

About Autism in Toddlers — Script



NOTE: The black text is the script of what is being said.
The blue text is what is on screen in the slides or videos.

Slide 1. What will I learn in this Autism Navigator tool?

Core diagnostic features of autism

Importance of early detection and early intervention

Prevalence and causes of autism

Welcome to Autism Navigator, a unique collection of web-based tools that uses extensive video footage to bridge the gap between science and community practice.

You will have the opportunity to explore three topics about autism. You will learn about:

- the core diagnostic features of autism,
- the critical importance of early detection and early intervention, and
- current information on prevalence and causes of autism.

You will also have the opportunity to access some of the innovative features of Autism Navigator. A slide index is located on the left side of the bottom toolbar. A slide viewer is located on the right side of the bottom toolbar. These can be used to navigate easily to specific slides. For a self-guided tour to learn how to navigate Autism Navigator and for tech support, go to Help in the top bar.

What are the diagnostic features of autism?

Slide 2. Video: How is autism impacting us now?

Child: *Gingerbread houses...Cornucopia...*

Autism can be obvious or subtle. A child who can read by three, but can't play peak-a-boo...

Child: *Macadamia pineapple tart...*

One who knows everything about trains and dinosaurs and gets upset if you ask about anything else. One who may never utter a spoken word, but rather use pictures or signing to be understood. The signs are as varied as the number of children affected.

It affects all children. Boys 4 times more often than girls. There is no known biological marker or medical test to help diagnose it. The cause unknown. Its signs can be dramatic. Or to the untrained eyes, easy to miss. It begins very early in development. Siblings of affected children are at risk. There is no magic bullet. No cure. But there is much we can do. We know for example, that many children can reach their cognitive and emotional potential if treatment begins early. The faster a physician can screen potentially affected children, the better the long-term prospects for typical development. You're going to see more and more worried and confused families, parents who need their physicians to be trained observers, sources of information, team leaders.

Slide 3. What are the core features of autism spectrum disorder?

Diagnostic and Statistical Manual of Mental Disorders — 5th Edition (DSM-5)

Core Diagnostic Features of Autism Spectrum Disorders (ASD)

Impairment in Social Communication and Social Interaction

- Deficits in social-emotional reciprocity
- Deficits in nonverbal communicative behavior used for social interaction
- Deficits in developing, maintaining, and understanding relationships

Restricted, Repetitive Patterns of Behavior, Interests, or Activities

- Stereotyped or repetitive motor movements, use of objects, or speech
- Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior
- Highly restricted, fixated interests abnormal in intensity or focus
- Hyper- or hypo-reactivity to sensory input or unusual sensory interest

Symptoms present in early childhood and limit everyday functioning

Adapted from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (Copyright © 2013). American Psychiatric Association

There is not yet a **biological marker** for autism and therefore, the diagnosis is based on **behavioral** features. The most widely used diagnostic criteria are from the DSM, which is the Diagnostic and Statistical Manual of Mental Disorders.

The first domain is Impairment in Social Communication and Social Interaction.

The second domain is Restricted, Repetitive Patterns of Behavior, Interests, or Activities.

There are **three** features in the first domain and **all 3** features are required for a diagnosis of autism spectrum disorder. There are **four** features in the 2nd domain and only 2 of the 4 are required for a diagnosis.

These features must be present in the early developmental period and cause impairment in everyday functioning.

If you're interested in more details about the core diagnostic features of ASD go to "**Tools**", on the top navigation bar. "**Tools**" include print materials and links to websites about autism.

Slide 4. Why it is so challenging to identify autism early?

Combination of Features

The age-old lesson of the "Elephant in a Dark Room" helps us understand why it is so **challenging** to identify autism in young children. The story goes that an elephant is brought into a dark room with a group of people collected to see it. Because it is too dark, they need to feel it to figure out what it is. Each one touches a **different** part and only **one** part, so they end up with different conclusions and **none** figure out it's an elephant.

Although you may think of autism as a **severe** disability in childhood, the features can range from mild to severe but they can be easy to **miss** if you don't look at the **combination** of features. Professionals are trained to look for specific features through the lens of their discipline. However, unless we look at the **combination** of features, we **may** draw the wrong **conclusion** from our observations.

Slide 5. Video: Do you recognize when social communication is typical or an early sign of autism?

Recognizing Social Communication Features

This video player has video clips that are paired so you can compare and contrast the social communication skills of Charlie on the left, who's typically developing, with Luke on the right, who's been diagnosed with autism. Find the numbers 1, 2, and 3 just below the video players. Click on each number to bring up a different pair showing both children a year later.

Typical Development: Charlie at 16 months

This clip shows Charlie during the CSBS, which is the Communication and Symbolic Behavior Scales, an evaluation tool designed for young children.

Mom: *There it goes! Up, up, up, up, up!*

Notice how Charlie shows interest in interacting and easily pays attention to both the bubbles and the people.

Charlie: *Pop!*

Clinician & Mom: *Pop! Oh! Stuck!*

Charlie: *(grunts)*

Clinician: *Uh! Ooh! Pour it out*

Charlie: *Cuck!*

Mom: *It's stuck*

Charlie: *(grunts)*

Clinician: *Do you need some help?*

You can actually see him learning- he watches, listens, and then imitates a word.

Clinician: *Stuck!*

Charlie: *(grunts)*

Clinician: *Uh! Ooh!*

Notice how well he coordinates eye gaze and sounds to share the problem and then gestures to ask for help.

Early Signs of Autism: Luke at 15 months

Now watch Luke in the same situation. Notice his early social communication skills and how they differ from those of Charlie at the same age.

Clinician: *Good popping! You got the bubbles!*

Mom: *Those are where the bubbles are!*

Clinician: *Open*

Mom: *Do you want mama to help you?*

Clinician: *Want more bubbles? You need some help?*

Mom: *(softly) Give us the bubbles.*

Clinician: *Want me to do it?*

Like Charlie, Luke showed interest in the bubbles, used a give gesture to request “more”, and did look at the clinician. However, Luke showed little expression in his face, rarely looked up, used no sounds or words, and did not communicate much, which in combination are cause for concern at this age. To the untrained eye differences between the two children may seem subtle and could easily be missed. Both showed repetitive behaviors, Charlie shook the jar a few times, Luke twisted the jar back and forth; but in contrast to Charlie’s social interest in commenting on the jar being stuck, Luke seemed more interested in the jar itself, than interacting with the people.

Typical Development: Charlie at 27 months

Now you’ll see Charlie and Luke again, about a year later, this time during the ADOS, which is the Autism Diagnostic Observation Schedule, the gold standard tool to help make a diagnosis.

Charlie: *Hear that? Is it loud?*

Clinician: *I heard that, it is loud*

Charlie: *That hurt my ears!*

Clinician: *It hurt your ears?*

Notice the impressive language and conversation skills Charlie has gained in a year.

Charlie: *Did that hurt your ears, Mommy?*

Mom: *Mmm...not really. It's a loud click, though.*

Charlie: *I'm not scared.*

Mom & Clinician: *You're not scared.*

Language growth in typical toddlers is remarkable. It is made possible by successful experience engaging in social interaction even before words.

Clinician: *Oh, look, what have you got?*

Charlie: *A truck!*

Clinician: *A truck*

Charlie: *A bus!*

Clinician: *And a bus.*

Charlie: *A police car.*

Clinician: *And a... OK.*

Charlie: *A van!*

Clinician: *A van! Yea!*

Early Signs of Autism: Luke at 28 months

Now watch Luke. Notice what he is focusing his attention on...

Clinician: *Luke!*

...and how his strong interest in the toy impacts his interaction.

Clinician: *Luke! Hey Luke! Can you get him to look at you by calling his name?*

Mom: *Luke! Luke! Look at Momma!*

Dad: (off screen) *He's pretty much a gold medalist at not looking if he sees something he wants to do.*

Mom: *Hey Luke! Look at Momma! Look! Momma has phone!*

Luke's interest in the toy was so intense that he had difficulty shifting attention from the toy to the people calling his name. After several attempts to get him to respond, his mom figured out that she could draw his attention to another toy that made a musical sound.

Although Luke **never** shifted attention to a person, he **was** able to shift attention between two objects. It's possible that because of his autism, Luke noticed more details about the toy and how it worked than a typical toddler would. In contrast to Luke, think about how Charlie's flexible attention and his interest in people has provided him with an abundance of opportunities to learn from and interact with others. From these video clips, you can see how the gap in social communication skills has widened in just a year. Features of autism that could be easy to miss at 15 months, have fully unfolded by 28 months.

Typical Development: Charlie at 27 months

In this final snack activity, notice how Charlie uses language.

Charlie: *What are those?*

Clinician: *Those are Teddy Grahams. Do you like Teddy Grahams? I do too. I like Teddy Grahams.*

Charlie: (nods head)

Clinician: *You know who likes Teddy Grahams at my house?*

Charlie: *You eat 'em?*

Clinician: *I eat them, I do, and you know who else eats them? My doggy...likes Teddy Grahams!*

Charlie: *Wow!*

Clinician: *Wow, yea he eats cookies. Sometimes he gets into trouble though.*

Charlie: *Will he get bigger? If he eats one?*

Clinician: *When he's bigger he can...he can get to the cookie jar. Yea, he can already get just about anything he wants.*

Charlie spontaneously asked questions and made comments using words that were well integrated with eye gaze and facial expression.

Charlie: *You eat 'em?*

Clinician: *I eat them, I do. And you know who else eats them? My doggy...likes Teddy Grahams!*

Charlie: *Wow!*

Clinician: *Wow, yea...*

He was able to listen actively to her story and then respond by expressing interest and probing for more information. This video clip illustrates the skillful social reciprocity and nonverbal behavior of a typical toddler.

Early Sign of Autism: Luke at 28 months

Now watch Luke during snack. What features of social communication impairment do you notice?

Dad: (off screen) *There are instances where he's asked us to open up a bag of chips or peel a banana or whatever.*

Clinician: *Uh, huh.*

Dad: (off screen) *But he...generally is hungrier at the time.*

Clinician: *Uh, huh...*

Dad: (off screen) *We should have brought a bag of Tostitos, I don't know.*

Clinician: *You want that? This kind? Here you go.*

Mom: *I try not to feed him too much...for breakfast. Good boy.*

Clinician: *Yummy raisins.*

Luke sat calmly at the table, was clearly interested in eating the snack, and seemed comfortable in this new situation. However, he showed three social communication features of autism in this brief video clip--- a lack of initiation and response to bids for interaction; limited use of gestures, facial expression and words; and lack of interest in people. You can see what is now a striking difference between the social communication abilities of these children and see the significant impact of the features of autism on development.

Slide 6. Video: Do you recognize repetitive and restricted behavior in 3 toddlers with autism?

Recognizing Restricted and Repetitive Behavior

Here you'll watch video clips of three children with autism spectrum disorder so you can focus on the features of restricted repetitive behavior. This video player has video clips that are paired so you can see each child at two different ages. Notice how these unusual behaviors start out subtle as young toddlers and become more obvious with increasing age. Click on each number to bring up a different pair showing the same child at two ages.

Early Signs of Autism: Anthony at 24 months

Now watch Anthony at 24 months.

Clinician: *There, Momma got one. Pop! Bubbles! You're excited! Bubbles!*

Did you notice how he stiffens his fingers in an unusual posture when he is excited about the bubbles?

Clear Diagnostic Features: Anthony at 4 years

Now watch Anthony when he's 4 years old and notice how his repetitive movements have changed since 24 months.

Clinician: *Get it! Pop! There we go.*

Anthony: *Bubbles?*

Clinician: *Oh, more bubbles? Last time!*

Brother: *I'm just going to pop some bubbles.*

Clinician: *Alright!*

Anthony's early finger posturing developed into hand flapping, that appeared to be an overflow of his excitement when he popped the bubbles. Once the wave of excitement had passed, Anthony stopped flapping and could then easily request more bubbles with a word, give gesture, and quick glance to the clinician. As he and his brother popped the bubbles, the wave of flapping started again.

Early Signs of Autism: Ryan at 20 months

Watch Ryan when he was 20 months old with toys that toddlers commonly use and pretend with.

Clinician: *Oh! Crash! And I can play too. Is it on? Uh, huh! Uh oh! You turned it over! I'm gonna cook in here. Stir, stir, stir! Stir, stir, stir! Your turn!*

Did you notice that he was interested in the objects but didn't pretend with them or share his interest? Instead he repeatedly turned them over or rolled them. Once the cooking set was brought out, his interest was focused on turning over and the wobbling objects. Perhaps Ryan was experimenting to find out how the objects moved and what sound they made. However, his restricted interest got in the way of pretending and interacting.

Clear Diagnostic Features: Ryan at 5 years

Now watch Ryan when he is 5 years old during the ADOS. This clip shows Ryan's substantial progress after early intervention but notice the features of autism that are still clear.

Ryan: *Can I take this home?*

Mom: *No, but you can play with it here.*

Ryan: *Can I take...this home?*

Clinician: *You can't take that home.*

Mom: *That's for other kids to play with.*

Ryan: *Can I borrow it?*

Mom: *While you're here. While we're here today you can borrow it. It's a neat ball, isn't it? What's it look like?*

Ryan: *A globe.*

Mom: *It does.*

Ryan: *Can I take this one home and leave this one here?*

Mom: *No, that's a good idea but the other kids need to play with it too.*

Ryan's verbal skills sure were impressive as he tried to negotiate taking one of the balls home. Ryan's mom mentioned that his early interest in rolling evolved into a fascination with planets by age two. However, his intense interest in these balls interfered with his ability to engage in imaginative play or talk about another topic.

Early Signs of Autism: Mara at 20 months

Watch Mara at 20 months. She has difficulty transitioning from one toy to the next. Notice what Mara's paying attention to.

Clinician: *You could stop stirring for a second to build me a tower? Yea, look!*

Mom: *Can you make the...can you make the blocks?*

Clinician: *On top? That's OK, You can leave them. Look! Up!*

Mom: *One, two...*

Clinician: *You try.*

Mom: *Can you make blocks?*

Clinician: *Pour it in. Pour it in!*

Mom: *Can you...Mara, where's the blocks?*

Mara demonstrated difficulty shifting her attention away from stirring with the spoon, which was a strong interest, to stacking the blocks.

Clinician: *You do it!*

Mom: *Can you...can you make a tower with the blocks?*

Clinician: *Can we knock it down? Crash! Caboom! These are for you. These are for you. These are for you. If you just could get a hand free.*

Mom and Clinician: *(laughter)*

Clinician: *Here you go! Thank you. On top!*

Even when she stacked the blocks, you can see how her attention was still focused on the spoon. The intensity of her fixation was unusual for her age and interfered with her ability to interact and to play with a variety of objects.

Clinician: *Caboom, down they go.*

Mara: *Oh!*

Mom: *Up?*

Clinician: *You know what? I'll take four, just fine.*

Mara: *(babble) no-no-we?*

Clinician: *Yes, I know, that's for you.*

Clear Diagnostic Features: Mara at 3 years

Now let's watch Mara at 3 years of age during the ADOS. Notice her strengths and difficulties with social interaction.

Clinician: *You want to be the daddy? OK. You ready?*

Mara: *Ready.*

Clinician: *Hi, Daddy! How are you? Do you want to go to the park?*

Mara: *Ow! I stepped on something! I stepped..something!*

Clinician: *Oh, no! What did you step on?*

Mara: *I stepped on my juice.*

Clinician: *Are you OK?*

Mara: *Yes.*

Clinician: *Do you want to go to the park with me?*

Mara: *No, I don't think...I want to stay in my house!*

Clinician: *You want to stay in your house? Well, what do you want to do in your house?*

Mara: *Ow! I stepped on something!*

Clinician: *Oh, no!*

Mara is repetitively using the phrase– “Ow, I stepped on something”. Notice how repeating this phrase helps her participate in the interaction.

Mara: *Oh, here's the baby's dinner! Look! Ow! I stepped on something!*

Clinician: *Oh, no! What did you step on this time?*

Mara: *I stepped on a...spoon!*

Clinician: *My spoon?*

Mara's language skills appear good for her age. She responded to the clinician's bids and engaged with the toys. However, on careful observation, she had limited reciprocity and her voice was sing-song-y. Mara only looked at the clinician when she used the repetitive phrase. While it helped her engage in interaction, her restricted interest limited her imaginative play and the quality of her social interaction.

Slide 7. What is the lesson of the elephant's eye?

Lack of Typical Milestones

Let's get back to the age-old lesson of the elephant in the dark. For fun, pick the eye that you think belongs to the elephant?

That may have tricked you to illustrate that the eye alone is not enough to know it's an elephant.

The diagnostic features of autism spectrum disorder are a combination of a lack of typical behaviors and the presence of unusual behaviors.

The lack of typical milestones in social, language, and communication should signal to you that a child is at-risk for ASD.

Slide 8. How do unusual behaviors help us identify autism?

Presence of Unusual Behaviors

Repetitive Behaviors

- Stereotyped motor mannerisms
- Repetitive movements with objects

Fixated Interests

- Preoccupations with parts of objects
- Sticky attention on objects
- Unusual sensory interests
- Restricted range of interests
- Precocious in area of keen interest

It is the presence of unusual behaviors— such as repetitive movements and fixated interests— that are specific to autism. These unusual behaviors, in combination with the lack of typical behaviors, help us to identify and diagnose autism spectrum disorder.

Slide 9. Why are unusual behaviors easy to miss?

Unusual Behaviors May Be Harder to Notice

The presence of unusual behaviors may be harder to notice than the lack of typical developmental milestones. Observe the repetitive behaviors and restricted interests in these photos.

The first photo shows the finger flaring and stiffening when Anthony is excited. This unusual posturing is brief and may be easily missed.

In the next photo, Anthony, who is nonverbal, is quite clever at figuring out how to turn the jar upside down on its lid and make it spin fast with his pinkies.

In the next photo, notice how skilled this child is at building a train. Because this skill is sophisticated for his age, it may not be recognized as an intense interest and missed as a sign for ASD.

The next child is nonverbal but shows strengths in building a tower of blocks and has a strong interest in the letters on the blocks.

Children with ASD may show relative strengths— which, although seemingly precocious— may be a sign of autism. Individually these strengths may not be recognized as signs. But when observed in combination with other signs begin to paint a bigger picture.

Slide 10. How do social communication deficits affect relationships as children grow up?

More About Social Communication Features

Reciprocity, the balance of give and take in social relationships, is particularly difficult for individuals with ASD across the lifespan. Interactions and conversations seem one-sided when a person is limited in the ability to understand the emotions, thoughts, and perspective of a social partner. Difficulties in peer relationships reflect social communication deficits. Many people on the autism spectrum want friends but lack the skills necessary to develop and maintain them. Their attempts to interact may seem odd, inappropriate, or misunderstood by others due to their social communication deficits. Adults with autism say they have trouble understanding and interpreting the nonverbal social intricacies of flirting and dating. How DOES one know if a person is interested or how much attention is appreciated? Much of this information is not in the words spoken, but rather in the often-subtle nonverbal signals of eye gaze, facial expressions, and body posture. Individuals with autism need to be taught these social skills so they can establish and maintain successful relationships.

If you are interested in learning more about Social Communication Features go to the Short Talk located in “Ideas”, on the top navigation bar. “Ideas” has mini-documentaries and additional short talks about autism.

Slide 11. Why is repetitive behavior and restricted interest important for individuals with autism— young and old?

More About Restricted and Repetitive Behaviors

For most of us, an occasional change in routine occurs without much notice, but for a person with autism, even a slight change from known routines can lead to feeling anxious or trigger tantrums, withdrawal, or even a complete shutdown. These behaviors can appear to occur without cause or 'out of the blue' if the reason for inflexibility is not understood. It is critical to recognize that repetitive behaviors serve an important function as they can help the person with autism calm down or become more alert. An increase in these behaviors is often seen when the individual is anxious, excited, or bored. Fixated interests, repetitive behaviors, and insistence on sameness are connected to each other. For example, a child stressed by a change in routine might use repetitive behaviors to calm himself. They vary greatly in terms of the behaviors, their frequency, intensity, and rigidity. They become an issue when they interfere with the individual's ability to engage socially, participate in everyday activities, and cope with an ever-changing world. They also contribute to the strengths of a person with autism. An intense interest can lead to enthusiasm for particular topics and the ability to focus on them. Inflexibility on sameness can be viewed as an ability to complete familiar activities. Repetitive behaviors are positive attempts to calm or energize one self and a focus on parts is an early indication of an ability to see details. Shaping these challenging behaviors into positive ones begins with understanding the function of the behavior and its impact on both the individual with autism and the communication partner. Figuring out why these behaviors occur is a critical initial step in developing appropriate and effective intervention strategies.

If you are interested in learning more about Restricted Repetitive Behavior view the Short Talk in “**Ideas**”.

Slide 12. What did you learn about diagnostic features of autism?

Now let's check your knowledge about the core features of autism spectrum disorder as they relate to the diagnostic domains. Click and drag each of the features to one of the domains.

Impairment in Social Communication and Social Interaction

- Deficits in social-emotional reciprocity
- Deficits in nonverbal communicative behavior used for social interaction
- Deficits in developing, maintaining, and understanding relationships

Restricted, Repetitive Behavior, Interests, or Activities

- Stereotyped or repetitive motor movements, use of objects, or speech
- Insistence on sameness, inflexible adherence to routines, or ritualized patterns of verbal or nonverbal behavior
- Highly restricted, fixated interests abnormal in intensity or focus
- Hyper- or hypo-reactivity to sensory input or unusual sensory interest

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Why are early detection and early intervention critical?

Slide 13. Video: How is development different in a typical child compared to a child with autism?

Red flags for autism- Nicholas, 16 months

Children with autism have significant impairments in social interaction and communication. It is this, in combination with the presence of repetitive behaviors or unusual interests that should signal concern to a trained observer.

Typical development- Jimmy, 15 months

Think about how typically developing children naturally show a strong interest in interacting, communicating, and sharing their ideas with others, and easily shift their attention between people and objects.

Child: *Daaa!*

Mother: *You want me to blow bubbles?*

Clinician: *(offscreen) Yea! Can I have the cup? Where's the cup?*

Typically developing children listen eagerly to speech and try to figure out what you mean from gestures and other social cues, even before they understand the meaning of words.

Child: *(babbles)*

Clinician: *Bottle! Thank you!*

Red flags for autism- Nicholas, 16 months

Children with autism have a core deficit in social attention. This core deficit impacts learning and has a cascading effect on brain development.

Clinician: *Get 'em open! (whispers)...bubbles. You want more bubbles?*

Autism interferes with a child's ability to listen to speech, to notice gestures, to look at faces, and to pay attention to what is important in the learning environment. Autism impacts the ability to learn from people.

Clinician: *Where's the bottle? We're going to say bye-bye to some of these things! Bye-bye cup!*

Typical development- Jimmy, 15 months

In typical development, children have an abundance of opportunities to learn that stem from interaction with others.

Clinician: *Oh Big Bird! He likes that! That's Yummy! More? Num, num, num, num, num.*

Red flags for autism- Nicholas, 16 months

Children with autism show more interest in objects than interacting with people, and may even notice more details than a typical child. However, it is because of this that they miss out on critical learning opportunities at a critical time in development.

These developmental consequences are cumulative and can lead to pervasive deficits and extremely challenging behaviors, if they're not caught early.

Slide 14. How does autism impact development and learning?

Impact of Autism on Development and Learning

A linchpin of early Intervention is helping families of infants and toddlers support their child's learning and development in the natural environment. Therefore, it's important to consider how autism impacts development and learning.

The core deficits can have a negative impact on development by interfering with social attention to important information and learning that can lead to a cognitive delay and intellectual disability. The core deficits of autism can also have a positive impact on strengths by enhancing skills that reflect overly fixated or restricted interests. For example, strong interests in shapes and letters can lead to unusual vocabulary words or precocious reading skills.

Learning in everyday activities and routines may cause a number of challenges for a young child with ASD. For example, an intense interest in trains may limit opportunities to pretend with other toys. While most toddlers learn without intentional teaching or without their parents arranging specific learning opportunities, toddlers with autism may not. They may not pay attention to people or seek the attention of others for social interaction.

A toddler with ASD may have strong responses or challenging behaviors that also impact learning. A meltdown may occur when a very specific routine is violated, making it hard to get out of the house on time in the morning because a parent is likely to follow the child's routine and avoid the meltdown. This can lead to the toddler taking over and limit opportunities for learning. Or a toddler with ASD may refuse to eat most foods making mealtime overwhelming. A toddler may run and not respond to the parent calling his name making leaving the house with that child very difficult.

The key is catching autism early and providing intervention that targets meaningful outcomes for families— to improve social communication skills, to help make activities predictable, and to create opportunities to support learning in everyday activities and routines.

Slide 15. Video: Why is early detection so important?

Unfolding of Red Flags

Here you can see Brian at 4 points in time from 14 to 26 months of age to show the unfolding of autism and how the features can worsen with age. Pay close attention to how Brian’s symptoms of autism are impacting his ability to pay attention to and learn from people. It is this secondary impact of autism symptoms on learning and development that may be prevented, if caught early.

Brian — Early Signs of Autism: 14 months

First you’ll see Brian at 14 months during the CSBS.

Clinician: *(to mom) Look at that eye gaze shift. Uh, oh!*

Brian looks at the clinician and his mom and shares warm smiles as they enjoy watching the toy. Notice how he changes once he has control of the object.

Clinician: *You’re so brave, you’re so brave!*

His attention is drawn into the toy, he doesn’t respond to the clinician’s words...

Clinician: *Brian, do you want more?*

...or her gesture to offer help.

Clinician: *He will go. I have to help. (laughs) Uh, oh! Uh, oh! Watch, watch! I’m going to wind him up. There you go. O’s!*

He looks over to check in with his mom and even coordinates a look and sound to the clinician.

Brian: *(babbles) ba-da-ye!*

Clinician: *Your daddy does it too? I’m glad.*

Although he has some nice social skills, he is significantly delayed for his age in communication on the CSBS. While we may not suspect autism at this age, we should be concerned about Brian’s limited use of sounds and gestures and low rate of communicating. But even more worrisome, are the moments of being so drawn into objects that they interfere with social interaction and may limit opportunities for learning.

Clinician: *More? OK, I’ll give you some more. That was nice too.*

Brian — Early Signs of Autism: 17 months

Now let’s watch Brian at 17 months, again during the CSBS. Like at 14 months he looks up and shares a warm smile.

Dad: *(off screen) That’s what you do!*

Clinician: *Do you dance? He’s dancing! Look at that! Look, daddy’s dancing.*

Mom: *Daddy’s dancing. Oh he’s excited about his toy.*

Clinician: *Watch what happens when he picks it up. Wow!*

Mom: *Look at that babe!*

Clinician: *He’s jiggling!*

But once the toy catches his attention, Brian stays intently focused on the penguin’s feet as they move, and does not respond to his mom or the clinician’s words or gestures.

Mom: *What happened? It doesn’t go anymore!*

Clinician: *It might be too noisy, especially when the fire truck goes by. Shake, shake, shake, shake! Brian. Brian! Do you want more? Do you need help? Do you need some help?*

You’ll hear his dad say, “He get’s so into whatever he’s into”, which suggests that his sticky attention is something his parents notice at home at this age.

Mom: Do you want to do it again?

Dad: (off screen) He gets, he gets so into whatever he's into.

Mom and Dad: Pop!

Dad: (off screen) Bubbles!

Mom and Clinician: Pop!

Mom: Some strong bubbles

Clinician: Pop! Bubbles...They're in there, friend. They're in there. Bubbles.

At 17 months it should be clear that Brian has a communication and language delay, and that he needs early intervention. Furthermore, his sticky attention and lack of response to the adult's voice and gestures should raise suspicion of ASD. While a diagnosis of ASD may not be made yet, early signs of autism make the need for early intervention even more urgent.

[Brian — Clear Diagnostic Features: 20 months](#)

Here Brian is 20 months, again during the CSBS. Brian is visibly upset by the wind-up toy, and turns and looks toward Dad for comfort, but he doesn't look at Dad's face.

Clinician: You can try to make him as happy as you can.

Dad: Hey, look at this bug. Are you not happy because of the bug?

He does not use eye gaze or other ways to communicate that he doesn't want the toy, rather, he cries and covers his eyes making it unclear exactly what is bothering him.

Clinician: Tempting, huh? Mmmmm...

Dad: That's a good way to do it.

Clinician: Mmmmm...

His lack of words, which should be developing rapidly at this age, has become more obvious and is significantly impacting his ability to communicate effectively.

Clinician: Chewing, chewing. Open?

Brian spends a long time visually inspecting the jar, turning it, licking it, and shaking it. It takes a good bit of support from the clinician for Brian to let go of the jar and allow her to open it.

Clinician: Oh, good job! Open! There you go! Cheerios. Yay! Oh, get 'em, get 'em, get 'em, get 'em, get 'em, pop! Get 'em, get 'em, get 'em, get 'em, pop!

To an experienced observer, the red flags of autism are clear by 20 months. Brian's expression of emotion is very flat, even though he seems interested. His change over time should be cause for concern. His social communication deficits have worsened, in combination with more noticeable unusual behaviors: repetitive movements, fixated attention on objects, and unusual sensory exploration. We hope Autism Navigator will hone your observation skills by bringing you many video examples of early signs of autism. Whether you're a parent, professional or someone interested in learning more, being able to see what autism looks like, before it is usually diagnosed, will help you recognize more subtle features of autism. This will help us a community build our capacity to detect autism earlier.

Clinician: Open!

[Brian — Clear Diagnostic Features: 26 months](#)

Now you can watch Brian during the ADOS at 26 months. In the context of the ADOS, the features of autism are very clear.

Clinician: I can help you. Do you want me to turn it?

Brian becomes overly focused on a toy that makes music. He doesn't shift his attention away from the toy, even though the clinician tries a few different ways to get his attention.

Clinician: There you go! Oh, OK I'll move my hand. You got it. I've got more. Do you want more?
Where are you going?

This video clip illustrates many diagnostic features of ASD. Brian rarely responds to bids for interaction, and does not share his interests. He also shows a significant deficit in the use of eye gaze, gestures, and sounds to communicate. He displays a ritualized pattern of behavior when he walks around in circles on his tiptoes, accompanied by unusual finger and arm posturing. At 26 months, Brian now clearly meets the diagnostic criteria for Autism Spectrum Disorder. On the one hand, this is much earlier than children are usually diagnosed, showing promise that autism can be detected this early. On the other hand, the early signs of autism were present at even younger ages, showing potential to detect autism before it has had such a significant impact on learning and development.

Slide 16. Video: What is the potential of early intervention?

Critical importance of Early Intervention

The federal mandate for early intervention is unfulfilled. 80% of children with autism and other developmental disabilities are not identified in time to benefit from early intervention services. With early diagnosis and effective early intervention, most children with autism can learn to talk. Most can advance to regular kindergarten. This can reduce the cost of educating a child with autism by over \$10,000 per year. Let's look at eight children with autism over time—all diagnosed under 24 months of age, so you can see the impact of early intervention on their development and learning. These video clips were recorded when their families were in ESI, the Early Social Interaction Project, an early treatment study of how parents of toddlers with ASD learn to use supports and strategies to engage their children in everyday activities.

This video player has video clips that are paired. On the left, you can see the early signs of autism in each child before intervention. On the right you can see how each child and parent changed during intervention. Find the numbers 1 to 8 just below the video player. Click on a number to bring up the video pair for each child.

You'll be watching real life events as the parents are learning and practicing with their child. Please pardon the occasional bumpy or dark video. We want to thank these parents for their incredible generosity in giving permission to share these very personal moments so that you can learn from their experiences.

For the first two children, Brandon and LB, you'll hear detailed commentary to describe the early signs and the intervention strategies that their parents are using to support their learning and development. For the other 6 children, we invite you to practice observing the early signs at first on your own. At the end of each clip on the left we'll review the most salient features with you. For each clip on the right, we will briefly highlight changes in both the parent and child over time.

Look in Tools for print materials to learn more about strategies for parents to support their child's development and learning.

Early Signs of Autism—Brandon at 20 months

At 23 months Brandon showed clear features of autism and was referred into early intervention. You'll see Brandon's missed opportunities for learning, despite his mom's efforts to encourage communication.

Mom: *Whoa, Watch out! – Open? Open?*

His mother encourages him to request, at the suggestion of the interventionist—but because she expects more than he can “deliver”, he quickly loses interest.

Here Brandon is 26 months—He's having snack with his twin brother who's typically developing.

Mom: *What do you want? Goldfish?*

Brandon's difficulties communicating are now leading to much frustration. His mom is clearly caring and trying her best to meet his needs, but Brandon is not able to make his wants and needs clear. A choice of snack is not enough to help Brandon calm down. Because this family is not yet getting specialized intervention to address the core deficits of autism, his mom is left feeling confused and unsuccessful.

Change with Intervention—Brandon at 2-3 years

At 30 months, Brandon's mom began ESI, which provided 3 intervention sessions a week at home tailored to his special needs related to autism. You'll see the ESI coaching model in action.

Interventionist: *You sure? This one, or this one?*

The coach guides his mom to offer choices, but allows her to stay in an active role, and provides specific feedback about how well her supports are working.

Interventionist: *I'm glad you confirmed his choice—"Oh, this is the one you want!"- That's a really good thing to do, because, especially if it's not really clear...*

Brandon's mom is learning how to offer choices and confirm what he really wants. She's making the most of every learning opportunity.

Mom: *You want juice?*

She waits for him to need help, waits for him to use clear, directed communication with a word, sign and a look,

Mom: *Open! --then models "more juice" to confirm his request and gives him a role to open the juice.*

Interventionist: *I know, just keep saying that word, open.*

Mom: *Open! Open! – Got it!*

Interventionist: *Top off!*

Mom: *Top off! – Twist, twist, twist! Drink!*

Interventionist. *All of those roles that you're giving him, all those words that you're saying, is building a routine, is helping him – "Oh, this is what we do, oh it's 'top off', that's what I want, not 'more' but 'top off'. I've already picked this".*

Mom: *Up, up up! Down, down down!*

Notice how even cleaning up after snack provides extra learning opportunities by giving him simple instructions that he can follow with support.

Mom: *Wait, not the trash! In the sink!*

Interventionist: *Alright, good! He might be able to do the same thing with the cups.*

Mom: *Cup – goes in the sink!*

Here Brandon's mom is showing how much she has learned in just a month. She now successfully supports Brandon to initiate without the coach there. She carefully times her waiting and balances their turn taking.

Mom: *Wash the spider out! Out came the sun and dried up all the rain, and –*

Brandon: *Itsy, itsy! Itsy, itsy!*

Mom: *The itsy, bitsy spider went up the spout again!*

This motivating, predictable song offers familiar words and actions that Brandon can practice. Look at the payoff for mom- he's looking at her, smiling, and sharing his enjoyment.

Mom: *Dried up all the – rain. And –*

Brandon: *Itsy, itsy, itsy, itsy!*

Mom: *Apple juice. Orange or apple?*

Brandon: *Apple!*

Mom: *Apple juice*

Interventionist: *That was beautiful!*

After 2 months of ESI, Brandon's mom not only offers clear choices, she models both language and actions,

Mom: *You need help? Open!*

She waits for better communication and gives him productive roles.

Mom: *Can you take the top off? Thank you!*

Interventionist: *Top off.*

Mom: *And now we pour! Now we pour just a little bit.*

Now that his mom can successfully run this activity with minimal guidance, the coach watches and provides feedback to support her independence.

Mom: *Thank you! Uh, oh! Mommy do it.*

Interventionist: *So you got a new cup!*

Mom: *Sit on the mat! Boing! Okay, who wants-here you do it. Open drum.*

Brandon: *Open drum!*

Mom: *Open drum. Thank you.*

After 5 months of ESI, Brandon's mom can now hold out for even better communication in the context of a motivating activity, and assign clear roles for both Brandon and his brother.

Brother: *Stop!*

Mom: *Stop?*

Brandon: *One, Two, Three, Four!*

She seamlessly offers pictures to give Brandon a way to choose the next song.

Mom: *Wait! I need a song. Which one? Pick a song that I sing. Hit it. Which one? Itsy, Bitsy, Twinkle, Twinkle? - Twinkle, Twinkle, Itsy, Bitsy, which one?*

Brandon: *Twinkle!*

Mom: *Alright!*

Brandon's mom has become masterful at pushing him to the best he can do and offering just enough support for him to be successful.

Mom: *Twinkle, twinkle little star. How I wonder what you are –*

When he shifts his attention to a book, notice how his mom confirms that he's "all done" with music and honors his interest in the book...

Mom: *Wait, wait, wait! If you're all done put the sticks – sticks in the drum.*

...but still holds him to picking up the instruments and putting them away.

Mom: *Thank you. Top on. Oh, wait! Alright, top on!*

After 7 months of ESI, Brandon's mom first establishes a shared agenda by having him choose an activity.

Mom: *Do you want to play with your motorcycle? Okay, here we go, since you have your motorcycle, you want to play with your motorcycle or do you want to read book?*

Brandon: *Read book!*

Mom: *Read book.*

Now that he's requested reading, you'll see his mom offer him a choice of which book and the coach explain the importance of choices to his dad.

Interventionist: *Sometimes it doesn't even seem like he - he's not engaged just give him a choice and he'll choose something, you know, and then it's usually something that he wants to do.*

Mom: *Wrong book? Which one? Bear hugs, or head to toe? – Bear hugs or head to toe?*

Brandon: *Head to toe!*

Mom: *Head to toe, Okay, head to toe.*

Notice the density of practice Brandon is getting both expressing and clarifying his message, and following directions.

Mom: *I am a –*

Brother: *Giraffe!*

Mom: *Ian said Giraffe, what am I? I am a –*

Brandon: *Neck!*

Mom: *What am I?*

Brandon: *Neck!*

Mom: *What am I?*

Brandon: *Neck!*

Mom: *That's his neck, he has a long neck, but what animal is that?*

Brandon: *Neck!*

Mom: *(laughs) I am a giraffe. Oh! And I bend my neck! I'm sorry. Yea. Can you do it?*

Interventionist: *You want to do the book with him Tyson?*

Mom: *Say "I can do it!" You say –*

Brother: *I can do it!*

Mom: *You say –*

Brandon: *I can do it!*

Interventionist and Mom together: *I can do it!*

Interventionist: *Brandon's saying his part too.*

Mom: *Oh, awesome!*

Mom: *Wait, just wait, you finished?*

Brandon: *Open it.*

Mom: *Thank you very much. Okay, now we've got to clean up.*

After 9 months of ESI, Brandon's mom shows her mastery of balancing high expectations with just enough support. While respecting that he is an active child who enjoys spinning, she skillfully makes the most of every opportunity for meaningful learning.

Mom: *Brandon! All done? – Your plate needs to go in the sink. – In the sink. Can you get Mom's bowl? Wait, wait, wait – Can you get the bowl, and put it in the sink? – And the plate?*

Brandon: *And the plate!*

Mom: *Refrigerator.*

Brandon: *Refrigerator!*

We hope these video clips illustrate the enormous potential of early intervention by coaching parents to support their child's learning in everyday activities, and is within the reach of any community, if we can catch autism early.

Mom: *Brandon! Do you want – Which one? This one, or this one?*

Brandon: *This one!*

Mom: *This one, Okay. Can you open the door? – Thank you.*

Early Signs of Autism—LB at 20 months

Mom: *Did you get it out? Did you get it out?*

Now that you've been learning about the features of autism, watch LB, who's 20 months old, and see if you can find any early signs of autism.

Mom: *Spoon is down there? All gone! Spoon's all gone! Oh boy, now what ya' got? A whisk? Whisk! Whisk! Come on, say whisk! Whisk! Whisk!*

LB was not talking or trying to communicate. He did not look at or respond to his mom. You may have noticed how hard his mom tried to engage him, yet he did not appear to pay attention to her.

Mom: *Spoon fell down? Spoon is down there?*

He became intensely focused on the whisk. His mom was aware of his lack of responding, and even moved closer to him and talked about his interest in the whisk. But she did not yet realize that the combination of a lack of social reciprocity and restricted repetitive behavior is associated with autism.

Mom: *Car! Car! Owl. Hoo, hoo! Hoo, Hoo! Hoo, hoo! That's an owl! Cat, meow! Dog, woof! Is that Jo Jo?*

LB is now 21 months. Since the previous video clip, his mom brought him in for an evaluation and a diagnosis of autism spectrum disorder was confirmed.

Mom: *Find one. Pick one. Ball! Box! Box! box!*

This video clip is right before LB and his mom began intervention with the ESI Project. Notice his mom's effort to draw his interest to flashcards, but LB remains focused on the truck.

Change with Intervention—LB at 2-5 years

Mom: *What is it doing? Crash!*

Now watch LB a month later during an ESI home visit. At this age he frequently laid down to peer sideways at vehicles.

Mom: *Gonna crash? Crash! Kaboom! Want to stack them up! – Car, car? Car, car go boom? How about three? Ya! Crash! Want to do three? Help Mama? Three! Four!*

You'll see how LB responds to the structure his mom provides to "build a tower" and then "knock it down". By bringing the car into this new routine, LB is very interested. He takes an active role in building and crashing, and even fills in a word.

Mom: *He said, "Ready, set, go!", did you hear?*

Interventionist: *I did.*

Mom: *Yay! Good job! Good job! Yea! She got it! Yes*

Interventionist: *So that, actually, as simple as it is, is a beautiful routine. There's a clear beginning, middle and ending. Right? He gets ready, you start to stack, he has a role to play, which is helping to put them up and then –*

Mom: *He gets to crash.*

Interventionist: *He gets to crash it. Yup--that's something he wants to do.*

Mom: *Do you want to play with the other small choo choo pieces? We can say "bye, bye cars", we don't have to play with the garage right now. – You really want to play choo choo, huh?*

After 3 months of ESI, LB continues to show an intense interest in watching vehicles roll and often lays down to peer sideways. His mom is learning ways to structure activities and draw him in. But during unstructured time without these supports in place, LB remains overly focused on certain objects and is unresponsive, showing the potential negative impact that autism could have on learning and development.

His mom is learning how to follow his interest. She brings him to the coffee table where the positioning is just right for him to look over at her. She creates an obstacle for his train setting up the need for him to communicate.

Mom: *Stop!*

LB: *Go!*

Mom: *Go! That's right! – Choo, choo! Chuga, chuga, chuga, chuga, chuga, chuga, chuga...*

Mom: *Although you still get the feeling that rolling the train is his biggest motivator, notice how it is now easier for him to shift his attention from the train to his mom.*

Mom: *Good job! – And stop! Thank you! Go, go, go, go, go!*

This structure provides repeated opportunities for him to communicate and enjoy interaction with his object of interest.

The coach jumps right in and tries a few different strategies, to figure out what it will take for LB to play with his favorite character, and still engage in social interaction.

Mom: *Want to fly? Whoosh!*

It is when the coach begins to copy LB's actions that they share a moment of success as he enjoys the characters "flying" together.

Mom: *Yay!*

Three months later, LB and his mom have expanded the flying routine to include more actions and words, and find many opportunities to check in with each other as they share the fun.

Mom: *We go up?*

LB: *Up!*

Mom: *Up, up, up, up, up!*

LB: *Up, up, up!*

Mom: *Up! Yay! Whoosh! Wee! – And, down!*

Mom: *Up?*

LB: *Up, up, up!*

Mom: *Up, up, up Wee! Whoosh!*

Because his mom has learned to embrace and follow his interest and provide the needed structure, LB is getting a lot of practice interacting. It's become easier for him to shift his attention to her.

Now you'll see LB when he is 3 years old at the end of ESI. This clip illustrates the impact of early intervention on both LB and his mom.

Mom: *Okay – You want to crack it?*

LB: *Crack it!*

Mom: *A little bit harder. – Momma do it?*

LB: *Momma do it.*

Mom: *Crack, crack.*

Mom: *More eggies, LB do it this time?*

LB: *The egg –*

Mom: *Yea, go crack, crack, crack!*

LB: *Dinosaur egg.*

Mom: *That's not a dinosaur egg, that's a chickie egg. – Aw, chickie egg. It looks like a dinosaur egg, I know! LB go crack, crack!*

LB: *Is the egg hiding?*

Mom: *Egg is hiding? There it is!*

Although his language is still delayed, it felt like they were having a conversation, and LB was doing his part to keep it going and stay engaged in the activity.

Mom: *Hide and seek!*

LB: *Yay!*

Mom: *Yea? You want to play?*

LB: *Yea.*

Mom: *Okay, Do you want to hide or –*

LB: *I want to play doctor hide and seek!*

Mom: *Doctor hide and seek, we can – sure, I don't know how to play that one.*

LB: *You have to get something - alive, and – and you have to count.*

Mom: *Okay.*

LB: *Uh oh!*

Mom: *Uh, oh!*

Mom: *Okay, how about I count? Do you want me to count, or you count?*

LB is now five years old and is in a regular kindergarten classroom. Two years after their participation in ESI, you see his mom continue using the supports to engage LB in interaction and play, with remarkable change.

Mom: *How do we play this game?*

LB: *This is how you play this game? Whoosh!*

Mom: *Whoosh. Do you have to take off?*

LB: *You go to the water.*

Mom: *Oh you go in the water, when they swim, in the water?*

LB: *And then you come out of the water and eat 'em all !*

Mom: *Num, num, num, num! Like that?*

LB: *Yea*

Mom: *Okay, let's start over, let's do it again! First we're flying –*

LB: *Then we're diving!*

Notice how together, LB and his mom make a plan for how to play with the dragon. His mom is still aware of the support he needs. She skillfully adds structure so that LB can come up with his own ideas and engage in reciprocal interaction.

Now watch LB and his mom playing a board game. As you watch, notice him listening, attending, generating new ideas, and even using language to negotiate with his mom. LB has gained really meaningful skills that are critical not only for academic success but also for building friendships and for handling the challenges of peer interaction.

Early diagnosis and intervention have lifetime consequences for toddlers with autism and their families. Autism Navigator will put into the hands of professionals and families hundreds of video examples of early signs of autism and effective intervention practices.

LB: *Bucket!*

Mom: *You finding one? Okay! How we doing on that time?*

Technology now gives us the means to connect worldwide.

Mom: *Here's a barrel! I didn't think I was going to find any.*

LB: *Time's up!*

Mom: *Time's up. How many did you find?*

LB: *I found one, two!*

Mom: *Alright, move your guy two spaces.*

Our hope is that we can maximize the role of families and give them support, so they can get started as soon as autism is suspected.

Mom: *One, two!*

LB: *Hey you're going on my side!*

Our dream is that we can help communities put the stigma of autism in the past. This is key to all families having access to the help they need early, so all children with autism can reach their potential.

Mom: *Two.*

LB: *One, two!*

Early Signs of Autism—Isaac at 17 months

Mom: *He'll come around. Boom.*

Interventionist: *Stuck.*

Mom: *What's wrong? Let's play with the wheels.*

Mom: *Hey Isaac! Is it solitary ball time, or momma ball time? Let's find out. Isaac? – Hey! Uh, oh! – Can I put that in there? Where does that go? – Would you like this? – Would you like this? Uh, oh! Can I put? Ready? – Boom! Boom! I know, what about this one? – Do you want to play?*

You saw Isaac during two different activities at home. In the first activity, he had access to an interesting push toy. Isaac did not initiate communication or share interest. Instead he turned the toy upside down and showed repetitive actions when he rotated the toy and spun the wheels. When Isaac was playing with the tennis balls, his mom called his name and he did not respond. It's noteworthy that she then asked him if this was solitary ball time or momma ball time. This showed her awareness that he sometimes preferred to play alone, which may be cause for concern in combination with his lack of gestures, sounds, and facial expression. She tried to get his attention by bouncing and rolling the ball. After several attempts, he did take the ball, but he preferred to play alone by putting the balls in the container and then pouring them out. His mom was aware of his difficulty looking at her and even held the ball near her face and used lots of social bids. He did respond by taking the ball from her. But his interest in the balls interfered with social interaction, and resulted in a lack of social reciprocity.

Change with Intervention—Isaac at 2-3 years

Isaac is 18 months old and after a few weeks of ESI, his mom is practicing how to create a shared agenda, first during Peekaboo and then Ring-around-the-Rosy.

Mom: *Isaac? Isaac? -There he is! There he is!*

Notice how she positions herself on the floor at his level, offers Isaac a productive role, and repeats predictable steps in each activity. Her balance of turns encourages Isaac to initiate simple movements, like giving the blanket to her or turning his body to request the game.

Mom: *There he is! Where's Mommy? There she is!*

Mom: *Isaac go round, round? Isaac? No.*

Isaac: *Mm mm mm. Ba ba ba.*

Mom: *Round, round?*

During these social games, his mom is successful at getting him to look at her, laugh and share enjoyment, use a gesture, and vocalize to request more.

Mom: *Pocket full of posies. Ashes, ashes, we all fall down! All the way down. Do we tickle, do we tickle! Do we tickle, tickle, tickle tickle tickle!*

Notice that he responds to social bids better when no small objects, such as tennis balls, are in the activity.

Mom: *Tickle, tickle, tickle tickle tickle! Tickle, tickle, tickle tickle tickle! Tickle, tickle tickle.*

Mom: *Momma up? Momma up?*

Isaac: *(Screech)*

Mom: *Up!*

Mom: *Something to drink?*

Grandpa: *(Voice off camera) Where you going, Bubba?*

Three months later, when Isaac is 21 months old, notice how his mom is using positioning, productive roles, and predictable steps during snack.

Mom: *Isaac. Would you like something to drink? Come here and pick it out. What do you want?*

Grandpa: *Pick something else there out of that...*

Mom: *Would you like milk or juice?*

She models key words about what he's looking at and doing.

Mom: *Isaac, milk or juice?*

Dad: *(Other voice off camera) Trying to steal the milk again? Last time we did that he grabbed the milk and took off running.*

Mom: *Milk?*

Isaac: *Ee, li.*

Mom: *Open Milk. There we go.*

Isaac: *Ooo.*

Mom: *Now what that part?*

Isaac: *Oooo (signs "Open")*

Mom: *Open! Thanks.*

Isaac responds to her social bids, initiates communication with sounds and gestures, and uses the sign for open.

Mom: *Thank you! - Drink! (Chatter off camera)*

Mom: *- Isaac can you close the door please?*

Grandpa: *Good deal dude! Very good!*

Mom: *I know! He's quite helpful.*

After his bath, his mom uses the mirror while combing his hair to provide an opportunity for Isaac to practice imitating sounds.

Mom: *This is the way we comb our hair, after we're done with bath time. (Isaac makes noises, mom imitates)*

Notice how the exaggerated melody in her voice attracts Isaac's attention and supports learning.

Mom: *Aaaaah. Zzzzzick! - (Isaac vocalizes) Aaiiii...Ssssaac! Hi! (Isaac laughs)*

Mom: *Hi! A comb and a –*

Isaac: *Ba*

Mom: *brush, and bowl full of m-mush, and a quiet little baby whispering hush. Good job. Oh my goodness! Do you want to go get Daddy? Let's go get Daddy! Come on.*

Mom: *We could play with the baby, or with blocks, or the ball? Want to play with the ball? Let's get the ball? No, let's play with the ball. Ball.*

Isaac: *Sss*

Mom: *Oh, you're ready? Set.*

Isaac is now 22 months old and his mom has been in ESI for 4 months. Notice all of the learning supports that his mom is using and how she extends the activity to keep Isaac actively engaged longer.

Mom: *Isaac, I'm ready! And set! Go, go, go go, go! Got it!*

Isaac: *Ooo*

Mom: *Ready?*

Isaac: *Sss*

Mom: *Set?*

Isaac: *Ey*

Mom: *Go, go, go! Bonk! Oh, my turn! Got it! Got it. Isaac, get ready!*

Isaac: *Sss. Ree.*

Mom: *Ready?*

Isaac: *Shhh*

Mom: *Set.*

Isaac: *Ey, ey, ehh.*

Mom: *G-go? Go Momma! Got it! I'm ready! Go, go, go, go! Got it!*

Isaac: *Ooo*

Mom: *Rea-dy.*

Isaac: *Sss. Ehh.*

Mom: *S-set. Rosie, move! Okay, go, go, go! Bonk! Isaac has ball! Push, push! Oh my goodness!*

Isaac: *Ehh.*

Mom: *Ready?*

Isaac: *Shhh*

Mom: *Set. Momma, go, go, go?*

Isaac: *Ehh. Ooh.*

Mom: *Go, go, go! Bonk! Ball. Got it! Good ricochet.*

Isaac: *Uhh*

Mom: *Brown bear?*

Isaac: *Eee.*

Mom: *Read? Okay. Brown Bear.*

Isaac initiates a request for his mom to read a book. Notice how his mom pauses in key places for Isaac to turn the pages and fill in sounds and words in this predictable book.

Mom: *S-see. I see a red bird looking at...*

Isaac: *Sheee. Mmm. Shee.*

Mom: *M-m-me!*

This also encourages him to look at her and share the book together.

Mom: *Duck. Yellow duck, yellow duck, what do you...s-see? I see a blue horsey, horsey looking at...*

Isaac: *Shee. Mmm.*

Mom: *Mm-me!*

Isaac: *Eeh.*

Mom: *Green frog, green frog, what do you...*

Isaac: *Sss.*

Mom: *Sss-see?*

Mom: *Okay, Isaac, we're going to do three things and then you can take a break.*

At 25 months, Isaac and his mom make a plan together for what they're going to do using a visual support board.

Mom: *I think we should do music. Then what? Oh, then rings? Okay. Oh, that one's hard. Rings. And what last? We could do shapes, or baby, or ball, or books. What do you think? Do you want to do books? Okay.*

This provides the structure to extend activities and adds predictability between activities.

Mom: *Oh, Isaac says, "I'm going to do shapes!" Okay, let's do shapes first. We're going to do shapes, then rings, then books! Let's go find the shapes. Let's go find the shapes. There they are. Shapes! You found them! Where's the lid? Oh, there it is! Lid on! Yay, you got one!*

Mom: *Okay, Ready?*

At 27 months, notice how Isaac's mom uses the tunnel to have extended moments of shared enjoyment.

Mom: *Should we do it? Okay.*

Isaac: *Shhh. Ooo.*

Mom: *Open. One, two, three! Tunnel! (gasp) Hi! (gasp) Hi! (gasp) Hi! (Gasp) Hi! Hi! Hi!*

Isaac: *(Laughs)*

Mom: *Are you going back through the tunnel? (gasp) Hi!*

In the last clip, Isaac is 31 months. Notice how during Old MacDonald, they have created a routine of shouting together to celebrate after each verse that Isaac anticipates and thoroughly enjoys.

Mom: *E-I-E-I-O and on that farm he had a...*

Isaac: *Kaa.*

Mom: A c- a cow? Cow. E-I-E-I-O. With a moo, moo here and a moo, moo there. Here a moo, there a moo, everywhere a...

Isaac: Mmm.

Mom: M-moo, moo. Old McDonald had a farm.

Isaac: Eee.

Mom: E-I...

Isaac: Eee.

Mom: E-I-O. One, two, three...AH! (laughs)

Isaac: (Laughs and screams)

Mom: Let's do it again.

Mom: Old McDonald had a farm, E-I-E-I-O. And on that farm he had a... What'd he have?

Isaac: Eee. Ggg. Eee.

Mom: Oh, a horse? Had a Horse. E-I-E-I...

Isaac: Eeh.

Mom: ...O. With a nay, nay here and a nay, nay there. Here a nay, there a nay, everywhere a...

Isaac: Eeh. Dii Eeh.

Mom: Nn-nay, nay. Old McDonald had a farm E-I-E-I...

Isaac: Eeh. Shh lah.

Mom: ...O. One, two...

Isaac: Ah.

Mom: three... AH! ((Laughs and screams with Isaac). Alright, Isaac, let's do one last time. Ready. One last time.

Early Signs of Autism—Jacobi at 18 months

Mom: Can we brush your teeth real good? – Get the toothpaste? – Okay, brush your teeth. – Brush your teeth. Open? Brush, brush, brush, brush, brush, brush, brush, brush, brush your teeth. – Okay, one more time. Open? – Alright, let's brush the front. – Rinse your mouth? Rinse your mouth. Let's go see daddy. Tell daddy you're hungry. – Go on. You coming?

Dad: Good morning. – Hey buddy! Hi! Good morning! – Good morning! He's like, "Okay, what's going on?"

Mom: You want some cereal? – Would you like to have some cereal? Yea? – I don't know. – Got your shoes. – Get your shoes on. We're going to go outside, do you want to go outside? Hmm? Your shoes are kind of dirty from yesterday, huh? – Oops.

Mom: Hmm? Cereal? – Cereal?

Jacobi: Two!

Mom: Cereal?

Jacobi: Two, two!

Mom: Two? You counted them? You said two? Count them. One...

Jacobi: Two.

Mom: Two, three! We did it! We did it! Want to do it again? One –

Jacobi: Two.

Mom: Two, three!

Jacobi: Yay!

Mom: Yay! You're a counter. Hmm?

Jacobi: Two? Tee.

Mom: One, two, three! Yay!

Jacobi: Yay!

Mom: You did it. You ready to go check the mail? – Jump. – Hmm?

Mom: Yay! Jacobi, where you going? That hill has you going pretty fast, huh?

When you first saw Jacobi's mom brushing his teeth, he did not communicate with gestures, sounds or words and did not look at her or express emotion. When his dad greeted him as they walked by, Jacobi did not respond to social bids and even walked away. As mom put his shoes on, she modeled key words but he did not respond or initiate communication. In contrast, during snack, Jacobi used a lot of sounds, looked at mom

several times, smiled, and shared enjoyment. But on a closer look, he didn't show interest in interaction except when he started taking the cheerios in and out and he initiated the word "two". Then his mom joined in with their counting routine that ended with a brief celebration. This interest in counting in combination with his lack of interaction in other activities, should signal concern at 18 months, and as you will see, develops into an unusually strong interest in numbers. This counting had a routinized feel but yet the structure promoted interaction. Without this structure, his lack of typical milestones was more obvious. When Jacobi and his mom went outside, he showed an interest in the ball, but then wandered off. He did not draw her attention to things or share his interest.

Change with Intervention—Jacobi at 2-3 years

Jacobi is now 20 months of age. During snack his limited use of gestures, sounds, words, eye gaze, and facial expression is evident.

Mom: *Open. Close Okay, you want to try to do it? Hmm? You ready? Here you go.*

His mom has been in ESI for about a month. Next, notice how she is able to support reciprocal social interaction successfully during a game of peekaboo.

Mom: *Come on you do it.*

Mom: *I worked really hard. Can I have a kiss? Can I have a kiss? No, I want a kiss. You doing Pee, pie? Pee-Pie! Pee-ow!-pee... I'll bite your fingers. Pie!*

Jacobi: *(vocalizes)*

Mom: *Pee-kaboom! Can I have my kiss now? Where's my kiss? Oh, that's a sweet boy! He's so sweet!*

Mom: *Let's go wash your hands.*

At 24 months, during hand washing, his mom provides nice language models.

Mom: *Okay, hop up on the chair. Let's wash our hands. This is the way we wash our hands, wash our hands, wash our hands –*

Jacobi listens to his mom and follows simple instructions, but does not initiate communication.

Mom: *Wash our hands.*

Mom: *Put it right there.*

At 27 months, notice how during hand washing, again Jacobi's mom models key words about what he's looking at and doing, and keeps him motivated.

Mom: *Turn the water on. Wash your hands. There you go. Rub them together. Rub them together. Rub, rub, rub! Rub, rub, rub! All around.*

Although Jacobi is still not initiating communication in this activity, you will see his use of language and social interaction starting to blossom next, during snack and book sharing.

Mom: *Okay, you want an orange, or do you want a plum?*

Jacobi: *Plum.*

Mom: *Huh? You want a plum? What do you want plum? You said plum?*

Jacobi: *Plum-please!*

Mom: *Plum, please.*

Jacobi: *Plum, please.*

Mom: *That's the plum. What is that?*

Jacobi: *Apple!*

Mom: *That's an orange. What is this?*

Jacobi: *Plum.*

Mom: *Plum.*

Mom: *There were six. Six little boys. Playing near a hive. A bee stung one of them-and then there were five. Five little boys – What are those?*

Jacobi: *Apples!*

Mom: *Apples? What are those? Hmm? Bananas. Bananas. How many bananas are there? Let's count.*

Mom & Jacobi together: *One, two, three, four, five, six, seven, eight, nine, ten!*

Mom: *Yay! Ten bananas. –And a coconut tree. You eat bananas too. You love bananas. Turn the page.*

Mom: *Okay, well let's sit down and see if you can put those on.*

At 29 months, Jacobi responds to his mom's social bids and verbal instructions. He is using his tone of voice to express emotion, making more sounds, and using echolalia as a language learning strategy.

Mom: *Goes on this foot. On this foot. Push your foot in. Push. Push. Push. These shoes are a little harder for you to put on because you're growing. There. Okay, strap it up. Close the strap. Close the strap.*

Jacobi: *Close the s-saps!*

Mom: *Open up the straps.*

Jacobi: *Open saps!*

Mom: *Open on the straps. Pull up the tongue.*

Jacobi: *Tongue!*

Mom: *Put your foot in.*

Jacobi: *Foo- in!*

Mom: *Push really hard. Push.*

Jacobi: *Push.*

Mom: *There we go. Okay, strap them up. Strap them up.*

Jacobi: *Mom, I want you to come with me.*

Mom: *We ran out of soap, so we're going to have to fill it back up.*

At 36 months, Jacobi discovers that the soap dispenser needs to be filled.

Mom: *We're going to fill –you want me to hold it?*

Jacobi: *Yes.*

Mom: *We're going to fill this up and then we'll finish our book, Okay? -Because you need to wash your hands.*

Jacobi: *My hands?*

Mom: *More soap. I think I have another –wait, wait. Get the big thing of soap down there that I haven't opened yet.*

His mom takes this very ordinary event and provides supports to create opportunities for spontaneous initiation, following instructions, and shared enjoyment.

Mom: *It's kind of heavy. Watch your head. Watch your head. Watch your –Bump. It's a good thing you have a hard head, huh? Okay, let's see here. Here you open this.*

Jacobi: *You open this. You open this.*

Mom: *Can you open this one?*

Jacobi: *Yes:*

Mom: *Good! Okay.*

Jacobi: *Yea (unintelligible)*

Mom: *No, no. You can't do it like that. You have to wait a minute. Leave it right there. Stop. Don't touch it. I'm going to have you hold this there –*

Mom: *You have to squeeze it.*

Jacobi: *Yea.*

Mom: *Squeeze and squeeze and squeeze, and make sure you hold it still. Whoa, it's filling up pretty fast.*

Notice all the different language and even science concepts that she's teaching and what an active learner Jacobi has become.

Mom: *See those bubbles going up to the top? Wow, the bubbles are way up there. How did those bubbles get up there?*

Jacobi: *(Unintelligible)*

Mom: *Okay, here. You want to squeeze?*

Jacobi: *Yes*

Mom: Look, it's going in. You have to squeeze. Squeeze right here in the middle. There you go. Squeeze it. Oh, look! Squeeze, oh, I think we closed it. There we go. Squeeze. Keep squeezing.

Jacobi: Squeeze, squeeze, squeeze, squeeze,

Mom: Good it's squeezing. It's coming out.

Jacobi: Squeeze, squeeze, squeeze –it coming down!

Mom: We almost there.

Jacobi: There. Hold it.

Mom: Squeeze it right up in here, it's easier to squeeze.

Jacobi: You hold the top.

Mom: Oh, you're going to hold it?

Jacobi: You hold it.

Mom: Okay –Okay, but who is going to squeeze it?

Jacobi: No you go squeeze it.

Mom: Oh, ok.

Mom: Ready, get set –

Jacobi: Go!

Mom: That's good, because we have to put the stick in there.

Jacobi: It stopped.

Mom: Okay, we stopped. Whoa, that was a lot of soap. Look at those bubbles. Look. Bubbles.

Mom: Okay, here can you twist the top on?

Jacobi: Yes

Mom: I'll put it in. Here, turn it. There you go.

Jacobi: (Unintelligible)

Mom: Uh, oh, it's sideways.

Jacobi: Watch this. Watch this.

Mom: You're squeezing it. Let me see. It's closed so –Oh, look! Bubbles! Do you see the little bubbles?

He is still using some echolalia but is also generating creative ideas and sharing his interests, and his enthusiasm for learning.

Mom: Whoa, I see little bubbles!

Jacobi: Got it.

Mom: Pop!

Jacobi: It's all gone

Mom: Look they're over there. You see them. Wow, those bubbles last a long time. Let's see if we can make some more bubbles. Nope. No more bubbles. They're all gone.

Jacobi: They're all gone.

Mom: That was fun.

Jacobi: That is fun.

Mom: Yea.

Jacobi: They're down there!

Mom: Where?

Jacobi: Down there!

Mom: Oh, yea. They're in there. Lots of tiny bubbles.

Jacobi: They're not in there. They're not in there. In there! They're all gone.

Mom: I see bubbles in here and I see bubbles on top of the liquid. Bubbles. Bub, bub, bub, bub, bub, bub, bubbles. You can't count all those bubbles.

Jacobi: Yeah. (Unintelligible) And I see another one.

Mom: Oh, there is another one. Can you catch it? It's right there.

Early Signs of Autism—Will at 18 months

Mom: Want to put the puzzle together? Okay, Will, look, let's put the puzzle together. Where do the pieces go? It's a car. Where does the car go? Ooh, and it makes a car sound. Where does the ambulance go?

Will: ... there.

Mom: *You want to put it in for Momma? Thank you. Good job! You're right on it baby! Okay, put it back in. Put it back in. Don't pay any attention over there. Look, sweetie. Alright, now we got a train. You want to see where the train goes? Can you put the train inside for momma? You found it, Okay. Look at that helicopter. That's a – oh, look at – you found it right away. That's upside down baby, switch it. Oh you got it, you got it, And it's a motorcycle. You got it. (Inaudible) Okay, look it's an ambulance, Can you put the ambulance in there please? Hey Will, look. Put the ambulance inside. Thank you. And now the boat. Boat. Can you see a boat? You got it, sweetie. You want Mommy to do it? There you go. That's a little bit harder. Okay, last one! It's a plane. Good job! Good job! You're really into that camera. Okay.*

Mom: *You want to go – you want to cook? You want to do some cooking with Momma? Do some mixing, and cooking. Good job. You want to eat something? Taste the batter? Num, num, num. Ooh, that's good. Mix the bowl. You going to put everything into the bowl? Thank you, thank you for cleaning up. It stacks this way. See? Will it fit? Good job. Yea, everything stacks. Good job. Now put it back in the bowl. There you go, put it back in the bowl.*

Mom: *Come on, let's go read a book. Will, you want to come sit in Momma's lap so we can read a book? Will? Will? Come sit in Momma's lap, let's read a book. It's story time. It's story time, come on sweetie. Come on, let's tell a story. You want to read a story? Come sit in Momma's lap. Good job. Alright story time. – And a comb, and a brush, and a bowl full of mush. And a quiet old lady, whispering hush, hush. – You want to try another book? You're really distracted. Alright. Let's do the train book.*

Mom: *Want to put it back in your wagon? Want to clean up? Put it back in your wagon. Here, Will, look. We have to clean up. It's time to clean up. Oh! Hello! Look Will, it's time to clean up. Thank you. Thank you. No, I don't think so. I don't think so. Oh, I don't think so. He, he, he! Ha, ha, ha! Ho, ho, ho!*

Will: *Sta, sta-- in (reaching toward camera).*

You saw Will's strengths and his interest in toys that he can put together, like the puzzle and stacking cups. In contrast to the other children with ASD that you've watched, Will is using words, which makes it easier to miss the features of autism. His lack of social reciprocity was evident by his limited initiation of communication that was directed to his mom. Will did respond to social bids during the puzzle. But when his mom modeled pretending with the play materials, it became clearer that there was cause for concern. He did pretend to eat, but it seemed odd that he continued to sit with his back to his mom and showed more interest in stacking the cups than interacting with her. His difficulty was with the sharing of pretend play, which most 18 month olds would readily do. You may have also noticed that he looked at the camera many times and seemed interested in the camera, but did not share this interest with his mom. His restricted interest was evident with toys that fit together and also particular objects, like the screwdriver and keychain with a string on it. His mom reported that at this age he was very interested in string, which he sometimes waved or twirled repetitively. She often tied strings to things to draw his attention and expand his interest. In this video clip, his excessive interest in these objects interfered with social interaction and attention to the book, even when his mom hid the keys in an attempt to help him focus on the book. You saw at the end that his mom figured out how to intercept his interest in the string by pulling him toward her with it and then tickling him to shift his attention away from that object.

[Change with Intervention—Will at 2-3 years](#)

Mom: *Okay baby, you want to sit and read?*

Will is 23 months old and after a few months of ESI, his mom is practicing how to create a shared agenda.

Mom: *What were those Will? Were those your shoes? Shoes? Hey Will look! Apple!*

Will: *Apple.*

Mom: *Car. Vroom, vroom!*

She is able to spark his interest and motivate him to name pictures in the book.

Mom: *Okay. Ball.*

Will: *Blue.*

Mom: *Yes, that's blue.*

Mom: *Pop, pop, pop ,pop, pop!*

Once outside, Will is motivated by the bubbles and enjoys popping them with his hands and his feet.

Mom: *You pop them? Pop, pop, pop! Pop, pop, pop, pop, pop! Hey Will, you want to pop the bubbles? Thank you! You don't need to pop them with the rocks. Will, do you want more bubbles? Will, Will, do you want more bubbles?*

Will: *Mine.*

Mom: *Bubbles! Bubbles! You got a stick?*

However, his attention easily gets drawn away from the bubbles by leaves on the bushes and a stick lying on the ground.

Mom: *Bubbles! You're going to pop the bubbles with the stick.*

His mom followed his focus of attention by commenting as he flitted to various objects in the yard. But without predictable steps or exchangeable roles, there was not a shared agenda and following his attention was not leading to interaction or engagement.

Mom: *You want to help?*

Will is now 28 months and during laundry, his mom has learned how to create a shared agenda by giving him a productive role in this predictable activity.

Mom: *Will, here. You want to help? Will, here. You want to help? I'll hold your cup. I'll hold your cup. Here.*

Will: *Ouchie.*

Mom: *Ouchie. I got it, I got it. Here Will. Keep helping Momma. Here Will.*

Mom: *Slobbered on bear. Here Will. Here's a little bit more. Thank you. Put it in. Good job. Okay, close the door. Good job.*

Will flaps his hands, which is his way to express excitement.

Will: *Dat.*

Mom: *Yea, that's a spring.*

Will: *...Boing, boing!*

Mom: *Boing, boing.*

Mom: *Did you bring your cup? How many goldfish do you want? One? Or two?*

Will: *I hold goldfish.*

Mom: *You want them all? What do you say?*

At 31 months, during snack, Will is interested in the slinky but at first can shift attention to his mom and let her know that he wants all of the Goldfish crackers.

Mom: *Are you going to eat the goldfish?*

He becomes more interested in experimenting, than eating them, to see if they all fit inside the slinky, and this interferes with social interaction.

A week later the interventionist helps Will's mom provide supports during a game of Hide and Seek.

Interventionist: *Seven, eight.*

Will: *Where she go? Where she go?*

Interventionist: *Where she go? Call her! ... Momma's hiding. Uh, oh! I hear her!*

Will: *Momma?*

Interventionist: *Did you check the room?*

Will: *Momma?*

Interventionist: *Where's Momma. He's checking.*

Will: *She this way.*

Interventionist: *She's this way. Very good. I hear her. Say, "Momma, where are you?"*

Will: *Hi -Hi, hi.*

Interventionist: *She is hiding. She is! Let's call her and see if she'll answer. Mommy!*

Mom: *Will?*

Interventionist: *Uh, oh. I heard her.*

Mom: *Will?*

Will: Momma?

Mom: Will?

Interventionist: Say “Momma, where are you?” Come on let’s go find her!

Will learns how to call out, use gestures, and pay attention to social bids and verbal instructions in this fun game with his sister.

Mom: Over here, Will! Will?

Will: -is way!

Interventionist: Is she this way!

Will: Momma!

Interventionist: Uh, oh. Hmm. Perfect, perfect.

Mom: Hi! You found me! You found me!

Interventionist: Perfect.

Mom: Good job! Good job!

Mom: You want to read this book, Will? Okay, in the mysterious jungle –you want to sit down? The lion is king, but have you wondered this one little thing? Are lions ticklish? Yes! Lions are ticklish! Is Will ticklish? What’s next?

At 32 months, Will’s mom has learned how to use positioning, productive roles, and predictable steps while they read a book about tickling that supports taking turns with his sister and shared enjoyment.

Mom: But did ever think to ask? Are zebras ticklish? Yes, zebras are ticklish! On the tummy! They’re ticklish on the tummy see! Tickle, tickle, tickle, tickle! Can you tickle? Maddie tickle? Tickle, tickle, tickle! Maddie tickle? Tickle, tickle, tickle! Tickle, tickle, tickle! Alright, next.

Mom: You want to get the plates ready? You got to put them on top of your tray? You got one plate for Will, and one plate for Maddie? Okay –you want to put it on the tray? Wipe that off. Here, and here’s your plate. Let’s go set it on top of your high chair tray.

Five months later, Will and his sister help set the table as they wait for the pizza to cook.

Mom: Maddie, do you want to put your plate up? Put your plate up here? –And then you need napkins. Here’s your napkin. Oh, there you go.

Interventionist: Got your chair all ready.

Mom: Yup. Here, Will. Here’s your napkin.

Interventionist: So we’ve got –so we’ve done a lot of little activities within this big activity.

Mom: Oh, we’ve got to take off our aprons. We’re done cooking.

Interventionist: Oh, Maddie, wait. Just a minute. Get your apron off.

Mom: You want to tie mine? Want to pull the string?

Will: I fixed it!

Interventionist: Oh, good, another little job there. You took Momma’s apron off.

Mom: Oh, Thanks. Maddie you want to take off your apron?

Will shows his excitement with hand flapping but now stays connected with his mom.

Mom: Let’s go see if the pizza is ready. Let’s go check on the pizza in the oven.

Interventionist: Here, I’ll get it.

Will: I’ll get it.

Interventionist: Here, let’s look.

Mom: Do you see it? It’s very hot, but let’s look inside. I think your pizza might be just about ready. You think it’s ready?

Will: Okay.

Mom: It looks like it’s almost ready. I think maybe two more minutes. Two more minutes. What do you think?

Will: (Unintelligible- while holding up 5 fingers)

Mom: You think five minutes?

Mom: Get your flour out first –

In this final compilation, you see Will at 40 months with his mom making pizza from scratch.

Will: *Flours too messy.*

Mom: *What it does is, we put the flour on the table. That way the flour doesn't stick to the table. See? We'll just put a little bit of that right there that way it doesn't stick.*

His mom has become masterful at creating productive roles for Will to participate actively in everyday activities and using language to explain the predictable steps.

Mom: *Here you go.*

Will: *That's too messy.*

Mom: *No, no, no. Don't pick it up. Watch this. This is what we're going to do. Remember – No, no, no, no. It's okay. It's okay. We're going to use that. See? Right here. We're going to roll the dough in it. Get the flour on the dough. Sticks to it. See? And then remember, you got to press down, and you got to push all the bubbles out. Okay? Push all the bubbles out. Use your palm of your hand. This is the palm of your hand. Yup. Okay, Keep going. You got it. Push down. Push down.*

Will: *I help make it ... Pat. Pat.*

Mom: *Yep. See? See we pushed all the bubbles out. Do you want to roll it with a rolling pin?*

Will: *Yes! Yes!*

Mom: *Yep, this is the rolling pin. You hold the sides. Yea, there we go. You push all the bubbles out, all the way to the end. Pop. See?*

Will: *Momma?*

Mom: *Yes? Here's your olives. So put a little bit of olives like this. Sprinkle. –and drop them one piece at a time. Spread it around. That's plenty. Ok.*

Will: *It's raining...*

Mom: *It's raining olives. All the pieces around. You want to put some mushrooms on there? Let's break up the pieces. Watch, watch, let me show you. Can you break up the pieces? Go ahead.*

This becomes a science lesson for Will to learn about the properties of each ingredient from the messy flour to the raining olives and mushrooms.

Mom: *Break them up. Break them up small.*

Will: *It's raining –mushrooms!*

Mom: *It's raining mushrooms. Now we got pepperoni.*

His mom is learning how to make every moment count for Will to support his learning in activities that she is doing every day.

Mom: *With these you have to lay a piece here. Lay a piece there. Here you go.*

Will: *I get those.*

Mom: *No, no lay them one at a time. You want to try one?*

Will: *Yep.*

We can see the substantial progress that Will has made in social communication and language skills.

Mom: *You got to spread them around. Remember, we got to lay them down. Lay them down.*

This compilation ends as his mom sends Will to get Mimi to come have pizza with them.

Mom: *Let's go get Mimi and Maddie. What are you going to tell them?*

Will: *The pizza is ready.*

Mom: *Okay.*

Mom: *Whoa, are you okay?*

You can see how the practice from Hide-and-Seek prepared Will for calling Mimi and announcing the meal is ready.

Mom: *Knock on the door.*

Will: *I got these for you.*

Mom: *Oh, is that what you made today?*

Will: *Yes.*

Mom: *Oh, wow! These are so cute.*

Will: *Those are happy ones.*

Mom: *They are happy ones. Do you want me to hang them up?*

Will: *Help me knock. Mimi!*

Will spontaneously shows mom the artwork that he made at school, and then, follows her instruction to put it on the refrigerator.

Mom: *Guess what? The pizza's ready.*

Mimi: *The pizza is ready? Did you show Momma your scarecrow you made at school?*

Mom: *Yes, he did.*

Will: *My scarecrows.*

Mom: *I know. You want to hang them up on the refrigerator?*

The intervention strategies that Will's mom has learned provide the intensity needed to impact Will's learning trajectory and will continue to support his learning during preschool and beyond.

Early Signs of Autism—Devin at 18 months

Mom: *Devin – What ya' got? Huh? Look! Fishie. Do you see? What ya' got? Look Devin. Ooh! Hey? - Get all the blocks out. All the blocks. Look. Where are you going? Where are you going? Huh, huh? Am I gonna get you? Am I gonna get you? Hey!*

Devin collected small objects, first puzzle pieces and then foam blocks, and his attention was overly focused on fluffing the objects. He also showed a lack of typical social communication. Despite his mom's persistent effort to offer different social bids and to model better play, Devin's intense interest in fluffing objects interfered with social interaction and he didn't share this interest.

Change with Intervention—Devin at 2-3 years

Devin is 19 months of age when his mom begins ESI. During this early intervention session, Devin displays better social attention while riding on a toy train.

Interventionist: *Oh I'm getting all kinds of looks and smiles. How could we do that? Do you want to try doing like a back and forth thing? Cause I want – I want to... Ready...*

It's easier to draw his attention to people when he is not playing with small objects.

Interventionist: *Now we're going to turn around. Hi Momma!*

Mom: *Want to come back to mom?*

Interventionist: *Ready, set go! So, expectations are pretty much nil other than just staying in this mix, right? So we're really just expecting him to participate. Hi, dear love! I found you! No we're going to turn around and find our Momma.*

Mom: *Where's Mom? Where's Mom? Hi!*

Notice how they have success getting him to look at their faces, share enjoyment, and even wave.

Interventionist: *Or even just when it's you guys, this is a fantastic time to get those nice shifts of gaze and share joy.*

Mom: *Ready? Got to turn this on.*

Interventionist: *Even though they are pretty easy for him, those things, looking and smiling and sharing that joy, it's going to get harder around objects because of the way that object focus works. Hi Momma.*

Mom: *Hi Devin. Hi. Wooo. Mwaa!*

At 21 months, you can see the challenges Devin's mom faces finding a motivating activity because of Devin's intense interest putting his favorite DVDs in and out and watching them over and over.

Mom: *You want to do Play-Doh or toys?*

Devin: *(whines)*

Mom: *Show Momma. Play-Doh please? Alright, Alright. We're not going to do that. Do you want open? Here. Please Mommy, open. That's not going to work. Do you want to play? Give to Mommy. It's not going to go in there.*

Devin: *(fusses)*

Mom: *We can sit. If you want to play we can sit. Come here. We can sit at the table.*

Devin's mom is trying to motivate him by offering choices of other activities. But his fixation with the DVD player led to much frustration.

Mom: *We're going to sit if you want to play with Play-Doh.*

His mom tries her best to offer activities that have more potential for interaction and learning. However, the supports for a shared agenda are not in place yet. His mom struggles to compete with his intense interest and is left feeling unsuccessful.

At 23 months during an ESI session, the interventionist coaches Mom to offer a choice of books to make sure the book is motivating to Devin, and set the stage for a shared agenda.

Interventionist: *Let's just give that a try since he's-*

Mom: *Do you want to look at babies or monkeys?*

Interventionist: *Oh, that's nice! Okay! So that was voice and reach. That was beautiful, Momma!*

Mom: *It says snuggle...and play...says snuggle with mommy.*

Interventionist: *Now we're going for his voice being his turn, right? So you're doing an awesome job adding a really fun word and then waiting.*

Devin's primary role is to turn the page and mom is learning to follow his focus of attention by making a sound effect and then giving the turn back to Devin.

Mom: *It's a tiger. Tiger play. Another page. It says, "hello" Hello.*

Interventionist: *Aw, look how nice! Any noises or sounds that go with those, like the roaring noises.*

Mom: *Roar!*

Devin: *Rah, rah, rah.*

Mom: *Roar.*

Devin: *(unintelligible)*

Together they celebrate these important steps in Devin's growth in social skills.

Interventionist: *Keep it going, this is beautiful!*

Grandma: (off camera) *This is unbelievable.*

Interventionist: *The way he's changing his sounds around and putting them together in different ways it's just beautiful.*

Mom: *Put in?*

At 24 months, while doing laundry, notice how mom gives Devin a productive role of pushing each clothing item into the washer, and models language. This provides a nice opportunity to share moments of enjoyment.

Mom: *Mommy shirt in. I'm looking, I'm looking. I'm looking for your stuff. Okay, two more. Devin's shirt in. Yay!*

Mom: *It's night time for Rudy, I'm sorry. Look, Mommy has...*

At 28 months, during an ESI intervention session, Devin and his mom worked through his intense interest in the DVD's and came to enjoy Play-Doh together with coaching and encouragement.

Interventionist: *You're doing a really nice job of pulling him back in. Do you think the constant..*

Mom: *Want to play with Momma? I don't know.*

Interventionist: *Okay. The other thing we could do is say, "you know what, we're going to do one hand print. One, two, three, four, five and then say "bye, bye" So that you're sort of...*

Mom: *Alright, Devin. We're going to do one- one handprint and then can say "bye, bye"*

Interventionist: *Okay, let's do Devin's fingers.*

Mom: *Let's do Devin's hand.*

Interventionist: *That's you're favorite thing. You're okay. That's right. Now as much as he can do.*

Mom: *One, two, three, four, five and squish! There's your hand! Yay!*

Interventionist: *Nice, Momma. Look at there! And now the colors, yea, those are going to be really exciting. Okay, very successful then just going on and deciding it's going to happen. Because in those moments letting too much of the choice be his may be too much.*

Mom: *Close. We need open.*

Interventionist: *Open.*

Mom: *Momma has a star and a triangle. No triangle?*

Interventionist: *No, no triangle.*

Mom: *We got to do the other way. Do this way. Push. Push. A star!*

Interventionist: *Here we go. Squeeze a big ball. Nice job, Mom!*

Mom: *Play-Doh goes in there. Push. Play-Doh goes in the cup, and cutters go in the bag.*

Interventionist: *You know, that timing of, “Are you all done?” was probably exactly right because did you notice he used his voice? It almost sounded like a yes. Like, “Yea, this is a good time for me to say goodbye.”*

Mom: *Hold on, cutters.*

Mom & Interventionist together: *Cutters away.*

Mom: *Cutters away.*

Notice how his mom is able to hold Devin to his roles to put the Play-Doh and cutters away with impressive independence, and even worked through a difficult ending as Devin was anxious to get back to the TV.

Devin: *(whines)*

Mom: *Put those two in. Okay, Play-Doh away. Put those two in.*

Interventionist: *Bye bye star. Okay.*

Devin: *whines*

Interventionist: *In. Those are fun. All finished Play-Doh.*

Mom: *Kiss. Kiss Momma. Squish the air. Kissy. Can I Kissy?*

Devin: *ah, ... ma, ma*

Interventionist: *Come, come! Mom, Mom!*

Mom: *Ma, Ma! Come!*

Mom: *Come here, Bud. You all done? You throw away? In trash. Uh oh.*

In the last clip at 29 months, Devin’s mom provides clear messages that express her expectations for his participation, which is so critical to support listening and the development of language comprehension.

Mom: *You gotta open. Push. Push.*

She helps Devin follow through to completion, and they celebrate his success with a high-five.

Mom: *Yay! One and two. Get your fork? It dropped. Get it.*

Grandma: *(off camera) Oh, good job.*

Mom: *Very good Devin.*

Grandma: *(off camera) Yay!*

Mom: *Close the top. Close the top. Let’s close it. Yay! High five. Yay! You big boy!*

Early Signs of Autism—Katie at 18 months

Mom: *Huh? What do you want? Well don’t get mad about it. What do you want? What do you want? Huh? What are you making? What are you making? What are you making? I’m going to put one in. I’m going to put another one in. Very good. – You see those bananas? Huh? Banana? What do you want? What do you want? Huh? Katie? Okay, Okay, you want to see the banana? You can see it. Banana? What’s that? You can’t eat it like that! Banana? Banana? Katie, let me cut it.*

Mom: *Here we are. What’s in your purse? What’s in your purse? You’ve got a coupon. You’ve got a picture. You got a picture? What else is in your purse? What’s in your little checkbook cover? Is that a picture? Did you put it back?*

Katie showed a striking deficit in social reciprocity. She used sounds and an occasional word but had very limited use of gestures. When her mom was not able to figure out what she was trying to communicate, she got very frustrated, bit her baby doll and then tossed it, fussed, and then walked away. Taking the blocks in and out of a container was calming but Katie had difficulty looking at mom and did not direct any communication to her before getting up and walking away again. She said something as she approached the counter and her mom interpreted it by guessing “do you see the bananas” but Katie never clearly let mom know what she wanted from the many choices on the counter. Again, this led to frustration and her mom continued to guess and tried to figure out what she wanted. Katie showed excessive interest when she found her favorite object, a checkbook cover with photos, which interfered with her response to social bids and initiation of social interaction. Her mom reported that at this age Katie collected, piled, or stacked particular objects repetitively, such as spatulas, books, DVD cases, or her baby dolls.

Change with Intervention—Katie at 2-3 years

Katie is now 21 months of age.

Interventionist: *You can put this one on. Here comes my car. One last time, under the bridge. Ready, set, go. Yeah! (claps with Mom)*

Her family began ESI a month ago. The interventionist helps her mom learn how to create a routine with blocks.

Interventionist: *I see that! Go under. Weee. Wooshhhh.*

Mom: *Crash.*

Interventionist: *Uh oh, bridge. That was great. So she actually did put one on and then go crashing with the cars. So practice and predictability is the piece that isn't there yet.*

Mom: *She's never seen them before.*

Interventionist: *Right, so it's brand new. She doesn't really know what we are going to expect of her or what her role was. But if you can get some little mini-routines happen the same way each time, like the bridge or building the road with the sides, then she knows the words that go with it, she knows the actions that go with it, and she's going to be more likely to play a part.*

These supports offer Katie clear roles and predictability for play and interaction.

Katie: *Bye bye, bye bye*

Mom: *Bye bye blocks?*

Interventionist: *Ok. All finished.*

Mom: *We're gonna take these shoes off. Look Katie, look. Off.*

Katie: *Uh, Katie shoe*

Mom: *Can you take that one off? Can you pull it off? Pull. There you go.*

Katie: *Cornstarch.*

Mom: *Cornstarch. And then we gotta put these on. Can you hand me a shoe? I need a foot.*

At 23 months Katie's mom provides supports for a shared agenda as they get ready for a craft activity with cornstarch and water.

Mom: *Shoe on. Can you push? Push push? Push it? Okay, good job. Okay, I need a foot.*

Notice how many roles her mom gives Katie while changing her shoes and gathering materials.

Mom: *I need a foot. Katie, I need a foot.*

Katie: *I don't see it.*

Mom: *Can you push it? Can you close it?*

Katie: *Push it.*

Mom: *Push it, yes. Okay.*

Katie: *Cornstarch.*

Mom: *Cornstarch and water and a pan.*

Katie: *Pan, water.*

Mom: *We're going outside. Be careful. Be careful. With this we gotta be careful. Okay. Okay, take the pan.*

Katie: *Pan.*

Mom: *Let's go outside.*

This motivates Katie to listen and be part of each step in anticipation of this fun activity.

Mom: *Katie wants cars. Okay, we can use the blocks. Do you wanna make a swimming pool?*

Katie: *Swimming pool?*

Mom: *You wanna help me get real water?*

Katie: *Yes.*

At 25 months during play, Katie's mom works to create a shared agenda on a new pretend scenario.

Mom: *Let's get real water. Come on. You gotta come help me. Stand up. You gotta help me.*

Katie: *All done blocks? All done blocks?*

Mom: *Look. Let's just give it a try Katie. Let's get some water for our pool. Okay? Come on. Let's get some water.*

Katie: *Ho, ho ho, ho ho.*

Mom: *Let's make a road.*

Katie: *Ho ho, ho ho.*

Mom: *Put it right here. There you go. There's another one. Put it right here. We're gonna go up to our pool with that. Make some steps. We're gonna make some steps for our pool. Help me make some steps. Can you help me? Push. Okay. We need some more steps.*

Katie: *All done, steps.*

Mom: *You don't want to make any steps?*

Katie: *No steps.*

Mom: *Okay. Then we just won't have steps for right now. Here's our pool. Here watch. Watch Mommy.*

Notice how her mom encourages her to try something new but is responsive when Katie says all done with the steps.

Mom: *Here I come. I'm coming to the pool. Here it comes Cookie Monster. He's gonna go up up up. Ready, set?*

Katie: *Go.*

Mom: *Wheee. Splashing in the water, splashing in the water, splash, splash, splash, splash, splash.*

Although the turns are not yet balanced, this practice opportunity helps Katie learn a new routine and to hang in when she is not as motivated.

Katie: *And splash.*

Mom: *And splash. Who's turn is it next?*

Katie: *Grover.*

Mom: *Well get Grover.*

Katie: *Jump in, jump in.*

Mom: *Everybody get up. It's time for school. What's the first thing we're gonna do, eat some breakfast?*

Katie: *He can go eat breakfast.*

Mom: *We gotta go to the kitchen then. Who's gonna go first and eat? Ernie? You want Ernie to go first? Oh, Cookie Monster's going first. He's going in the kitchen. He's getting something out of the refrigerator. What did he get?*

Katie: *He's all done.*

Mom: *He's all done? What did you get, Cookie Monster? What did you get to eat?*

Katie: *Now he's gonna go to school.*

Six months later, Katie is now 31 months old. Her language has developed and she has pretend actions in mind for her characters.

Mom: *Oh, he's gonna go to school. Who's next? Who's next?*

Katie: *Cookie Monster.*

Mom: *We're gonna put him in the car if he's gonna go to school. Get in your car seat Cookie Monster. Get in your car seat. I'm gonna make a school. All right. He's getting out of his car and he's going to school. Who's next? Who's next?*

Katie: *Grover gonna go.*

Mom: *Well he's gotta get something to eat.*

Katie: *(smack smack)*

Mom: *What did he eat?*

Katie: *He had a bagel.*

Mom: *He had a bagel? Oh, that's a good breakfast. Put him in the car.*

Her mom is still working to guide the play scenario, but Katie is initiating more and offering new ideas.

Mom: *Beep, beep, beep. Going to school, going to school. He's going to school. Who's next? Who's next?*

Katie: *Lion.*

Mom: *The lion! The lion's gonna go to school?*

Mom: *Bye bye house. Put it down there.*

Katie: *He playing at home now.*

Mom: *Alright, now what did you want to do? I can't remember. Hmm.*

Katie: *Momma, please get play-doh.*

Mom: *Okay. Let's get it.*

Katie: *I go get it. Momma, stop. I go get it.*

A month later, Katie spontaneously initiated a request for the Play-Doh, which is her favorite activity.

Mom: *Alright.*

Katie: *I carry the bag for...*

Mom: *That's heavy, isn't it? Oh,*

Katie: *There's the play-doh.*

Mom: *Okay.*

Katie: *Shall we make a horse? Shall we make a horse?*

Katie is now more interested in pretending and sharing her plans. Notice how her mom provides playful opportunities for Katie to use language and now with more balanced turns to support social reciprocity.

Mom: *Hmm, which one do we want to get?*

Katie: *The horse.*

Mom: *I know you wanna make a horse. But what color are we gonna make him? Which color play-doh?*

Katie: *Green.*

Mom: *Green, green?*

Katie: *Green (pointing in bag)*

Mom: *Here you go. Here's the green. Here's the green (while handing Katie the pink).*

Katie: *Oh, that's green..., that's pink.*

Mom: *Oh... here's the pink (while handing Katie the green).*

Katie: *Oh, that's green!*

Mom: *Okay (while laughing).*

Katie: *That's not pink (while handing back the pink).*

Mom: *Okay.*

Mom: *What do you wanna make? Hmm? What do you wanna make?*

Katie: *I need, I need a horse.*

Mom: *A horse. Okay. Let's make a horse. You help me. You make one and Mommy make one.*

Katie's mom provides support for better skills with models for language and play.

Katie: *A Pineapple Pirates's hat. He's got hat. He got a pirate.*

Mom: *A pirate hat?*

Katie: *I got it.*

Mom: *The mail is out there, I saw the mailman (directed to dad off camera). Okay, this is going to be our horse.*

Katie: *It's a snake.*

Mom: *It's not a snake. That doesn't look like a horse? I guess it doesn't. It needs legs but we'll pretend he's sitting down.*

Katie: *Eat butter, butter, and he's got..*

Mom: *I'm giving horsey rides. Who wants to ride on my back?*

Notice that Katie adds in her own creative ideas and actions to this play with excitement and even uses different voices for the characters.

Mom: *I'm giving horsey rides. Who wants to ride on my back? I do, I do, I do.*

Katie: *That Cookie Monster.*

Mom: *Daroom, daroom, daroom, daroomda, Daroom, daroom, daroom, daroom, daroom, daroom. Thanks for the ride Mr. Horse. Can he ride the horse?*

Katie: *Thank you for the ride Mr. horse.*

Mom: *Thank you for the ride Mr. Horse. Me me! It's my turn, my turn. Daroom, daroom, daroom, daroomda, Thank you Mr. Horse for the ride.*

Katie: *My turn, my turn. Baa, baa, carry. Riding the pony. I'm going for a ride Mr. Horse. Whose gonna do this? Ride. Oh, he fell.*

Mom: *Oh, he fell. Grover fell.*

Katie: *Where's daddy?*

Mom: *You know where he is. He's sitting on the blue couch, reading the mail.*

Katie: *Oh, here he is.*

Mom: *There he is. What are we gonna make now? We got a horse and we got a hat. What else are we gonna make?*

Katie: *Alligator.*

Mom: *Hmm?*

Katie: *An alligator.*

Mom: *An alligator. Does that look like an alligator to you? Roar, roar, chump, chump, chump.*

Katie: *Oh, no, the tail.*

Mom: *His tail fell off.*

Katie: *Can we get a new one tail?*

Mom: *We can make another one. Just stick him down there. Let's see. Let me show you.*

It now feels like Katie and her mom are having a conversation, and Katie is doing her part to keep the interaction going.

Mom: *There, we fixed it. There, fixed it.*

Katie: *I fixed it back.*

Mom: *Good. You fixed his back.*

In this final clip, Katie is 36 months old.

Katie: *We need to go.*

Mom: *Okay. We'll go, back in there.*

Katie: *We need some friends first.*

Now she can expand the pretend scenario herself by suggesting to invite friends and uses generative language to lead the way.

Mom: *I need to get Avery something to play with. Okay, you ready?*

Katie: *Mmhmm.*

Mom: *Okay.*

Katie: *Come on camera lady.*

Her mom models better language and play by making just a few suggestions here and there to keep the routine going and extend the activity.

Katie: *We came home to see you. But we need to close the door.*

Mom: *No, we can't close the door cause the camera lady needs to stand there. Okay, we're gonna have a tea party. We gotta get it all set up. We gotta get it all set up. Okay.*

Katie: *We need some friends.*

Mom: *We need some friends.*

Katie: *Mmhmm.*

Mom: *Who's gonna come?*

Katie: *Sesame Street.*

Mom: *Your Sesame Street friends?*

Katie: *Mmhmm.*

Mom: *Well go get them.*

By supporting Katie only as much as needed, her mom promotes Katie's independence to prepare her for successful play interactions with peers.

Mom: *Oh okay, good job. Let's do that. You gonna put it on the table?*

Katie: *Mmhmm.*

Mom: *Okay.*

Katie: *Well, I'm actually do.*

Mom: *You're actually gonna do that?*

Katie: *Mmhmm, I am.*

Mom: *Well come on over.*

Katie: *I am. Because I'm gonna finish it for the camera lady.*

Mom: *Okay. Look Katie, I picked some flowers for our picnic. You wanna smell them?*

Katie: *Mmhmm.*

Mom: *Mmm, they smell nice, don't they? Mmm. Can we put them in a vase? I found one.*

Katie: *We have to leave them out.*

Mom: *Okay.*

Katie: *That's a vase. This is my drink.*

Mom: *Okay.*

Katie: *That's called juice.*

Mom: *That's called juice?*

Katie: *Mhmm. That's called juice.*

Mom: *Okay. Here's a plate for you.*

Katie: *Mhmm. Here's a plate for flowers.*

Mom: *Here's a plate for Rabbit? Who is that for?*

Katie: *Minnie.*

Mom: *Minnie, okay. Help me, help me get up.*

Katie: *Help you?*

Mom: *Yup. Help me. Let's put the food out.*

Early Signs of Autism—Ryan at 18 months

Mom: *Say open? Can you open it? You need some help? You want mommy to help open? There you go. You want to color? Here, get a crayon out. There you go. Do you want to use this to draw? Here, draw a circle. You just want to clean up, huh? Let's draw a little face. Your turn. This is just your size, Ryan. Can you open that? Can we get a crayon? Can you pick one? Pick one out. Let's pick a red one. There we go. You want to draw? You just want to clean up, huh? I love to open and close things these days. How about purple? Can you find the purple crayon? Hey, Ryan, look at Mommy. Ryan, look at Momma! Look, look. Look at me. Look at me. Can you draw? Here. Let's find some crayons. Put the lid on one more time and then we're going to draw. There. Put it on all the way. Push it down. Okay, draw. Can you color? Let's draw a picture. You don't want to? Say "That lid is much more fun." Come here!*

Mom: *What's this do? There you go? Dance! Let's dance! Let's dance! Let's dance! Let's dance! Say "Mom, I got food in my mouth, I shouldn't be dancing." Oh, Oh you found your favorite. You were able to reach that huh? What is that, Ryan? Is that a helicopter? What does it do? Does it fly in the sky? Watch! Vroom, vroom, vroom! Vroom, vroom vroom! Can Mommy have a turn? Ryan? Can you hand that to Mommy? Can I have a turn? Come on. Say "I'll never hand you this, it's my favorite." Look! Zoom, zoom! Can I have a turn? Can I have the helicopter? Oh, fall down, Thank you! You want to help me do some laundry? Come here! Try this first. Oh, he can still reach. Okay, never mind. Ryan, come here. You want to do some laundry?*

Ryan showed an intense interest in the lid of a plastic container. He repetitively took it off, then put it back on, even though his mom tried hard to model scribbling with the markers and to draw him in by offering different materials and roles. His mom even commented that he "just wants to clean up". She asked questions, and even continued to bid for his attention by calling his name, touching his cheek, and getting very close to his face. She prepared him by telling him to put the lid on for the last time, and then removed the container. His strong interest was even more evident when he moved away from the table in search of the container. In spite of his mom's consistent and gentle support, Ryan showed a striking lack of social communication skills. When he was playing with a musical toy, his mom got him to look at her, approach her, and smile briefly by singing, taking his hands, and wiggling him, as if to dance. But, within a matter of seconds, his attention was drawn to his favorite toy helicopter on the desk next to her. He turned the propeller in a spinning motion many times. His mom was aware that this particular toy interfered with interaction. She tried to draw his attention to her and to other actions with the helicopter. When that didn't work, she removed it and tried to redirect his attention to a new activity. But Ryan found the toy and then moved further away, as if to make sure he could play with it, without being interrupted. In these activities at home, the presence of repetitive behaviors and restricted interest, as well as a significant lack of social communication milestones were very clear.

Change with Intervention—Ryan at 2-3 years

Mom: *Here's a star. Oh, Momma has a star. We got two stars. Should we sing twinkle, twinkle?*

Ryan: *eh, uh*

Ryan is now 22 months old. After a few months of ESI, his mom is learning how to create a shared agenda.

Mom: *You keep your star. I get my star.*

Mom: *And stop. Can you stop yours? One, two, three, stop.*

Ryan: *Go, go (using sign language with emphasis)!*

Mom: *Should we go, go, go? Okay, read, go, go, go!*

Here they each have a star-shaped cookie cutter. Ryan turns it with a circular motion and shows a strong interest in making it spin.

Mom: *Mine's pretty loud. Stop.*

Ryan: *Eh, eh, eh, eh, eh.*

Mom: *I'm going to put a star on your toe. Up! Down. I'm going to put a star on my finger, and can I put it on my nose? You think it will stay? Oh! Look at that! I've got a star on my nose. Achoo! I got it!*

His mom supports a shared agenda by respecting his repetitive, restricted interest and trying out different playful actions and sounds to draw his attention to her.

Mom: *You have a star on your nose! Are you going to sneeze? A-a-achoo!*

Ryan: *Eh, eh, eh (smiling)*

Mom: *Should we put it on our finger? Twinkle, twinkle little star. Should I put it on my head? Oh Ryan, A-a-a-a...a-a-a-a...a-a, I'm going to sneeze, a-achoo! Oh, right to you!*

Ryan: *Eh (while giving star to mom)?*

Mom: *Another one? A-a-a-a-achoo! Ryan's turn! Achoo!*

Ryan: *Oh.*

Mom: *You want it on your nose? Boink. Bonk. I've got a star on my nose. Choo! Oh, pretty.*

Ryan: *Uh, huh*

Mom: *Yep, put it together. Oooh, that's cool. Round and round it goes. Can you share? Is it my turn? Can you share? Share with Momma? I'm going to turn it around and I'm going to spin it. And I'm going to go up, and apart.*

Ryan: *eh, eh, eh, eh, eh, eeeeeh (while banging emphatically on the table).*

Mom: *You want it on the table? You want it down, down, down? Here it comes. Say down, down Momma.*

Ryan: *fusses*

Mom: *Down, down.*

At 23 months, Ryan's mom creates opportunities for Ryan to take turns with simple actions and sounds by hiding a favorite toy in one of a set of stacking boxes.

Mom: *Oh, no he's not in there. Where is he?*

Ryan: *Hmm.*

Mom: *Oh! Nope, not in there! Let's guess again. Here, I want to try this one. No, not there. Your turn.*

Ryan: *No, hmm.*

Mom: *Oh, where could he be? Is he under there? Is he under there?*

Ryan: *No.*

Mom: *Oh, my goodness. Oh, look we've got two more. Is he under this one or this one? Oh, there he is!*

This version of hide-and-seek builds on Ryan's strong interest in objects while providing moments for social interaction and shared enjoyment.

Mom: *We found him. Yay!*

Ryan: *Bap, bap, bap, bap, bap, bap.*

Mom: *Up, up,*

Ryan: *Moo.*

Mom: *Boom. Shall we build it?*

Ryan: *Uh, oh.*

Mom: *Here we go. Up, up, up.*

Ryan: *Bap, bap,*

Mom: *Jump!*

Ryan: *bap, bap.*
Mom: *Should we do more tower? And then you can knock it over? Here.*
Ryan: *(knocks on box)*
Mom: *Knock, knock, knock. Is anybody in there?*
Ryan: *No.*
Mom: *No? No one's in there. Knock, knock, knock. Anybody in there?*
Ryan: *No.*
Mom: *You better check. Knock, knock, knock. Hello? Anybody in there?*
Ryan: *No.*
Mom: *Let's open.*
Ryan: *Uh, uh.*
Mom: *Shake, shake, shake. Pull. Pull push. Pull. Push. Pull or push!*
Ryan: *My (using sign language).*
Mom: *More? Ryan's turn?*
Ryan: *Go (using sign language and laughs)*
Mom: *Wanna go. Oh, or push. Why is that so funny? Uh, oh. Here it comes!*
Ryan: *Go (using sign language and laughs)*
Mom: *Go or push! My turn. Pull or push.*
Ryan: *Mmm (while reaching for box).*

Mom: *What shall we do? Shake it?*
Ryan: *Open (and signs open).*
Mom: *Open? Look at Momma. Open Momma.*
Ryan: *Open open (and signs open).*
Mom: *Help me open. Ready? Pull. Oh, you don't want it open?*
Ryan: *Mmhmm (walks away)*
Mom: *Open, open. Come here.*
Ryan: *(Whines, signs open, and flaps hands).*

A month later when Ryan is 25 months, his mom models pretend play with a doctor kit using the “knock knock” concept that Ryan already knows to draw his interest.

Mom: *Oh, open. You've gotta help, ready? Let's do it together. Okay. What should we do first? Should we check the dog's heartbeat, or Ryan's heartbeat? Hmm.*
Ryan: *Dat, dat, dat.*
Mom: *Check your knee? Tap, tap. Here, check Momma's knee. You wanna check my knee?*
Ryan: *Dat, dat, dat, dat, dat,*
Mom: *Check my reflexes.*
Ryan: *Dat, dat, dat, dat, dat, dat, dat.*
Mom: *Boom! Boom! Boom!*
Ryan: *Dat, dat, dat, dat.*
Mom: *Boom! Boom! Here. My turn. Let Momma check Ryan. Ready? Check Ryan. Tap, tap, tap tap.*
No response.
Ryan: *Bap bap, bap bap.*
Mom: *There's your heartbeat. You have to put these on your ears. Here, I'll check your heartbeat.*

Notice how this resonates with Ryan as he looks at her and initiates “bump bump” with the stethoscope.
Bump, bump, bump, bump, bump, bump, bump, bump, bump. Faster, faster. Bump, bump, bump, bump. Oh, you fell down. Here, you want to check Mommy?

Ryan: *Bap bap, bap bap.*

This provides practice for Ryan to use sounds, a few spoken and signed words, and pretend actions.

Mom: *Check Momma. Where's my heart? Keep it on your ears. Here, check my heartbeat. Ready?*
Bump bump, bump bump, bump bump, bump bump. Here, take a deep breath.
Ryan: *(turns away from his mom)*

Mom: Hey, Ryan. Are you all done playing doctor? Are you all done? We gotta clean up. We can play with something new, but if you're all done you've got to clean up.

Ryan: Mmhmm, Mmhmm.

Mom: Okay? All done doctor. Put this away and close the lid.

Notice how his mom respects his request to end but holds him to helping clean up.

Mom: Let's go find baby. Come with me?

A month later, Ryan's ability to listen to his mom's language is developing.

Mom: Baby, where are you? Is she in the chair?

Ryan: No.

Mom: Hmm.

Ryan: Baby.

Mom: Baby? Is she in the wagon? Hmm. Wagon.

Ryan: Hmm (makes neigh sound and touches rocking horse).

Mom: Horse! Let's find the baby first. Is she in the wagon? No. Baby?

Ryan: Oh, sss-chee (holds up car).

Mom: You found a green car! Let's go find baby and show her the car.

She provides supports for social reciprocity as they search the living room for the baby doll.

Ryan: Baby.

Mom: Oh, under the table, maybe? Baby, are you under there?

Ryan: whines

Mom: Hmm. Is she on the couch? Is she under this pillow? Is she under here? Come see. Come see.

Notice how carefully Ryan watches his mom for cues to understand her message and responds when it's his turn with a sound or word.

Ryan: No.

Mom: Nope. Is she under this one? Baby! Say, "I found you." Hug for baby.

Ryan: Baby.

Mom: Baby!

Mom: Bye bye everyone. Should we give them a big push? One, two, three, go! Bye. Say "Come back!" Come, come. You say come, come! Come back! Come here! Here they come! Here they come!

As this play activity unfolds, notice all the different supports his mom is using as she models key words to create opportunities for Ryan to learn new language concepts.

Ryan: Out.

Mom: Give them some water? Here comes giraffe. Dum, deedum, deedum

Ryan: Dit, dit.

Mom: Oh, Ryan had some water. Gulp, gulp. Giraffe's turn.

Ryan: Juice (runs to kitchen)

Mom: You want your juice? Giraffe gets some water. There we go.

Ryan: Juice, juice, juice.

Mom: Juice please? Say, "Come, Momma." Come.

Ryan: Juice, bem (while gesturing come).

Mom: There, you go. Come. Come.

Ryan: Mama.

Mom: Mama.

She responds to Ryan's spontaneous request for juice, but capitalizes on that moment to help him generalize the meaning of "come" from the toys to her, and holds out for him to use a gesture and word.

Mom: Do we need to open or close? Open?

Ryan: Ohen (signs open)

Mom: Okay, let's pull. One, two, three--pull! Help me pull.

Ryan: Uh.

Mom: One, two, three. Help me pull. Can you reach?

Ryan: *Up.*

Mom: *We'll go up after we open. Whoa, oh, you want to pull up? One, two, three-- pull. Get your juice.*
She expects him to participate in each step, from opening the refrigerator, making a choice, and closing the door, so he is actively engaged.

Ryan: *Wawa.*

Mom: *Water. Close the door.*

Mom: *Time to decorate? Alright, time to decorate.*

At 27 months, Ryan's mom provides supports for him to make choices and practice saying words in a meaningful and motivating context.

Mom: *Okay Ryan. You want blue, pink or green?*

Ryan: *gee, ee, eh.*

Mom: *Which one do you want first?*

Ryan: *Oh, oh (with emphasis).*

Mom: *Open green?*

Ryan: *Open green.*

Mom: *Open green, please.*

Ryan: *Open green.*

Mom: *I got a big truck here.*

Ryan: *More (while signing more).*

Mom: *More cars? Should we get some blocks and fill the truck?*

Building on the predictable, salient language in the next activity, his mom models "go" and "stop" with gestures and words at just the right moment for Ryan to watch and imitate her.

Mom: *Look, make a road, we can drive in.*

Ryan: *Oh, oh.*

Mom: *Oh, look. Vroom. Vroom, vroom!*

Ryan: *(Laughs)*

Mom: *One, two,*

Ryan: *Go.*

Mom: *Go! Crash. Who's next?*

Ryan: *Ta, ta, ta?*

Mom: *Blue's turn. How about red? One. Wanna count?*

Ryan: *Two, ta, ta?*

Mom: *Two.*

Ryan: *Three.*

Mom: *Three.*

Ryan: *Four.*

Mom: *Four.*

Ryan: *Five.*

Mom: *Go, go, go! Woosh.*

Ryan: *Go (using sign language).*

Mom: *Go, go, go, go, go, go, go, go, go. Go, go, go, go, go, go!*

Ryan: *Laughs.*

Mom: *And stop. Stop. Can you say stop?*

Ryan: *Stop (while using sign language).*

Mom: *Good job! Stop. Go, go, go?*

Ryan: *Go, go, go (while using sign language).*

Mom: *Faster, then stop. Stop. Here comes blue. Bbbroom.*

Ryan: *Puzzle*

Mom: *Should we do some puzzles?*

Ryan: *Uh huh. Ka ka, mmm. I need help!*

Mom: *Who should help you?*

Ryan: *Need help.*

Mom: *Who should help you, Daddy or Mommy?*

Ryan: *Mommy, can you help?*

Mom: *Okay, Mommy help?*

Ryan is 32 months and is able to communicate his intentions clearly.

Mom: *What do you need? Puzzles?*

Ryan: *Yes*

Mom: *Pull them out?*

Ryan: *Pull them out.*

Mom: *Help me push, ready?*

Ryan: *Help me push.*

Mom: *Push them to the middle. Do you want to do it on the floor or the table?*

Ryan: *Floor.*

Mom: *Floor? Okay. That's good, let's do it right there.*

Ryan: *Mommy, help.*

Mom: *Move these trucks. Okay, lets open it up. You want puzzle?*

Ryan: *Mommy, help.*

Mom: *You need Mommy open?*

Ryan: *Yes.*

Mom: *Say, "Mommy open please."*

Ryan: *Open please, Mommy.*

Mom: *Okay. Here we go. Ready? Help me lift?*

His mom models better language and holds out for Ryan to use words and phrases, but she makes the meaning of his communication the most important.

Ryan: *I wanna do fishing.*

Mom: *Or animals?*

Ryan: *Do fishing.*

Mom: *Fishing one? We've got to put it together.*

Mom: *A dog?*

Ryan: *Uh, uh.*

Mom: *We could just look at the picture.*

At 35 months, Ryan is able to use clear messages to let his mom know what he wants and does not want.

Ryan: *I don't like farm, Mommy.*

Mom: *Okay, dump it over.*

Ryan: *I don't like it!*

Mom: *Oh, you don't like it.*

Ryan: *I don't like farm.*

Mom: *Do you want the girl, and the cat, and the ladybug?*

Ryan: *No! I finish the cupcakes.*

Mom: *Oh, you want to do cupcakes. Okay, that's all you have to say.*

His mom provides a nice balance of support for interaction and independence.

Ryan: *Let's do it in the living room.*

Mom: *In the living room? Okay, well, put everything back in the box so we can carry it.*

Ryan: *Dats here. Dat there.*

Mom: *Put those two –put two here and two right here. Okay, what about your juice? Are you all done?*

Ryan: *Mmhmm.*

Mom: *Let's put that away.*

Ryan: *Can you help put it in the frig mom?*

Mom: *You can do it. Let's scoot your chair out since I pushed you in. You do it. I'll bring the cupcakes.*

Ryan: *Open (as he opens refrigerator).*

Mom: *Okay.*

At 38 months Ryan is a self-directed learner and is now able to use language to express ideas and emotions, and to advocate for himself.

Ryan: *Oh, no! He fell down there!*

Mom: *Oh, no. Is he hurt? He looks happy. He looks like he's laughing.*

Ryan: *He's not happy. He's so sad.*

Mom: *Oh, okay. He's sad?*

Ryan: *What's dis, what's his, where's the..., where's..*

Mom: *Where's what?*

Ryan: *I wanna make a sandwich over here.*

Mom: *A sandwich over here? We've got to make it in the kitchen. Are you still hungry?*

Ryan: *Bye cars.*

Mom: *Bye cars.*

The impact of early intervention is evident in the progress Ryan has made in language and social interaction. But more importantly, his mom has become masterful at supporting Ryan's development and learning that she will continue to use during his preschool years and beyond.

Ryan: *I want you.*

Mom: *You want what?*

Ryan: *Because I want lunch!*

Mom: *You want lunch? I guess it is getting close.*

Ryan: *Ask Alisa to come downstairs to eat lunch (looks toward Alisa off camera).*

Mom: *Okay.*

Ryan: *Tell Alisa to come down stairs.*

Mom: *Yup. We can make some lunch.*

Ryan: *Jen, go downstairs. Can you go downstairs (looks toward Jen off camera)?*

Mom: *We are downstairs. You want to help me make a sandwich?*

Ryan: *Jen needs to come downstairs.*

Mom: *Jen needs to come downstairs? We are downstairs. Okay, let's get a plate. Do you want blue monkey or pink flowers?*

Ryan: *Uh, purple!*

Mom: *We don't have any clean purple. You want blue monkey or pink flowers?*

Ryan: *Pink flower.*

Mom: *Okay.*

Ryan: *Mommy, you're the best.*

Mom: *Thank you, Ryan! He just started saying that yesterday, or two days ago. Ryan, I think you're the best. You're the best little boy in the whole wide world.*

Ryan: *I want honey on sandwich, and peanut butter.*

Mom: *Should we make it up here or down there?*

Ryan: *Down there.*

Mom: *Down there? Okay.*

Slide 17. How does information empower families?

Information Empowers Families

Families play a critical role in both improving early detection of ASD and improving children's outcomes. Current information about the features and causes of autism will help to better support families. It is normal for families to want to know why their child has autism. Information can empower families to help them move forward to improve their child's outcomes, to mobilize resources, to feel competent, and importantly to be hopeful.

Slide 18. How can we understand and respond to the emotions of families?

Understanding and Responding to Emotions or a Family

Focus on:

- [What might have been](#)
- [What is now](#)
- [Dreams of what the future will bring](#)

Parents respond to the autism diagnosis differently and also share their emotions in different ways.

Some feel the loss of their hopes and dreams and focus on what might have been. They may express sadness that their child is not developing typically and talk about what he can't do. They might recall times when their family was able to go to the store or take a vacation like other families.

Other families focus on what is now and emphasize who their child is and what he can do. Statements such as, "He is a deep thinker." "We know what he wants." "He's bashful just like my brother." do not need to be judged as denial or acceptance. They simply describe the parent's feelings. The child is viewed as an individual, a child with unique and endearing traits, not a diagnosis or disorder.

Families may dream of the future. They may search for answers about services and supports— what if we tried a special diet or if he could get another therapy or go to a different school? They may worry about what happens when— he gets older, gets a job, or wants a family. And other families use their emotions for energy to get information and to access intervention for their child.

Families experience a range of emotions, and they change over time. There are ups and downs. There is no right or wrong response to families.

It is important for physicians, early intervention providers, extended family and friends to listen and understand. Offer to gather information, problem solve, or connect them with another family. Responding with compassion and an understanding of the family's emotional support needs builds trust within the relationship and supports the child's potential.

Slide 19: Video: How does it feel to learn your child may have autism?

Learning That Your Child May Have Autism

Select a video from the menu on the right to begin review.

- [. . . When It's Your First Child](#)
- [. . . When It's Not Your First Child](#)

In this video player you'll hear 4 parents reflecting back on their emotional reactions to learning that their child may have autism. You will see their children at different ages so you can see the different experiences of these families. Grappling with the stigma of autism was a hurdle for all of them. You'll hear how their experiences with intervention helped them focus their energy and move forward in a positive direction.

. . . When It's Your First Child: Katie

We had no experience, and then when we found out something was wrong, you just, it's hard to hear that there's something wrong with your child. It was really hard for my husband, even more than me. I don't know why that is, but he just was, he was really devastated by it. And then, of course, you know, now, it's like a happy ending. But it was really, really hard to hear those words "autism." And, in fact, when I first heard them, I didn't know what it was and I thought my child is gonna act weird or strange, and my husband and I both thought about that movie Rain Man. I always bring that up, but that's what we thought of is the gentleman in Rain Man and how different he was, and is our daughter going to act like that? And it was just lots of things that went through our mind that was not positive.

Early detection was very important to us because we were able to get help we needed early. We did not know Katie had a problem per say. We thought she was just a little different. In fact, I was very upset when I first found out about it. I was mad. I didn't even want to talk to the lady who called me to tell me that they thought it could be Autism. But after about 24 hours, I kind of got myself together. My husband and I decided we needed to just listen to the lady who had called us with the information, to listen to her to see what she had to say and to what she had to offer us. And it was a good thing we did listen because the early help that we got helped our daughter, we think, pretty much overcome whatever her problems were she when she was little.

My mother thought that there was nothing wrong with my child, that she did not need any help; she just was developmentally delayed. Um, I never told my dad. You know that, that's been three years ago and I've never told him. It's strange how some are supportive and some were not, and skeptical. But, you know we just, the way we looked at it was, we had an amazing opportunity to get help, and it's still, we still think about that. It was, it didn't cost us anything but our time to get the help that we got. And like I said, some of our family was very supportive and some were very skeptical. And even to this day, now that my child is doing so great it's like they'll say, "I told you so kind of thing, there's nothing wrong with her." But my husband and I know that the help that we got early is what, we feel, helped her pull through.

... When It's Your First Child: Ryan

When I went to the pediatrician, no concerns whatsoever. He had no concern. Yeah and it's really hard especially being a first child, not realizing how quiet he was. And the second one came along and I realized that he was a very quiet child. And then—I was somewhat concerned because, ya know, he was late walking, late talking. And to me one things ok but two things not. I know a lot of with the pediatrician wasn't worried about was the fact his receptive skills were so good. He understood everything and to this day he still adapts.

Ya know, I'm excited that he's—pretty much a typical teen. I mean again that some of the—social concerns, but he's not afraid to jump in there. He's been to high school dances and—he's really excited about doing new things like that, that surprised me. I think the—biggest thing for me was just—as a new parent—not knowing and again for him he wasn't frustrated. Um—so, not knowing what was going on there. And just that the—I think the early intervention, ya know, definitely helped. And I also, I can remember thinking when we were going through this well none of the therapy we are doing is going to hurt him. So, why would I not do it, none of the—testing, it was play, umm and it was good for him. Now I do remember—initially with some of the therapy we were doing a lot of it, the physical therapy was, I thought—ok—plays kinda gone out the window, now I'm working, he wasn't working but—I always felt like, when I was playing with him that it needed to have a purpose and it...yeah it does seem like its really paid off and really by the time he got to kindergarten, he's always been in a regular classroom.

Had the—I guess one of the biggest things with having a diagnosis that I've seen is you get help. And if you are afraid of that diagnosis, you're keeping resources from your kids. And with—Ryan, the big thing was academically, he didn't need a lot. And I would see the other kids who didn't get help because the parent didn't wanna label. And a—that's one of the biggest things I've seen is that if you don't have that label, they're not gonna give you any help, until your kid fails. And with Ryan, he wouldn't have ever failed academically, that he's smart enough to do fine academically, but it's the social things he needed—the lunchroom help. And without that diagnosis, there would have been no intervention at the school level. And that was very helpful in—elementary school. Elementary school was easier as far as speech goes because there're so many kids doing articulation work that he would just meet, when the kids were meeting for articulation, so he'd have typical kids and he could work on social skills. That's, that's probably the big thing is don't worry about that label. It's not for life. He's—my child is not on an IEP anymore, he doesn't need it anymore. Um—that it can, to me it can only help and don't be afraid of that. That the lot of the—I've got a good friend of mine who's a speech therapist who she found out that the parent had had an issue as a child and that he just didn't want his child to have anything wrong. And we even had relatives, ya know, tell us, "Oh, I'm so sorry to hear." Well like, I'm not sorry about my child at all. He's got some really cool things. He can tell you what note the air condition is making —laughing <<Top that.

... When It's Not Your First Child: Charly

And she said, "Well" —Honestly, I don't remember the words. But she said, "the hammer", ya know, Charly scored in the autism range. And I remember I just robotically continued the call and I hung up and I threw my head back and just cried, cried, cried. And my mother, poor mother, she has no idea who I'm talking to and she was visiting, wasn't listening to the conversation and she yelled, "What happened? Oh my God did somebody die?" And I said, "It may as well be", because I was so strongly pegged to this idea that if Charly has autism, it's going to kill us. It is going to kill my husband. It's going to gut everything.

It's an understandable and a natural thing for the people around you to try to comfort you and the way that people comfort you is by telling you that it's alright. You could have cancer and you will have people telling you, "It's gonna be fine—it's gonna be fine." Um—and this is—no different, if not worse because what people will do, it's the same things that...that I did. They'll look at the child and they'll pick out specific things, specific skills and they'll make statements like: "Well, he can't have autism because he just looked me in the eye." "He can't have autism, because I just called his name and he turned to me." "He can't have autism because he talks." That's the biggest one...um because there's these preconceived notions about autism having 5 attributes and if you don't meet exactly all 5 of them then you do not have autism.

So, it took me a few weeks to get over the—mortification of it, and then I just set my mind to the grind stone. And I thought, I'm not gonna make the same mistakes with Charly. I'm gonna support him in every way I can. And I just thought ok, there's no this time, thinking in the back of my mind that I don't need what they are telling me. Or that everything's going to be ok without it. I'm gonna listen to everything they say. I'm gonna be the best student I can. I'm gonna do everything that I can for Charly because I know how important this is—for helping him.

But I really feel that Luke's situation helped us to evaluate Charly earlier than he would have ever would have been seen. And it helped us to get that initial early trajectory change for Charly. So, it's a blessing in a way for Charly because he got the help because of his brother, that he needed. And I just—ya know there's gotta be so many Charly's out there that their parents are just happy accepting them and that's beautiful. And that's what you should be doing, but accept and help—accept and love, and—and work. You know there's no shame in helping a child with any other type of deficit, so there shouldn't be one with helping them with social disorders or sensory disorders or autism as a label. You know we shouldn't as a society fear a label so much that it makes us not help our children.

... When It's Not Your First Child: Brandon

I think he, I think he—may have been—maybe a year old—maybe 10 or 11 months, I would say definitely at a year old. I clearly remember and I used these words, "It's almost as if he disappeared." He was the talkative one. He was the "mama", the "baba". He talked and he has a twin, so he used more words or those communicative sounds than his brother. So there was never and honestly I was actually more worried about Ian than Brandon. And then one day, he just stopped talking. As far as eye contact, when I would feed him, there was just, just—a glare. He would always stare at other things there was never a focus on me, so to speak. And I just thought some of those behaviors were just odd. So when they had their yearly check up I mentioned that to his pediatrician. And she just immediately—she never said what her concerns were—she initially said, "OK, we'll do hearing screening; we'll do visual screening; we're at the rule out everything stage." I think along with a lot of other parents you are clearly in denial, so, I honestly just went along with it, hoping for the best, but knowing in my heart that—there was—yes special—but there's something a little different. There's something—he's no longer connecting with me and I don't know why.

And I think as a parent, I always say that sometimes we know. We may not want to admit it or accept it. But I knew there was something. And I wish that more parents would acknowledge the something. And I was comfortable with whatever. If it ruled out that this was this was not—that he was not on the spectrum, then that would be fine. But I knew there was something else. So—I knew that I just couldn't ignore and it wasn't—it was not a surprise—it wasn't a shock—it was what do I need to do and how can I help him. My advice would

be—don't wait. I can't imagine—where we would be without the early interventions. I would want parents to not be afraid.

I think we need to—we need more success stories. We need to see our children at various ages, various stages. To show that they are functioning; they are doing well; they are happy; they are successful. This is from the earliest child that is diagnosed to those that, you probably wouldn't even notice if you saw them on the street. I think we need every kind of success story and I think that would help—alleviate—relieve—get rid of some of that fear that we have that this is just a “death sentence” because it's not.

Slide 20. Video: How can a physician support families?

A Physician's Reflection on Early Detection

Pediatrician's Perspective: Dr. Jeff Brosco, MD, Professor of Clinical Pediatrics, University of Miami

Early intervention improves outcomes (onscreen text)

It's very simple, really. We know that early intervention improves outcomes. So for every child where there may be any concern about their communication or their social interaction, we want to make sure we know about that as early as possible.

The sooner the better (onscreen text)

Because the sooner we start some intervention, the better it is in the long run for that child and for their family. Now, I can understand why some families might be a bit scared. Other families actually welcome the diagnosis and a lot of others simply just don't know.

Families will react in different ways (onscreen text)

And, it turns out that if you have any concerns about how your child is growing, talking, walking, developing, interacting with others, then what we know is the earlier we start helping that child and helping that family the better the long term outcomes.

Every parent wants the best for their child (onscreen text)

Every parent wants their child to develop to his or her full potential. And the value of screening early in the pediatrician's office or in the family doc's office or any of the various places where screening can happen, is if we recognize early that the child has any delays, then we can help right away.

Recognize delays early (onscreen text)

And even if it turns out that a child doesn't meet criteria for a specific diagnosis, still we know that parents want the best for their children.

Extra developmental input benefits everyone (onscreen text)

So the opportunity to provide extra developmental input is great. And I think every family would love it, and we know that all professionals are interested in making sure we do this.

Slide 21. What did you learn about early detection and early intervention?

Now let's check your knowledge about the importance of early detection and early intervention. Review the four statements and click all that are true. Remember that more than one statement may be true.

Why is early detection and early intervention important?

- Knowledge of behavioral markers makes it possible to diagnose autism by 18 to 24 months of age.
- Social attention is important because it impacts how individuals listen to speech, look at faces, and learn what is important in the environment around them.
- Early intervention programs are currently able to accurately identify toddlers and provide sufficient services during this critical early period.
- Targeting meaningful outcomes, such as social communication, participation in family activities, and active engagement to support learning, supports the families' role in early intervention.

Button: Check Answer

All of the statements except the third one are true. Most children are not identified until after age 4 (CDC, 2012) and receive minimal specialized services specific to the core deficits lessening the impact of early intervention.

What does current research tell us about prevalence and causes of autism?

Slide 22. How common is autism?

Prevalence of Autism

1 : 44	2021
1 : 54	2020
1 : 59	2018
1 : 68	2014
1 : 88	2012
1 : 110	2009
1 : 150	2007
1 : 500	1995
1 : 2,500	1970

Korea 1 : 38

Estimates of the prevalence of autism spectrum disorder in 1970 were 1 in 2,500, making this a rare disorder. Prevalence increased to 1 in 500 in 1995, 1 in 150 in 2007. Prevalence estimates of ASD continue to increase in recent years. Recent estimates are based on careful reviews of school records for 8-year-olds in the US.

As prevalence has increased, the percentage who do not also have intellectual disabilities has increased. In 1995, one-fourth of individuals with ASD had average or above average intellectual ability. This increased to one third and to half in recent years. Thus, the largest increase has been in those with higher cognitive abilities.

A study in Korea based on screening a total population sample and comprehensive assessment of screen-positive students reported prevalence estimates of 1 in 38 children. Two-thirds of this sample were mainstreamed and had gone undiagnosed.

You can find a brief synthesis of research on prevalence estimates and other topics about autism in Research Briefs located in “**Tools**”, on the top navigation bar.

Slide 23. Why does it seem like autism is increasing?

Reasons Why Prevalence Estimates Have Increased

- Broader diagnostic criteria
- Better screening and diagnostic tools
- Increased public awareness
- Schools are now counting autism
- More individuals diagnosed with mild autism
- Symptoms vary across settings and activities

There are many reasons to explain why prevalence estimates have increased from the 1970s until recently.

- Diagnostic criteria have broadened to include a spectrum of symptoms.
- Better screening and diagnostic tools are available.
- There is increased public awareness through the media.
- Schools are now counting autism because it was added as a separate category within the Individuals with Disabilities Education Act in 1991.
- There are many more individuals diagnosed with mild autism who were undiagnosed before.
- Autism symptoms in a child may vary across settings and from one activity to another.

- A child with autism may behave very differently at home compared to school, childcare, or a clinical setting.
- Symptoms may vary depending on the structure provided, demands placed on the child, and supports offered by others.

Therefore, prevalence estimates may vary depending on what setting and situations diagnostic information is gathered to evaluate behaviors and symptoms. There are likely other reasons that may affect the prevalence of ASD still to be determined.

Slide 24. What do we know about the brain and autism?

Neurological Basis of Autism

It is widely accepted that autism is a neurological disorder, but the exact cause or causes are not known.

Cerebral cortex . . . limbic system . . . corpus callosum . . . basal ganglia . . . brain stem . . . cerebellum

- emotion
- attention
- communication and language
- cognition
- sensory response
- movement

Abnormal increasing brain volume

- Genetic
- Cellular
- Molecular mechanisms

It is widely accepted that autism is a neurological disorder, but the exact cause or causes are not known. There is now a body of research that has identified specific regions and systems of the brain, which are abnormal in brain imaging and autopsy studies of individuals with autism spectrum.

In addition to the cerebral cortex, which you can see from the outer view of the brain, five other regions have been identified, which are below or deep to the cortex, including the limbic system, corpus callosum, basal ganglia, brain stem, and cerebellum.

These regions are interconnected through systems in the brain that regulate of emotion, attention, communication and language, cognition, sensory response, and movement. Although we may not know the exact cause of autism, the features are associated with abnormal connectivity in these brain regions.

Recent brain imaging research has shown an abnormal increasing brain volume in the first few years of life in some children with autism. Discovering the genetic, cellular, and molecular mechanisms underlying this “brain overgrowth” is the focus of current research.

Slide 25. What role does genetics play?

Genetic Basis of Autism

- Genetic factors play a primary role
 - Identical twins usually both have autism.
 - Siblings are at higher risk for ASD and other developmental delays.
- Genes associated with autism may or may not run in families.
- Current research is studying gene-environment interactions.

At this point in time, research suggests that genetic factors play a primary role in the cause of autism. We know this because twin studies have shown that if one identical twin has autism the other usually also has it.

Furthermore, siblings are at a higher risk for not only autism but also for other developmental delays. Far more boys are affected with 4 out of 5 children with autism being male.

At this time, it appears that the features of autism are associated with multiple genes, although only some have been identified. Some of the genes that have been found run in families while others do not run in families.

Many possible environmental factors may also play a causal role in autism and are being studied. The most important emphasis in current research is on understanding the gene-environment interaction. Research suggests that many different genes contribute a small amount of risk, and interact with other genes and environmental factors, to trigger the unfolding of clinical features.

Slide 26. How do the brain, genes, and the environment interact?

Biological Basis of Autism

As we study the gene-environment interaction, autism is becoming viewed as a biological disorder, that involves not only the brain, but may also involve the immune, gastrointestinal, and/or metabolic systems for some children.

There is continued controversy over the link between autism and vaccinations. Current medical research has not found an association. We know that vaccines carry risk, but those risks have **not** been found to be associated with the causes of autism or increase in prevalence.

However, many possible environmental factors may play a role in autism and are being studied which may lead to better understanding of the multiple biological systems and etiologies underlying autism.

Research on gene-environment interactions will continue to help unravel the puzzle of autism.

You can find a synthesis of current research on causes of autism in the Research Briefs located in “**Tools**”, on the top navigation bar.

Slide 27. How do you stay up to date on autism research?

Research-Based Web Sources

National Institutes of Health

- [NIH Autism Coordinating Committee](#)
- [NIH Autism Research Activities](#)
- [NIH A Parent’s Guide to Autism Spectrum Disorder](#)

Centers for Disease Control and Prevention

- [Vaccinations and autism](#)

American Academy of Pediatrics

- [Synthesis of research on autism](#)
- [Collection of interviews to answer parent’s questions](#)

It is challenging to stay current on information about autism. The web pages from each of these three major federal agencies are good resources about current research on autism.

You can find more current information about autism in “**Tools**”.

Slide 28. What did you learn about prevalence and causes of autism?

Now let’s check your knowledge about prevalence and causes of autism. Review the four statements and click all that are true. Remember that more than one statement may be true.

What do we know about the prevalence and causes of autism?

- Increased public awareness and better screening and diagnostic measures are two of the many reasons that prevalence estimates of ASD have increased.
- The current prevalence estimate of ASD based on school record reviews is 1 in 110.
- Current research suggests that features of autism are associated with multiple genes although only some have been identified.
- The interaction of genes with each other and with many possible environmental factors may provide the most comprehensive explanation for the causes of autism.

Button: Check Answer

All of the statements except the second one are true. The most recent CDC report places the estimate at 1 in 44.

Slide 29. Who helped create and develop Autism Navigator?

Autism Institute

The Florida State University College of Medicine

www.fsuautisminstitute.com

Florida Center for Interactive Media

www.fcim.org

A special thanks to the many families and professionals who gave permission to share these videos so that you can learn from their experiences.

Autism Navigator was created by the Autism Institute at the Florida State University College of Medicine. To learn more about the Autism Institute, click on our logo.

A special thanks to the many families and professionals who gave permission to share these videos so that you can learn from their experiences. They are the reason and the resources that have made Autism Navigator possible.

Thanks also to Prometheus Research and the Florida Center for Interactive Media. You can learn more about our web design teams by clicking on their logos.

Finally, we want to thank you for your interest and the time you've devoted to learning about autism. Now that you are armed with information and have practiced observing many young children, we hope that you have confidence recognizing early features of autism and understanding the importance of early detection. You play a critical role in building the capacity of your community, to ensure that families can benefit from this critical window of opportunity, when the environment can have the greatest impact on learning and development. Even for children who are past the age for early intervention, today is earlier than tomorrow and this year is sooner than next year. We hope Autism Navigator will help families and professionals feel more comfortable acting sooner if ASD is suspected. Getting effective intervention going is what will lead to more success stories, will help remove the stigma of autism, and will improve outcomes for children with autism spectrum disorder.