

NHAIMH
27th Annual Conference
Early Indicators of Autism
Spectrum Disorder

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**WILLIAM JAMES
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Plan

- Personal Path
 - Treatment, Assessment, Research, Teaching
- Neurodevelopment
 - Early Childhood Development
 - Assessment
- Early Identification of ASD symptoms
- Case Examples
- Q & A

About me

- How and why I entered the field of infant/toddler mental health
- Academic/Clinical Background
- Why I still love working in infant/toddler mental health

ABA and evaluation for ASD



Meet and Greet

- Name and Role
- Clinical Experience with Autism Spectrum Disorder

ASD Systems of Care

- Early Intervention (0-3 years of age)
 - Cognitive Development
 - Physical Development
 - Communication Development
 - Social or Emotional Development
 - Adaptive Development
- Free and Appropriate Public Education (FAPE)- (3-21 years of age)
- Department of Developmental Services
- Department of Mental Health
- Transition into Adulthood
 - Services Cliff



Your baby at 2 months

Baby's Name

Baby's Age

Today's Date

Milestones matter! How your baby plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your baby has reached by 2 months. Take this with you and talk with your baby's doctor at every well-child visit about the milestones your baby has reached and what to expect next.



What most babies do by this age:

Social/Emotional Milestones

- Calms down when spoken to or picked up
- Looks at your face
- Seems happy to see you when you walk up to her
- Smiles when you talk to or smile at her

Language/Communication Milestones

- Makes sounds other than crying
- Reacts to loud sounds

Cognitive Milestones (learning, thinking, problem-solving)

- Watches you as you move
- Looks at a toy for several seconds

Movement/Physical Development Milestones

- Holds head up when on tummy
- Moves both arms and both legs
- Opens hands briefly



Your baby at 4 months

Baby's Name _____

Baby's Age _____

Today's Date _____

Milestones matter! How your baby plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your baby has reached by 4 months. Take this with you and talk with your baby's doctor at every well-child visit about the milestones your baby has reached and what to expect next.



What most babies do by this age:

Social/Emotional Milestones

- Smiles on his own to get your attention
- Chuckles (not yet a full laugh) when you try to make her laugh
- Looks at you, moves, or makes sounds to get or keep your attention

Language/Communication Milestones

- Makes sounds like "oooo", "aahh" (cooing)
- Makes sounds back when you talk to him
- Turns head towards the sound of your voice

Cognitive Milestones (learning, thinking, problem-solving)

- If hungry, opens mouth when she sees breast or bottle
- Looks at his hands with interest

Movement/Physical Development Milestones

- Holds head steady without support when you are holding her
- Holds a toy when you put it in his hand
- Uses her arm to swing at toys
- Brings hands to mouth
- Pushes up onto elbows/forearms when on tummy

Your baby at 6 months

Baby's Name

Baby's Age

Today's Date

Milestones matter! How your baby plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your baby has reached by 6 months. Take this with you and talk with your baby's doctor at every well-child visit about the milestones your baby has reached and what to expect next.



What most babies do by this age:

Social/Emotional Milestones

- Knows familiar people
- Likes to look at himself in a mirror
- Laughs

Language/Communication Milestones

- Takes turns making sounds with you
- Blows "raspberries" (sticks tongue out and blows)
- Makes squealing noises

Cognitive Milestones (learning, thinking, problem-solving)

- Puts things in her mouth to explore them
- Reaches to grab a toy he wants
- Closes lips to show she doesn't want more food

Movement/Physical Development Milestones

- Rolls from tummy to back
- Pushes up with straight arms when on tummy
- Leans on hands to support himself when sitting

Your baby at 9 months*

Baby's Name _____

Baby's Age _____

Today's Date _____

Milestones matter! How your baby plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your baby has reached by 9 months. Take this with you and talk with your baby's doctor at every well-child visit about the milestones your baby has reached and what to expect next.



What most babies do by this age:

Social/Emotional Milestones



- Is shy, clingy, or fearful around strangers
- Shows several facial expressions, like happy, sad, angry, and surprised
- Looks when you call her name
- Reacts when you leave (looks, reaches for you, or cries)
- Smiles or laughs when you play peek-a-boo

Language/Communication Milestones

- Makes different sounds like "mamamama" and "babababa"
- Lifts arms up to be picked up

Cognitive Milestones (learning, thinking, problem-solving)

- Looks for objects when dropped out of sight (like his spoon or toy)
- Bangs two things together

Movement/Physical Development Milestones

- Gets to a sitting position by herself
- Moves things from one hand to her other hand
- Uses fingers to "rake" food towards himself
- Sits without support

* It's time for developmental screening!

At 9 months, your baby is due for general developmental screening, as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your baby's developmental screening.

Your baby at 12 months

Baby's Name

Baby's Age

Today's Date

Milestones matter! How your baby plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your baby has reached by 12 months. Take this with you and talk with your baby's doctor at every well-child visit about the milestones your baby has reached and what to expect next.



What most babies do by this age:

Social/Emotional Milestones

- Plays games with you, like pat-a-cake

Language/Communication Milestones

- Waves "bye-bye"
- Calls a parent "mama" or "dada" or another special name
- Understands "no" (pauses briefly or stops when you say it)

Cognitive Milestones (learning, thinking, problem-solving)

- Puts something in a container, like a block in a cup
- Looks for things he sees you hide, like a toy under a blanket

Movement/Physical Development Milestones

- Pulls up to stand
- Walks, holding on to furniture
- Drinks from a cup without a lid, as you hold it
- Picks things up between thumb and pointer finger, like small bits of food

Your child at 15 months

Child's Name _____

Child's Age _____

Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 15 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.



What most children do by this age:

Social/Emotional Milestones

- Copies other children while playing, like taking toys out of a container when another child does
- Shows you an object she likes
- Claps when excited
- Hugs stuffed doll or other toy
- Shows you affection (hugs, cuddles, or kisses you)

Language/Communication Milestones

- Tries to say one or two words besides "mama" or "dada," like "ba" for ball or "da" for dog
- Looks at a familiar object when you name it
- Follows directions given with both a gesture and words. For example, he gives you a toy when you hold out your hand and say, "Give me the toy."
- Points to ask for something or to get help

Cognitive Milestones (learning, thinking, problem-solving)

- Tries to use things the right way, like a phone, cup, or book
- Stacks at least two small objects, like blocks

Movement/Physical Development Milestones

- Takes a few steps on his own
- Uses fingers to feed herself some food

Your child at 18 months*

Child's Name _____

Child's Age _____

Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 18 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.



What most children do by this age:

Social/Emotional Milestones

- Moves away from you, but looks to make sure you are close by
- Points to show you something interesting
- Puts hands out for you to wash them
- Looks at a few pages in a book with you
- Helps you dress him by pushing arm through sleeve or lifting up foot

Language/Communication Milestones

- Tries to say three or more words besides "mama" or "dada"
- Follows one-step directions without any gestures, like giving you the toy when you say, "Give it to me."

Cognitive Milestones (learning, thinking, problem-solving)

- Copies you doing chores, like sweeping with a broom
- Plays with toys in a simple way, like pushing a toy car

Movement/Physical Development Milestones

- Walks without holding on to anyone or anything
- Scribbles
- Drinks from a cup without a lid and may spill sometimes
- Feeds herself with her fingers
- Tries to use a spoon
- Climbs on and off a couch or chair without help

* It's time for developmental screening!

At 18 months, your child is due for general developmental screening and an autism screening, as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your child's developmental screening.

Your child at 2 years*



Child's Name _____

Child's Age _____

Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 2. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.

What most children do by this age:

Social/Emotional Milestones

- Notices when others are hurt or upset, like pausing or looking sad when someone is crying
- Looks at your face to see how to react in a new situation

- Tries to use switches, knobs, or buttons on a toy
- Plays with more than one toy at the same time, like putting toy food on a toy plate

Language/Communication Milestones

- Points to things in a book when you ask, like "Where is the bear?"
- Says at least two words together, like "More milk."
- Points to at least two body parts when you ask him to show you
- Uses more gestures than just waving and pointing, like blowing a kiss or nodding yes

Movement/Physical Development Milestones

- Kicks a ball
- Runs
- Walks (not climbs) up a few stairs with or without help
- Eats with a spoon

Cognitive Milestones (learning, thinking, problem-solving)

- Holds something in one hand while using the other hand; for example, holding a container and taking the lid off

* It's time for developmental screening!

At 2 years, your child is due for an autism screening, as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your child's developmental screening.

Your child at 30 months*

Child's Name _____

Child's Age _____

Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by 30 months. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.



What most children do by this age:

Social/Emotional Milestones

- Plays next to other children and sometimes plays with them
- Shows you what she can do by saying, "Look at me!"
- Follows simple routines when told, like helping to pick up toys when you say, "It's clean-up time."

Language/Communication Milestones

- Says about 50 words
- Says two or more words together, with one action word, like "Doggie run"
- Names things in a book when you point and ask, "What is this?"
- Says words like "I," "me," or "we"

Cognitive Milestones (learning, thinking, problem-solving)

- Uses things to pretend, like feeding a block to a doll as if it were food

- Shows simple problem-solving skills, like standing on a small stool to reach something
- Follows two-step instructions like "Put the toy down and close the door."
- Shows he knows at least one color, like pointing to a red crayon when you ask, "Which one is red?"

Movement/Physical Development Milestones

- Uses hands to twist things, like turning doorknobs or unscrewing lids
- Takes some clothes off by himself, like loose pants or an open jacket
- Jumps off the ground with both feet
- Turns book pages, one at a time, when you read to her

* It's time for developmental screening!

At 30 months, your child is due for general developmental screening as recommended for all children by the American Academy of Pediatrics. Ask the doctor about your child's developmental screening.

Your child at 3 years

Child's Name _____

Child's Age _____

Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 3. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.



What most children do by this age:

Social/Emotional Milestones

- Calms down within 10 minutes after you leave her, like at a childcare drop off
- Notices other children and joins them to play

Language/Communication Milestones

- Talks with you in conversation using at least two back-and-forth exchanges
- Asks "who," "what," "where," or "why" questions, like "Where is mommy/daddy?"
- Says what action is happening in a picture or book when asked, like "running," "eating," or "playing"
- Says first name, when asked
- Talks well enough for others to understand, most of the time

Cognitive Milestones (learning, thinking, problem-solving)

- Draws a circle, when you show him how
- Avoids touching hot objects, like a stove, when you warn her

Movement/Physical Development Milestones

- Strings items together, like large beads or macaroni
- Puts on some clothes by himself, like loose pants or a jacket
- Uses a fork

Your child at 4 years

Child's Name _____

Child's Age _____

Today's Date _____

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 4. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.



What most children do by this age:

Social/Emotional Milestones

- ➔ Pretends to be something else during play (teacher, superhero, dog)
- ➔ Asks to go play with children if none are around, like "Can I play with Alex?"
- ➔ Comforts others who are hurt or sad, like hugging a crying friend
- Avoids danger, like not jumping from tall heights at the playground
- Likes to be a "helper"
- ➔ Changes behavior based on where she is (place of worship, library, playground)

Language/Communication Milestones

- Says sentences with four or more words
- Says some words from a song, story, or nursery rhyme
- Talks about at least one thing that happened during his day, like "I played soccer."
- Answers simple questions like "What is a coat for?" or "What is a crayon for?"

Cognitive Milestones (learning, thinking, problem-solving)

- Names a few colors of items
- Tells what comes next in a well-known story
- Draws a person with three or more body parts

Movement/Physical Development Milestones

- Catches a large ball most of the time
- Serves himself food or pours water, with adult supervision
- Unbuttons some buttons
- Holds crayon or pencil between fingers and thumb (not a fist)

Your child at 5 years

Child's Name

Child's Age

Today's Date

Milestones matter! How your child plays, learns, speaks, acts, and moves offers important clues about his or her development. Check the milestones your child has reached by age 5. Take this with you and talk with your child's doctor at every well-child visit about the milestones your child has reached and what to expect next.



What most children do by this age:

Social/Emotional Milestones

- Follows rules or takes turns when playing games with other children
- Sings, dances, or acts for you
- Does simple chores at home, like matching socks or clearing the table after eating

Language/Communication Milestones

- Tells a story she heard or made up with at least two events. For example, a cat was stuck in a tree and a firefighter saved it
- Answers simple questions about a book or story after you read or tell it to him
- Keeps a conversation going with more than three back-and-forth exchanges
- Uses or recognizes simple rhymes (bat-cat, ball-tall)

Cognitive Milestones (learning, thinking, problem-solving)

- Counts to 10
- Names some numbers between 1 and 5 when you point to them
- Uses words about time, like "yesterday," "tomorrow," "morning," or "night"
- Pays attention for 5 to 10 minutes during activities. For example, during story time or making arts and crafts (screen time does not count)
- Writes some letters in her name
- Names some letters when you point to them

Movement/Physical Development Milestones

- Buttons some buttons
- Hops on one foot

Screening & Early Identification

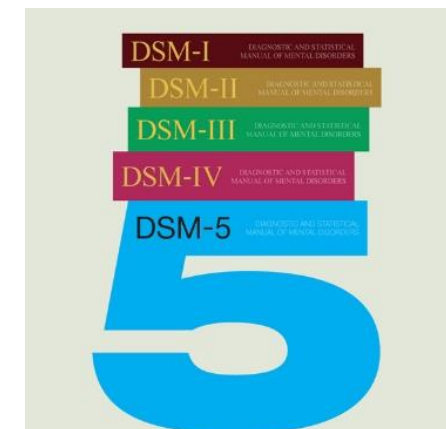
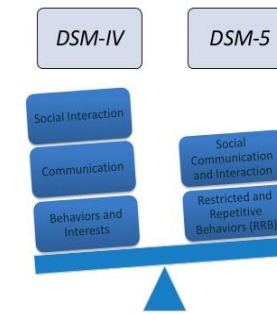
- The American Academy of Pediatrics recommends screening for developmental delay at
 - 9, 18, and 24 or 30
 - with ASD screening at 18 and 24 months
- Identification/treatment barriers are greater for uninsured, non-English speaking, and racial/ethnic minority children and families

ASD in the DSM...

Changes Over the Years

- DSM-III
 - Monothetic approach
 - Classic autism
 - As manifest in more severely affected individuals.
- DSM-III-R (APA, 1987)
 - Developmental emphasis
 - Polythetic criteria set
 - Expanded the diagnostic concept
- DSM-IV (APA, 1994) and DSM-IV-TR (APA, 2000)
 - “High-functioning” individuals with social disability
- DSM-5
 - Sensory Symptoms

Changes from DSM-IV to DSM-5



DSM-5 Criteria for Autism Spectrum Disorder

Currently, or by history, must meet criteria A, B, C, and D

A. Persistent deficits in social communication and social interaction across contexts, not accounted for by general developmental delays, and manifest by all 3 of the following:

- 1. Deficits in social-emotional reciprocity**
- 2. Deficits in nonverbal communicative behaviors used for social interaction**
- 3. Deficits in developing and maintaining relationships**

B. Restricted, repetitive patterns of behavior, interests, or activities as manifested by at least two of the following:

- 1. Stereotyped or repetitive speech, motor movements, or use of objects**
- 2. Excessive adherence to routines, ritualized patterns of verbal or nonverbal behavior, or excessive resistance to change**
- 3. Highly restricted, fixated interests that are abnormal in intensity or focus**
- 4. Hyper- or hypo-reactivity to sensory input or unusual interest in sensory aspects of environment;**

C. Symptoms must be present in early childhood (but may not become fully manifest until social demands exceed limited capacities)

D. Symptoms together limit and impair everyday functioning.

ASD...



- 1 in 44 8-year-olds diagnosed with ASD (CDC, 2022), with boys affected more often than girls
- Early diagnosis and treatment (prior to age 4) are crucial for optimizing long-term outcomes
- It is possible to identify children at high risk for ASD as young as 9 months of age
- Stability of early diagnosis is relatively high (85%), although not as high as when a diagnosis is made > 3 years of age (97-99%)
- Even when caregivers report developmental/behavioral concerns between 12 - 18 months, diagnosis is routinely made between 3 - 4 years or later, especially for *economically disadvantaged, racial/ethnic minority groups, or non-English speaking homes*
- Mandell et al. (2009) found that on average, *Black children are diagnosed 1.5 years later than White children.*

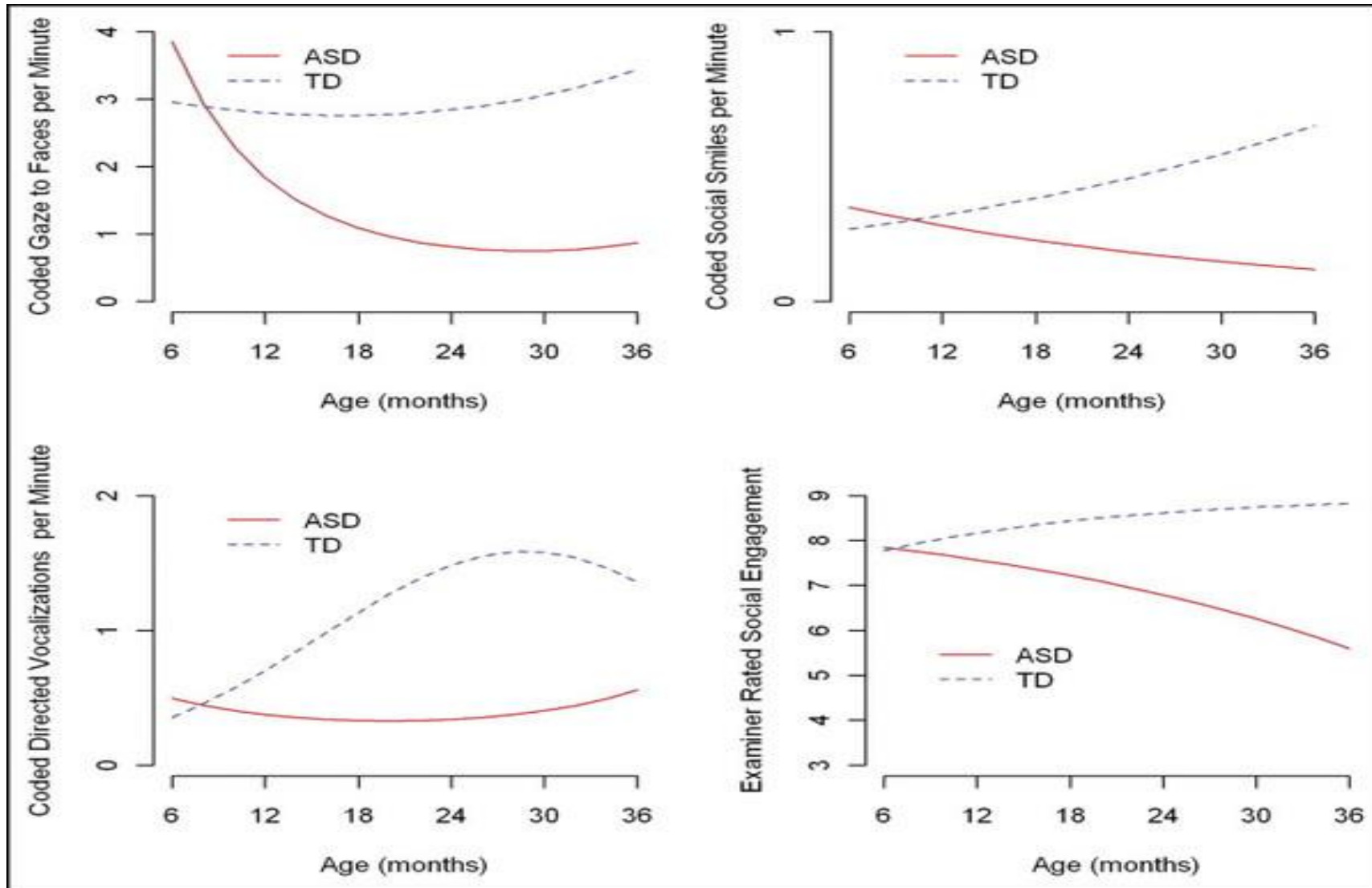
TODDLER MEASUREMENT TOOLS

ADOS-2 & Mullen

- **Autism Diagnostic Observation Schedule (ADOS-2):** a Gold standard diagnostic instrument for ASD; 30-45 minute play-based assessment administered by trained clinician
- **Mullen Scales of Early Learning (Mullen):** 4 subtests of this developmental assessment
 - Visual reception
 - Fine motor
 - Receptive language
 - Expressive language

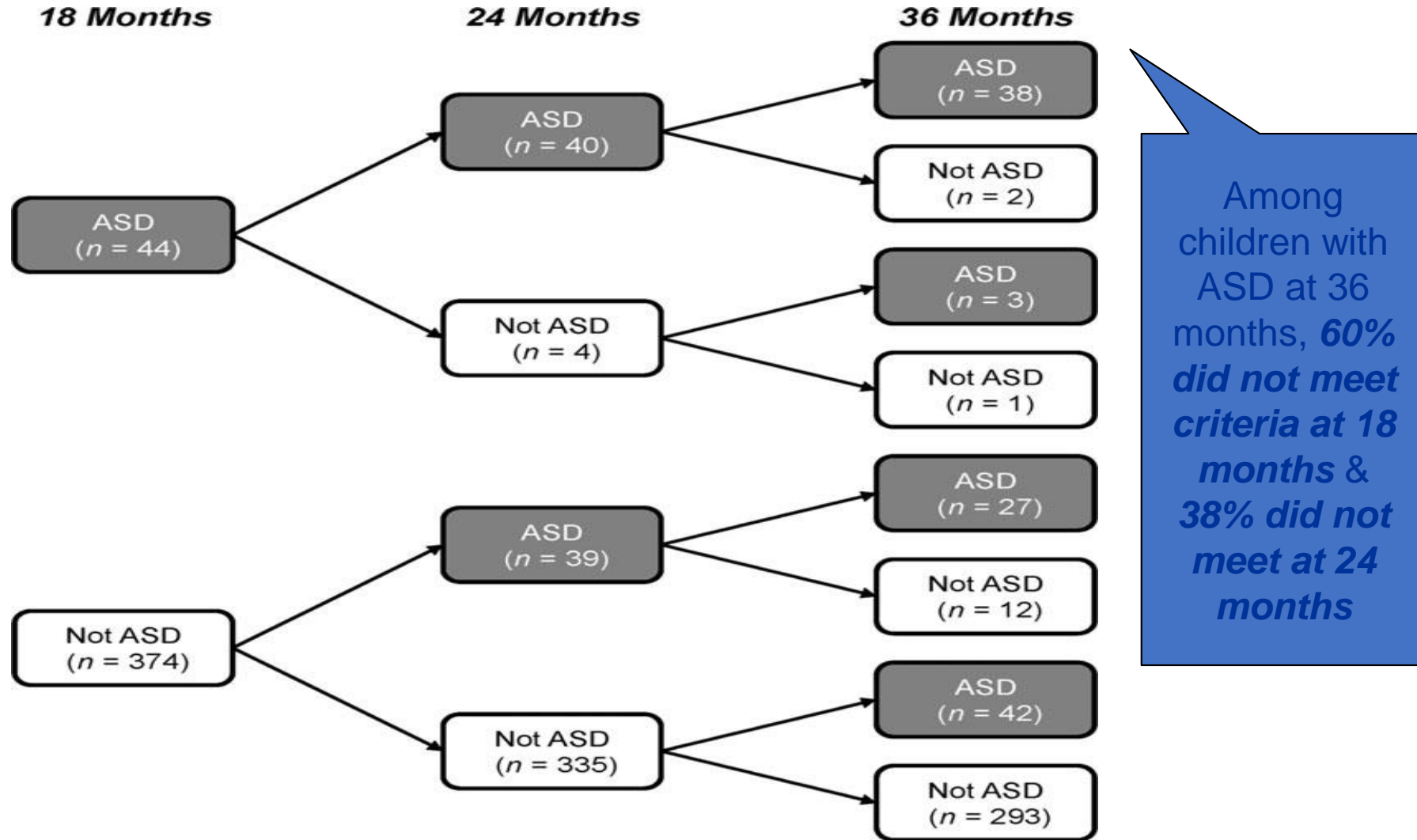


Symptom Trajectories Vary



Diagnostic Stability & Onset

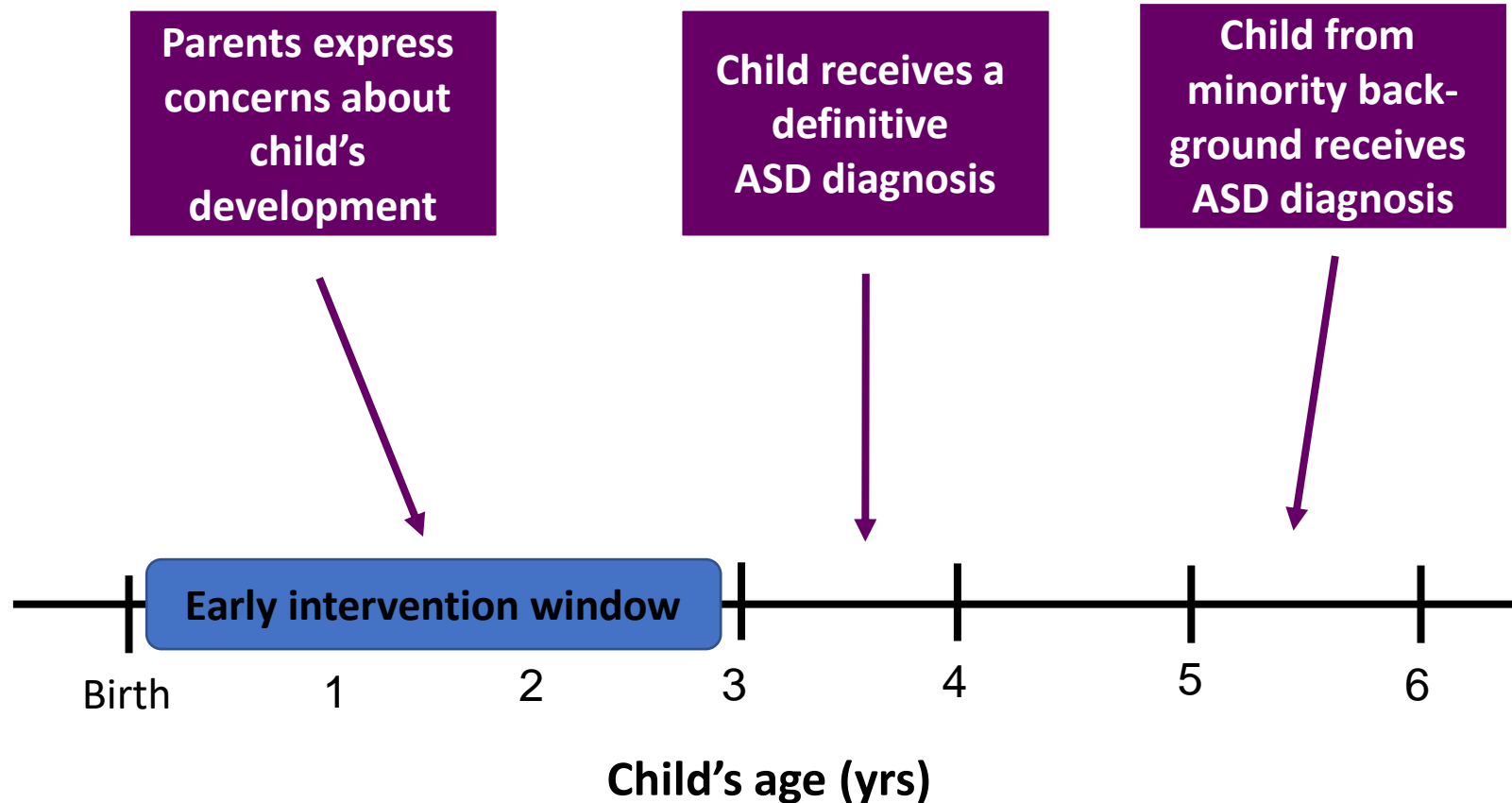
(N= 414 Infant Siblings)



Among children with ASD at 36 months, **60% did not meet criteria at 18 months & 38% did not meet at 24 months**

The diagnostic timeline

Long delays between first concerns and ASD diagnosis



Prognosis of ASD

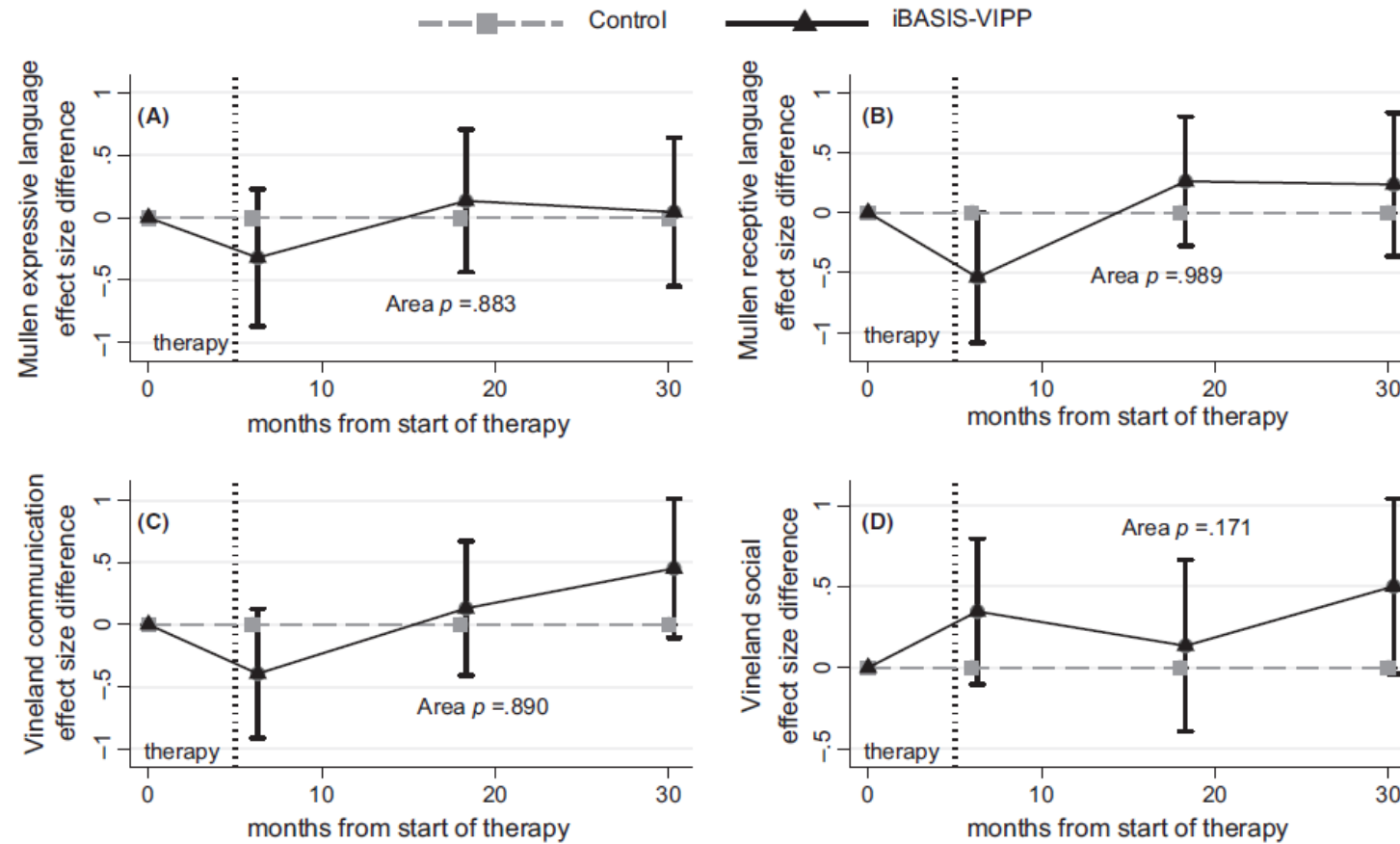
- Cognitive ability (e.g., IQ)
- Joint attention skills by age 4 years
- Functional spoken language by age 5 years

Preventive Intervention vs. “Pre-emptive Intervention” (Insel, 2007)

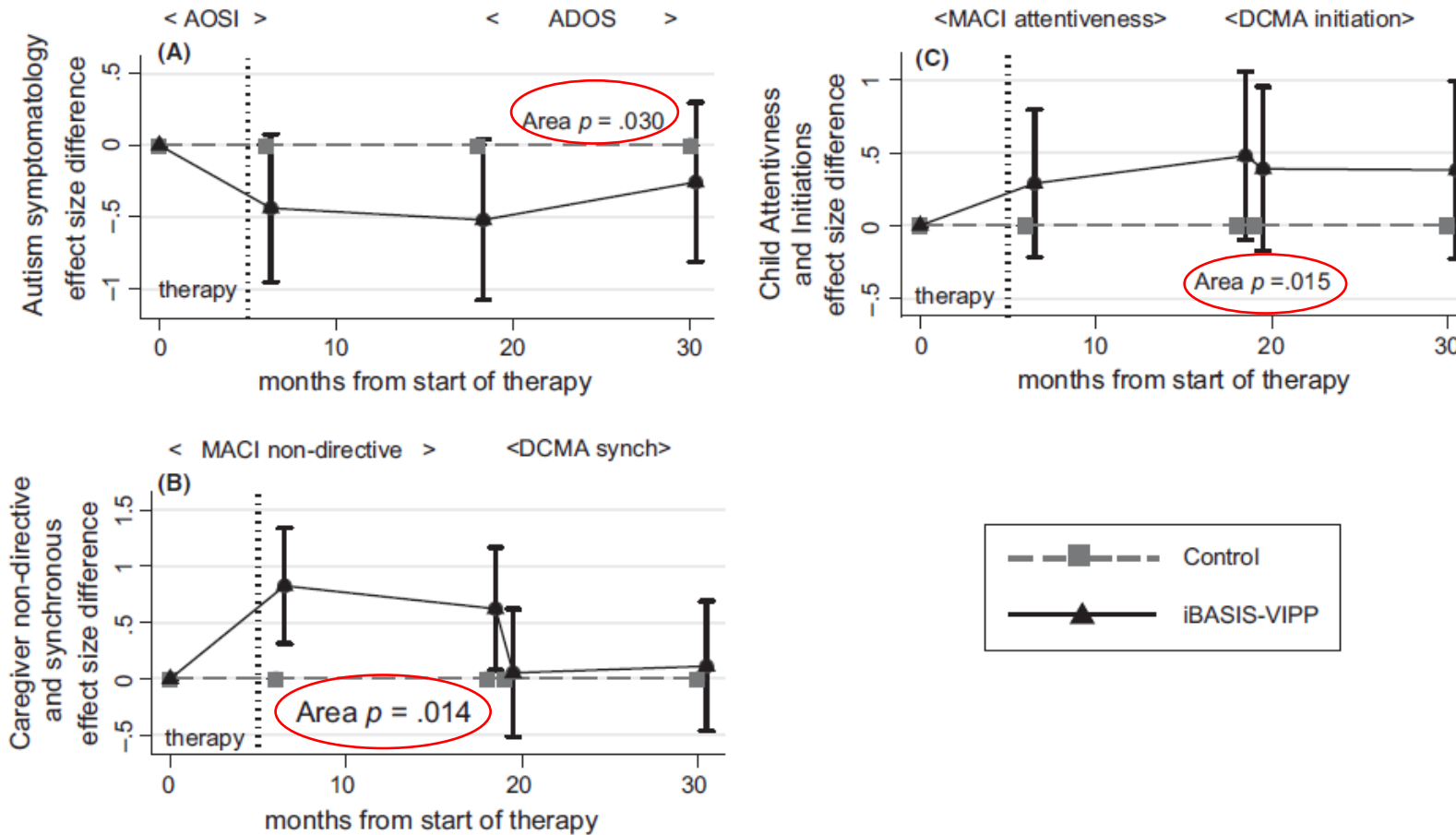
- Identification of prodromal manifestation
 - Subthreshold
 - Justify interventions?
 - E.g. Cost to family, society

Green et al. (2017)

RCT of parent-mediated intervention for HR ASD infants



Green et al. (2017)

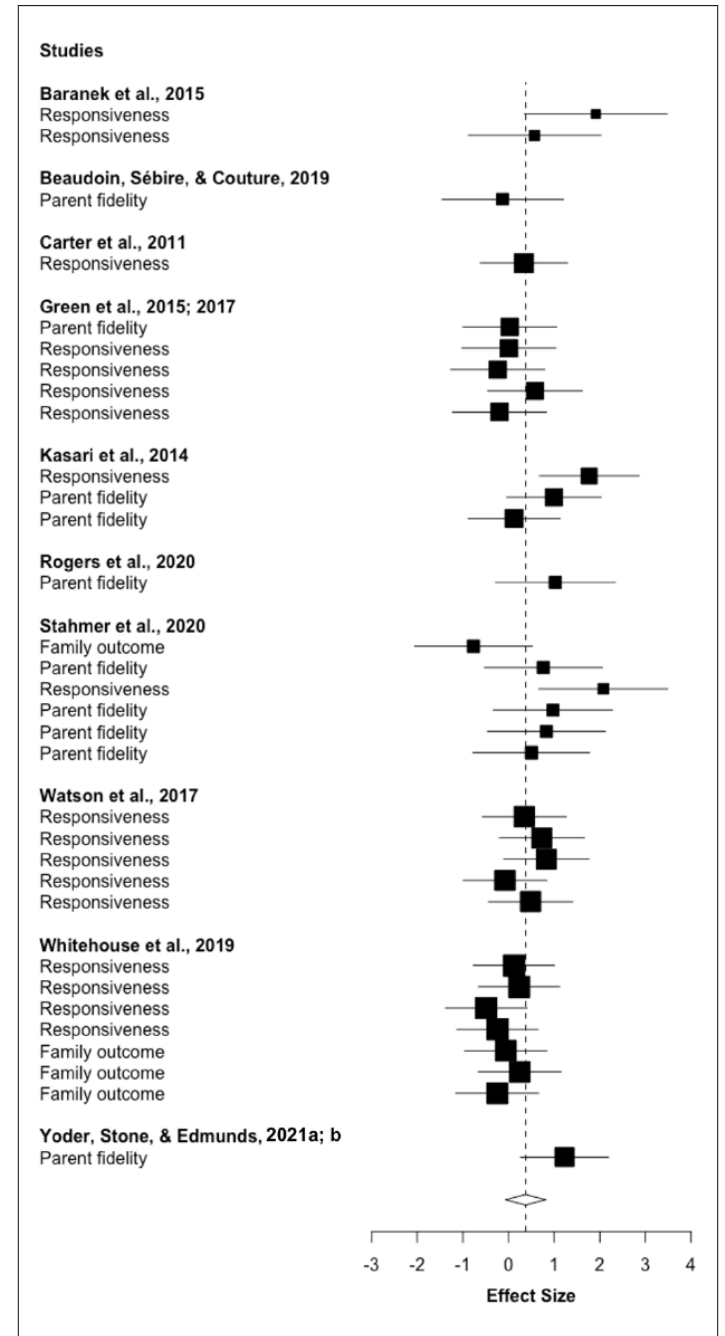


Preemptive interventions for infants and toddlers with a high likelihood for autism: A systematic review and meta-analysis

Lauren H Hampton  and Elizabeth M Rodriguez

- Many moderators were nonsignificant → age, parent depression, and baseline joint attention
- Some studies demonstrated support that
 - some child characteristics may predict more robust child outcomes
 - Fewer child risk factors (Yoder et al., 2021)
 - Lower child object interest (Carter et al., 2011)
 - Parent factors –
 - Quality of parent coaching (Stahmer et al., 2020)
 - Parent stress (Watson et al., 2017)

Autism
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Case Example: Tommy Red

- Initial Evaluation – 2 years, 4 months
- Second Evaluation – 3 years, 10 months
- Third Evaluation – 6 years, 4 months

Initial Evaluation

2 years, 4 months

- History
 - Language delays
 - Single words (total of 5) at time of evaluation
 - Poorly modulated eye contact
 - Led others by hand for requests
 - Lined up toys
 - Visual peering
 - Social smiling
 - EI Evaluation → 26 months and subsequent EI services
 - Batelle Developmental Inventory, 2nd Edition
 - Motor Skills = 98
 - Adaptive = 64
 - Personal-Social = 61
 - Communication = 55
 - Cognitive = 68

Mullen Scales of Early Learning

INTELLECTUAL FUNCTIONING				
Mullen	Raw	Standard	Percentile	Description
Early Learning Composite	129	67	1	Impaired

Notes: Standard score mean is 100 with standard deviation of 15



The Mullen – Visual Reception and Fine Motor Scales

FINE MOTOR & VISUAL RECEPTION SKILLS				
Mullen	Raw	T-score	Percentile	Description
Visual Reception	26	41	18	Low Average
Fine Motor	24	38	12	Low Average

Notes: T-score mean is 50 with standard deviation of 10.

The Mullen Language Abilities

LANGUAGE ABILITIES				
Mullen	Raw	T-score	Percentile	Description
Receptive Language	15	20	<1	Impaired
Expressive Language	17	30	2	Borderline

Notes: T-score mean is 50 with standard deviation of 10.

Social, Emotional and Behavioral Functioning

- ADOS-2
- BASC-3
- ABAS-3
- ITSEA
- ALL CONSISTENT WITH ASD
- CONCLUSIONS → ASD, level 3

Follow-Up Evaluation

3 years, 10 months

INTELLECTUAL FUNCTIONING			
DAS-II Composite Scores	Standard	Percentile	Description
Verbal	97	42	Average
Nonverbal Reasoning	104	61	Average
Spatial	84	14	Low Average
General Conceptual Ability	93	32	Average
DAS-II Subtests	T-score	Percentile	Description
Verbal Comprehension	49	46	Average
Naming Vocabulary	47	38	Average
Picture Similarities	42	21	Low Average
Matrices	62	88	High Average
Pattern Construction	55	69	Average
Copying	29	2	Borderline
Recall of Digits Forward	53	62	Average
Early Number Concepts	46	34	Average
<i>Notes: Standard score mean is 100 with standard deviation of 15; T-score mean is 50 with standard deviation of 10</i>			

VISUAL-MOTOR SKILLS

Beery VMI	Raw	Standard	Percentile	Description	Age Equiv.
Visual-Motor Integration	6	86	18	Low Average	2.10
NEPSY-II	Raw	Scaled	Percentile	Description	
Visuomotor Precision Completion Time	19	16	98	Very Superior	
Visuomotor Precision Total Errors	236	-	6 to 10	Borderline	
Visuomotor Precision Pencil Lifts	0	-	>75	High Average to Superior	
Visuomotor Combined Scaled Score	-	8	25	Average	

Notes: Standard score mean is 100 with standard deviation of 15; Scaled score mean is 10 with standard deviation of 3; Age Equivalent shown in Years.Months

LANGUAGE ABILITIES					
Peabody Picture Vocabulary Test, 4th Edition	Raw	Standard	Percentile	Description	Age Equiv.
Total	45	87	19	Low Average	3.2
NEPSY-II	Raw	Scaled	Percentile	Description	
Comprehension of Instructions	11	9	37	Average	
<i>Notes: Standard Score mean is 100 with standard deviation of 15; Scaled Score mean is 10 with standard deviation of 3; Age Equivalent shown in Years.Months</i>					

ATTENTION AND EXECUTIVE FUNCTIONING				
NEPSY-II	Raw	Scaled	Percentile	Description
Statue Body Movement	15	-	<2	Impaired
Statue Eye Opening	15	-	<2	Impaired
Statue Vocalizations	9	-	6 to 10	Borderline
Statue Total	0	3	1	Impaired
DAS-II Subtests		T-score	Percentile	Description
Recall of Digits Forward		53	62	Average
<i>Notes: Standard score mean is 100 with standard deviation of 15; Scaled score mean is 10 with standard deviation of 3; T-score mean is 50 with standard deviation of 10</i>				

Social, Emotional, & Behavioral Functioning

- Vineland-3 → Low Average
- SRS-2 → Within Normal Limits
- ADOS-2, Module 2 → Comparison Score = 4
- Conclusions → ASD, level 1

Third Evaluation - 6 years, 4 months

INTELLECTUAL FUNCTIONING				
WPPSI-IV Composite Scores		Standard	Percentile	Description
Verbal Comprehension		105	63	Average
Visual Spatial		80	9	Low Average
Fluid Reasoning		74	4	Borderline
Working Memory		82	12	Low Average
Processing Speed		68	2	Borderline
Full Scale IQ		80	9	Borderline
General Ability Index		85	16	Low Average
WPPSI-IV Subtests	Raw	Scaled	Percentile	Description
Information	24	12	75	Average
Similarities	28	10	50	Average
Block Design	18	6	9	Low Average
Object Assembly	22	7	16	Low Average
Matrix Reasoning	4	3	1	Impaired
Picture Concepts	14	8	25	Average
Picture Memory	16	9	37	Average
Zoo Locations	8	5	5	Borderline
Bug Search	16	4	2	Borderline
Cancellation	18	4	2	Borderline
Cancellation Random	10	5	5	Borderline
Cancellation Structured	8	4	2	Borderline

MOTOR & VISUAL MOTOR SKILLS

Beery VMI	Raw	Standard	Percentile	Description	Age Equiv.
Visual-Motor Integration	15	90	25	Average	5.6
Grooved Pegboard Test	Raw	Standard	Percentile	Description	
Right/Dominant Hand	76	79	8	Borderline	
Left/Nondominant Hand	57	97	42	Average	

Notes: Standard score mean is 100 with standard deviation of 15; Age Equivalent shown in Years.Months

LANGUAGE FUNCTIONING

WPPSI-IV	Raw	Scaled	Percentile	Description
Receptive Vocabulary	27	13	84	High Average
Picture Naming	20	11	63	Average
CELF-5	Raw	Scaled	Percentile	Description
Following Directions	9	9	37	Average
NEPSY-II	Raw	Scaled	Percentile	Description
Word Generation	12	7	16	Low Average

Notes: Scaled Score mean is 10 with standard deviation of 3; Age Equivalent shown in Years.Months

MEMORY & LEARNING

CVLT-C		T-score	Percentile	Description
Immediate Recall – Trials 1-5 Total		21	<1	Impaired
Trial 1		30	2	Borderline
Trial 5		25	1	Impaired
Trial B		30	2	Borderline
Total Learning Slope		40	16	Low Average
Short Delay Free Recall		30	2	Borderline
Short Delay Cued Recall		35	7	Borderline
Long Delay Free Recall		30	2	Borderline
Long Delay Cued Recall		35	7	Borderline
Recognition Total Hits		55	69	Average
Recognition False Positives		>20	>1	Impaired
Repetitions		60	84	High Average
Intrusions		50	50	Average
Rey Complex Figure Test	Raw	T-score	Percentile	Description
Immediate Recall	0.5	36	8	Borderline
Delayed Recall	1	36	8	Borderline
Recognition Total Correct	18	49	46	Average

Notes: T-Score mean is 50 with standard deviation of 10

ATTENTION & EXECUTIVE FUNCTIONING

KCPT-2		T-score	Percentile	Description
Detectability		63	90	Elevated
Omissions		90	>99	Very Elevated
Commissions		50	50	Within Normal Limits
Perseverations		73	99	Very Elevated
HRT		64	92	Slow
HRT SD		71	98	Very Elevated
Variability		77	>99	Very Elevated
HRT Block Change		52	58	Within Normal Limits
HRT ISI Change		50	50	Within Normal Limits
Rey Complex Figure Test	Raw	T-Score	Percentile	Description
Copy	7.5	-	11-16	Low Average
Time to Copy	506	-	>16	Within Normal Limits

Notes: T-score mean is 50 with standard deviation of 10

ACADEMIC ACHIEVEMENT

WIAT-4	Raw	Standard	Percentile	Description	Grade Level
Word Reading	35	87	19	Low Average	K.3
Reading Comprehension	2	87	19	Low Average	K.2
Spelling	6	86	18	Low Average	K.3
Alphabet Writing Fluency	6	80	9	Low Average	PK.7
Math Problem Solving	26	90	25	Average	K.4
Numerical Operations	7	78	7	Borderline	<K.0
Reading	158	77	6	Borderline	-
Written Expression	166	77	6	Borderline	-
Mathematics	168	82	12	Low Average	-
Total Achievement	492	75	5	Borderline	

Notes: Standard score mean is 100 with standard deviation of 15; Scaled score mean is 10 with standard deviation of 3; WIAT-4 scores derived from grade-based norms; Grade Equivalent shown in Years.Months

Social, Emotional, & Behavioral Functioning

- BASC-3 → social, emotional, and attention challenges
- Vineland-3 → borderline to low average skills
- SRS-2 → more impaired at school than home
- Brown EF/A Scales → global challenges
- CONCLUSIONS → ASD, level 1, ADHD-C

Conclusion

- Neurodevelopment
 - Early Childhood Development
 - Assessment
- Early Identification of ASD symptoms
- Future Directions
 - Development of more (low vs high dosage) pre-emptive interventions
 - Increase training opportunities of IMH clinicians – evaluation and treatment

Questions, Comments?



Thank you for Attending!

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Online Autism Resources

- autismspeaks.org
 - Toolkits: First 100 Days, Challenging Behaviors, Sleep, Feeding, needle sticks, etc.
- autismguidelines.dmh.mo.gov/
 - Overviews of evidence-based practices, summaries for clinicians, parents, etc.
- Autism Society of the Heartland (parent support)
 - <http://www.asaheartland.org/>
- Feb 2016 *Pediatrics* Supplement: Health Care for Children and Youth with Autism and other NDDs
- m-chat.org/
- nationalautismassociation.org & autismsafety.org
 - Safety resources
- <https://www.cdc.gov/ncbddd/actearly/autism/curriculum/class.html>