ASD in 3D:Autism Spectrum Disorders across the Lifespan

11/27/2012

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rethink autism
THE FIRST CHOICE OF PROFESSIONAL EDUCATORS

Webinar, 11/28/2012

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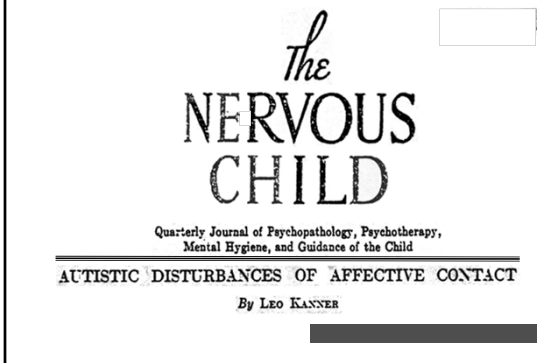
Kanner, L. Autistic Disturbances of Affective Contact. Nervous Child, (2) 217-250, 1943



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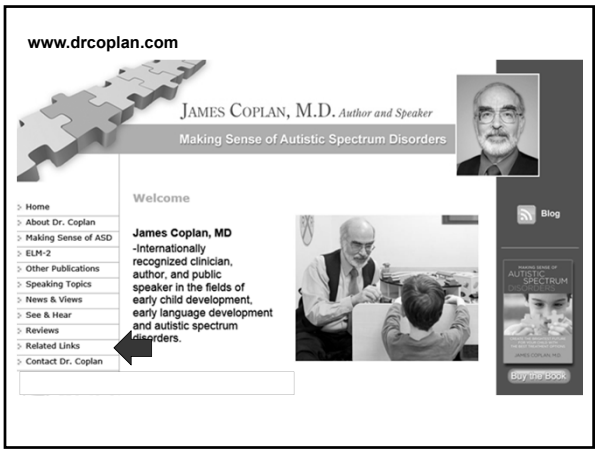

Kanner, 1943

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

***N = 11 (M 8; F 3); Age: 2 to 8 yr.**

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

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Impaired Socialization
"In his own little world"

Age: 22 months. Nonverbal. CARS=44.

www.drcoplan.com MRN 11-0741

Idiosyncratic Language

- Echolalia
- Delayed Echolalia
- Pronoun Reversal
- Odd inflection

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Repetitious Behaviors

- Rigid Routines
- Difficulty with transitions
- Repetitious play (lining up objects)
- Stereotypies (flapping, spinning)

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Repetitious Behaviors

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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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Abnormal responses to sensory stimuli

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

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

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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

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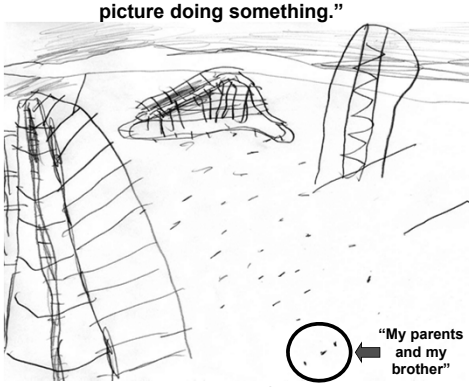
"Draw a picture of your family, with everybody in the picture doing something."



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

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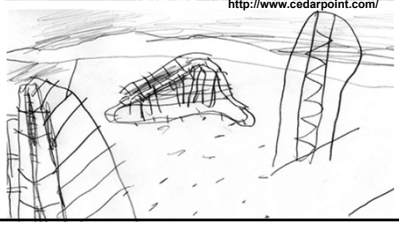
http://www.cedarpoint.com/



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

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Central Coherence

What's happening in this picture?

Central Coherence

Q: What's happening in this picture?
A: *The boy is hoarding animals*.

Central Coherence

Q: What's happening in this picture?
A: *The kitten is on the boy's back and is about to eat him*.

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

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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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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

Theory of Mind

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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

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* unusual *story, because you don't often find cows in the woods.* (Asperger Syndrome)**

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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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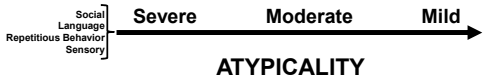
Quantifying severity of ASD - 3

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

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

"The Spectrum": ASD in One Dimension



Atypical features range from severe to mild
Atypical features improve over time

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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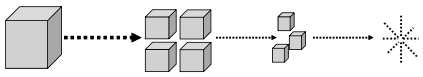
0:15

Over time, the ice melts



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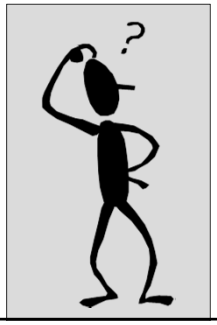
But the ice melts faster for some children than others. Why is that?



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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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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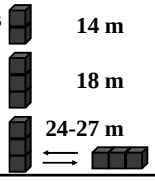
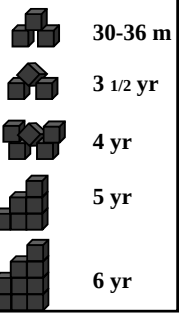
Non-Verbal Problem-Solving

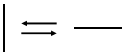
1" Cubes

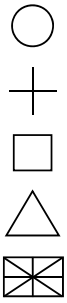
- Takes one: 6 m
- Transfers: 7 m
- Bangs two: 9 m
- Takes three: 10-12 m
- Copies  14 m, 18 m, 24-27 m

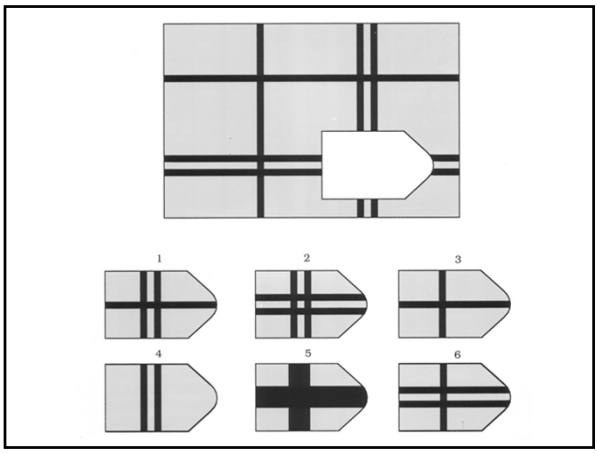
- Builds:  30-36 m, 3 1/2 yr, 4 yr, 5 yr, 6 yr

Non-Verbal 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



Adaptive Skills

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

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Play

- Midline hand play (3 mo)
- Banging & Mouthing (7 - 9 mo)
- Casting (12 mo) (object permanence)
- Tools (crayon, e.g.) ~ 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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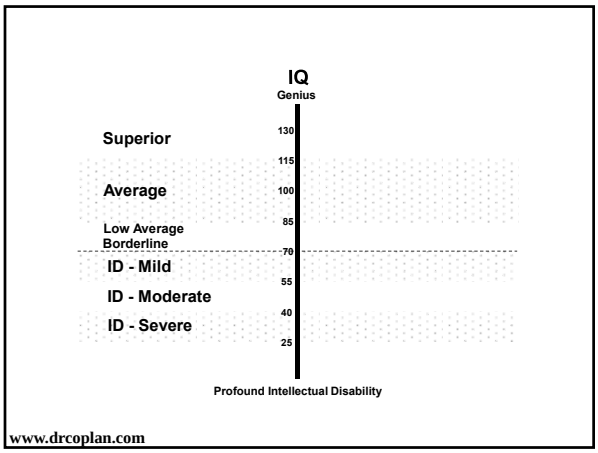
IQ
Genius
Superior
Average
Low Average
Borderline
ID - Mild
ID - Moderate
ID - Severe
130
115
100
85
70
55
40
25
Profound Intellectual Disability
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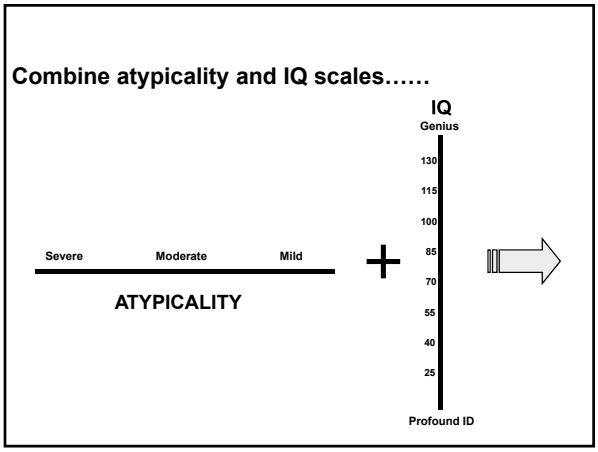
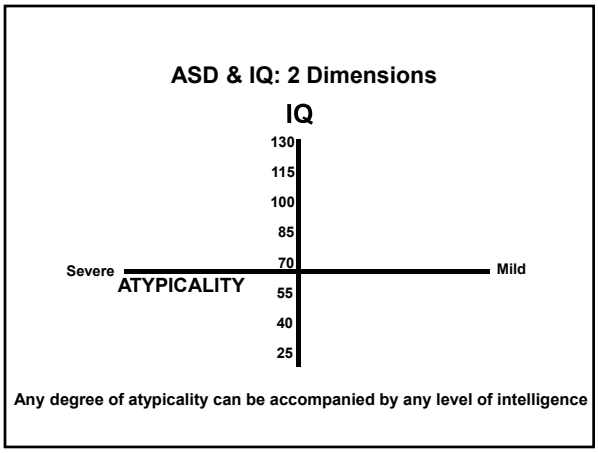
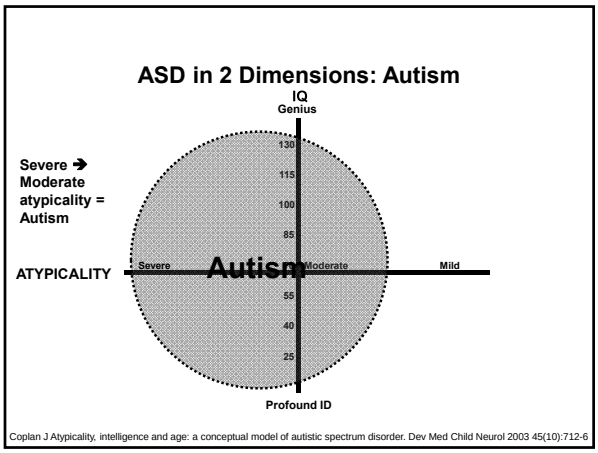
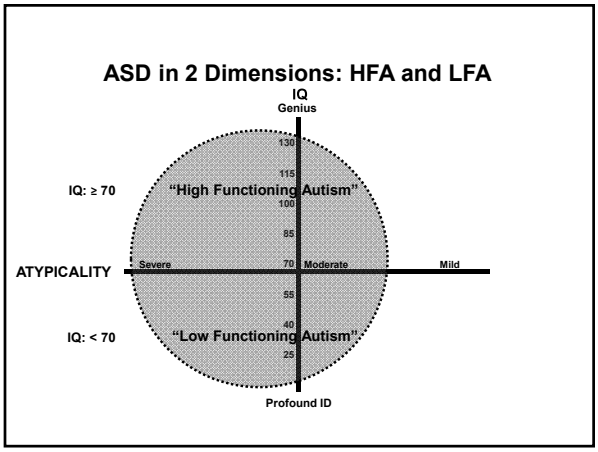
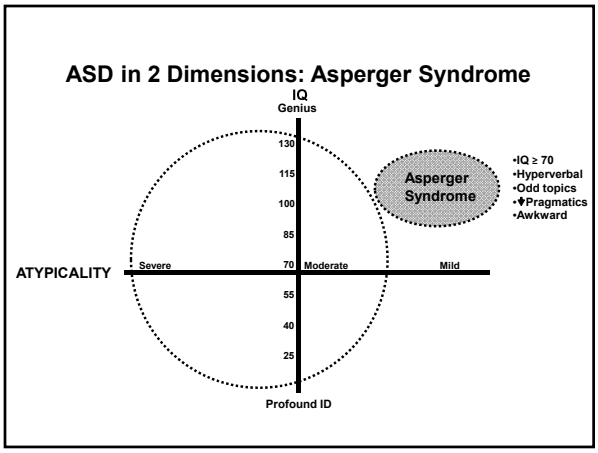

Combine atypicality and IQ scales……
IQ
Genius
130
115
100
85
70
55
40
25
Profound ID
Severe
Moderate
Mild
ATYPICALITY


ASD & IQ: 2 Dimensions
IQ
130
115
100
85
70
55
40
25
Severe
ATYPICALITY
Mild
Any degree of atypicality can be accompanied by any level of intelligence


ASD in 2 Dimensions: Autism
IQ
Genius
130
115
100
85
70
55
40
25
Profound ID
Severe ➔ Moderate atypicality = Autism
ATYPICALITY
Severe
Moderate
Mild
Autism
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: HFA and LFA
IQ
Genius
130
115
100
85
70
55
40
25
Profound ID
IQ: ≥ 70
"High Functioning Autism"
ATYPICALITY
Severe
Moderate
Mild
IQ: < 70
"Low Functioning Autism"


ASD in 2 Dimensions: Asperger Syndrome
IQ
Genius
130
115
100
85
70
55
40
25
Profound ID
Asperger Syndrome
•IQ ≥ 70
•Hyperverbal
•Odd topics
•↓Pragmatics
•Awkward
ATYPICALITY
Severe
Moderate
Mild

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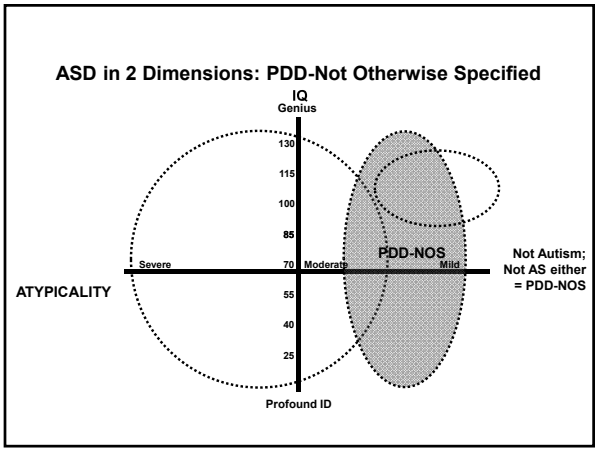

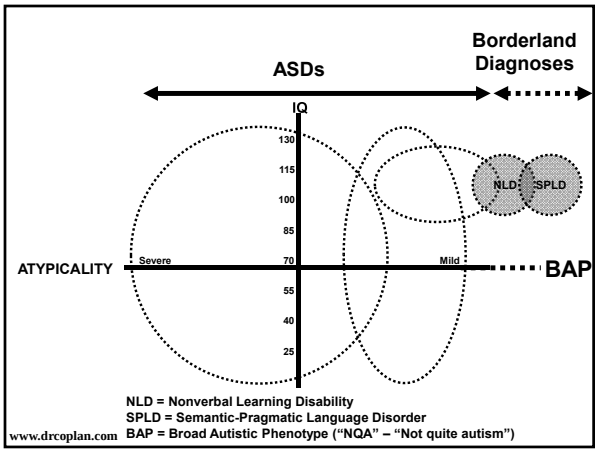

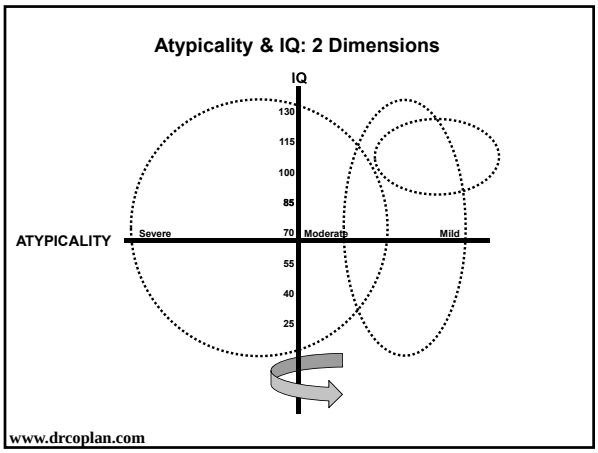
Atypicality & IQ: 2 Dimensions
IQ
130
115
100
85
70
55
40
25
ATYPICALITY
Severe
Moderate
Mild
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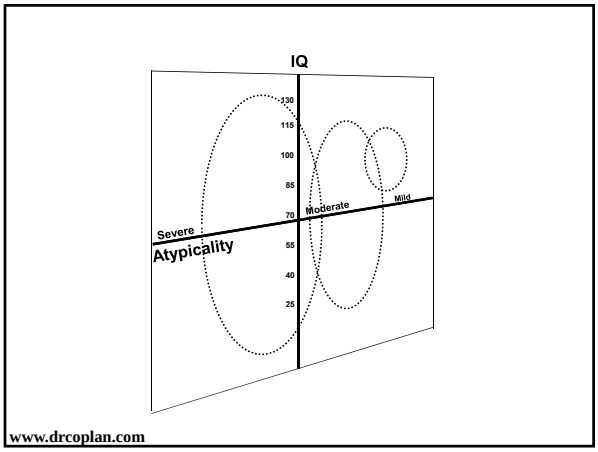
IQ
130
115
100
85
70
55
40
25
Severe
Moderate
Mild
Atypicality
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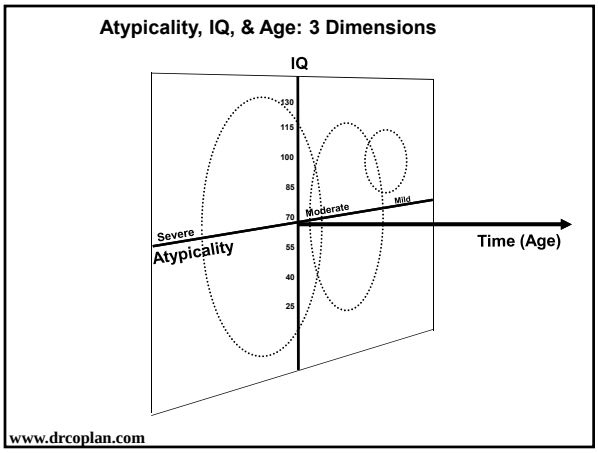
Atypicality, IQ, & Age: 3 Dimensions
IQ
130
115
100
85
70
55
40
25
Severe
Moderate
Mild
Atypicality
Time (Age)
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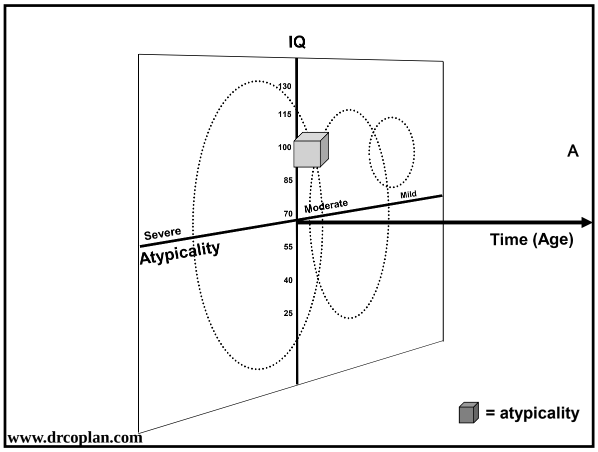
IQ
130
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A
Severe
Moderate
Mild
Atypicality
Time (Age)
= atypicality
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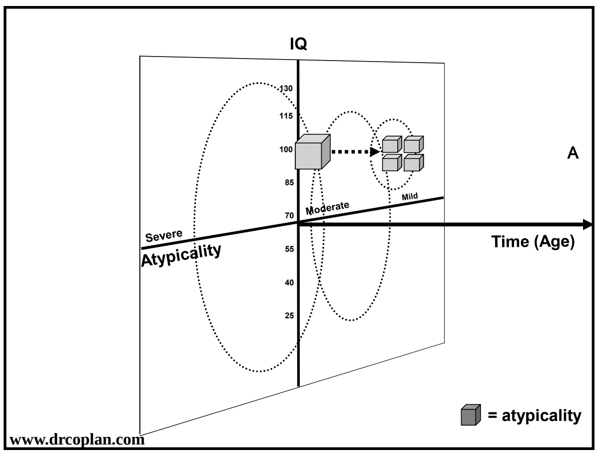
IQ
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Atypicality
Time (Age)
= atypicality
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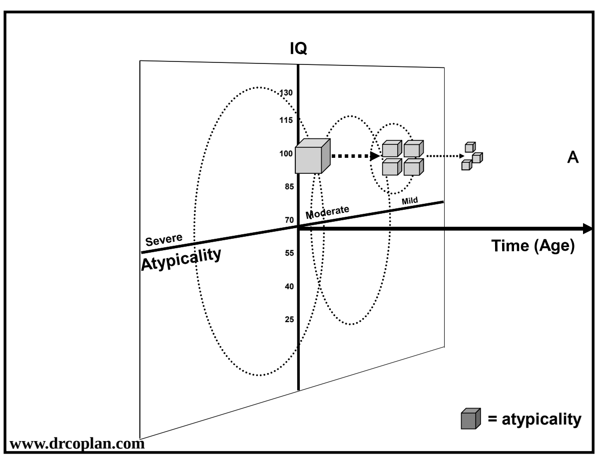
IQ
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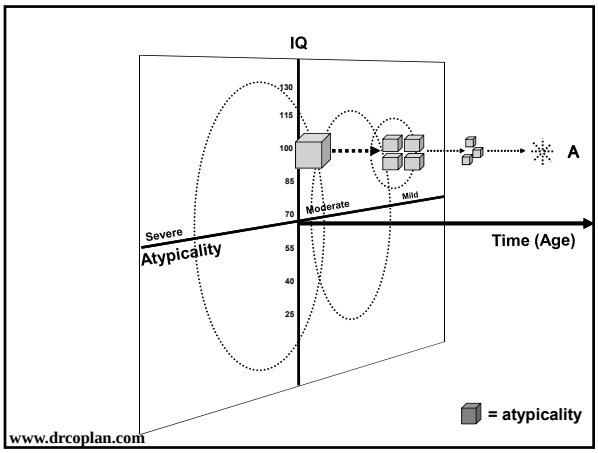
Atypicality
Time (Age)
= atypicality
www.drcoplan.com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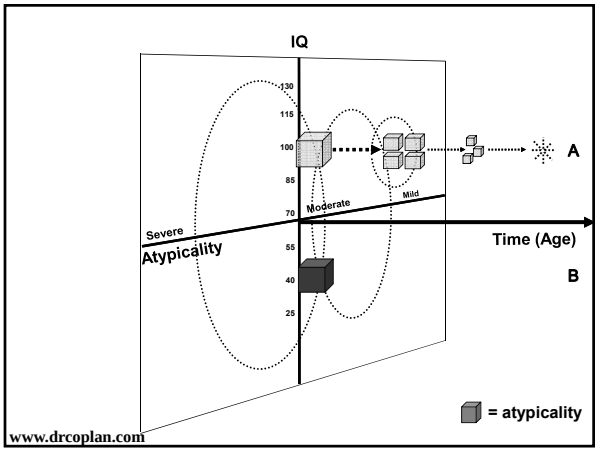
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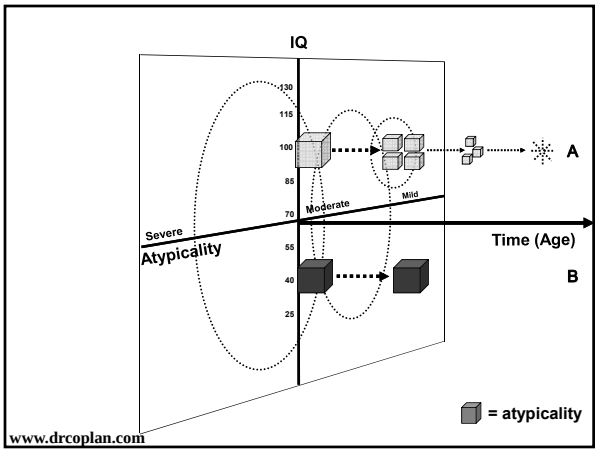
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Severe
Atypicality
Time (Age)
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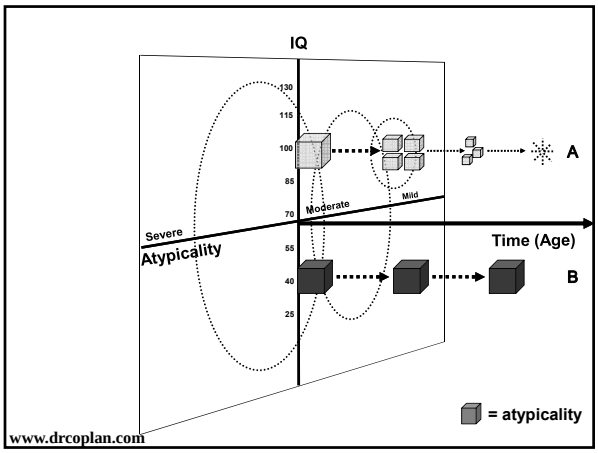
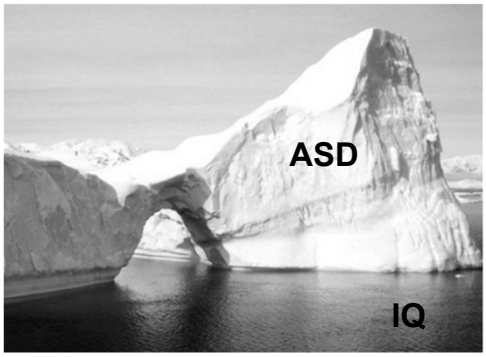
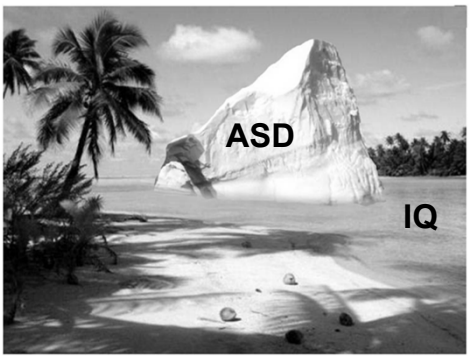
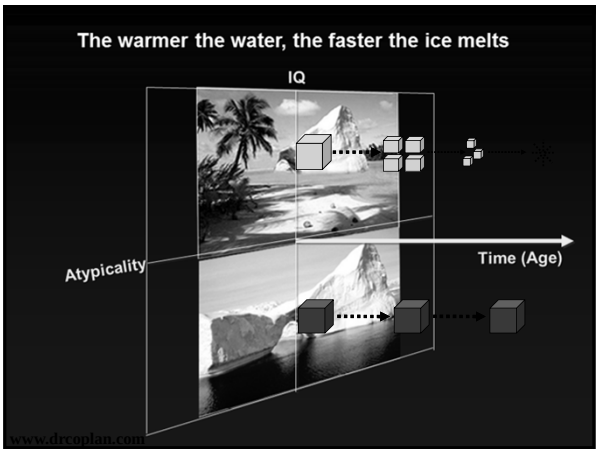






The warmer the water, the faster the ice melts



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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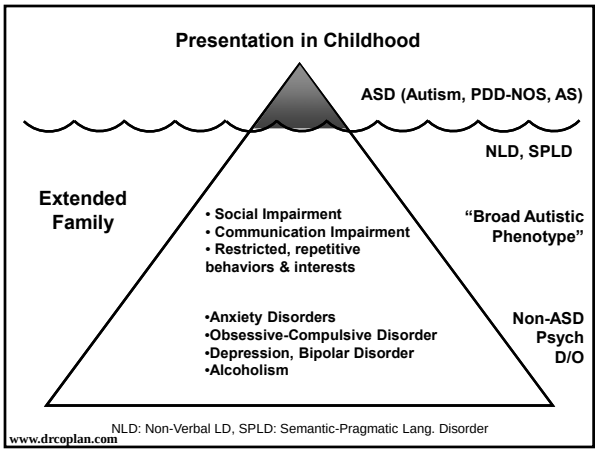

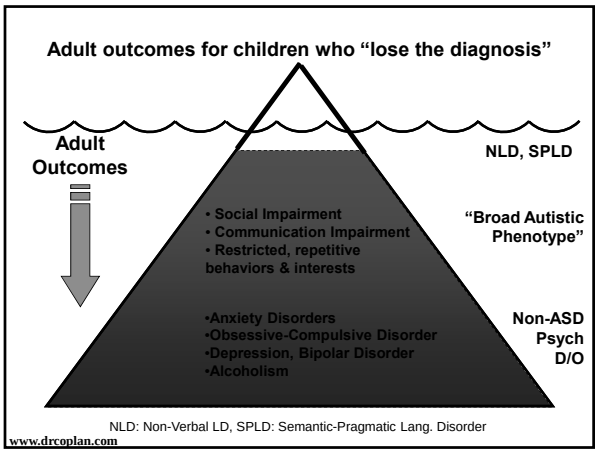
Adult outcomes for children who "lose the diagnosis"
Adult Outcomes
NLD, SPLD
• Social Impairment
• Communication Impairment
• Restricted, repetitive behaviors & interests
"Broad Autistic Phenotype"
•Anxiety Disorders
•Obsessive-Compulsive Disorder
•Depression, Bipolar Disorder
•Alcoholism
Non-ASD Psych D/O
NLD: Non-Verbal LD, SPLD: Semantic-Pragmatic Lang. Disorder
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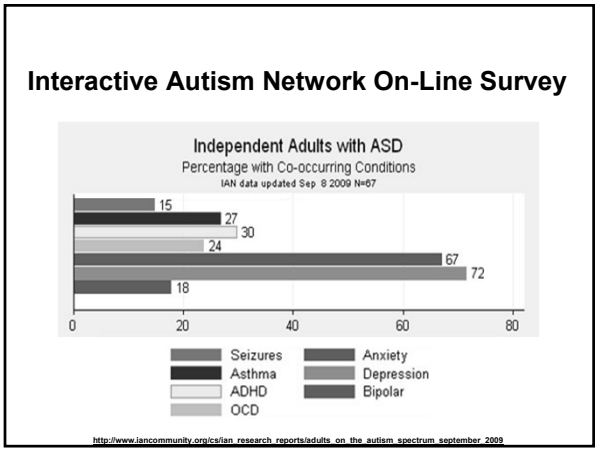
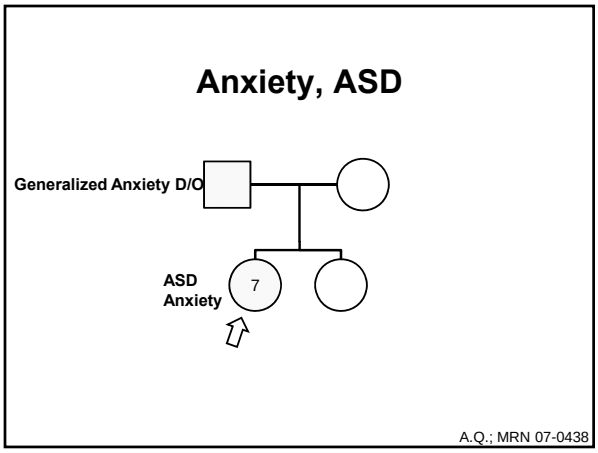
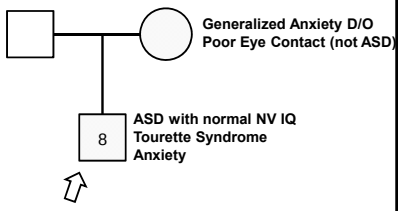

Interactive Autism Network On-Line Survey
Independent Adults with ASD
Percentage with Co-occurring Conditions
IAN data updated Sep 8 2009 N=67
15
27
30
24
67
72
18
0
20
40
60
80
Seizures
Asthma
ADHD
OCD
Anxiety
Depression
Bipolar
http://www.iancommunity.org/cs/ian_research_reports/adults_on_the_autism_spectrum_september_2009

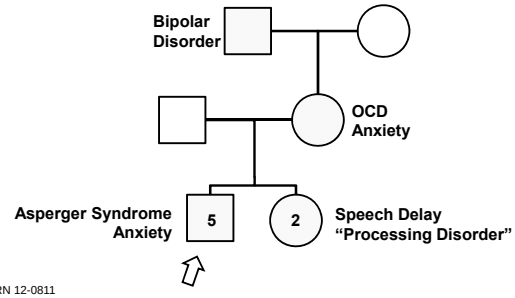

Anxiety, ASD
Generalized Anxiety D/O
ASD
Anxiety
7
A.Q.; MRN 07-0438

Anxiety, Tourette Syndrome, ASD

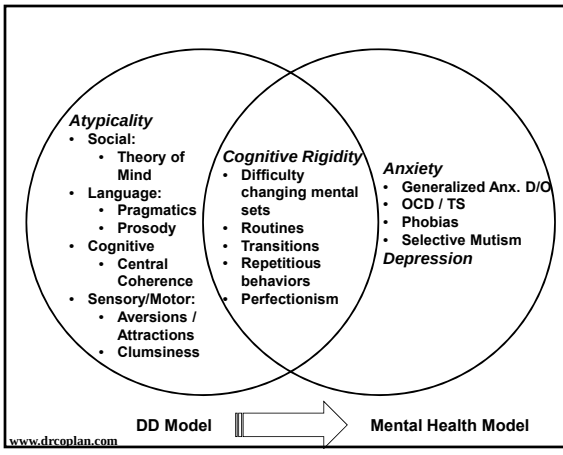


S.W.; MRN 08-0485

Bipolar D/O, OCD, Anxiety, ASD



MRN 12-0811



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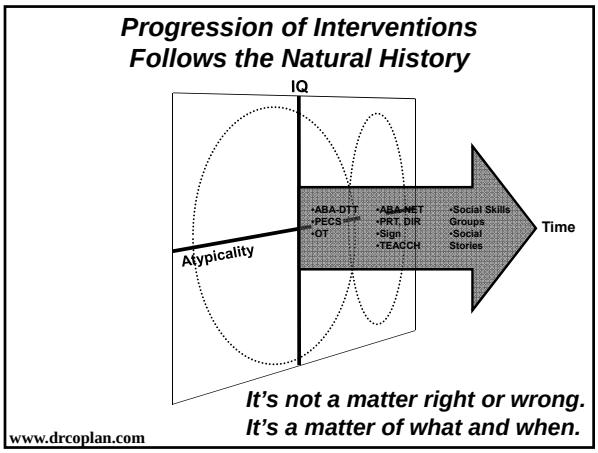
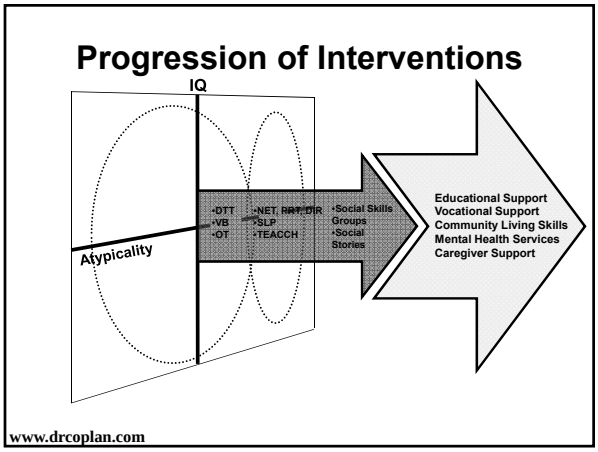
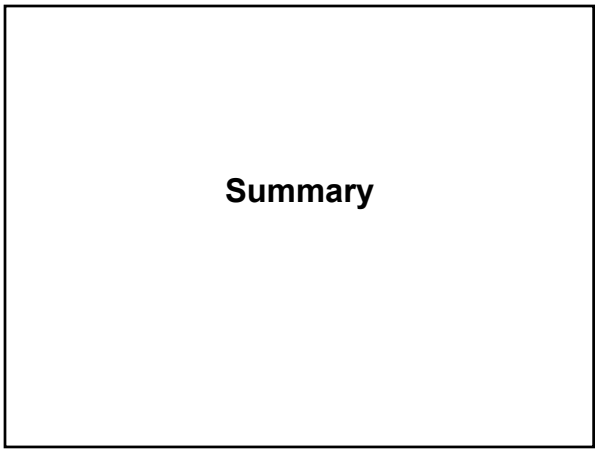

Progression of Interventions
Follows the Natural History
IQ
•ABA-DTT
•PECS
•OT
•ABA-NET
•PRT, DIR
•Sign
•TEACCH
•Social Skills
Groups
•Social
Stories
Time
Atypicality
It's not a matter right or wrong.
It's a matter of what and when.
www.drcoplan.com

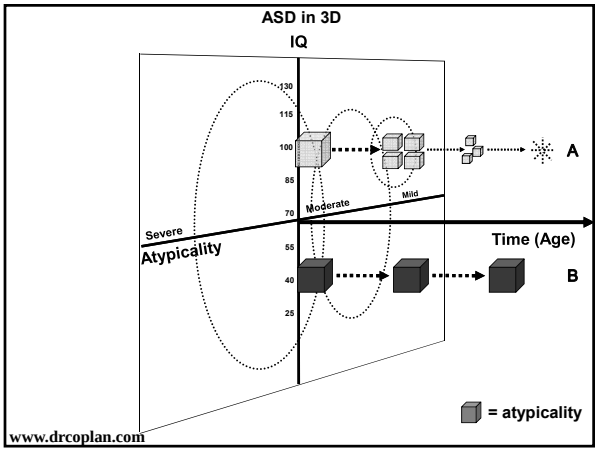

Progression of Interventions
IQ
•DTT
•VB
•OT
•NET, RRT, DIR
•SLP
•TEACCH
•Social Skills
Groups
•Social
Stories
Educational Support
Vocational Support
Community Living Skills
Mental Health Services
Caregiver Support
Atypicality
www.drcoplan.com


Summary

Summary

- **Natural History of ASD is for improvement over time, regardless of intervention**
- **Any degree of atypicality can be accompanied by any level of IQ**
- **Long-term outcome is driven by the joint impact of IQ and degree of atypicality**
  - ***The warmer the water, the faster the ice melts***

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



Summary

- **Shift from Developmental Disability model to Mental Health model**
- **"Losing the diagnosis" does not = "cure"**
- **Need for adult services**

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Summary

- **Need for controlled research:**
  - **What works, what doesn't?**
  - **How much improvement is due to Natural History?**
- **Beware of quackery, capitalizing on natural history.**
  - **"Half of what we've taught you in medical school is either incorrect or obsolete – but we don't know which half." – Sir William Osler**

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Thank you