How malleable is autism?

Outcome studies of the youngest children with ASD

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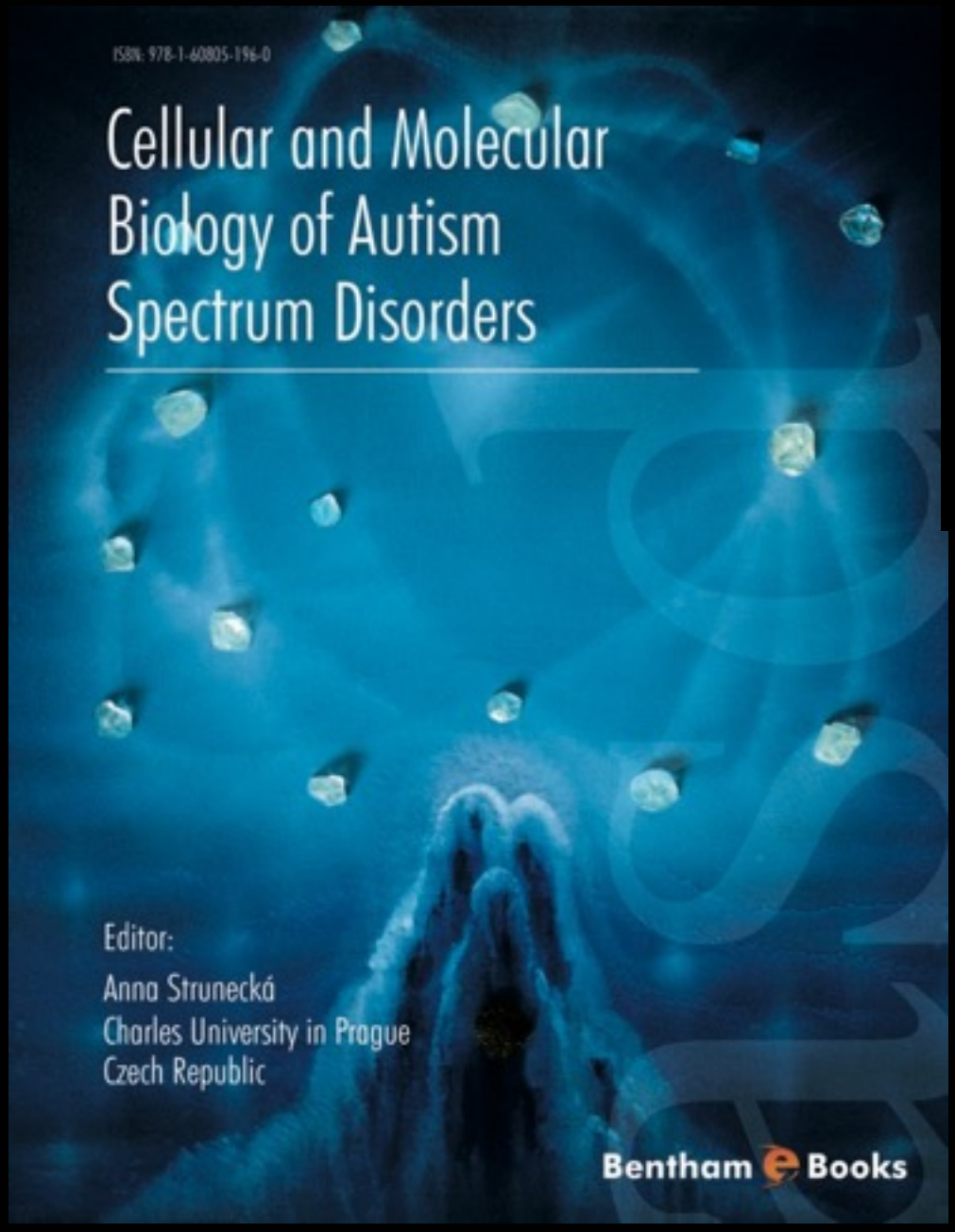
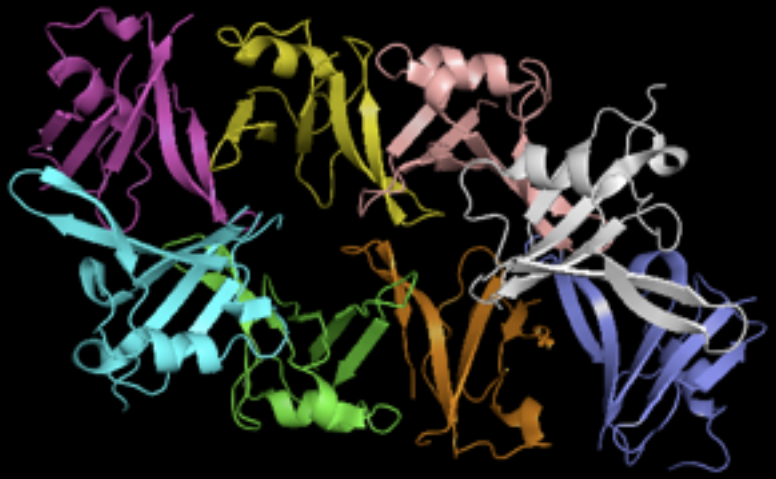
Children and families

NICHD U19 HD 85468 (Rogers)
NIMH R01 MH 081757 (Rogers)
NIDCD DC R03 05574 (Rogers)
NIMH U54 MH66399 (Dawson)
OSERS #G008100247 (Rogers)
NICHD R21 065275 (Rogers)
Autism Speaks, NAAR, CAN
OAR, MIND (Vismara)
OSERS (Rogers)
MIND Institute
Coleman Institute
Children's Miracle Network
John & Marcia Goldman Foundation

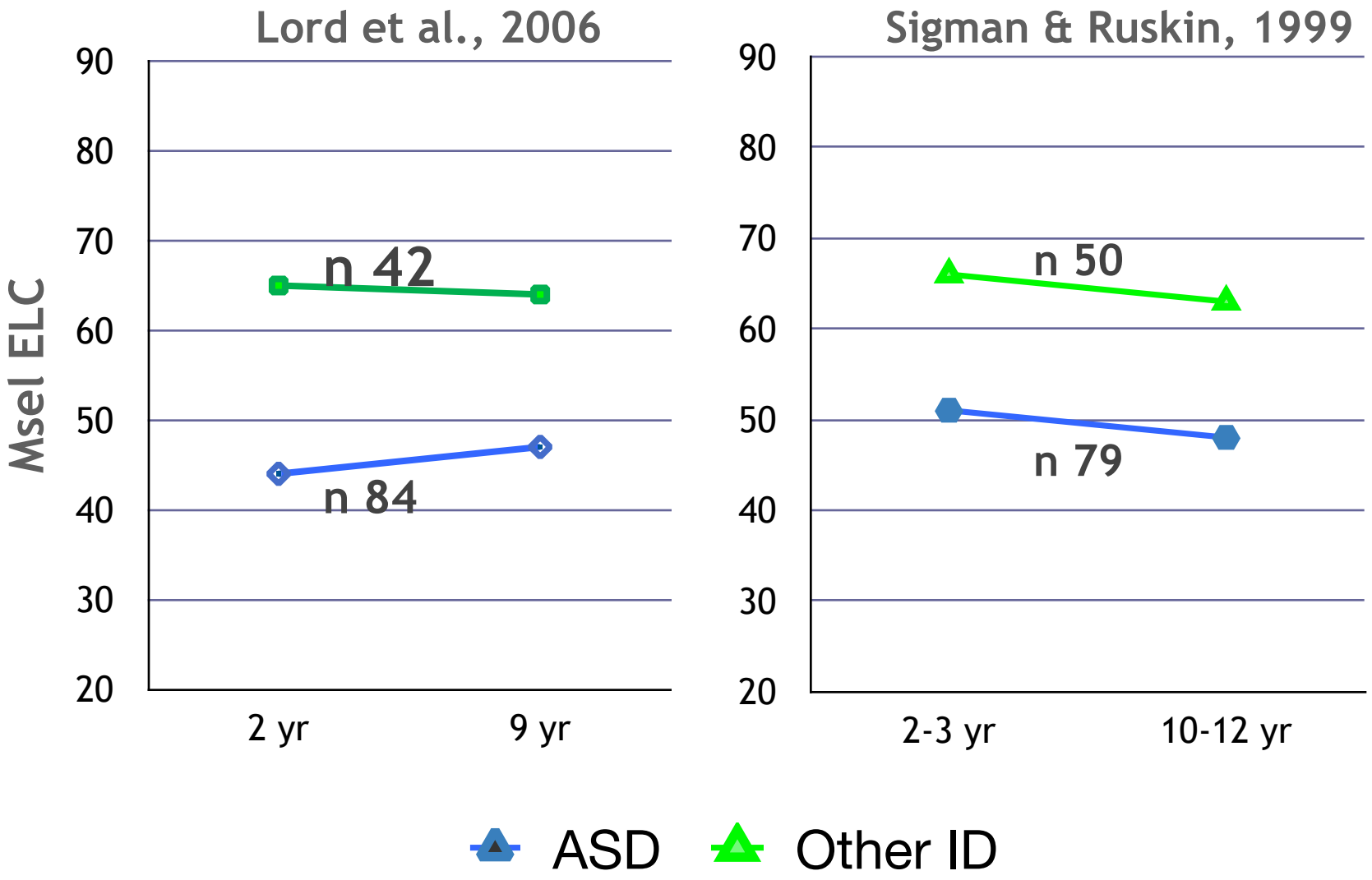
Conflict of interest

royalties
honoraria

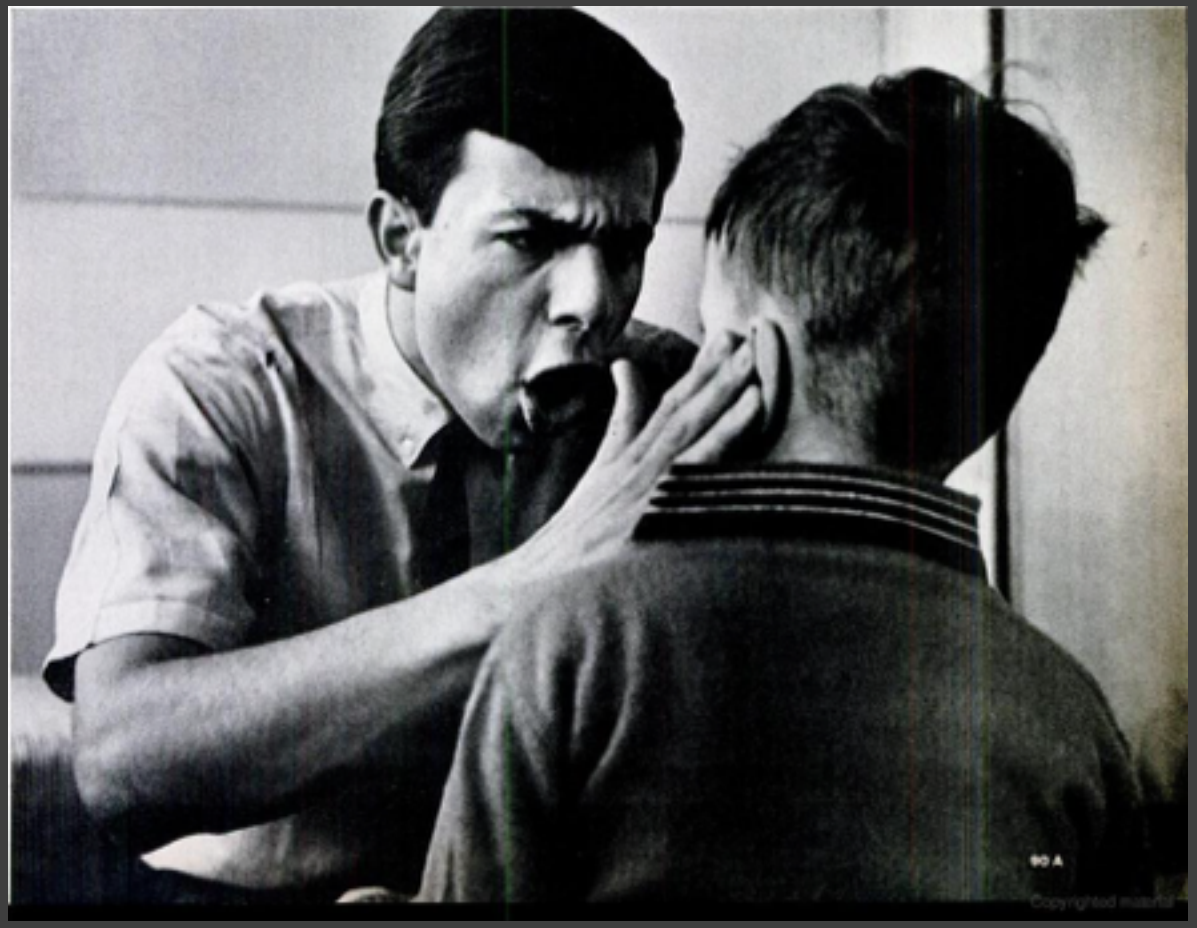

ISBN: 978-1-60805-196-0
Cellular and Molecular Biology of Autism Spectrum Disorders
Editor:
Anna Strunecká
Charles University in Prague
Czech Republic
Bentham Books



IQ scores in ASD across childhood

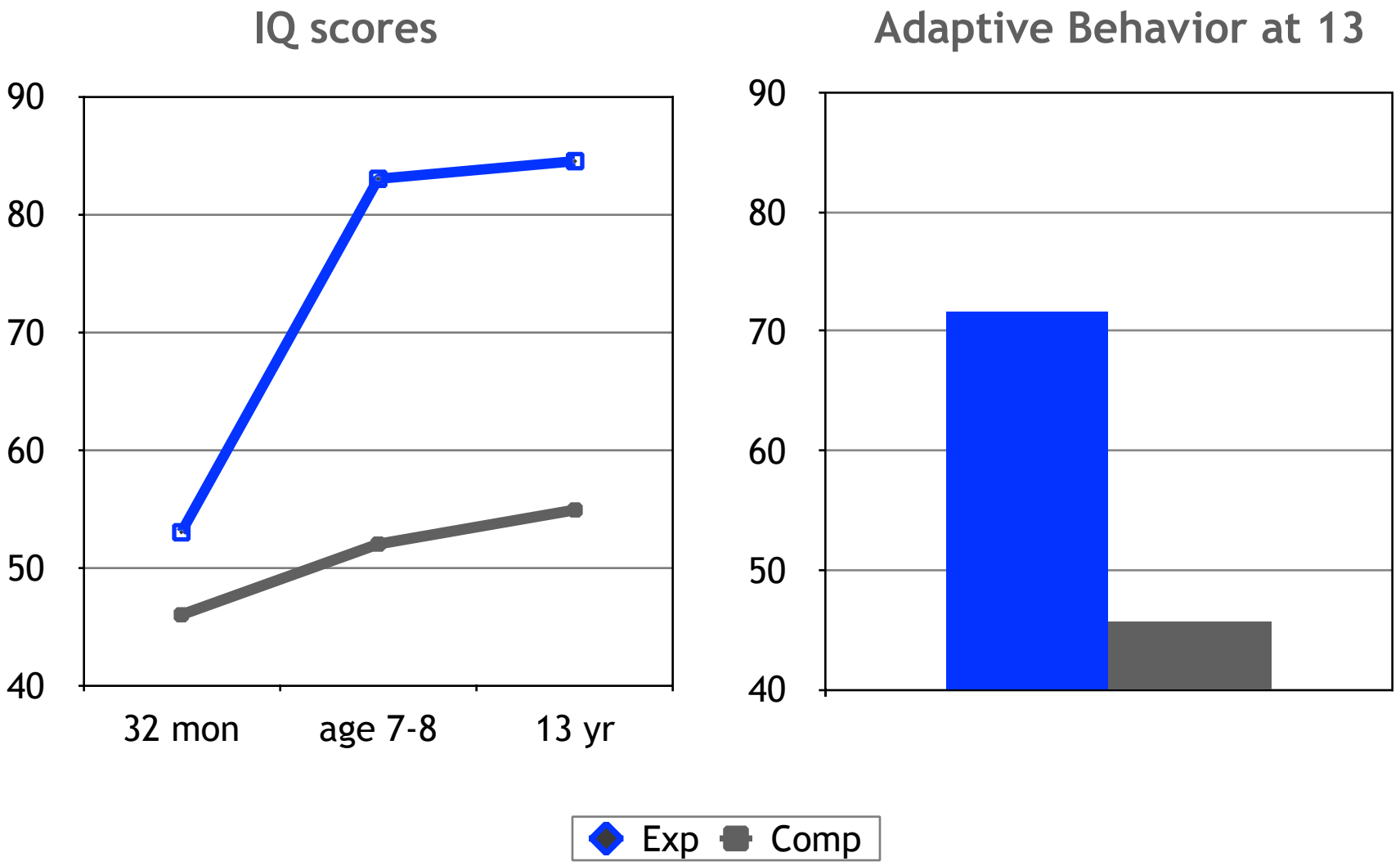


Life Magazine, May 7, 1965
“Screams, Slaps, and Love”



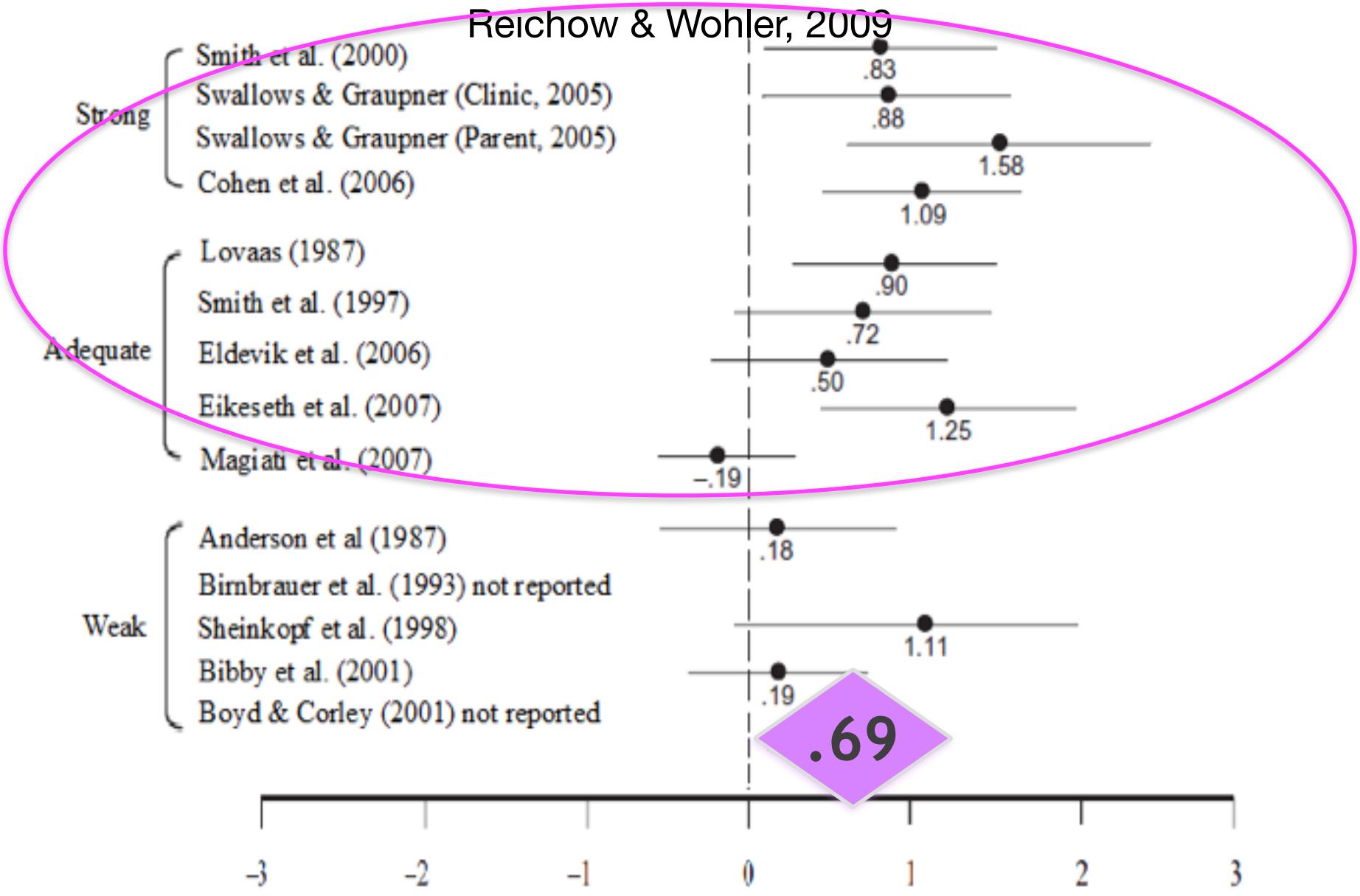
The game-changer

Lovaas,1987; McEachin et al 1993



Meta-analysis of DTT studies

Reichow & Wohler, 2009

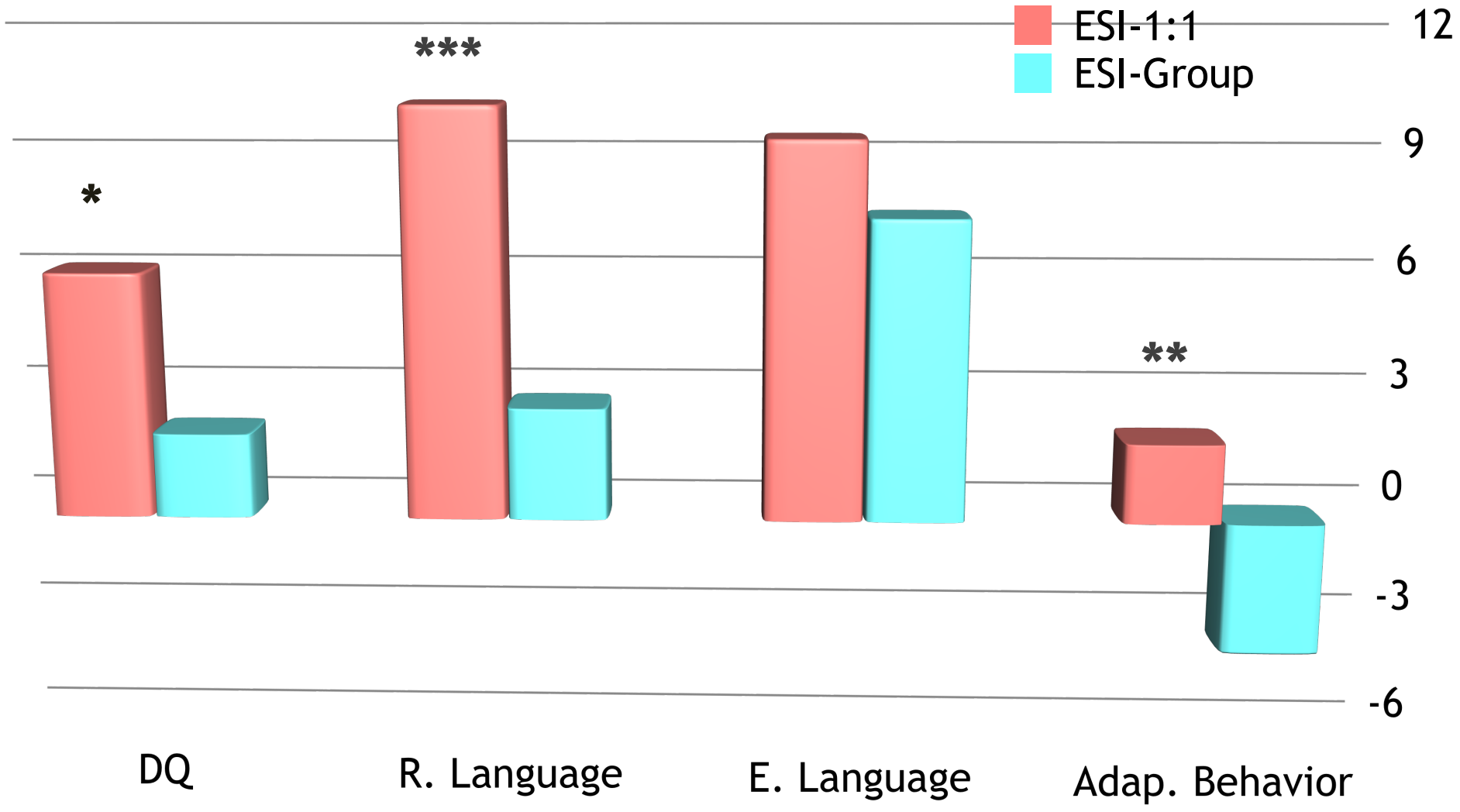


High intensity, global intervention models. How much can impairment be reduced?

(Rogers & Vismara, 2013)

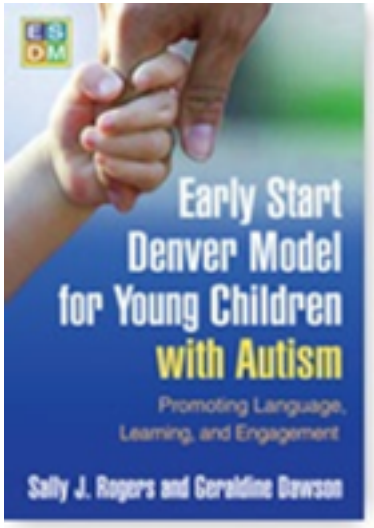
Remington 2007	Lovaas Early Intensive Behavioral Intervention
Wetherby et al, 2006, 2015	Early Social Interaction
Dawson, Rogers et al 2010	Early Start Denver Model (ESDM)

Wetherby ESI 2014: change scores

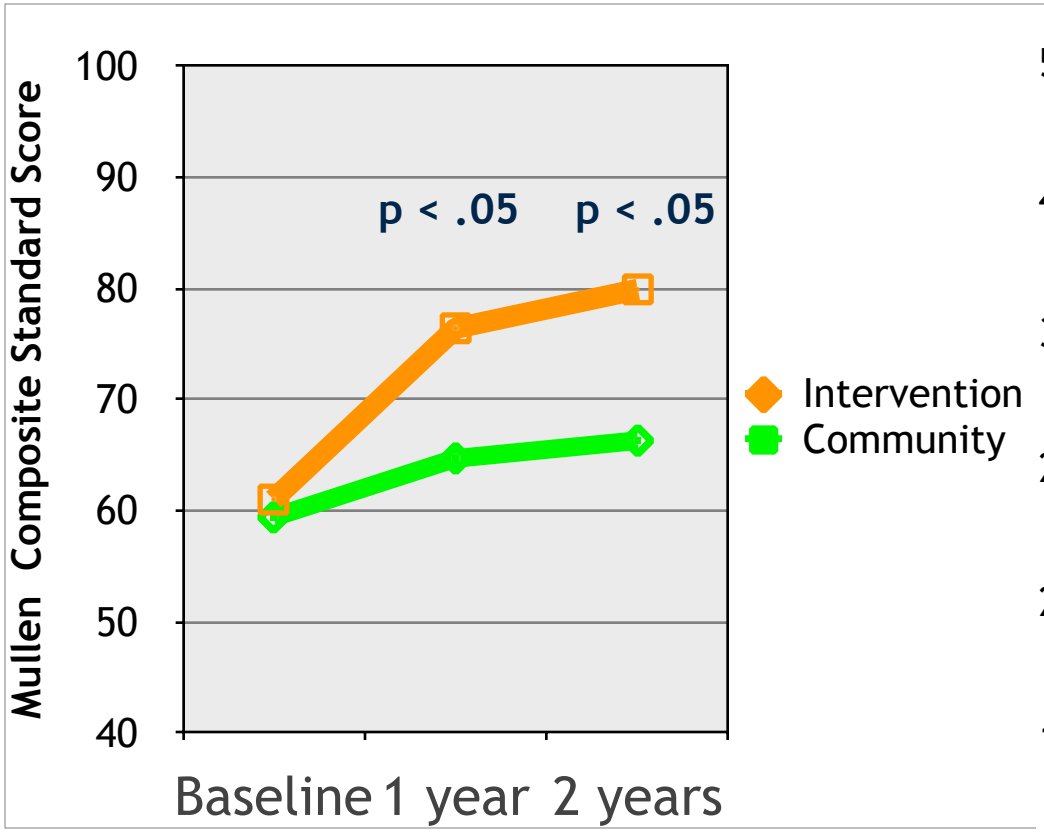


Early Start Denver Model

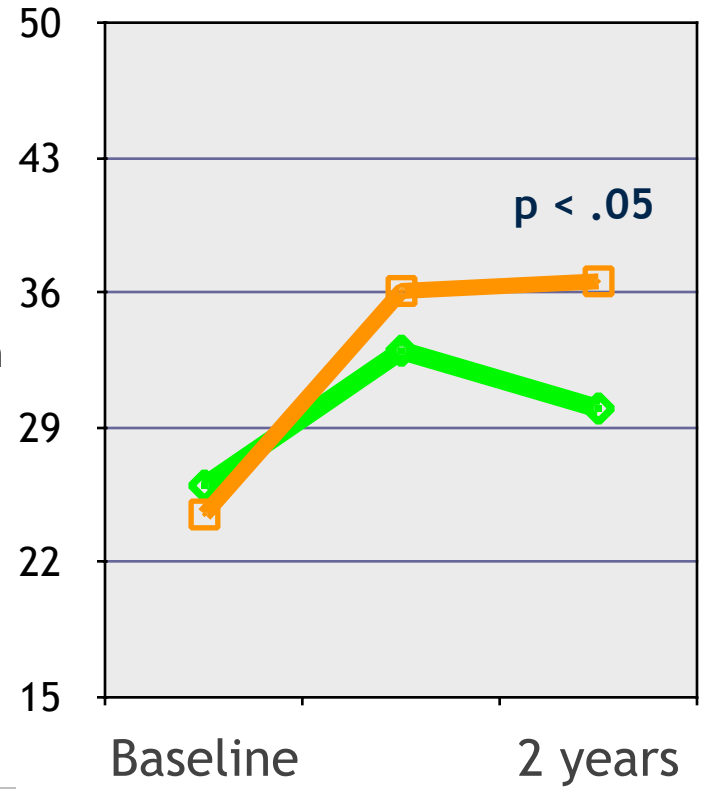
- ASD specific
- Comprehensive
- Interdisciplinary
- Integrates developmental and learning science
- Evidence-based teaching
- Data-based



2010 outcomes from RCT of ESDM versus community care (Dawson et al., 2010)



IQ

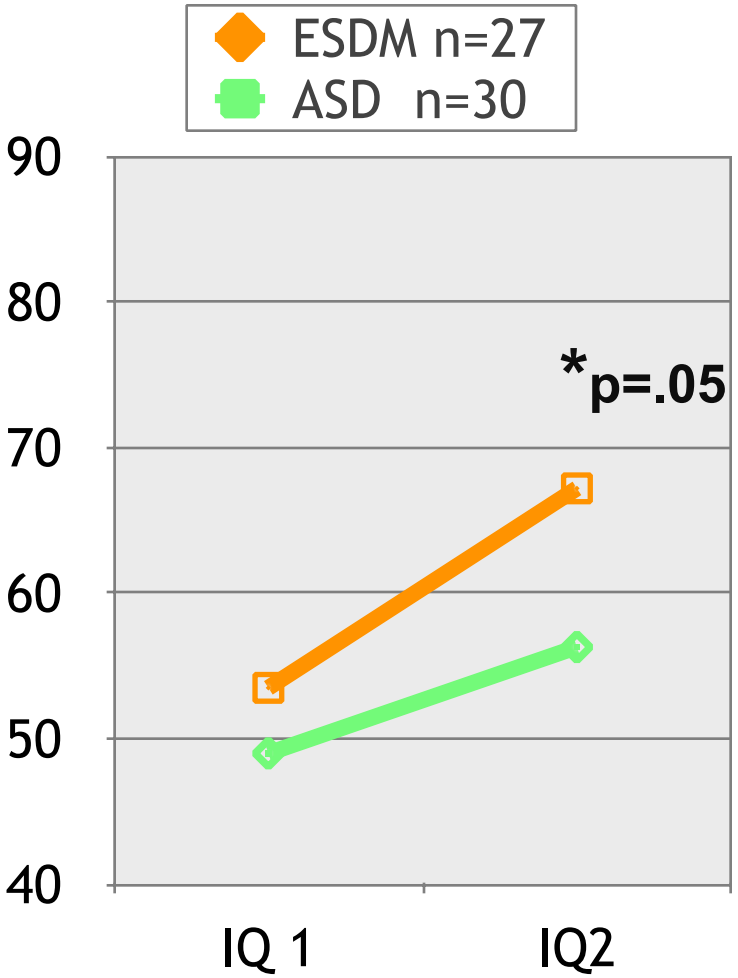


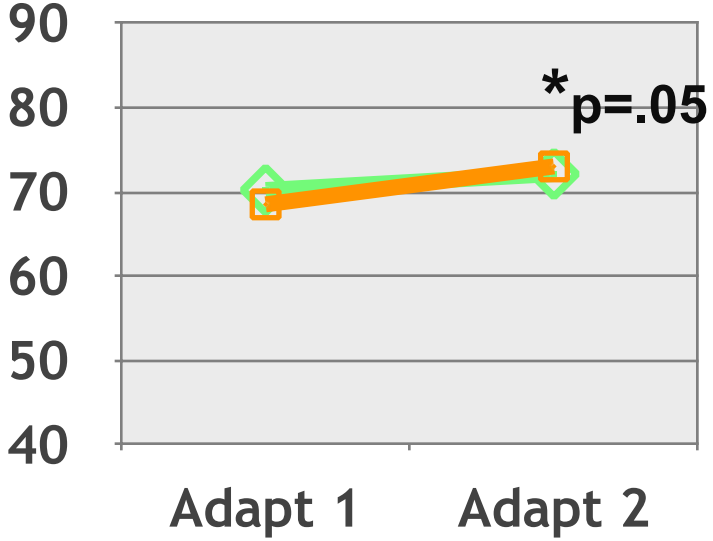
Language

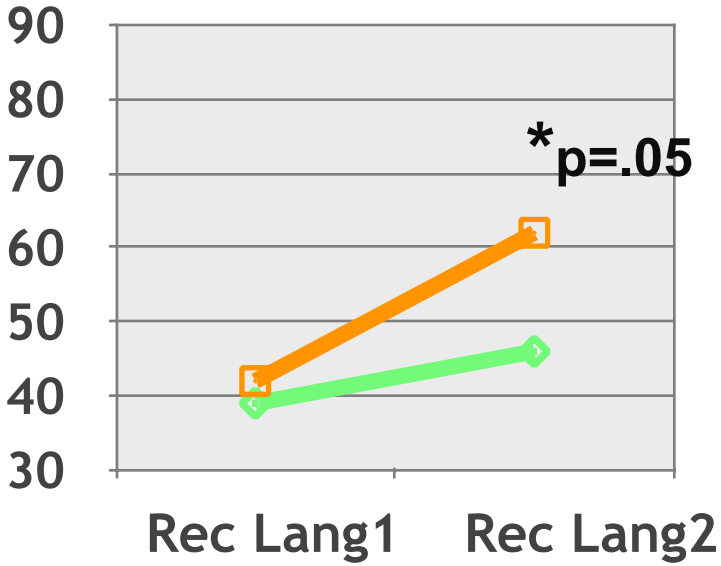
(Dawson NIMH U54 MH66399)

Replication: ESDM in 1:4 groups

Vivanti, Dissanayake et al., 2014

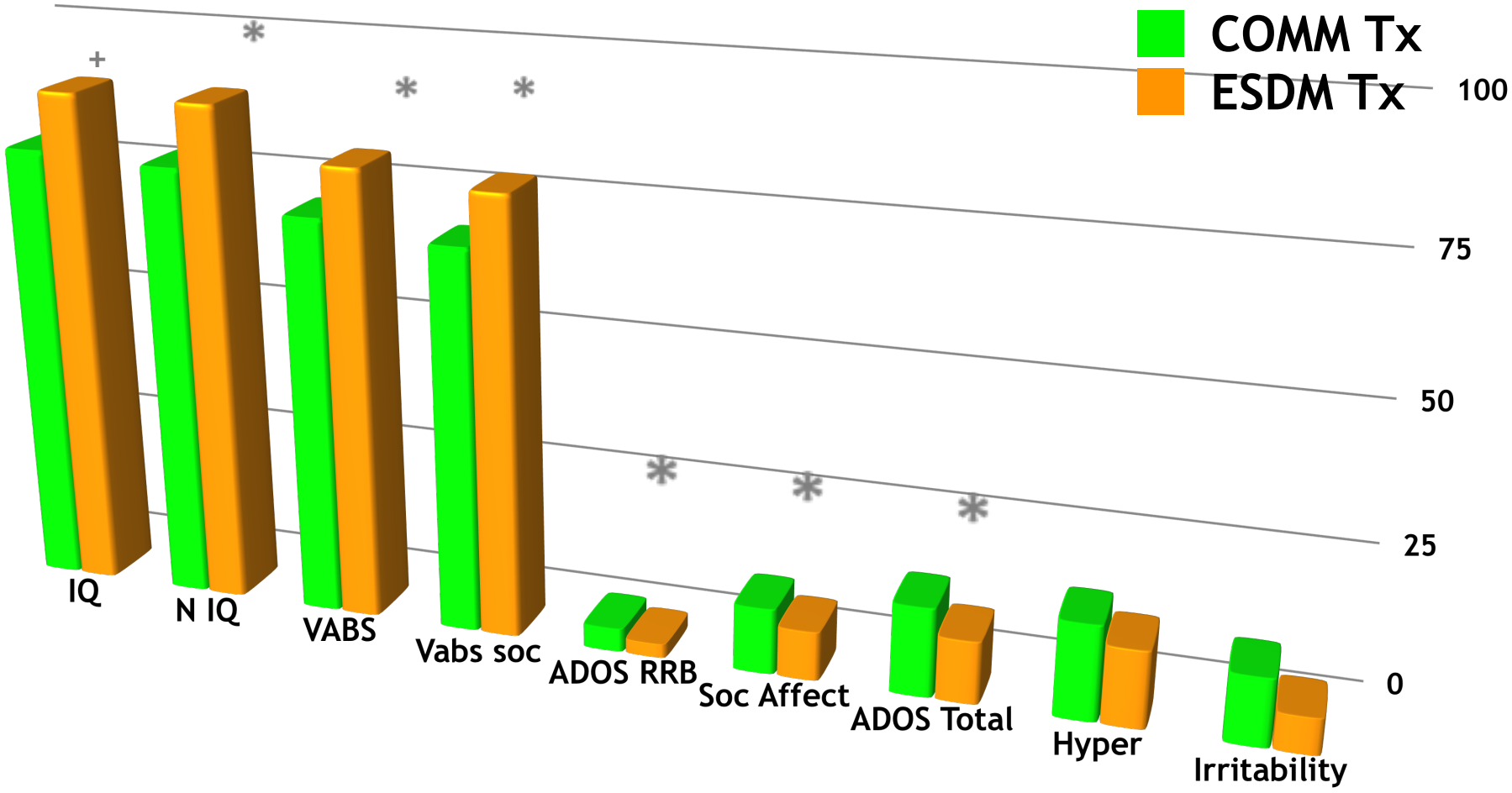






Gains last for years

(Estes et al., 2015)



High intensity, comprehensive interventions

Strengths

- Significant change
- In multiple areas
- Unified approach

Weaknesses

- Hard to isolate effective elements
- Cost
- Complex to learn and deliver

Low intensity models: target a specific change with a specific procedure

Kasari et al, 2015	JASPER: Joint attention, engagement, symbolic play
Ingersoll et al, 2012, 2012	Reciprocal Imitation: RIT
Green, et al, 2015	VIPP: Video Interaction for Producing Positive Parenting
Steiner et al, 2013	PRT: Pivotal Response Training
Baranek et al, 2015	Responsive Teaching + social commun, sensory reg

Parent Implemented Interventions

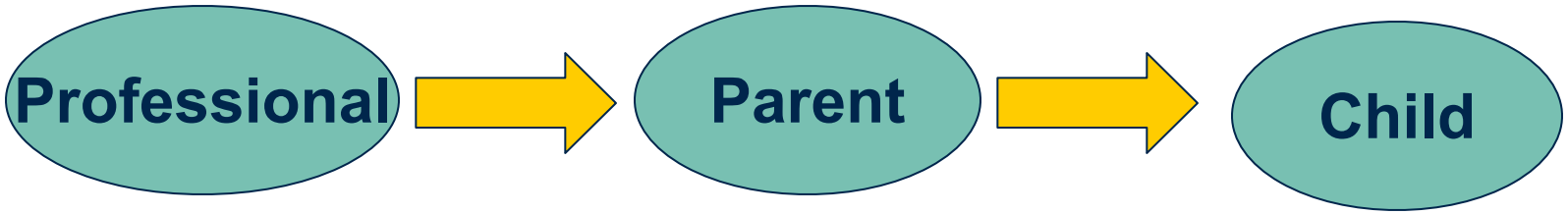
Effective with other groups

Allow for intensity, generalization

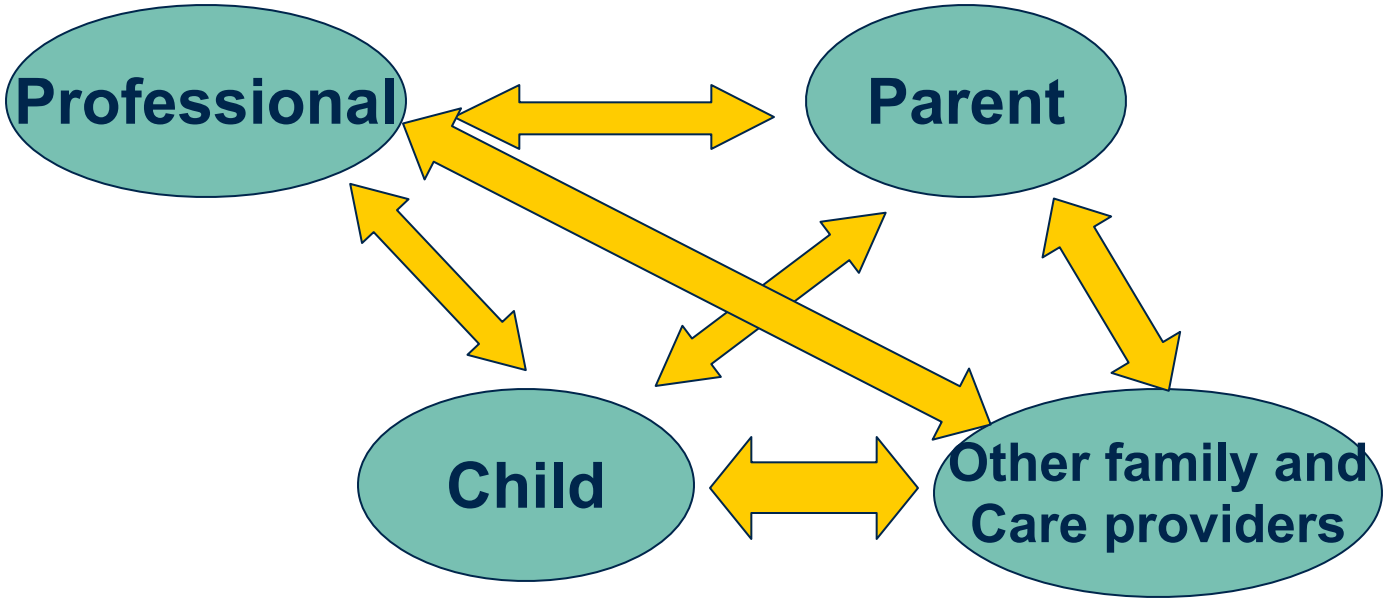
Implementable using distance technology

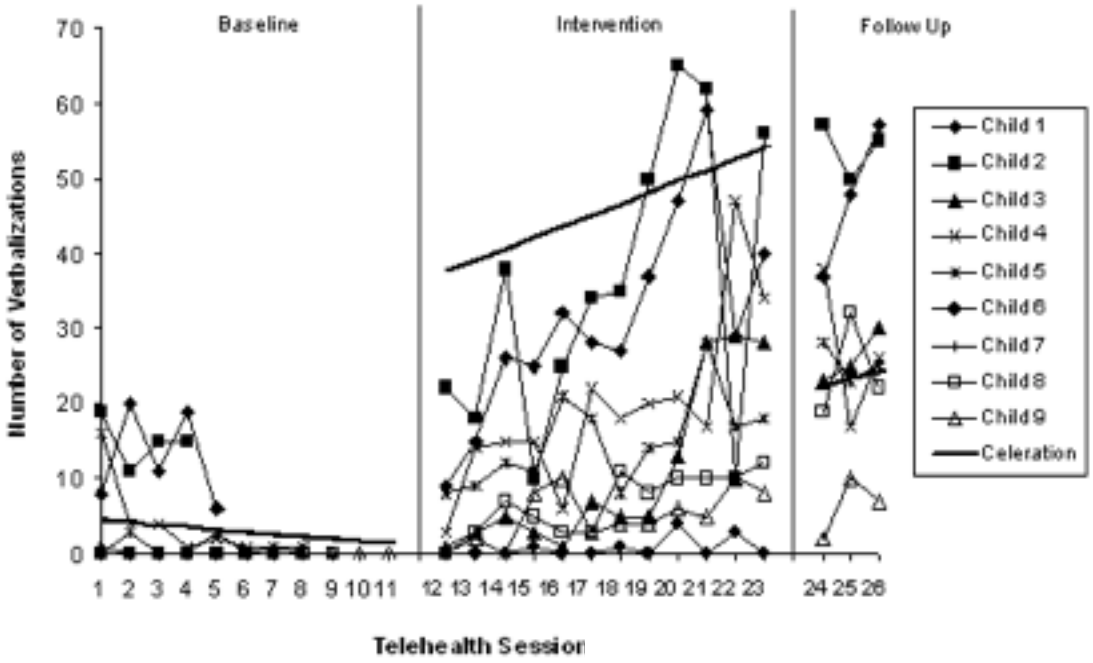
More than 5 with demonstrated efficacy

Process: How many interventionists think about it



How it really goes





New:
Parent-ESDM from a distance; effects on child communication

Vismara et al, in press

Parallel Processes

Procedural & declarative

Hands on, guided learning

Goal focused,self-assessed

Much practice

Mastery

Low intensity models

Strengths

- Effective
- Low cost
- Low intensity
- Brief
- Parent learning

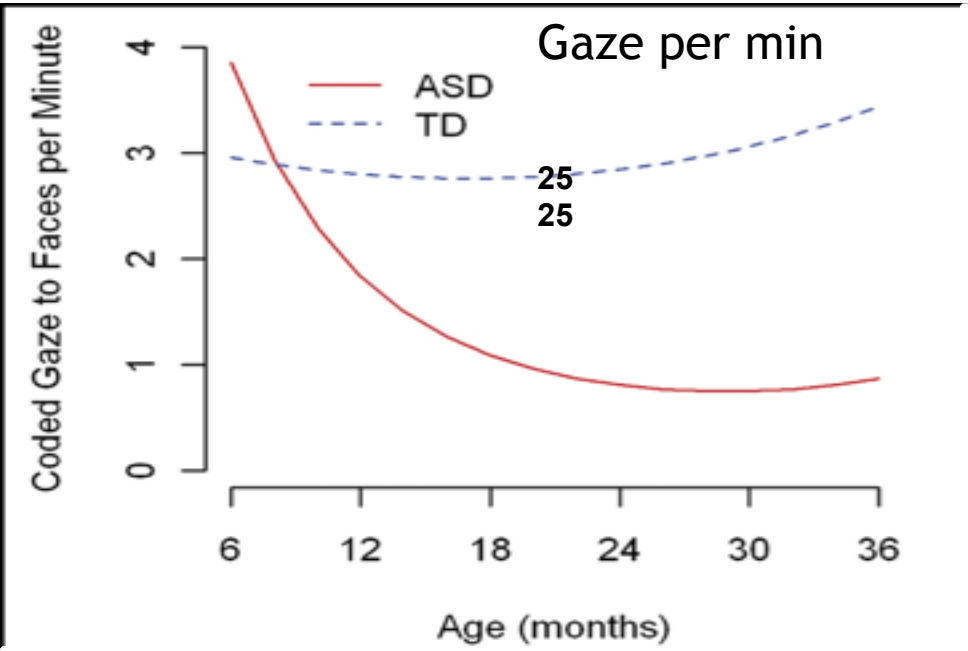
Weaknesses

- No long term data
- Addresses a few needs
- Not meant to stand alone
- Requires variety of plans to address all needs

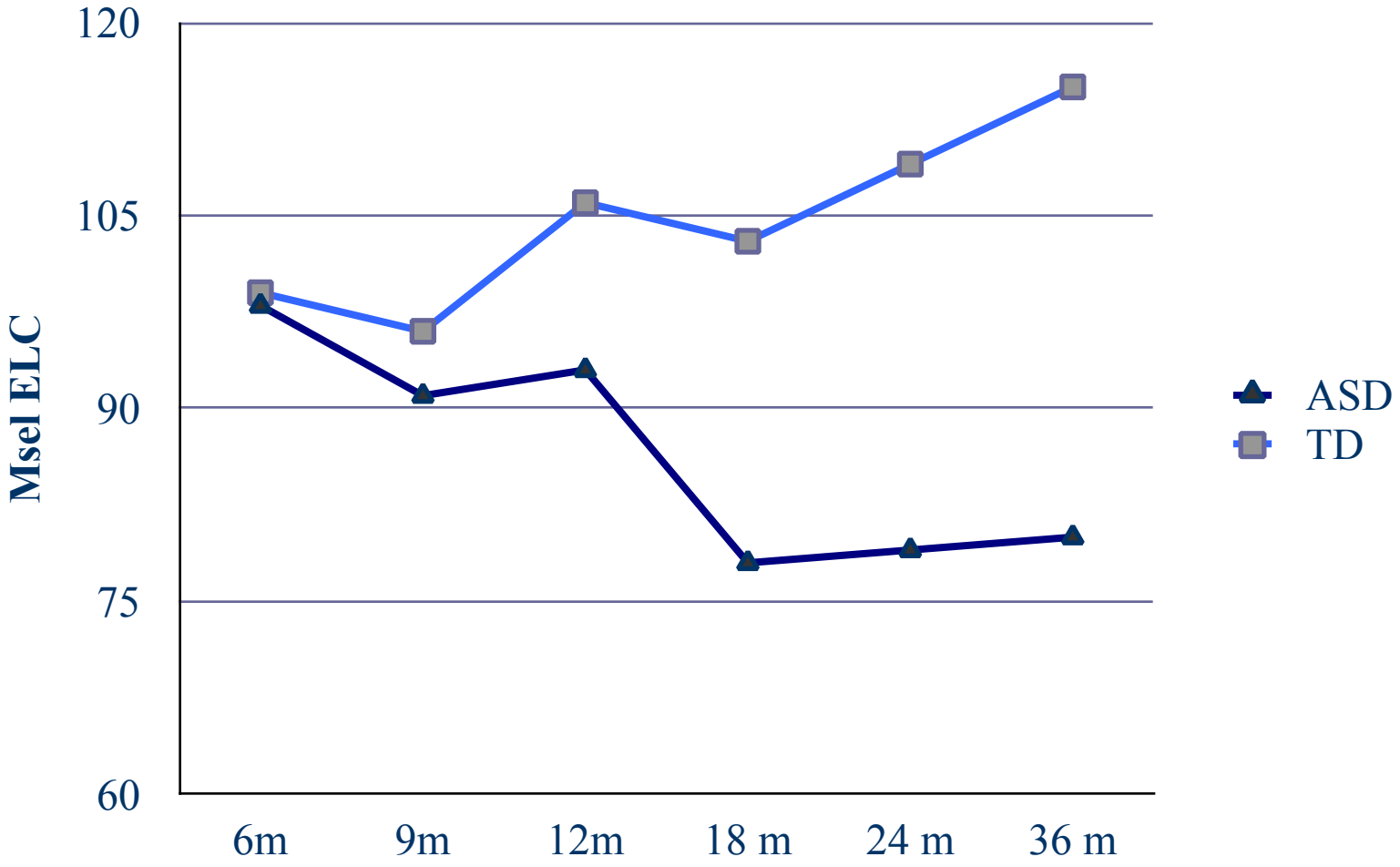
Model: Interactional Effects of Autism

Mundy 1995, Dawson et al.1998

Biology of autism → Child does not adequately engage in social learning → Increasing social deprivation due to isolating effects of autism → Lack of social learning alters course of neural and psychological development


Gaze per min
ASD
TD
25
25
Coded Gaze to Faces per Minute
0
1
2
3
4
6
12
18
24
30
36
Age (months)

DQ scores of infant sibs (n=48) who develop ASD and comparisons (n=92) (Ozonoff et al)



Can we begin sooner?

Rogers & Vismara, NICHD R21 HD065275; Autism Speaks

Decreased gaze, social interest

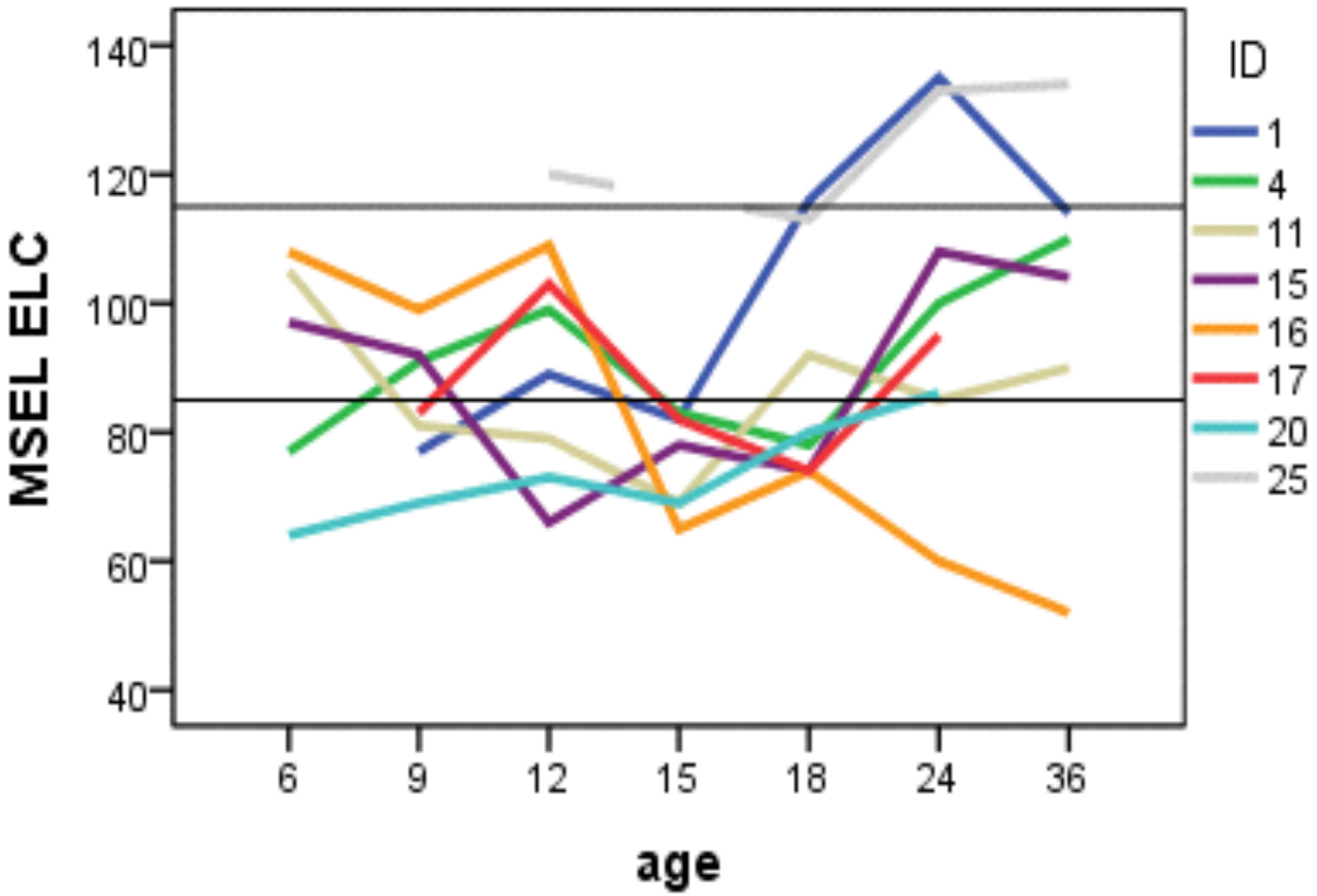
Little intentional communication

Little coordinated voice, gaze, gesture

Delayed phonemic development

Visual fixations on objects

Atypical repetitive behaviors


MSEL ELC
140
120
100
80
60
40
6
9
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age
ID
1
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11
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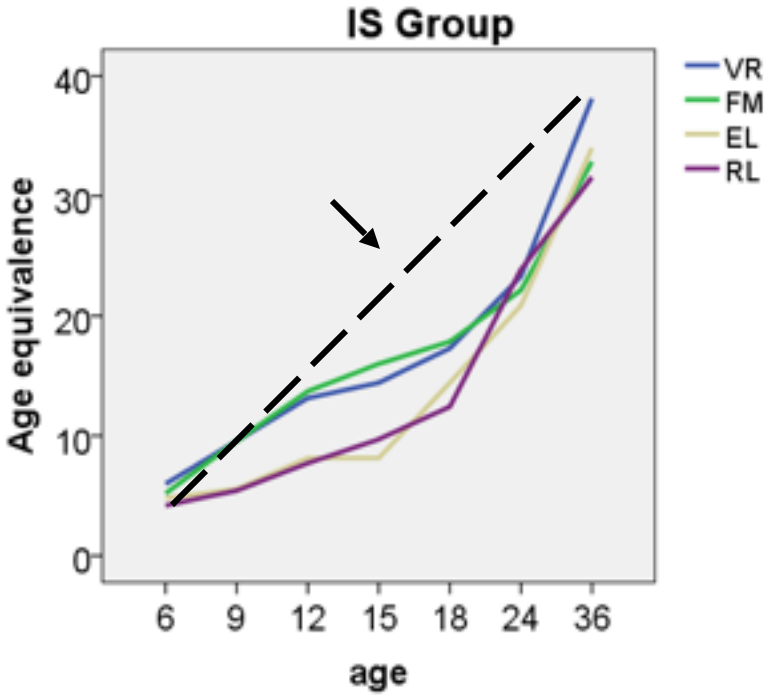
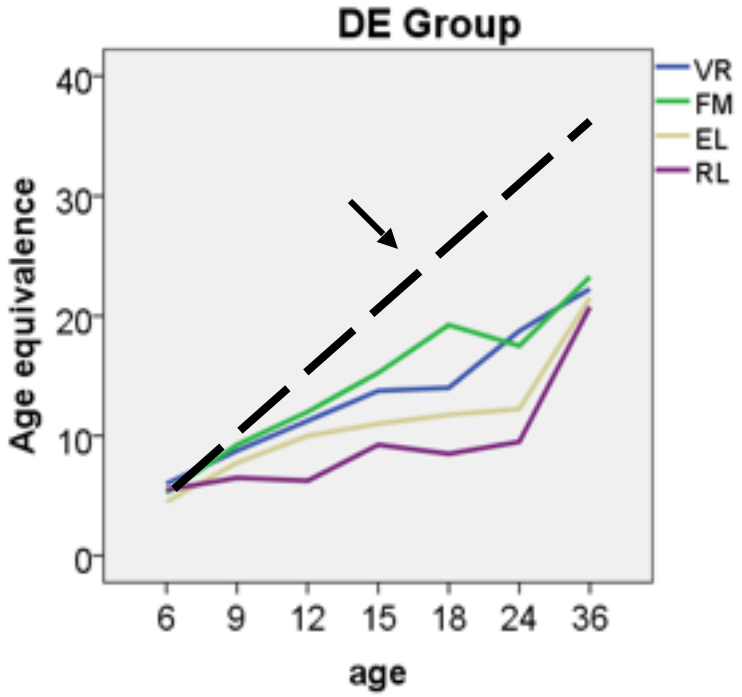
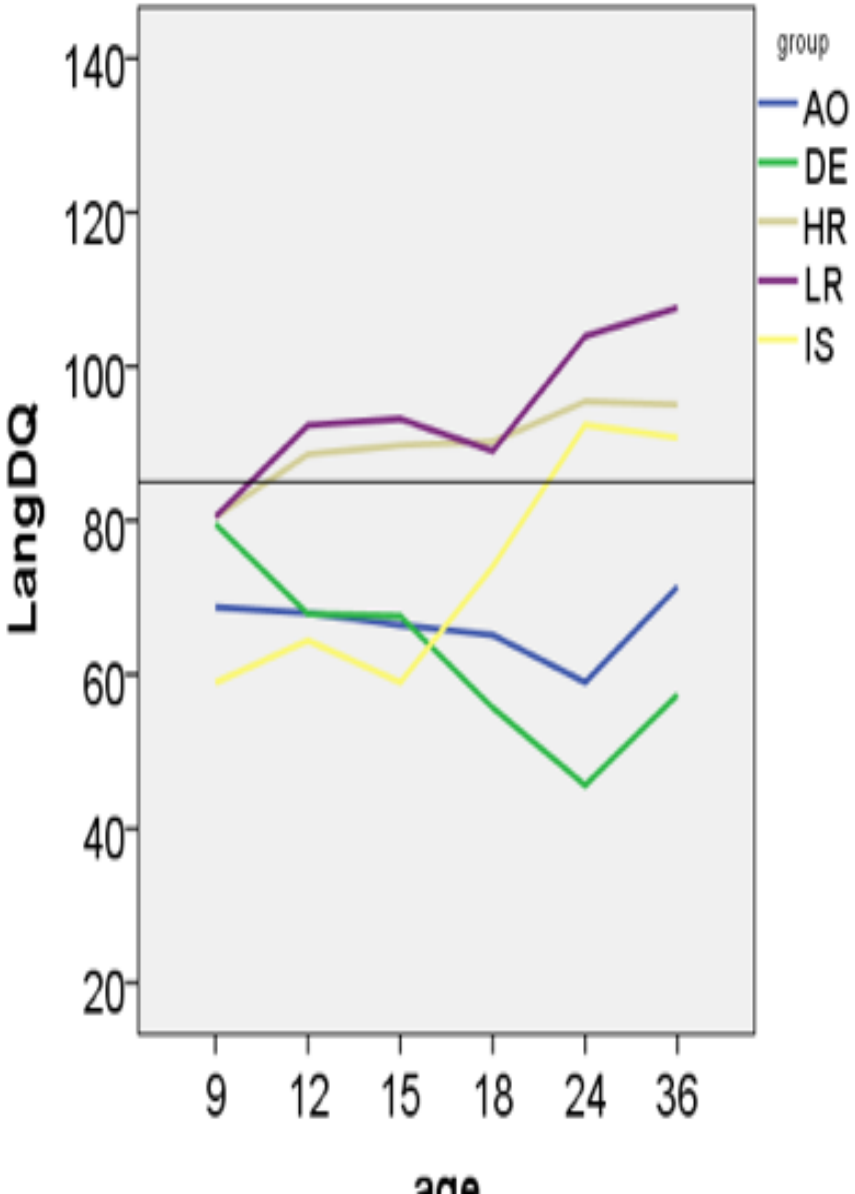
16
17
20
25

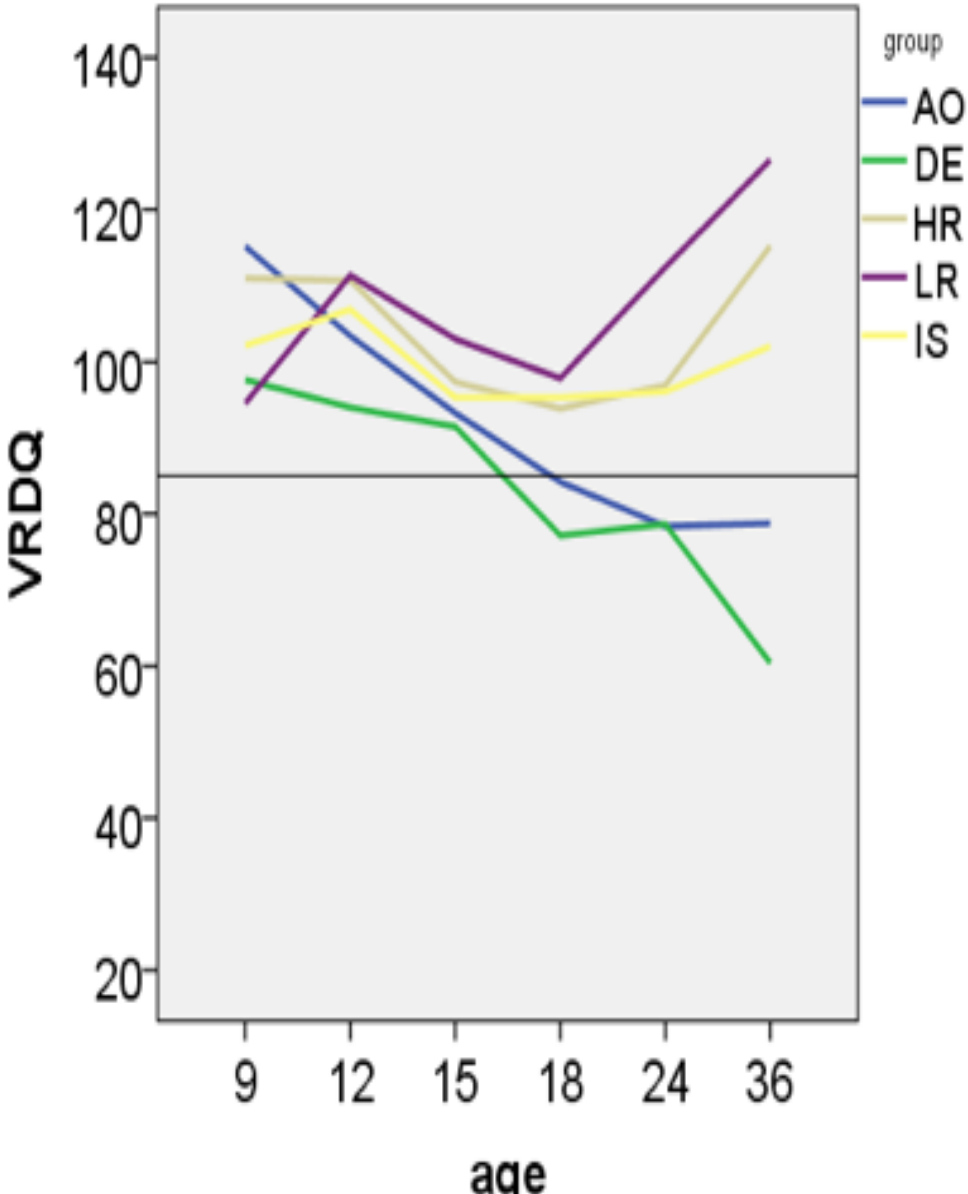
Treated Group/Refused Group





Five comparison groups: autism onset, declined enrollment, high risk (sibs), low risk, treated





The most effective interventions

Majority have skills in normal range by 6-7.

90% (ESDM) spontaneous, generative, phrase or sentence speech, by 4.

How is this possible?

Phenotype is emerging

Phenotype is emerging

Neural readiness

Phenotype is emerging

Neural readiness

Positive emotion

Phenotype is emerging

Neural readiness

Positive emotion

Social attention – resonance

Phenotype is emerging

Neural readiness

Positive emotion

Social attention - resonance

Targeted learning, enrichment

Phenotype is emerging

Neural readiness

Positive emotion

Social attention - resonance

Targeted learning, enrichment

Self-righting

Phenotype is emerging

Neural readiness

Positive emotion

Social attention - resonance

Targeted learning, enrichment

Self-righting

Growth or compensation?

How do we move forward?

to find them?

to diagnose them?

to treat them?

Find them

30–50% concerns by 12 months

Age of first concern = 18 – 19 months

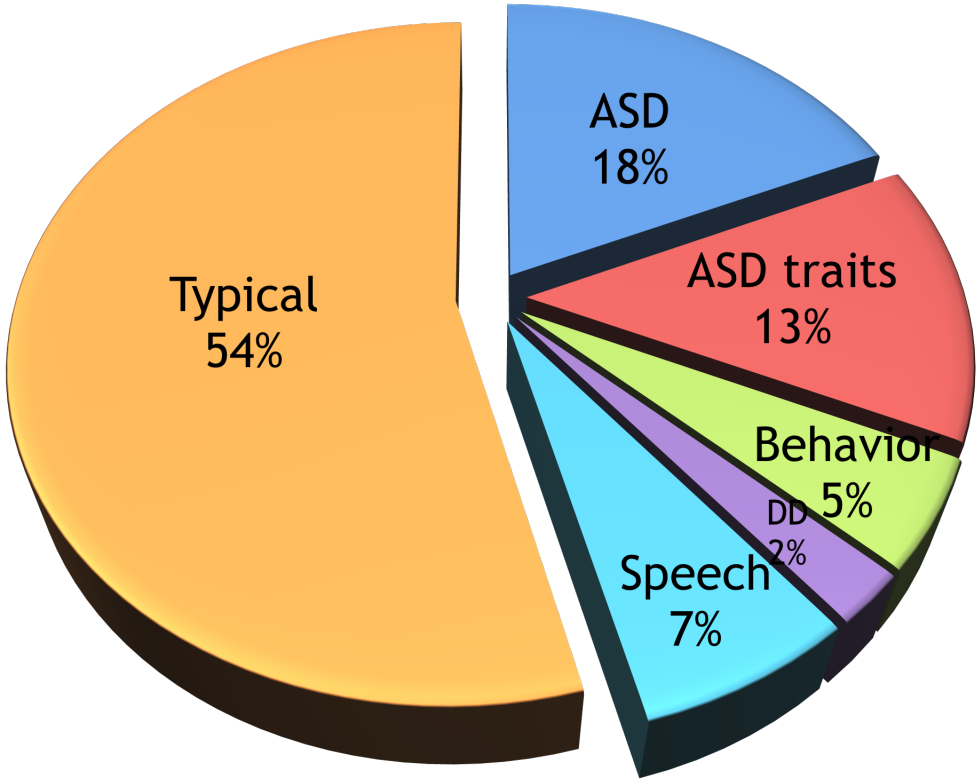
Age of U.S. diagnosis 48 – 53 months (CDC, 2012)

Find them

pediatric contacts
news articles
parent advocacy groups
autism treatment groups
child care educational groups

Find them

Monitor sibs



Age 3 Clinical best estimate outcomes
Of 294 infant sibs Ozonoff et al, 2014

Diagnose them

Use formal tools: screeners and tests

Good screeners

Infant-Toddler Checklist (ITC) 6 – 24 months

http://firstwords.fsu.edu/pdf/checklist.pdf

Modified Checklist for Autism in Toddlers 16 – 30 months https://www.m-chat.org

Good tests

Autism Observation Scale for Infants (AOSI)

ADOS-Toddler Module

Infant mental health mindset

Early diagnosis provisional, descriptive

Goal of early diagnosis is early treatment

Cannot predict outcomes from infant behavior

If parents did not want to know, they would not be here

Treat them

Act for earlier evidence-based services

- Learn, provide a parent-implemented tx
- Find those already seeing infants and network
- Use your influence in public children's services
- We need to help families get more treatment availability

Prevent

Reverse

Improve