

# ASD Video Glossary

## Diagnostic Features Section



This document has the text in the *ASD Video Glossary* Diagnostic Features section—definitions of the diagnostic features above the side-by-side video players, and details describing each clip under the videos.

### OVERVIEW

#### Autism Spectrum Disorder

Autism spectrum disorder (ASD) is a neurodevelopmental disorder defined by persistent deficits in social communication and social interaction, accompanied by restricted, repetitive patterns of behavior, interests, or activities.

##### *Pair 1*

**Left Video Clip:** Notice the wide range of intensity, symptoms, and behaviors in children with ASD. The signs are as varied as the number of children affected. These signs can be subtle and, to the untrained eye, easy to miss.

**Right Video Clip:** Learn about the DSM-5™ or Diagnostic and Statistical Manual of Mental Disorders, 5th Edition, a handbook published by the American Psychiatric Association that lists the criteria for mental health disorders. According to the DSM-5, an ASD diagnosis is given if a child has deficits in 1) social communication and social interaction, and 2) restricted, repetitive patterns of behavior, interests, or activities.

#### Developmental Milestones

Developmental milestones are markers or guideposts that enable parents and professionals to monitor a baby's learning, behavior, and development. Developmental milestones consist of skills or behaviors that most children can do by a certain age. While each child develops differently, some differences may indicate a slight delay and others may be a red flag or warning sign for greater concern. Deficits in nonverbal communicative behavior used for social interaction

##### *Pair 1*

**Left Video Clip:** View key social communication milestones in children from 4 to 15 months.

**Right Video Clip:** View key social communication milestones in children from 18 to 36 months.

#### Screening and Diagnosis

Screening is a quick way to monitor a child's development. Screening tools are brief measures to detect children at risk for developmental delay or ASD and often based on parent report. Diagnosis of ASD should be based on observation of behavioral features using the DSM-5™ framework and made by a multidisciplinary team. The ADOS is considered the gold standard tool used for diagnosis along with parent interviews about patterns of behaviors and the child's developmental and medical history.

##### *Pair 1*

**Left Video Clip:** Hear about the importance of using accurate screening tools. The American Academy

of Pediatrics recommends developmental surveillance at every well-child visit between 9 and 30 months. Additionally, they recommend all children be screened for ASD at 18 and 24 months.

**Right Video Clip:** A child at risk for ASD is receiving a comprehensive diagnostic evaluation, usually conducted by a multidisciplinary team that gathers information from parent interviews, structured observation, and standardized tests. The diagnosis is based on behavioral symptoms or features, including the absence of or delays in typical developmental milestones and the presence of unusual behaviors.

## Parent Reflections

Parents know their child better than anyone else. They should trust their instincts and, when in doubt, they should take immediate action. Don't be afraid to ask for a screening or a referral to a developmental specialist. Developmental delays will only develop further. Effective early intervention programs can brighten a child's future and have a positive impact on the entire family.

### Pair 1

**Left Video Clip:** Parents discuss the importance of referring to a developmental specialist when in doubt.

**Right Video Clip:** A parent talks about the importance of seeking help from a developmental specialist when you know in your gut something is wrong with your child.

### Pair 2

**Left Video Clip:** Parents discuss the impact early diagnosis can have on the outcome of a child. Effective early intervention programs can brighten a child's future and have a positive impact on the entire family.

**Right Video Clip:** A developmental pediatrician and parents talk about the heartache parents feel when finding out their child has ASD and the importance of figuring out next steps.

## SOCIAL COMMUNICATION AND SOCIAL INTERACTION

Social communication and social interaction are the use of nonverbal or verbal behavior to engage in interaction with people. This may involve eye gaze, gestures, facial expressions, and speech to initiate and respond to interactions with others. Also known as: Social Engagement and Social-Emotional Reciprocity.

### Social-Emotional Reciprocity

Social-emotional reciprocity is the back-and-forth flow of interactions. Reciprocity is how behavior of one person influences and is influenced by behavior of another person. It is the dance of social interaction and involves partners working together on a common goal of successful interaction. In young children this begins with showing interest in interacting with others and exchanging smiles and builds to sharing conventional meanings with words, and later topics, in conversation.

### Initiating or Responding to Social Interaction

Initiating or responding to social interaction refers to a child's interest in being with and interacting with adults or other children by looking at them, smiling, and communicating in verbal and nonverbal ways. A typical child will show an interest in other children, and respond to, and initiate offers for interaction with adults and peers.

### Pair 1

**Left Video Clip:** Jimmy is initiating and responding to social interaction with both his mom and the clinician. He shares his interest in the bubbles with his mom by looking at her, smiling, and showing her the bubbles.

**Right Video Clip:** Ethan is not responding to social interaction with either his mom or the clinician. Instead, he is overly focused on knocking down and rolling the jar.

### *Pair 2*

**Left Video Clip:** Charles is initiating and responding to social interaction with the clinician and his mom. As with most typically developing children, he is more interested in interacting with adults than focusing on the jar.

**Right Video Clip:** Jason is focusing his attention on the jar and is not interested in interacting with either his mom or the clinician. Instead, he reaches for and pulls his mom's hand as a tool to request help without looking up at her.

### *Pair 3*

**Left Video Clip:** Siblings Deni and Dillon show no interest in interacting with one another and minimal interaction with the clinician. As is common with children with ASD, they are more interested in objects and toys than interacting with other children.

**Right Video Clip:** Caleb's older sister is working very hard to get him to interact with her in a pretend picnic, but he shows no interest in interacting or parallel play. Instead, he is more interested in the objects he is holding.

### **Sharing of Interests, Emotions, Affect**

Infants learn early to share interests, emotions, and affect by shifting gaze between an object of interest and another person and back to the object, following the gaze or point of others, and using gestures to draw attention to objects, either by pointing to it or by eye gaze. This builds to sharing enjoyment by looking at others while smiling when enjoying an activity, drawing others' attention to things that are interesting, and checking to see if others notice an achievement.

### *Pair 1*

**Left Video Clip:** Charles is sharing positive affect and interest in the bubbles with both his mom and the clinician.

**Right Video Clip:** Ethan is happy, having fun, and showing positive affect, but he does not look at his dad or at the clinician either to share interest or when requesting help.

### *Pair 2*

**Left Video Clip:** Jimmy responds to joint attention by following the point to a picture on the wall and then initiates shared attention by pointing to the picture.

**Right Video Clip:** Caleb does not respond to joint attention and he does not follow the point. Instead, he is more interested in touching the clinician's finger.

### *Pair 3*

**Left Video Clip:** Charles is responding to joint attention by following the point to a picture on the wall and he is responding to his name.

**Right Video Clip:** Sam does not respond to joint attention, nor does he follow the clinician's point. He also does not respond to his name.

### *Pair 4*

**Left Video Clip:** Jimmy is sharing interest in his book with his mom and the clinician. He has a nice balance of turns and feeling of sharing interest and attention.

**Right Video Clip:** Jason is interested in looking at a book, but he insists on holding it and turning the pages himself. He has not yet developed the important skills of sharing his interest with others.

### *Pair 5*

**Left Video Clip:** Jacari is sharing his interest in playing with a toy dog and directs the clinician's attention to the picture on the wall. Here you see a nice balance of turns and feeling of sharing interest and attention.

**Right Video Clip:** Jamaal is having a difficult time transitioning from the book and he is not sharing his interest with either his mom or the clinician. Instead he is more focused on the objects.

### *Pair 6*

**Left Video Clip:** Charles is sharing his interest in the pop-up toy with the clinician. Here you see a nice balance of turns with a lot of initiating and sharing.

**Right Video Clip:** Luke is not sharing his interest in the pop-up toy with either his mom or the clinician. They keep calling his name but he shows no interest in interacting with them. Although he acts like he is deaf, he finally responds to the sound of a toy telephone.

## **Initiating and Sustaining Conversation**

The ability to initiate and sustain conversation begins with shared attention on objects and develops into an exchange of turns. Infants first learn to exchange turns and coordinate attention during social games, such as peek-a-boo, looking at books, or playing with toys. During these early social activities children learn to follow the attentional focus of others as well as draw others' attention to things that are interesting. This back and forth sharing is foundational for conversation.

### *Pair 1*

**Left Video Clip:** Hanna is initiating a conversation with her mom while playing with a picnic set. Here you see a nice balance of turns with lots of initiating and sharing, and sustaining of their conversation. Once children have a core vocabulary and can form simple sentences, they should be able to initiate and sustain conversation about a shared topic over many exchanges of turns.

**Right Video Clip:** Ryan is able to respond to questions, but he is not yet able to initiate a conversation. Here you see how his mom is working very hard to keep the interaction flowing by asking questions.

### *Pair 2*

**Left Video Clip:** Charles has good use of gestures and eye gaze, easily initiates a conversation with his mom and the clinician, and he is beginning to learn how to sustain the conversation. Even though he is only 27 months, you have the feeling he is having a conversation about the fire truck.

**Right Video Clip:** Mara is initiating conversation, but she is not responding to comments made by the clinician. She is very repetitive and rarely directs her eye gaze to the clinician.

## **Nonverbal Communication**

Nonverbal communication are those things people do to convey information or express emotions without using words. These include eye gaze, facial expression, body language, and gestures.

### **Eye Gaze, Facial Expression, Body Language, Gestures**

Examples of nonverbal communication include eye gaze (looking at others to see what they are looking at and to signal interest in interacting), facial expression (movements of the face to express emotion and communicate with others nonverbally), body language (positioning of the body in relation to others), and gestures (hand and head movements to signal to someone else, such as a give, reach, wave, point, or head shake).

### *Pair 1*

**Left Video Clip:** Charles is shifting his eye gaze from the windup toy to the clinician, and then he coordinates his eye gaze with smiling. A child should develop this important nonverbal behavior in the first year of life.

**Right Video Clip:** Sam is overly focused on the windup toy and does not look at or engage in interaction

with adults. He becomes frustrated easily, though he is not using eye gaze or gestures to convey his emotions.

### *Pair 2*

**Left Video Clip:** Sam is looking at the bubble jar and mom's hand but he does not shift his eye gaze to mom's face to convey what he wants. He taps the bubble jar and gets frustrated easily. Eventually he gives the jar to mom with help but he does not direct his eye gaze to either adult.

**Right Video Clip:** Nine months later, Sam has been in early intervention and, although he still has significant language challenges, he is now able to look at his mom's face in coordination with a sign or gesture and word approximation, and he persists in requesting her to open the jar.

### *Pair 3*

**Left Video Clip:** Jimmy is demonstrating a giving gesture to request help. These gestures are coordinated with his eye gaze and facial expression between the jar of bubbles, his mother, and himself. The movements of the face are used to express his emotion and to communicate with others nonverbally.

**Right Video Clip:** Ryan is showing interest in opening the jar by touching the lid and looking at the clinician's hand but he does not give the jar to request help and he does not look at anyone's face. He has marked impairment in the use of facial expressions and other nonverbal behaviors.

### *Pair 4*

**Left Video Clip:** Jimmy is reaching to request comfort from his mother because he is fearful. Reaching is an important gesture acquired in the first year of life to request something, such as reaching out for a parent or caregiver in order to seek comfort when fearful or in a new situation.

**Right Video Clip:** Stephen does not communicate to seek comfort from either his dad or the clinician when he becomes frightened. Instead, he spins the wheels on a tractor he is holding in order to comfort himself.

### *Pair 5*

**Left Video Clip:** Jimmy is using a showing gesture to draw attention to the jar of bubbles with nice gaze shifting from the object to his mom and the clinician and back to the object. Showing is an important gesture acquired in the first year of life.

**Right Video Clip:** Luke is interested in popping the bubbles but he does not use a gesture to draw attention to the bubbles or the jar just for the sake of sharing something interesting. Instead, he explores the jar by pushing it back and forth and turning it. Then he uses a give gesture by pushing the jar to the clinician while looking at her to request help.

### *Pair 6*

**Left Video Clip:** Jimmy is pointing to, and naming, pictures in a book. Pointing is an important gesture of the index finger used to request an object, called protoimperative pointing, or to draw attention to an object to comment on it or share interest in it, called protodeclarative pointing. The ability to make pointing gestures typically develops by the age of 12 months.

**Right Video Clip:** Ryan is using his mom's hand as a tool to point to words in a book. He is beginning to point with his thumb. A delay in the development of the pointing gesture using the index finger is a red flag. Pointing to draw attention to something interesting, called protodeclarative pointing, is particularly difficult for children with ASD.

## Integrated Verbal and Nonverbal Communication

Integrated verbal and nonverbal communication is the combined use of speech or spoken language and the use of eye gaze, facial expression, body posture, and/or gestures to share ideas, exchange information, and regulate interactions.

### Pair 1

**Left Video Clip:** Jimmy is using speech-like sounds or babbling in a meaningful, interactive way, integrated with pointing gestures. Typically by six to nine months, a child begins to vocalize repeated consonant-vowel combinations, like “ba ba ba” and “da da da,” called babbling. Babbling precedes real speech and is necessary in the process of learning to talk.

**Right Video Clip:** Seven months later, Jimmy is now using clear words to name animals while pointing to pictures in the book. Unlike babbling, words are recognizable and have specific meaning. Typically by 15 months a child can use and understand at least three words, such as “mama,” “dada,” or “baba” for bottle.

### Pair 2

**Left Video Clip:** Ethan makes an effort to communicate with a lot of gestures but minimal vocalization, and he has no words yet. This is an example of impairment in expressive language. Most children his age would have a variety of words and two-word phrases.

**Right Video Clip:** Six months later, Ethan is trying to imitate “more” and “open” verbally as he is starting to learn words. Children with ASD can range from having no functional language to having very proficient vocabulary and sentence structure.

## Relationships

Relationships are the way in which two or more individuals talk to, behave toward, relate to, and interact with each other and form connections with others.

### Interest in Interacting with Others

A child shows interest in interacting with adults or other children by looking at them, smiling, and communicating in verbal and nonverbal ways. A typical 6 month old will relate to a parent or caregiver with joy, smiling often while playing together. A typical 12 month old will show more interest in the parent or caregiver than in objects and toys.

### Pair 1

**Left Video Clip:** Paul is engaging in back-and-forth social interaction during family dinner with support from mom, who is asking him to recall the day's events. He is eager to tell everyone how he played with the fish, and got ice and threw it.

**Right Video Clip:** Siblings Deni and Dillon show no interest in interacting with one another and only minimal interaction with the clinician. As is common with children with ASD, they are more interested in objects and their toys than interacting with other children.

### Pair 2

**Left Video Clip:** Evelyn says goodbye to her friend after a walk together. She initiates spontaneous hugs without being prompted, because she knows hugs are part of the social routine of saying goodbye. With cheering and patience from both parents, she persists in saying goodbye, returning several times to hug her friend, communicate her affection, and end their fun interaction.

**Right Video Clip:** Caleb's older sister is working very hard to get her brother to interact with her in a pretend picnic, but he shows no interest in interacting or parallel play. Instead, he is more interested in the objects he is holding.

## Sharing Imaginative Play

Sharing imaginative play is where children are pretending to do things and be something or someone else with another child or adult. This kind of play typically develops between 2 and 3 years of age. Infants first learn functional play, when a child uses objects for their usual purpose. After children learn a variety of functional actions in play, they develop social imitative or pretend play, which is pretending to act out actions of daily routines or actions of others in the context of play.

### *Pair 1*

**Left Video Clip:** Jimmy is engaging in make-believe play by hugging and feeding Big Bird with the bottle, sharing with mom, and stirring and pouring food. He is also imitating blowing on food. You have the sense he knows he is pretending and enjoys sharing the pretense or make-believe play.

**Right Video Clip:** Caleb does not engage in make-believe play, but instead explores the physical features of the objects. This limited range of interest is common in children with ASD. Often they become preoccupied with the toy itself, rather than engaging in pretend play with the toy or object.

### *Pair 2*

**Left Video Clip:** Jacari is using his toys functionally and he is engaging in social imitative play with Big Bird, his mom, and the clinician.

**Right Video Clip:** Ethan does not know how to use toys functionally and he is preoccupied with rolling the toys. The lack of sharing spontaneous social imitative or make-believe play is one of the criteria for a diagnosis of ASD.

### *Pair 3*

**Left Video Clip:** Peyton is engaging in imaginative play as her mom calls her attention to the stuffed animals and cooking materials, and suggests certain pretend actions. Peyton communicates her ideas to mom, responds to her verbal directions, and shows flexibility as she goes along with suggestions mom makes as they play.

**Right Video Clip:** Will's mom is trying to get him to engage in imaginative play with the bowl and cooking utensils and while he plays with the items constructively he is not participating in pretend play.

## Adjusting Behavior to Social Contexts

Adjusting behavior to social contexts is the ability to modify one's behavior based on social cues from others that may be nonverbal, indicating a change is needed. Individuals with ASD have difficulty picking up on social cues and may not notice another person is interested versus disinterested or how their behavior is impacting others. For example, they may ask inappropriate questions, turn away when someone is talking to them, make inappropriate approaches, or laugh out of context.

### *Pair 1*

**Left Video Clip:** Although Shaylen is not yet using many words, she is fully engaged and has nice social interactions with mom. Notice how she monitors mom's social bids and chimes in by imitating and using gestures and sounds at just the right moment. Shaylen understands what book sharing means and adapts her interactions based on mom's social cues. This clip shows the very early foundation for adjusting behavior to social contexts.

**Right Video Clip:** As mom tries to interest Katie in sharing books, Katie is focused on collecting the books and making piles. Mom moves closer and offers social bids several times, but Katie does not adjust to this social context and continues with her own agenda, often with her back to her mom. This clip shows how the core deficits of ASD interfere with active engagement and impact her ability to adjust behavior to social contexts.

# REPETITIVE BEHAVIORS AND RESTRICTED INTERESTS

Repetitive behaviors and restricted interests are common in children with ASD. Children with ASD may appear to have odd or unusual behaviors such as a very strong interest in a particular kind of object (e.g., long thin objects, lint, people's hair), parts of objects, or certain activities. They may have repetitive and unusual movements with their body or with objects, or repetitive thoughts about specific, unusual topics.

## Repetitive Movements

Repetitive movements are movements with the body, with objects, or with speech that are repeated and are unusual or stereotyped. They are common in children with ASD and may serve an important function, such as providing sensory stimulation, communicating, or soothing when anxious.

### Repetitive Motor Movements

Repetitive motor movements are recurring mannerisms or posturing of the body. They include hand flapping, finger twisting or flicking, rubbing or wringing hands; rocking or pacing; odd posturing of the fingers, hands, or arms; and toe walking. These mannerisms may appear not to have any meaning or function, however may have significance for the child, such as providing sensory stimulation, communicating to avoid demands, requesting attention or desired object, or soothing when anxious.

#### Pair 1

**Left Video Clip:** Charles is giving the balloon to request help. For the typical child the balloon is a vehicle for engaging in social interaction, in this case, drawing attention to the balloon in asking for help.

**Right Video Clip:** Jason is showing his excitement by shaking the balloon and flapping his arm. He gets stuck on the shaking and flapping movements and has a hard time shifting his attention away from the balloon. Young children with ASD often engage in repetitive motor mannerisms and odd body posturing that may not appear to have meaning, but for the child may function as communication and self-stimulation.

#### Pair 2

**Left Video Clip:** Stephen enjoys the bubbles and explores the jar by shaking it but he does not request more. When the bubbles are removed he gets upset then tries to soothe himself by repetitively rubbing his fingers on his lips while vocalizing. Children with ASD who have difficulty responding and regulating sensory input often use repetitive behaviors as a coping mechanism to calm themselves.

**Right Video Clip:** Stephen regulates himself using repetitive behavior to soothe himself when the book, the preferred object, is removed. While upset, he requests help from his dad by gently hitting or tapping him. Many children with ASD have difficulty with emotional regulation, and often have abnormal responses to the ordinary demands of their surroundings.

#### Pair 3

**Left Video Clip:** Sarah demonstrates excessive pacing. She has fleeting moments of being connected to her parents, but retreats back to her repetitive mannerisms. The pacing does not appear to have meaning, but it may function as communication, self-stimulation, or attempt to soothe her anxiety.

**Right Video Clip:** Six months later, Sarah shows repetitive hand flapping and stiffening or clenching of her fist as she is excited about the waves at the beach. Though many young typically developing children do some minimal hand flapping, this is excessive and considered a red flag for ASD.

#### Pair 4

**Left Video Clip:** Anthony stiffens his fingers and grimaces with his mouth because he is excited about the bubbles. Young children with ASD often use repetitive motor mannerisms and odd body posturing that do not appear to have meaning, but may have significance, or function for the child.



**Right Video Clip:** Two years later, Anthony is again excited about popping the bubbles and shows repetitive hand flapping. This kind of repetitive motor mannerism is common in children with ASD.

### *Pair 5*

**Left Video Clip:** Emily is displaying excessive rocking, hand clapping, and banging. These repetitive behaviors are common in children with ASD and may not appear to have meaning, but may be meaningful to the child, or function as self-stimulation, communication, or a way to avoid demands.

**Right Video Clip:** Emily does not understand what the clinician is asking and she is repetitively biting her arm. This kind of behavior is not uncommon in children with ASD who have trouble communicating. However, not all children with ASD have self-injurious behaviors.

## **Repetitive Movements with Objects**

Repetitive movements with objects are common in children with ASD. They may manipulate parts of an object, such as spinning the wheel of a toy car, flicking a handle, or opening and closing a door, rather than use the object functionally or in pretend play. This can be related to anxiety and is usually to the exclusion of interest in people, or in using the object in social interactions.

### *Pair 1*

**Left Video Clip:** Charles engages in make-believe play by offering "coffee" to everyone and scooping food for Big Bird and himself. You really have the sense that he knows he is pretending, and it is the pretending and sharing in this make-believe play that seems to motivate him.

**Right Video Clip:** Ryan does not engage in play but instead explores objects by turning them over and rolling them repetitively. This interferes with the child learning to use the objects appropriately, and may be a reflection of anxiety or an unusual interest. Some repetitive behaviors may be very subtle to those observing.

### *Pair 2*

**Left Video Clip:** Jimmy engages in make-believe play by hugging and feeding Big Bird with the bottle, and stirring, pouring, and blowing on food. He uses a nice variety of toys in his play, and shifts his focus easily from one toy to another and from the toy to the people.

**Right Video Clip:** Nicholas does not engage in make-believe play but instead gets very focused on wobbling the bowl and cup. His preoccupation with this repetitive and stereotyped movement prevents him from engaging in simple pretend play or using objects appropriately.

### *Pair 3*

**Left Video Clip:** Jimmy is reaching to request comfort because he is fearful. This reach gesture signals to his mom to provide comfort, and once he is comforted and reassured, he can then play with the windup toy. Thus, his ability to communicate helps him to regulate his emotions.

**Right Video Clip:** Stephen spins the wheels on the toy tractor as a way to regulate his emotions instead of seeking comfort from dad when he is fearful. Many children with ASD often respond to their emotions with repetitive or stereotyped behaviors to soothe or regulate themselves.

## **Repetitive Speech**

Repetitive speech is the repetition of words, phrases, intonation, or sounds of the speech of others, sometimes taken from movies, but also sometimes taken from other sources such as favorite books or something someone else has said. Also known as: Perseverative Speech, Scripting, and Echolalia

### *Pair 1*

**Left Video Clip:** Charlie uses the phrase "What's that" repetitively to engage in social interaction. While young children use this phrase, it is an example of stereotyped or perseverative language, because it is used excessively and is inappropriate for the situation after so many repetitions.

**Right Video Clip:** Three years later, Charlie uses several different repetitive questions as a way to engage in conversation.

### *Pair 2*

**Left Video Clip:** Mara uses the same phrase repetitively. While meaningful to her, she likely heard someone use it, so it may be delayed echolalia. This reflects her effort to engage in conversation and her difficulty shifting from this focus and using more conventional, generative language.

**Right Video Clip:** Christopher uses idiosyncratic language, repeating the phrase “Henry Circus...Henry Alvin.” Idiosyncratic use of language refers to language with private meanings, or meaning that only makes sense to those familiar with the situation from where the phrase originates.

### **Insistence on Sameness (Activities, Routines, Behavior)**

Insistence on sameness refers to a rigid adherence to a routine or activity carried out in a specific way, which then becomes a ritual or nonfunctional routine. Children with ASD may insist on sameness and may react with distress or tantrums (sometimes so big they are described as catastrophic) to small changes or disruptions in routines. This type of response may reflect difficulty with change in activities or routines or being able to predict what happens next, and may be a coping mechanism.

### **Extreme Distress Over Change**

Children with ASD may react with extreme distress or tantrums over change. This type of response may be a coping mechanism reflecting difficulty they have understanding and handling change in activities or routines – even changes or disruptions that may seem small to others – or being able to predict what happens next.

### *Pair 1*

**Left Video Clip:** Ethan becomes distressed when the balloon is put away. He is very persistent in requesting the clinician to blow it up again. Children with ASD often have problems with change or transitioning from one activity to another.

**Right Video Clip:** Four months later, after some intervention, Ethan is able to regulate himself in a more supportive situation and use gestures to communicate effectively. With appropriate intervention, children with ASD can learn strategies to respond more effectively to the demands of their surroundings.

### *Pair 2*

**Left Video Clip:** Christopher gets upset when he learns he is going to the park. He calms himself by swinging, but the distress escalates then disappears abruptly. Children with ASD often experience intense distress over change and use self-stimulating, stereotyped behaviors to regulate their emotions.

**Right Video Clip:** Christopher is frustrated on the swing but dad recognizes it and offers him help before his frustration escalates to distress and possible meltdown.

### **Ritualized Patterns of Behavior**

Ritualized patterns of behavior are specific and seemingly meaningless behaviors a child performs repeatedly in certain situations or circumstances, such as turning the lights on and off several times when entering a room. They may be specified, sequential, and apparently purposeless repeated actions or behaviors a child engages in, such as always lining up toys in a certain order instead of playing with them. Although they appear to be senseless, they may have significance to the child.

### *Pair 1*

**Left Video Clip:** Jimmy is engaging in make-believe play by hugging and feeding Big Bird with the bottle, and stirring, pouring, and blowing on food.

**Right Video Clip:** Jason does not engage in make-believe play but instead is collecting the objects. This insistence on a nonfunctional, rigid routine prevents him from engaging in pretend play, but may function as a way for bringing order to his surroundings, or soothing his anxiety.

## Pair 2

**Left Video Clip:** Charlie clutches the blocks he brought from the waiting room and insists on keeping them there as he transitions to the first activity—the windup toy. Children with ASD frequently react with distress to change and have difficulty transitioning between activities.

**Right Video Clip:** Charlie continues to clutch the blocks even after many different activities. He sets them down and participates but then he clutches the blocks periodically for comfort. While this behavior may appear meaningless, it may be an important coping mechanism for Charlie.

## Pair 3

**Left Video Clip:** Mara gets stuck on her ritualistic pattern of naming Disney characters again and again. This kind of apparently nonfunctional routine may have significance for her, and may be a coping mechanism to make play predictable.

**Right Video Clip:** Christopher demonstrates a repetitive and ritualistic pattern of asking for a kiss any time he hurts himself. These kinds of rituals are common in children with ASD, and may reflect anxiety.

## Highly Restricted, Fixated Interests

Highly restricted, fixated interests refer to the preoccupation with a narrow range of interests and activities that are unusual in intensity or focus. In young children with ASD, this may be evident in strong attachments to certain unusual objects (such as long strings, sticks, pans) or preoccupations with certain movements or sensations (such as fascination with lights, spinning objects, or vacuum cleaners).

### Preoccupation with Unusual Objects

Preoccupation with unusual objects is a persistent interest or fixation on certain objects unusual for the child's age. Young children with ASD may be fascinated with certain kinds of objects (long, hard things) or movements (spinning wheels, flicking a handle, or opening and closing a door), rather than using the object functionally or in pretend play. Preoccupations with unusual objects can be related to anxiety and can interfere with social interaction and learning.

## Pair 1

**Left Video Clip:** Caleb is preoccupied with parts of a bottle. Children with ASD often have restricted interests and may focus on parts of an object rather than use the whole object functionally. This can be related to anxiety and interfere with a child's normal activity or social interaction.

**Right Video Clip:** Ryan is getting stuck on the lid of the jar. This persistent preoccupation prevents him from using the object in social interaction, or in a functional way.

### Intense Interests

Children with ASD often have a limited range of interests that are intense in focus.

## Pair 1

**Left Video Clip:** Justin wants more snack but rather than request more, he becomes overly focused on drawing circles with his finger on his plate and the cookie container. This restricted pattern of interest in drawing circles, rather than interacting with others, is common in children with ASD.

**Right Video Clip:** Ethan is intensely preoccupied with putting together the tractor. The clinician tries to remove it, but the only way to soothe him is to bring back the tractor. This kind of preoccupation can become more intense as children get older and interfere with social interaction.

## Pair 2

**Left Video Clip:** Ryan gets stuck on a ball that resembles a globe. He is particularly drawn to this ball because of his intense interest in planets. This intensity of focus interferes with his ability to engage in meaningful social interactions and imaginative play with toys and others.

**Right Video Clip:** Ryan gets stuck on the camera. He has shown intense interest in cameras for a few years and uses this topic as a way to avoid doing a difficult task. His preoccupation prevents him from engaging in social interaction about more conventional topics.

## **Narrow Interests**

Children with ASD often have a narrow or limited range of interests.

### *Pair 1*

**Left Video Clip:** Will is overly focused on long thin objects. This is a subtle example of narrow interests in a toddler and shows how it interferes with his learning. Here he is consumed with the keys and does not pay attention to his mom because of it.

**Right Video Clip:** Will gets overly focused on the stick while his mom is working hard to capture his attention with the bubbles. His narrow interest in long thin objects went from keys to sticks. And next you see him overly focused on a slinky during snack time and although he can turn his attention to his mom and his snack he finds a way to incorporate the slinky into snack time by storing the goldfish crackers in it.

## **Unusual Sensory Input or Interest**

Unusual sensory input or interest includes an over- or under-reaction to sensory input or unusual interest in certain sensations, such as a fascination with flickering lights, side peering, rubbing certain textures, licking or smelling certain objects.

## **Over Reactive**

Over reactive to sensory input is abnormal sensitivity to sound, sight, taste, touch, or smell and feeling overwhelmed by what most people would consider common or ordinary stimuli. Many children with ASD are over reactive to ordinary sensory input and may exhibit sensory defensiveness - a strong negative response to their overload, such as screaming at the sound of a telephone. Also known as: Hyperresponsiveness.

### *Pair 1*

**Left Video Clip:** Charles reaches cautiously into the bag, looks at the clinician for reassurance, and then actively explores the Koosh "cat" ball by touching and mouthing it, and then showing it to his mom. Charles is displaying a normal reaction to ordinary sensory input.

**Right Video Clip:** Adam is very reluctant to touch the Koosh "cat" ball and reaches to his dad to request comfort. He is very over reactive and does not want anything to do with it. This strong negative emotion to stimuli is known as sensory defensiveness.

### *Pair 2*

**Left Video Clip:** Ryan anticipates the noise from the balloon and covers his ears. He throws the balloon then gives it to his mom to protest. Many children with ASD are over reactive to ordinary sensory input with a strong negative response to their overload, known as sensory defensiveness.

**Right Video Clip:** Ryan again covers his ears in anticipation of the balloon being shot into the air. Although he is still very over reactive to sensory input, with intervention, he is now able to tell the clinician he does not want her to let the air out of the balloon.

### *Pair 3*

**Left Video Clip:** Cole is very over reactive to light, and he begins engaging in self-stimulating behavior, also called "stimming." Many children with ASD who have trouble responding to and regulating internal and external stimuli are over reactive to ordinary sensory input, and may exhibit sensory defensiveness, or engage in self-stimulating behaviors to soothe or comfort themselves.

**Right Video Clip:** Sarina is very over reactive to loud noises, like hand clapping. This child puts her hands over her eyes and reaches to her mom for comfort. Often you will see children with ASD who are over reactive to sound put their hands over their ears in order to comfort themselves and muffle the sound.

### **Under Reactive**

Under reactive to sensory input is one aspect of abnormal insensitivity to sensory input, or hyporesponsiveness, in which a child does not respond to sensory stimulation. A child who appears as if deaf, but whose hearing has tested as normal, is under reactive. A child who is under reactive to sensory input may have a high tolerance to pain, may be clumsy, sensation-seeking, and may act aggressively. Also known as: Hyporesponsiveness.

#### *Pair 1*

**Left Video Clip:** Sarah does not respond to her name or to requests to “look”. Many children with ASD have regulatory and sensory deficits, and may have abnormal reactions to sensory input. A child who appears as if deaf, but whose hearing has tested as normal, is under reactive to sensory input.

**Right Video Clip:** Eleven months later, Sarah is still not responding to her name or to questions or requests. Though she is appearing as if deaf, she is not. She is under reactive to sensory input and she has deficits in receptive language skills and social reciprocity.

#### *Pair 2*

**Left Video Clip:** Sam does not respond to his name being called repeatedly. A child who acts as if deaf, but whose hearing has tested as normal, is under reactive to sensory input and is considered to have impairment in social reciprocity.

**Right Video Clip:** Luke does not respond to his name though he is being called repeatedly (11 times) by his mother. Finally, he responds to the sound of a toy telephone. Though he is appearing as if deaf, he is not. Because he is not responding to social stimuli (i.e., calling his name), he is showing the diagnostic feature of an impairment in social reciprocity.

### **Unusual Sensory Interest**

Children with ASD often have unusual intense interest in or craving for stimulation from the sensation of sight, touch, sound, taste, or smell (e.g., fascination with flickering lights or rubbing textures).

#### *Pair 1*

**Left Video Clip:** Ethan is showing unusual sensory exploration when he licks the Koosh ball. Though mouthing is common, licking is not, and is unusual in a child this young. This child is seeking sensory input, which is a red flag. Although he is showing a nice range of emotions, and positive affect, he does not direct it to either adult to share the emotion, which is also an early red flag.

**Right Video Clip:** Ethan is seeking sensory input when he tries to get the bubbles to fall on his face. Once again, he is showing a nice range of emotions.

# ASSOCIATED FEATURES

Associated features are characteristics defined by the DSM-5™ that are linked or related to ASD. These features include intellectual disability, language disorder, uneven development of skills, unusual motor skills, and disruptive or challenging behaviors. It is important to understand that while some children may show many or most of these features, other children will show only some of them.

## Expressive and Receptive Language Impairment

Expressive language is the use of verbal behavior or speech to communicate thoughts, ideas, and feelings with others. It involves combining sounds to make words, combining words into sentences, and using sentences in conversation. Receptive language is the ability to understand or comprehend words and sentences that others say. Impairment is an abnormality, delay, or decrease in quality.

### Pair 1

**Left Video Clip:** Jimmy does not yet understand the meaning of the words (Receptive Language), but he does understand that the context with the open-hand gesture means to give something. Typically a child has more receptive language skills than expressive, or understands what is being said to him before he learns to express himself.

**Right Video Clip:** Nicholas does not yet understand that “cleaning up” with an open-hand gesture means “give me something”. Instead, he is focused on wobbling the bowl and cup. When interacting with young children we often use nonverbal communication so it's easy to think a child understands words when he may only understand gestures. A child with ASD may have difficulty understanding both words and gestures.

### Pair 2

**Left Video Clip:** Jimmy understands the meaning of names for objects, people, and body parts. He is exhibiting good receptive language skills, which is what is expected from typical children at this age.

**Right Video Clip:** Jamaal does not understand the meaning of words or the open-hand gesture. This is an example of impairment in receptive language abilities, and is common in children with ASD.

### Pair 3

**Left Video Clip:** Jason has unusual sounds for language. This is an example of impairment in expressive language. Children with ASD who do not yet speak, usually produce unusual sounds instead of real speech.

**Right Video Clip:** Sarina has unusual sounds for language. This is an example of impairment in expressive language. She names a letter and then says a string of jargon that sounds like she is saying words but they are not understandable. She may be repeating something she heard and it may be meaningful to her. It feels more like self-talk since she never looks up at others.

### Pair 4

**Left Video Clip:** Anthony uses an unusual squeal sound to request help in opening the jar. This is an example of impairment in expressive language. It is not unusual for a child with ASD, who does not yet speak, to use unusual sounds instead of real speech.

**Right Video Clip:** Two years later, Anthony has unusual prosody (rhythm of language) in the words he uses to request cereal. Often, children with ASD who talk have odd intonation, or prosody, and may sound flat, monotonous, stiff, or “sing songy” without emphasis on the important words.

### *Pair 5*

**Left Video Clip:** Caleb has unusual prosody and some delayed echolalia. Echolalia is the repetition of words, phrases, intonation, or sounds of the speech of others, sometimes taken from movies, but also sometimes taken from other sources such as favorite books or something someone else has said. Children with ASD often display echolalia.

**Right Video Clip:** Caleb has unusual prosody and some delayed echolalia. Echolalia was once thought to be non-functional, but is now understood to often serve a communicative purpose for the child. Caleb uses the delayed echolalic phrase “want blue balloon”, which he heard earlier to request it (see left clip).

### *Pair 6*

**Left Video Clip:** Sarah is not responding to her name or to requests for her to look. This is an example of impairment in receptive language because she is not responding to verbal stimuli. Some children with ASD have no understanding of words and do not respond to speech, so they appear as if they are deaf.

**Right Video Clip:** Eleven months later, Sarah is still not responding to her name, questions, or to requests. This lack of response to speech also illustrates a lack of social reciprocity because she shows a marked lack of awareness of others.

## Uneven Development of Skills

Uneven development of skills refers to an individual whose skills are developing at different rates and may have one or more skills considerably more advanced than the others. For instance, a 24-month-old child with ASD may be assessed with expressive language skills at 18 months, receptive language skills at 12 months, social/emotional skills at 9 months, and gross motor skills at 32 months.

### *Pair 1*

**Left Video Clip:** Jimmy has good social reciprocity and he is engaging in make-believe play by hugging and feeding Big Bird with the bottle, sharing with mom, stirring and pouring food, and imitating blowing on food. While he may not yet understand everything being said he clearly understands non-verbal communication. Jimmy is demonstrating an even development of skills.

**Right Video Clip:** Will has good constructive play skills but he does yet not engage in imaginative play and he lacks social reciprocity. He shows more interest in the objects than his mom. Additionally, his expressive and receptive language skills are delayed. Will demonstrates an uneven development of skills.

### *Pair 2*

**Left Video Clip:** Jimmy is pointing to and naming pictures in a book coordinated with eye gaze, pointing gestures, and expressive language. He has good social reciprocity and receptive language skills. He understands what his mom and the clinician are saying to him. Jimmy is progressing with even development of skills.

**Right Video Clip:** Ryan is beginning to use pointing gestures with his thumb and shows interest in his book but he is using his mom’s hand as a tool to point to words in a book instead of using his index finger. He lacks social reciprocity and coordinated eye gaze. Ryan is not progressing with an even development of skills.

## Unusual Motor Skills

Unusual motor skills are characterized by uncommon development of the body's coordination, such as an odd gait, clumsiness, and walking on tippy toes.

### *Pair 1*

**Left Video Clip:** Karina is toe walking while dancing. While occasional toe walking in young children is common in typical development, if toe walking persists after age 2 or 3, and becomes the preferred way of walking, this is an indicator of a potential developmental problem.

**Right Video Clip:** Three years later, Karina is still toe walking while dancing. Children with ASD often have odd behaviors, such as finger flicking and toe walking, which may be related to anxiety, tactile defensiveness (aversion to touch), or may be self-stimulatory. In addition, many children with ASD have an odd or awkward gait, the manner in which they walk, step, or run.

### Challenging Behaviors: Self-Injury, Disruptive, Aggressive Behaviors

Challenging behaviors are problem behaviors that may be used as an attempt to communicate or to regulate emotions. They include self-injurious behaviors (head banging, biting one's own wrist), disruptive behaviors (tearing up, knocking over, throwing), or aggressive behaviors (hitting, biting, or kicking others).

#### Pair 1

**Left Video Clip:** Emily does not understand what the clinician is asking, and because she is frustrated with the activity, she is biting her arm. This kind of odd and self-injurious behavior is not uncommon in children with ASD who have trouble communicating. However, not all children with ASD have self-injurious behaviors. This clip also shows lack of receptive language skills.

**Right Video Clip:** With the proper support in place, Emily is calm, happy, and playing with the popup toy. The clinician is helping her, putting words to her gaze for request using a soft, soothing voice. She feels understood and does not have any demands on her to do something she doesn't understand.

#### Pair 2

**Left Video Clip:** Christopher gets upset when he learns he is going to the park. He calms himself by swinging, but the distress escalates then disappears abruptly. Children with ASD often experience intense distress over change and use self-stimulating, stereotyped behaviors to regulate their emotions.

**Right Video Clip:** Christopher is frustrated on the swing but dad recognizes it and offers him help before his frustration escalates to distress and possible meltdown. The proper supports in place can help children with ASD regulate their challenging or disrupting behaviors.

#### Pair 3

**Left Video Clip:** Robby becomes increasingly frustrated over having to put away his magnetic letters. Since he is not able to communicate, his frustration escalates quickly into a tantrum. Once he realizes his letters spelling "The End" were not put away, he calms himself. Children with ASD often have difficulty regulating their emotions and react with self-injurious behavior, as depicted here.

**Right Video Clip:** Robby is now calm and regulated as he completes what he set out to do. In children with ASD who have trouble communicating in general, tantrums are a common reaction to internal frustrations and changes in their surroundings.