Social Interaction

"Our child is *among* us, but not *with* us."

Parent of a 4 year old with ASD

www.drcoplan.com

Quantifying severity of ASD - 1

Clinical Domain ⇓	Decreasing Atypicality / Increasing Age ⇒		
	Severe / Youngest	Moderate / Older	Mild / Older
1. Social Interaction	•No eye contact •No physical affection •Cannot be engaged in imitative tasks	•Intermittent eye contact •Seeks affection "on his own terms" •May invade personal space of others (not true affection) •Engageable in imitative tasks, although with difficulty	•Good eye contact •Shows interest in others, but often does not know how to join in •Easily engaged in imitative activities •Rigid; has difficulty if perceives that rules have been broken •Difficulty with "Theory of Mind" tasks

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Theory of Mind

- **Realization that other people have an internal mental & emotional state, different from one's own**
- **Ability to gauge the internal mental & emotional state of others**
  - **Able to infer motives & predict behavior of others**
  - **Empathy**
  - **Humor**

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Theory of Mind

How does the boy feel?
Why?

www.drcoplan.com

Theory of Mind

Muff

**Muff is a little yellow kitten.
She drinks milk.
She sleeps on a chair.
She does not like to get wet.**

**What is this story about?
How would Muff feel, if you gave her a bath?**

•Clean

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Theory of Mind

The Dog

A little black dog ran away from home. He played with two big dogs. It began to rain. He ran under a tree. He wanted to go home, but he did not know the way. He saw a boy he knew. The boy took him home.

**What happened in the story?
Does the story have a happy ending, or a sad ending?**

***•Sad, because it was raining.
•Sad, because the dog was lost.***

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Theory of Mind

Camping

Six boys put up a tent by the side of the river. They brought things to eat with them. When the sun went down, they went into the tent to sleep. In the night, a cow came and began to eat grass around the tent. The boys were afraid. They thought it was a bear.

Is this a sad story, a scary story, or a funny story?

***•A scary story, because the boys were scared*. (PDD-NOS)
•*It was a most <u>unusual</u> story, because you don't often find cows in the woods.* (Asperger Syndrome)**

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Theory of Mind

www.drcoplan.com

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Language

"My child talks, but he doesn't communicate."

Mother of a 3 year old with autism

www.drcoplan.com

Language Deficits in ASD

- ***Pragmatics:*** **Use of language for the purpose of social interaction**
  - **Framing**
  - **Topic maintenance**
  - **Conversational repair**
  - **Impaired Pragmatics:**
  - **Nonverbal**
  - **Echolalia, delayed echolalia**
  - **Off-topic responses**
  - **Person talks "at" rather than "with" partner**

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Language Deficits in ASD

- ***Prosody:*** **Tone, Pitch, Volume**
  - **Stilted**
  - **Sing-song**
  - **Robotic**
  - **Pedantic**
  - **Overly loud**

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Quantifying severity of ASD - 2

Clinical Domain ⇓	Decreasing Atypicality / Increasing Age ⇒		
	Severe / Youngest	Moderate / Older	Mild / Older
2. Language •Pragmatics •Prosody	•Nonverbal •No response to voice; may "act deaf" •No use of gestures as a means of compensating for absence of spoken language •May use "hand-over-hand" to guide caregiver to desired objects	•Echolalia, Delayed echolalia •Verbal Perseveration •Odd Inflection (stilted, sing-song, ⇑⇓ volume) •May use stock phrases in an attempt to communicate •Makes use of visual communication modalities (symbol cards; sign language)	•Speaks fluently, but literal; lacks understanding of verbal nuance •Difficulty with Pragmatics (framing, turn-taking, topic maintenance; conversational repair; talks "at" rather than "with" others) and Theory of Mind language tasks (fibbing; humor, verbal make-believe)

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Repetitious Behavior

Quantifying severity of ASD - 3

Clinical Domain ⇓	Decreasing Atypicality / Increasing Age ⇒		
	Severe / Youngest	Moderate / Older	Mild / Older
3. Repetitious Behaviors *Cognitive*	•Extreme distress if *routines* are changed or when required to *transition* from one task to another •Fascination with odd objects (tags, wheels, fans, etc.)	• Same, but with diminishing level of distress; able to accept verbal preparation for changes in routine • Complex repetitious play (lining up objects, memorizes numbers, letters, etc)	• May demonstrate conscious awareness of preference for routines; easier to self-modulate •Play remains repetitious, but repetitive quality is more subtle; preoccupation with arcane topics •Problems with Central Coherence
Motoric	•Frequent, intense stereotypical movements (flapping, spinning, toe-walking, finger twiddling)	• Motor stereotypies occasional; may re-emerge when excited	• Motor stereotypies rare or absent

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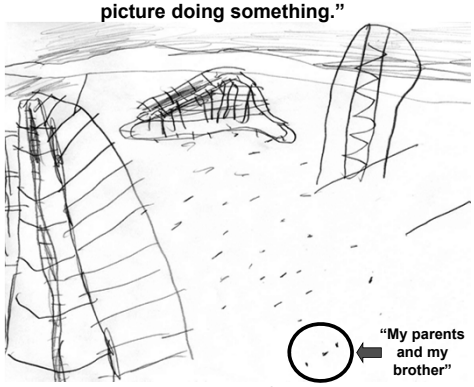
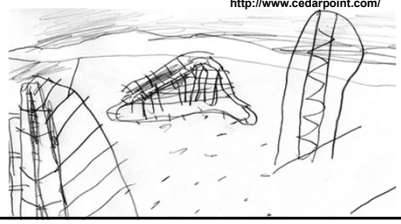
"Draw a picture of your family, with everybody in the picture doing something."



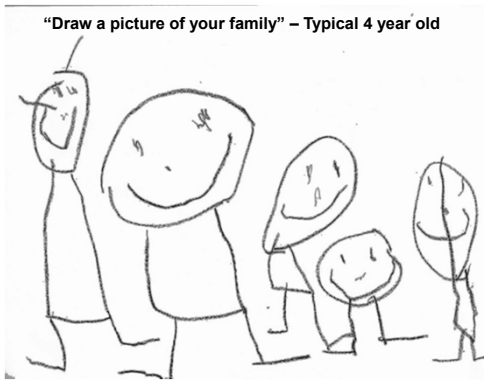
"Cedar Point Park, with the ocean and Canada in the background."

www.drcoplan.com © J. Coplan 2010

http://www.cedarpoint.com/



"Draw a picture of your family" – Typical 4 year old



"Draw a picture of your family" – 8 yr old with ASD

Repetitious behavior in ASD

- A direct expression of the underlying biology
  - Cognitive Rigidity
  - Stereotypies
- Stress relief
- A coping mechanism, to offset deficits in Theory of Mind & Central Coherence

Central Coherence

- **Ability to see "the big picture" rather than a collection of individual elements**

Tasks requiring Central Coherence (in addition to Theory of Mind)

What's happening in this picture?

What's happening in this picture?

"The girl is screaming."

What's happening in this picture?

"That girl is trying to steal the other girl's book."

What's happening in this picture?

What's happening in this picture?

"The man is drowning."

What's happening in this picture?

"The man is swimming, and the car is about to fall on him."

What's happening in this picture?

What's happening in this picture?

"The man is trying to fix the truck."

What's happening in this picture?

"The man is playing with his dog. The truck can't go because all the people are in the way."

Sensory & Motor Processing

Quantifying severity of ASD - 4

Clinical Domain ⇓	Decreasing Atypicality / Increasing Age ⇒		
	Severe / Youngest	Moderate / Older	Mild / Older
4.Sensorimotor: •*Intense aversion or attraction to specific classes of stimuli* •*Clumsiness*	•*Auditory*: Hyperacusis, covers ears, acts deaf •*Visual*: self-stimulation (lights/patterns); looks at objects from odd angles •*Tactile*: rubbing, licking, mouthing, deep pressure; averse to light touch •*Olfactory*: Sniffing •Extreme food selectivity •↓ ↑Pain threshold •Fears: Heightened / blunted	Same, but diminishing intensity	Same, but diminishing intensity

© Coplan, J. Making Sense of Autistic Spectrum Disorders. Bantam-Dell, 2010

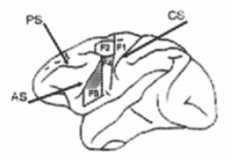
Abnormal responses to sensory stimuli

© Coplan, J. Making Sense of Autistic Spectrum Disorders. Bantam-Dell, 2010

Clumsiness in ASD

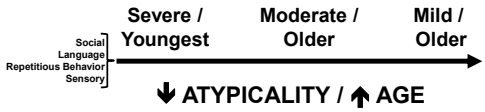
1. Fournier, K.A., et al., *Motor coordination in autism spectrum disorders: a synthesis and meta-analysis.* J Autism Dev Disord, 2010. 40(10): p. 1227-40.
2. Mostofsky, S.H., et al., *Decreased connectivity and cerebellar activity in autism during motor task performance.* Brain, 2009. 132(Pt 9): p. 2413-25.
3. Gidley Larson, J.C., et al., *Acquisition of internal models of motor tasks in children with autism.* Brain, 2008. 131(Pt 11): p. 2894-903.
4. Papadopoulos, N., et al., *Motor Proficiency and Emotional/Behavioural Disturbance in Autism and Asperger's Disorder: Another Piece of the Neurological Puzzle?* Autism, 2011.
5. Mostofsky, S.H. and J.B. Ewen, *Altered connectivity and action model formation in autism is autism.* Neuroscientist, 2011. 17(4): p. 437-48.

Mirror Neurons: The Missing Link?



Caggiano et al Science 17 April 2009. Mirror Neurons Differentially Encode the Peripersonal and Extrapersonal Space of Monkeys

"The Spectrum": ASD in One Dimension



Coplan J Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003 45(10):712-6

Natural History of ASD-1

- **ASD has a *Natural History* for improvement over time**
- **Assessment is age-dependent**
  - **Symptoms may reflect child's age, rather than intrinsic severity**

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Natural History of ASD-2

- ASD can be accompanied by any degree of intelligence, from profound cognitive delay to genius IQ

Coplan, J., Counseling parents regarding prognosis in autistic spectrum disorder. Pediatrics, 2000. 105(5): p. E65

Atypicality vs. Delay

- *Delayed:* Behavior would be normal in a younger child
  - Ex: Pulling to stand at 18 months; normal tone & reflexes
  - Ex: Babbling in a 24 month old
- *Atypical:* Behavior would be abnormal at any age
  - Ex: Spasticity & hyperadduction
  - Ex: Reciting TV commercials but not saying "mama" or "dada"

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Intelligence in ASD

- No mention of intelligence in the DSM definition of Autism or PDD-NOS
- Intelligence stated to be normal in Asperger Syndrome
  - By implication, therefore, it is possible to measure intelligence in the presence of atypicality
- Some children with ASD are clearly brighter than others (although this is not synonymous with "normal intelligence")

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Measuring intelligence in ASD

- How to operationalize the measurement of intelligence in ASD?
  - Omit ASD-specific areas of dysfunction or inflator scores:
    - Language
    - Social judgment
    - Savant skills
  - What's left?
    - Non-verbal Problem-Solving
    - Adaptive skills (somewhat)
    - Play skills (somewhat)

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Non-verbal Problem-Solving

- Object permanence
- Tools (Spoon, Crayon)
- Cause & Effect
- Rule-based behavior

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Adaptive Skills

- **Self-feeding**
  - Finger-feeding
  - Cup
  - Spoon (tool use)
- **Self-dressing**
  - Unbuttoning, buttoning
  - Zippers, Snaps
  - Tie shoes
- **Toilet-training**

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Problem-Solving

1" Cubes

- Takes one: 6 m
- Transfers: 7 m
- Bangs two: 9 m
- Takes three: 10-12 m
- Copies
  - 14 m
  - 18 m
  - 24-27 m

- Builds:
  - 30-36 m
  - 3 1/2 yr
  - 4 yr
  - 5 yr
  - 6 yr

Problem-Solving

Crayon

- Mouths: < 9 m
- Makes marks 10-12 m
- Scribbles p demo: 14 m
- Scribbles spont: 16 m
- Alternates from stroke to scribble: 22 m
- 24-27 m

- Draws:
  - 30-36 m
  - 3 1/2 yr
  - 4 yr
  - 5 yr
  - 6 yr

Play

- Midline hand play (3 mo)
- Banging & Mouthing (7 - 9 mo)
- Casting (12 mo)
- Tools (crayon) ~ 14 mo
- Cause & Effect (14 to 16 mo & up)
- Imitative Play (24 mo)
- Imaginative Play (36 mo)
- Rule-based Play (48 mo)

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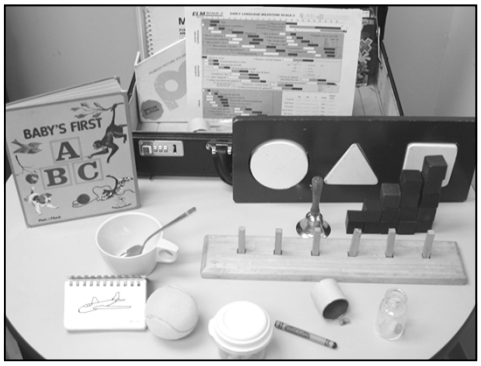

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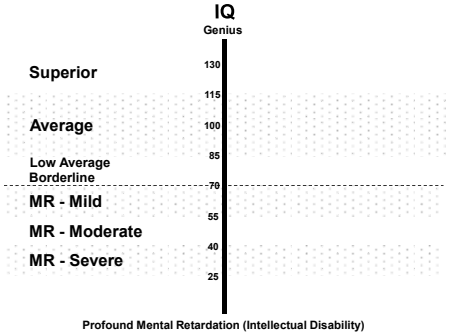

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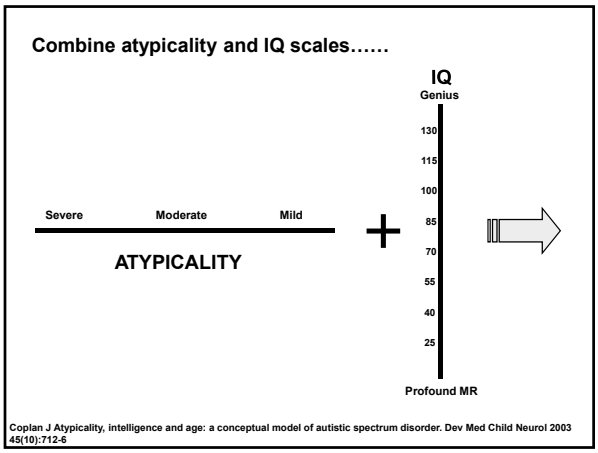
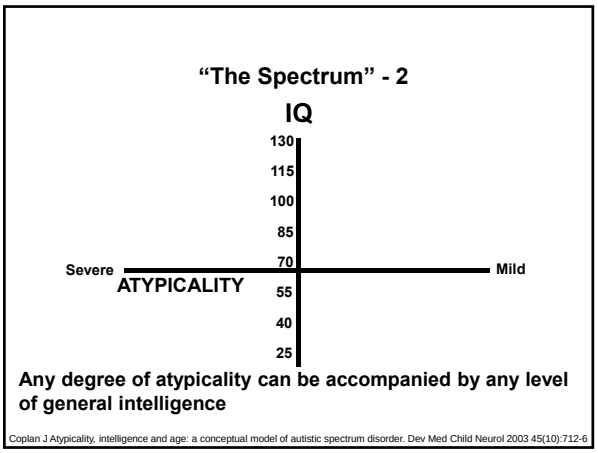
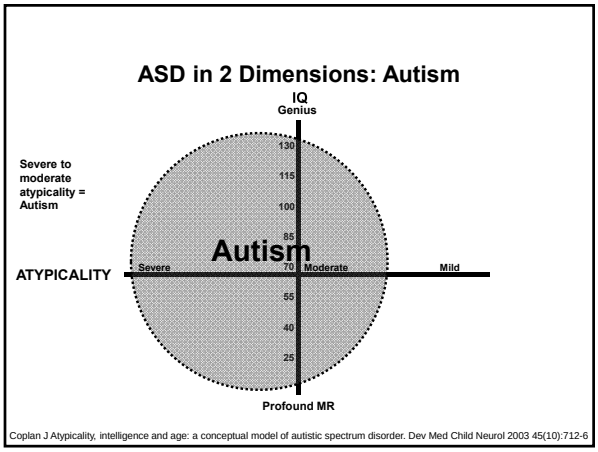
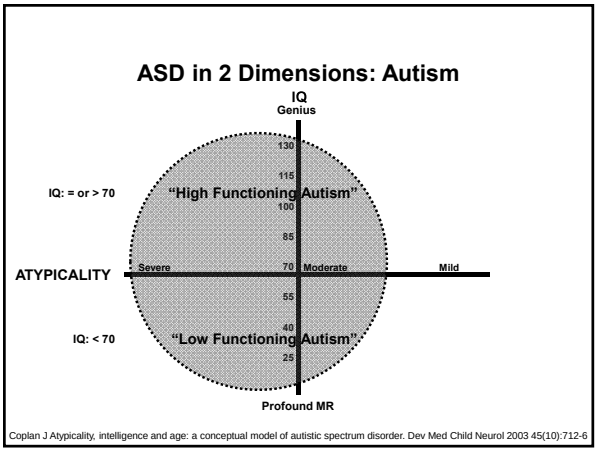
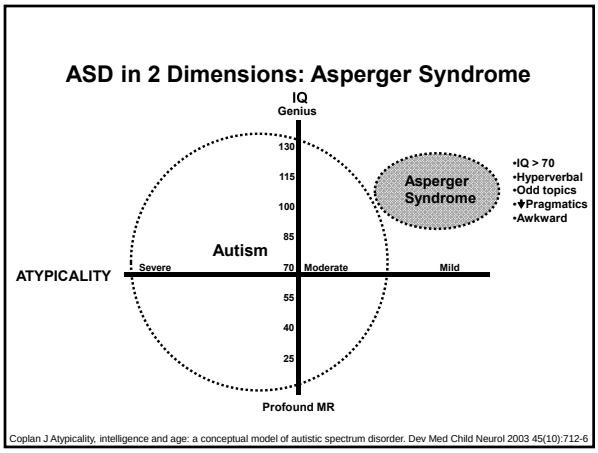

Combine atypicality and IQ scales……
IQ
Genius
130
115
100
85
70
55
40
25
Severe
Moderate
Mild
ATYPICALITY
Profound MR
Coplan J Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003 45(10):712-6


"The Spectrum" - 2
IQ
130
115
100
85
70
55
40
25
Severe
Mild
ATYPICALITY
Any degree of atypicality can be accompanied by any level of general intelligence
Coplan J Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003 45(10):712-6


ASD in 2 Dimensions: Autism
IQ
Genius
Severe to moderate atypicality = Autism
Autism
ATYPICALITY
Severe
Moderate
Mild
Profound MR
Coplan J Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003 45(10):712-6


ASD in 2 Dimensions: Autism
IQ
Genius
IQ: = or > 70
"High Functioning Autism"
ATYPICALITY
Severe
Moderate
Mild
IQ: < 70
"Low Functioning Autism"
Profound MR
Coplan J Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003 45(10):712-6


ASD in 2 Dimensions: Asperger Syndrome
IQ
Genius
Asperger Syndrome
•IQ > 70
•Hyperverbal
•Odd topics
•↓Pragmatics
•Awkward
Autism
ATYPICALITY
Severe
Moderate
Mild
Profound MR
Coplan J Atypicality, intelligence and age: a conceptual model of autistic spectrum disorder. Dev Med Child Neurol 2003 45(10):712-6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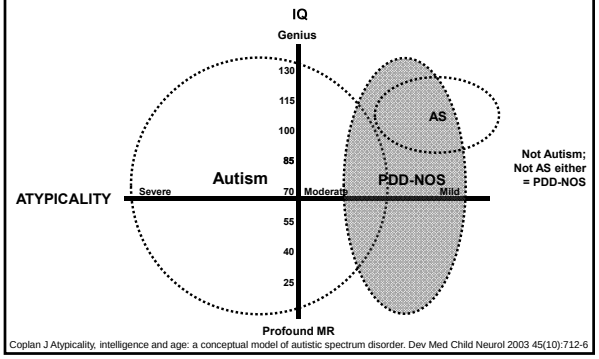
ASD in 2 Dimensions: PDD-Not Otherwise Specified



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At the "Borderland" of ASD

- Nonverbal Learning Disability (NLD)
  - ⬇ Language pragmatics
  - ⬇ Social skills
  - Disregard for personal space
  - ⬇ Coordination / Sensory processing
  - Verbal IQ > Performance IQ
- Semantic-Pragmatic Language Disorder (SPLD)
  - ⬇ Language pragmatics only
- (Broad Autistic Phenotype: Traits, not disorder)

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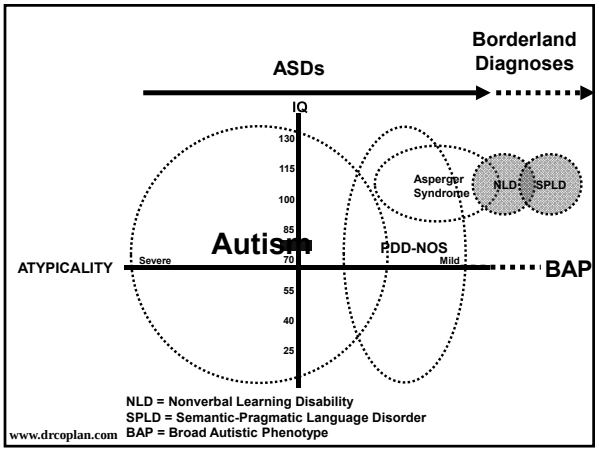

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Topics

- Atypicality
- Associated features (IQ)
- Etiology
- Epidemiology (the "explosion")
- Prognosis (the "Natural History")
- Developmental Interventions
- Behavior Management & Medication
- Quackery
- Family Matters

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DSM III

Yr	Event	Comment
1980	DSM-III: First appearance of: •Infantile autism •Autism-residual state: Children who once met criteria for infantile autism but no longer do.	6 mandatory, severe criteria for Dx of autism, including: •Pervasive lack of responsiveness to other people •Gross deficits in language development •Bizarre responses to various aspects of the environment

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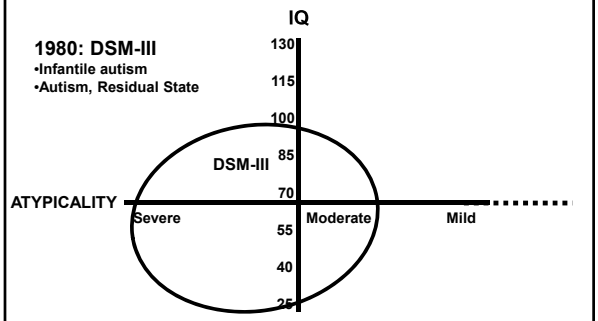
DSM Criteria and the ASD Explosion



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DSM III-R

Year	Event	Comment
1987	DSM-III-R: •"Infantile autism" replaced by "Autistic Disorder" •"Autism-Residual State" replaced by PDD-NOS	PDD-NOS encompasses children who *never met full criteria for Autism*, as well as children who once met such criteria but improved over time.

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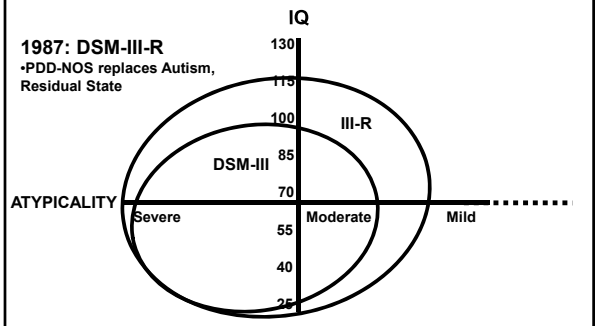
DSM Criteria and the ASD Explosion



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DSM IV

Year	Event	Comment
1994	DSM-IV: •Broader menu for diagnosis •Asperger's Disorder first appears	6 of 16 milder criteria, such as: •Lack of spontaneous seeking to share achievements with other people •Difficulty sustaining a conversation •Lack of varied social imitative play •Persistent preoccupation with parts of objects

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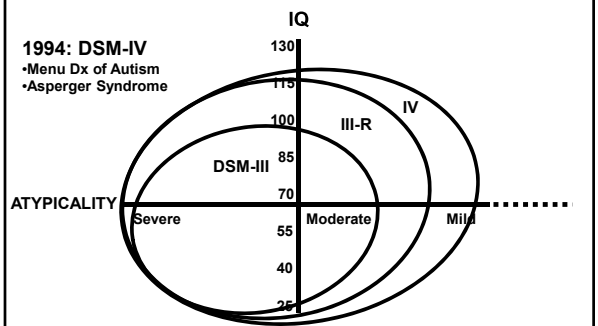
DSM Criteria and the ASD Explosion



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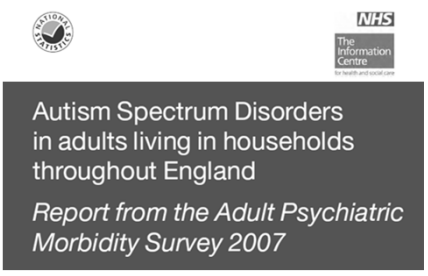
"Missing" adults, I: NHS Survey



http://www.ic.nhs.uk/pubs/asdpsychiatricmorbidity07

NHS Survey 2007

Prevalence of ASD (ADOS 10+), by age

All adults *2007*

	Age group		
	16-44	45-74	75+
	%	%	%
ASD (ADOS score of 10+)[a]	1.1	0.9	0.8

Prevalence x Age: Not statistically significant

http://www.ic.nhs.uk/pubs/asdpsychiatricmorbidity07

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Topics

- Atypicality
- Associated features (IQ)
- Etiology
- Epidemiology (the "explosion")
- Prognosis (the "Natural History")
- Developmental Interventions
- Behavior Management & Medication
- Quackery
- Family Matters

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Prognosis

Long-term outcome is driven by the joint impact of IQ and degree of atypicality

Coplan, J., Counseling parents regarding prognosis in autistic spectrum disorder. Pediatrics, 2000. 105(5): p. E65

Influence of IQ on Prognosis

- "In terms of scholastic progress, social competence, and work opportunities, the child's IQ level is as influential as the presence of autism."*
- 1973-2005: > 10 studies; >1000 subjects

* Bartak, L. and M. Rutter, Differences between mentally retarded and normally intelligent autistic children. Journal of Autism & Childhood Schizophrenia, 1976. 6(2): p. 109-20

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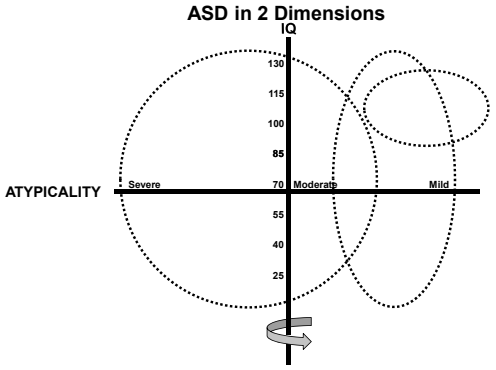

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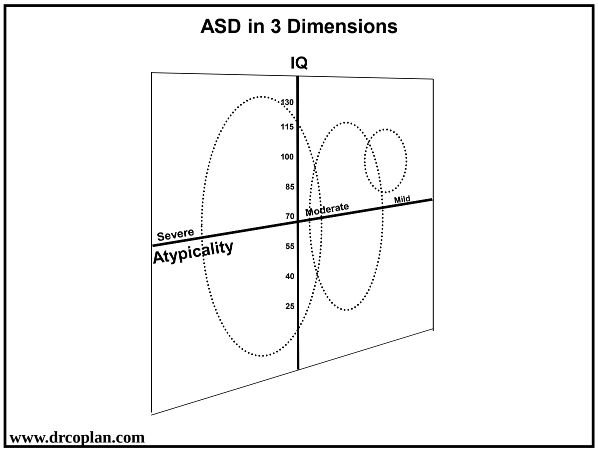
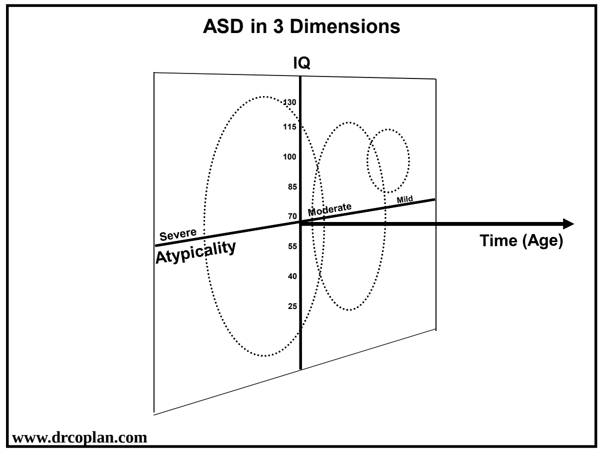

ASD in 3 Dimensions
IQ
130
115
100
85
70
55
40
25
Severe
Moderate
Mild
Atypicality
www.drcoplan.com


ASD in 3 Dimensions
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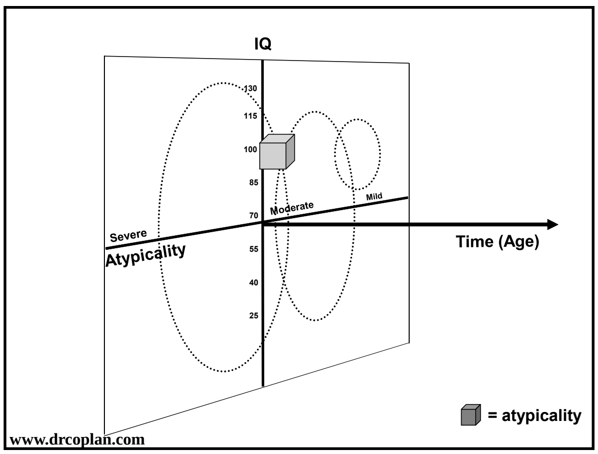
Mild
Atypicality
Time (Age)
www.drcoplan.com


IQ
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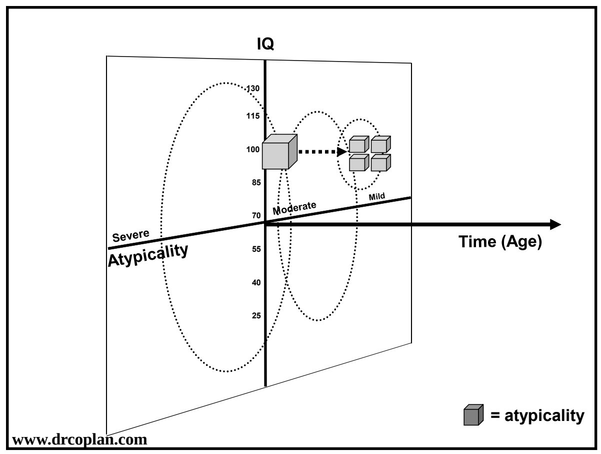
Atypicality
Time (Age)
= atypicality
www.drcoplan.com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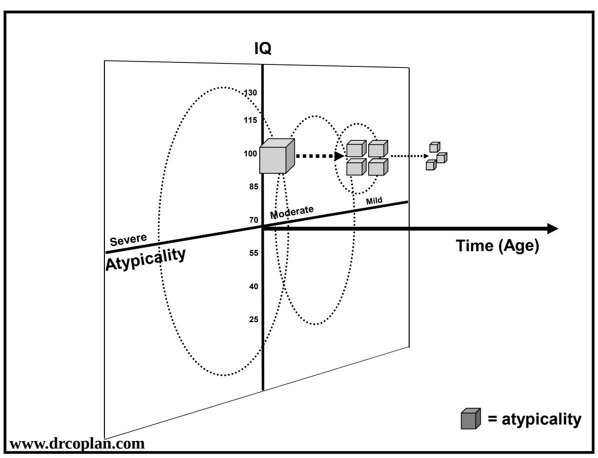
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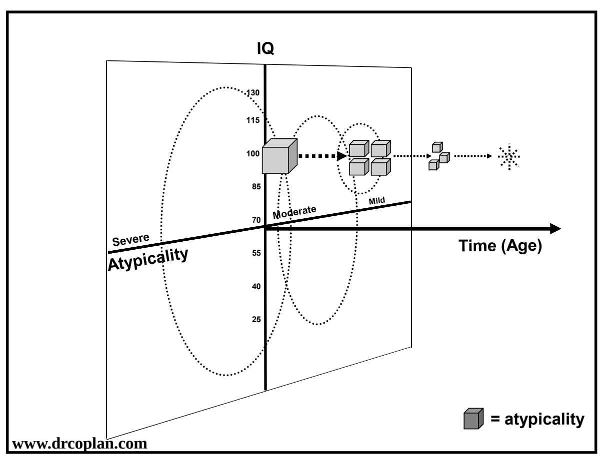
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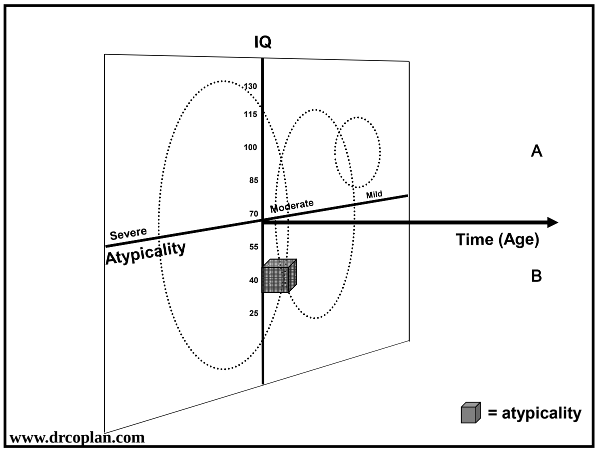
IQ
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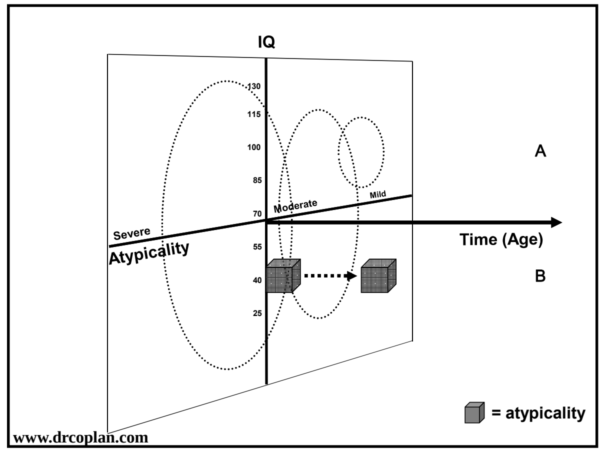
Time (Age)
A
B
= atypicality
www.drcoplan.com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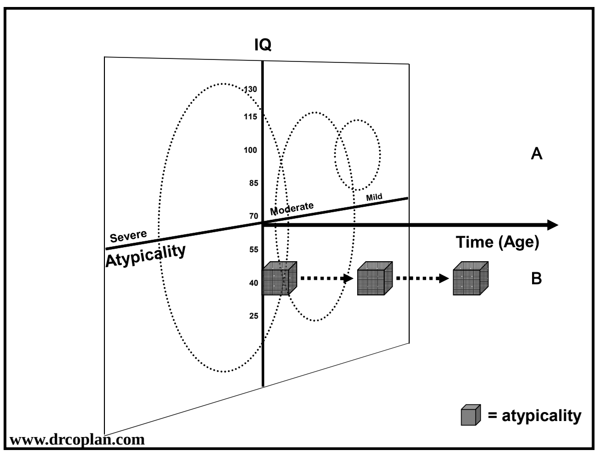
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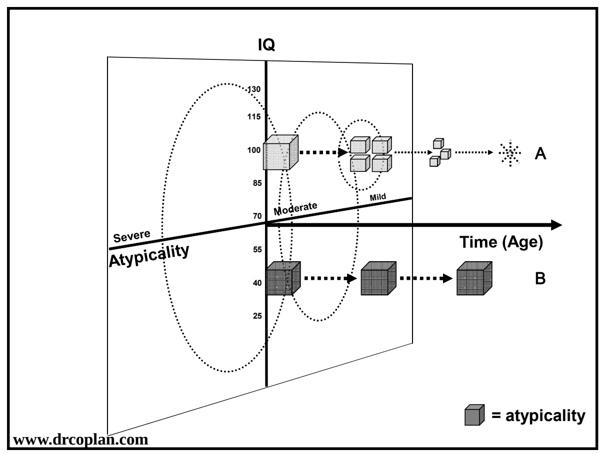
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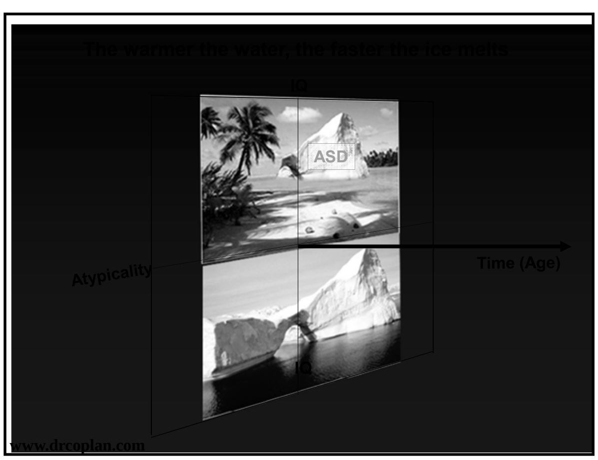
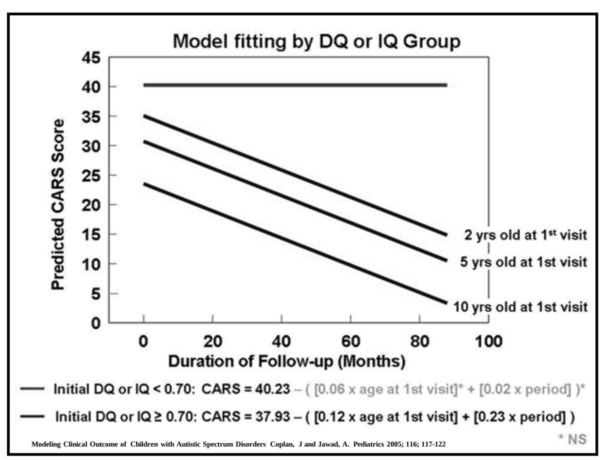
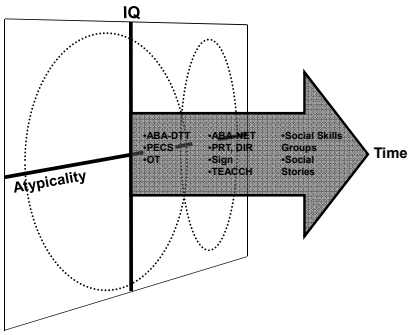

The warmer the water, the faster the ice melts
IQ
ASD
Atypicality
Time (Age)
www.drcoplan.com


Model fitting by DQ or IQ Group
Predicted CARS Score
45
40
35
30
25
20
15
10
5
0
0
20
40
60
80
100
Duration of Follow-up (Months)
2 yrs old at 1st visit
5 yrs old at 1st visit
10 yrs old at 1st visit
Initial DQ or IQ < 0.70: CARS = 40.23 – ([0.06 x age at 1st visit]* + [0.02 x period])*
Initial DQ or IQ ≥ 0.70: CARS = 37.93 – ([0.12 x age at 1st visit] + [0.23 x period])
* NS
Modeling Clinical Outcome of Children with Autistic Spectrum Disorders Coplan, J and Jawad, A. Pediatrics 2005; 116; 117-122

Progression of Interventions Follows the Natural History



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Natural History of ASD

Some improvement occurs due to the natural history of ASD, irrespective of intervention.

Coplan, J., Counseling parents regarding prognosis in autistic spectrum disorder. Pediatrics, 2000. 105(5): p. E65

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Adult outcome

- "Losing the diagnosis" does not mean "cured"
- Persistence of
  - Cognitive patterns
  - Behavioral patterns
  - Emotional patterns
- Symptoms ⇒ Quirks ⇒ Traits
- Non-ASD neuropsychiatric disorders

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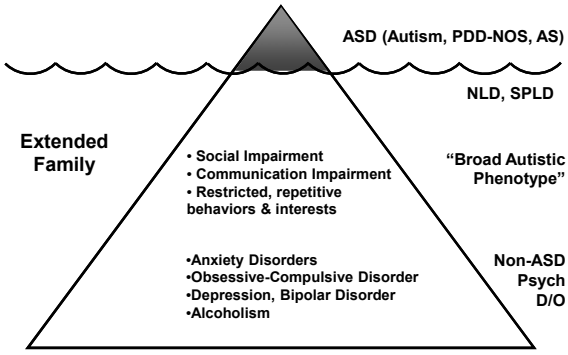
Presentation in Childhood



NLD: Non-Verbal LD, SPLD: Semantic-Pragmatic Lang. Disorder

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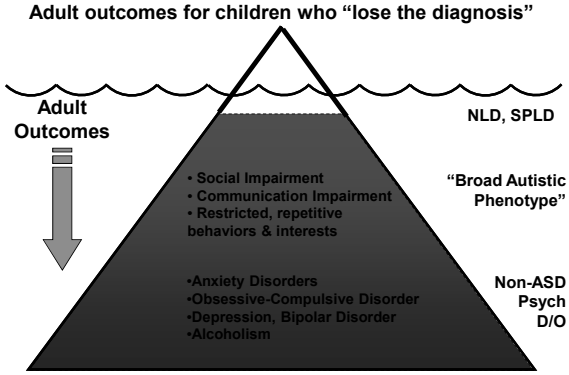
Adult outcomes for children who "lose the diagnosis"



NLD: Non-Verbal LD, SPLD: Semantic-Pragmatic Lang. Disorder

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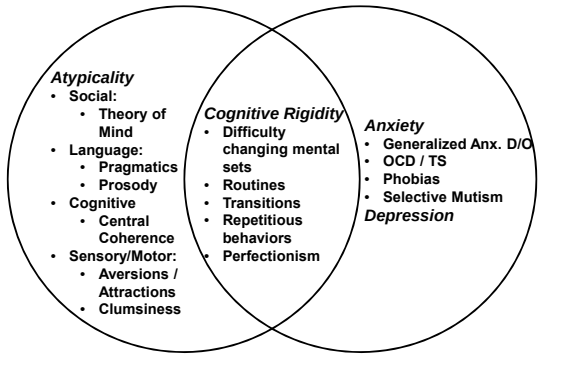

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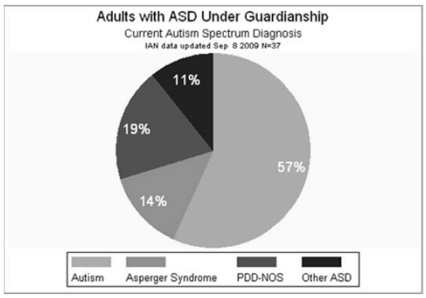
Interactive Autism Network On-Line Survey



http://www.iancommunity.org/cs/ian_research_reports/adults_on_the_autism_spectrum_september_2009

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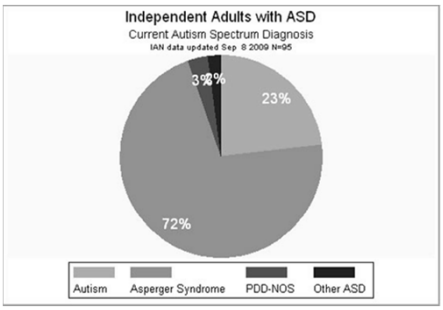
Interactive Autism Network On-Line Survey



http://www.iancommunity.org/cs/ian_research_reports/adults_on_the_autism_spectrum_september_2009

www.drcoplan.com

Interactive Autism Network On-Line Survey

THE MISSING MIDDLE

As we have examined our data, and spoken with adults with ASD and their families, we have begun to suspect that there is one large group currently missing from participation in the IAN Research project: adults who are not under guardianship but who nevertheless need assistance…in between the very high functioning independent adults, many with Asperger's…and individuals under guardianship.

These individuals are legal adults, who must decide whether to consent to participate in research for themselves.. If a person with ASD who is not under guardianship says "I don't want to do this," then no is the answer.

http://www.iancommunity.org/cs/ian_research_reports/adults_on_the_autism_spectrum_september_2009

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Summary

- **ASD: 4 domains (Kanner)**
  - **Social**
  - **Language**
  - **Repetitious behavior**
  - **Sensory**
- **Natural Hx: Improvement over time**
- **Prognosis is driven by:**
  - **Degree of atypicality**
  - **Level of intelligence**

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Summary

- **3D "map" of ASD:**
  - **Facilitates:**
    - **Tracking child's progress over time**
    - **Selecting best therapy at any given point in time**
    - **Anticipating future needs (prognosis)**
  - **Accounts for differences in outcome**
  - **Serves as a benchmark for intervention research (*Is the child "more better" than would have been the case based on natural history alone?*)**

www.drcoplan.com

Thank you!

References

Modeling Clinical Outcome of Children with Autistic Spectrum Disorders. James Coplan and Abbas F. Jawad. Pediatrics 2005; 116; 117-122 http://www.pediatrics.org/cgi/content/full/116/1/117

Coplan, J. Atypicality, intelligence, and age: a conceptual model of autistic spectrum disorders. Developmental Medicine and Child Neurology. Devel Med Child Neurol 2003; 45:712-716.

Coplan J. Counseling parents regarding prognosis in autistic spectrum disorder. Pediatrics 2000; 105:5. URL: http://www.pediatrics.org/cgi/content/full/105/5/e65

Coplan, J. Making Sense of Autistic Spectrum Disorders. © James Coplan, Bantam-Dell, 2010.