chapter 2

The Child's Perspective

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Children with autism appear to view the world from a perspective that differs from everyone else. They find the social behaviors of others confusing. They struggle to understand the complexity of social relationships. The simplest conversational exchange with others is difficult for them to negotiate. This confusion results in social isolation and frustration. At the same time, the children are intensely preoccupied with small details. They seem to demand order in the physical world as a means to cope with the "social chaos." Their ritualistic behaviors often bring meaning and comfort to them, while at other times they appear to be an expression of uncertainty and anxiety.

Professionals and parents need to understand the thinking patterns, social perspectives, and socioemotional qualities of children with autism in order to help them. This chapter describes various aspects of learning, social skills, and communication in autism through short stories about many different children who have the disorder. Vignettes about the children are used to highlight their unique qualities. The children's perceptions and experiences provide a poignant picture of autism.

It is necessary to respect the children's view of the social world in order to establish realistic expectations for social and communication growth. An understanding of the children's perspective also assists in the development of intervention strategies that take into account both their strengths and their struggles. Through a discussion of autism from the child's perspective, it is hoped that compassion will ultimately dictate intervention.

COGNITIVE PATTERNS

The cognitive patterns of children with autism include a tendency to focus on details, interpret information in a fragmented manner, misperceive the perspectives of others, and become "stuck" in one mode of thinking and behaving. These cognitive patterns have two results. First, children with autism often misinterpret the meaning of experiences (see Figure 2.1). Second, learning and social-communicative behaviors become self-directed and intensely ritualized.

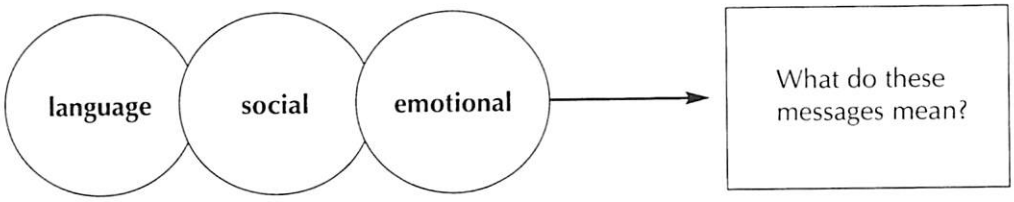

Figure 2.1. The challenge for children with autism.

Selective Attention

An experience must be either interesting or meaningful to maintain some level of attention. Attention to a novel or confusing situation requires a degree of internal motivation or external reinforcement. In the absence of motivation (i.e., internal or external reinforcement) and meaning (i.e., understanding the experience), interest and attention are lost.

Children with autism tend to hyperfocus on sensory experiences that are pleasurable and ignore or avoid multisensory experiences that are uncomfortable or confusing. The following children illustrate this characteristic:

Two-year-old Sam loves to sit and play in the sandbox for hours. He sifts the sand through his fingers and laughs with glee. Although he enjoys this tactile experience, Sam has a high degree of auditory sensitivity. He is only able to watch television with the sound turned off, and he covers his ears and cries at the sound of the television and the radio.

Five-year-old Christopher plays well with a wide range of toys at home. In his classroom of 15 children, however, his play is dominated by self-stimulatory twirling of ribbons and string. The discrepancy between skills seen at home and at school appears linked to the amount of stimulation in the classroom environment. When he is overstimulated, Christopher is unable to organize his play, even during familiar activities.

Impaired social interactions are due, in part, to the difficulty children with autism have with shifting attention. The children can sustain attention the same way typically developing children do, but this creates in them a tendency toward perseverative behavior or interest in activities that do not change. The desire for repetition and rituals may be an attempt to have meaningful experiences with objects amidst a socially chaotic world. The children profiled next demonstrate this point:

Three-year-old Lisa lines up the letters of an alphabet puzzle in order repeatedly. She also lines up her farm animals, toy cars and trucks, stuffed animals, video collection, blocks, and crayons, as well as her mother's shoes and her brother's baseball cards. She can sustain attention while involved in meaningful solitary play but has difficulty in social play that requires her to shift attention back and forth from her own activity to the activities of others.

Five-year-old Tyler's attention varies during group storytime. He can maintain attention to the story if the teacher reads the book cover to cover without interruption. If the teacher interrupts the story intermittently to ask questions, however, Tyler's attention is lost, and he attempts to leave the classroom. Tyler can attend to the book but has difficulty during discussions that require him to shift attention back and forth from one child to the next.

One aspect of attentional behavior that seems unique to autism is overselective attention to details (Koegel & Koegel, 1995b). Children with autism appear to focus on specific details, often without noticing the most relevant aspect of a situation. This attention to details often translates into misinterpreting the meaning of the situation, as shown in the following examples:

Six-year-old David was having difficulty learning his numbers. He continued to point to the correct answer only 50% of the time. Upon closer examination, it was discovered that David always selected the number card that was in the location of the previously correct answer. He focused on location, not meaning, in his effort to understand the task.

Alex was learning about money in first-grade math. When asked to tell the class what he would do with a nickel, he explained, "A nickel is gray or silver. A nickel is a circle, and a nickel has a man on it with a jacket. The quarter has a man with no jacket." Alex recognized the presidents' attire on U.S. coins, but he had concentrated on details that were not socially relevant and did not appear to understand the purpose of money.

Meaning in the Details

Learning occurs when information is analyzed, organized, stored, and remembered in multiple ways. In a single moment, a person attends to various aspects of a new experience and then links it to an infinite number of related experiences. This novel information reshapes and redefines all related knowledge. In contrast, the processing style observed in autism is characterized by concrete perceptual associations (Peeters, 1997). Children with autism have a tendency to focus on one aspect of a situation. This results in making a more restricted and often singular association between perception and behavior. The outcome, which has been termed *illogical logic* (Michaels, 1998), is seen in the next vignettes:

Seven-year-old Ben learned to ask for a drink in school by bringing a photo of a yellow cup to his teacher. Although he mastered this requesting skill in school, he never used the same communication symbol at home. Ben's mother gradually realized that there was a yellow cup for his drinks in school but not at home. For Ben, the photo of the yellow cup meant "yellow cup," not "drink."

The mother of 8-year-old Mary understands her child's way of thinking. Mary's mother links each outing with a specific object so Mary understands where she is going; for example, a straw bag symbolizes a trip to the market and a heart necklace means a trip to visit Nana. One day, Mary's mother put the heart necklace on Mary and they left for a ride to Nana's house. When they turned left to go to Nana's instead of right to go shopping, Mary began to scream. Her mother was confused by Mary's sudden outburst and immediately stopped the car. In the back seat, she found Mary holding the straw bag.

Eight-year-old Brian went to the mountains for a winter vacation with his family. His mother bought him a new red sweater for the trip. Each day Brian wore the sweater while happily playing in the snow. Three weeks later, his mother dressed him for school in this red sweater, and Brian squealed with excitement. He spent much of the school day anxiously looking out the window. By evening, when his mother removed his sweater for bath time, he had a tantrum. Brian appeared to connect the red sweater with playing in snow, so he became upset when it did not snow on that particular "sweater day."

Jennifer is 3 years old and her favorite video is about a baby. She especially likes the part when the mother in the video feeds the baby a bottle and says, "Now, now, not so fast." Every night when Jennifer wants her bedtime bottle she says, "Now, now, not so fast." For Jennifer, the phrase "now, now, not so fast" means bottle.

Visual Thinking

Just as children with autism have an easier time sustaining attention to events that do not change, it is generally easier for them to process visual information that does not rapidly change. In contrast to fleeting visual auditory information, visuospatial stimuli (e.g., objects, pictures, graphics, written language) are fixed in space and time and, therefore, are often easier for the children to process. As Grandin explained, "I think totally in pictures. Visual thinking is like playing different tapes in a videocassette recorder in my imagination" (1995a, pp. 34–35). The two child profiles that follow exemplify this characteristic:

Three-year-old John has mastered most preschool computer software programs. The computer screen displays one piece of visual information at a time, and John can control the sequence and pace of the information. At the same time, he has difficulty following simple directions from his mother. This is because interacting with his mother requires him to process multiple visual and auditory stimuli quickly.

Six-year-old Timmy never follows directions. His teacher tested whether Timmy's lack of following directions is due to poor language and social comprehension or noncompliance. She found that when Timmy is given verbal directions alone or verbal directions with gestures, he does not respond. However, when Timmy is given verbal directions paired with a picture cue, he is consistently compliant. Even fleeting gestural movements occur too rapidly for Timmy to follow. He needs to look at the picture cue for a few seconds in order to understand.

Another learning quality of children with autism is concrete thinking. When learning is predominantly driven by concrete, physical experiences, the result is an understanding of the world of objects and a greater difficulty with abstract concepts, particularly social meaning. This is commonly observed in the children's literal interpretation of situations, as shown in the following cases:

Four-year-old Charlie has a large single-word vocabulary. He can list every character on Sesame Street, every geometric shape, and every automobile make and model. Nonetheless, Charlie is unable to name any attribute or action associated with these things. He does not know how to ask for help or tell his mother when he is sick. His vocabulary is composed exclusively of concrete objects.

Children in a kindergarten class were asked to place their hands in a "feeling bag" and describe how the objects in the bag felt. When it was Amy's turn, the teacher asked, "How does it feel?" Amy answered, "Happy? Mad? Calm? Frustrated?" Although Amy was trying to identify emotions in herself and others, she did not understand that these terms do not apply to inanimate objects.

At 9 years old, Patrick was being taught different safety rules. One of the skills he learned was to telephone 911 for emergencies. His list of emergencies included a stranger in the house when his parents were not home. One evening, Patrick was with a babysitter whose friend stopped by the house for a brief visit. Seeing the babysitter's friend, Patrick ran to the phone, dialed 911, and yelled, "Help—there

is a stranger in the house and my mom and dad are not home." To the embarrassment of the babysitter, the police quickly arrived.

Gestalt Learning

Another fundamental aspect of the learning patterns of children with autism is that they tend to organize and remember information as a gestalt rather than analyze the interrelated meaning of its parts. In the absence of understanding the integrated meaning of an experience or a concept, information is stored as a whole (Prizant, 1982). The next examples demonstrate how echolalic speech and routinized conversations typify this pattern:

Six-year-old Steven has learned that conversation is an exchange between two people. He is still struggling, however, with the meaning of the words he hears. For example, when his mother says, "Hello, Steven," he replies, "Hello, Steven." If she then states, "No, say 'Hello, Mommy,'" Steven answers, "Say hello Mommy."

Max is 7 years old and enjoys maps. The first time Max meets someone, he asks, "What's your name?" and "Where do you live?" Then he checks his map and describes the route the person takes from his or her home to school. Each time he sees that person—whether it is 1 hour, 1 day, 1 month, or 1 year later—he asks the same two questions, then smiles and details the route. If the person happens to have moved, Max becomes extremely agitated and demands that the person state the old address in order to maintain the whole conversation as he remembers it. Comfort and pleasure are linked to these gestalt, routinized conversational exchanges.

Fragmented Memory

The ability to use what you know is a complex process that reflects how information has been organized and stored. Material that is integrated in flexible, meaningful ways can be accessed and used in the same manner. In contrast, a series of fragmented, concrete associations (i.e., "In situation A, I do this; in situation B, I say this") is manifested as rote and contextually driven (or cue-based) behaviors.

The social and communicative behaviors observed in children with autism are typically more rote and less flexible. Grandin (1995) described her gestalt-driven, visual memory strategies. She stated,

> To access spoken information that I have heard in the past, I replay a video of the person talking to me. To retrieve facts, I have to read them off a visualized page of a book or replay the video of some previous event. This method of thinking is slow . . . it takes time to play the videotape in my imagination. (p. 35)

The next profiles further illustrate this concept:

Alan is 8 years old and excels at memorization. In geography class, he made a list of every mountain in the world and its exact height as well as a list of every body of water in the world and its depth. Alan has also memorized the definitions of all the words in his children's dictionary, although he is unable to put any of the words into a sentence or paraphrase their meaning.

Six-year-old Maggie had "mastered" many tasks presented by her classroom teacher. Other therapists at school, however, were unable to get Maggie to complete similar tasks, and Maggie's parents did not observe these skills at home. Upon closer examination, it became clear that Maggie's "mastery" was context specific, limited to specific materials and teacher cues. Lack of generalization reflected lack of meaning.

The learning style in children with autism can be summarized as a series of concrete associations between selective perceptions and their own behavior that are made one situation at a time. They have a tendency to link information in a more restricted and, thus, less typically meaningful way. The fact that fluid analysis and integration of information is compromised for a child with autism influences cognitive, social, and communicative flexibility. Because the child's experiences are learned as a series of single events and are not connected to other related experiences in a broader conceptual sense, the result is rote learning and responding. Cognitive, social, and communication rigidity is manifested by insistence on predictability and routinized interactions.

Social Misunderstanding

Social understanding begins with social interest, shared attention, and social-communicative and emotional reciprocity. These core skills lay the foundation for all social learning. The development of social understanding also requires cognitive flexibility. Social concepts are formed when children compare their perceptions, experiences, thoughts, and feelings with others' during shared social experiences. In children with autism, social concepts are driven by concrete, perceptual information. This limits their development of inferential reasoning, which is required for the development of abstract social concepts and social perspective-taking. The result is limited social understanding and, in turn, self-directed social and communication behaviors that do not take into account the perspective of others.

Figure 2.2 depicts four social messages. The two messages on the left are physical, and their meaning is derived from observable social behaviors. The two on the right, although physical in nature, require an understanding of internal mental states to infer the meaning. Children with autism are more likely to understand the messages shown on the left because the meanings are linked to observable events; they would be challenged by

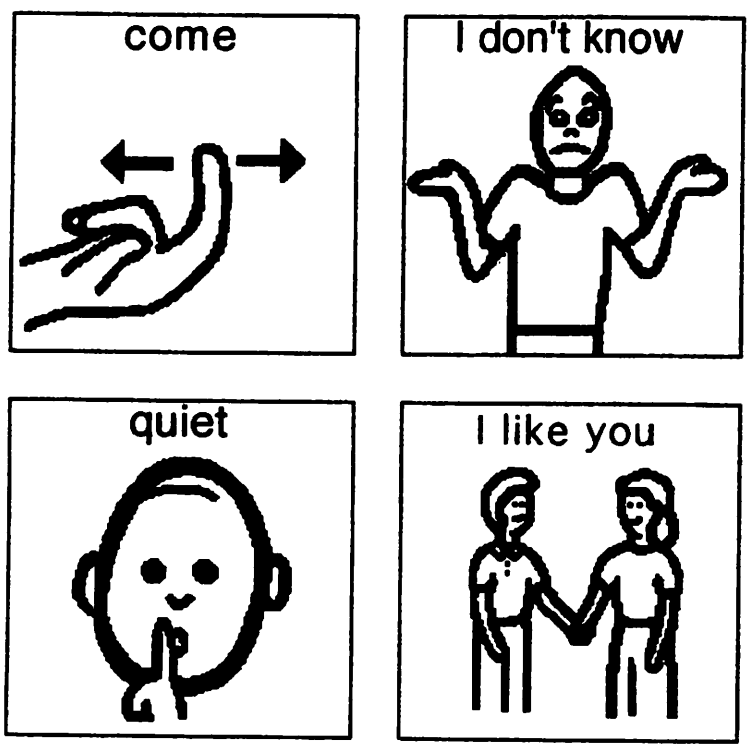

Figure 2.2. Theory of mind display. (The Picture Communication Symbols ©1981–2000 Mayer-Johnson Co. are used with permission.)

those on the right, which require theory of mind for comprehension. The next vignettes demonstrate this distinction:

Michael was a 9-year-old who was striving to understand the meaning of mental state terms such as "think" or "know." In one instance, he was working with his teacher on story sequencing. They were looking at a picture of a girl holding a pencil near her face and thinking about a drawing that she was preparing to begin. Michael's teacher asked, "What is the little girl doing?" "Thinking," Michael replied. "What is she thinking about?" his teacher asked. "She's thinking at her desk," said Michael. His teacher asked the same question again, this time emphasizing the words "what" and "about." Michael answered, "She's thinking at her desk with a pencil on her head and paper on her desk." Michael did not understand that others have "thoughts" that influence their observable actions and, therefore, struggled to understand the meaning of his teacher's question.

Nathaniel was participating in a group activity with his kindergarten class. During the lesson, the teacher accidentally tripped over a building block and fell to her knees. The other children expressed concern while Nathaniel laughed. Most of the children cleaned up the materials after the lesson, but Nathaniel arranged the building blocks exactly as they were when his teacher fell. Then he reenacted his teacher's falling over the block three times. The first and second times, Nathaniel laughed. The third time, however, he rubbed his knee because it hurt. He then walked over to his teacher, rubbed her knee, and said, "Okay?" Nathaniel needed to experience the physical pain to understand the situation and express empathy.

Jared was an 8-year-old who had been learning about his and others' feelings. His teacher was helping Jared to "see" what people are doing when they feel _____, how they look when they feel _____, and what to say when they feel _____. Jared was becoming increasingly able to identify feelings observed in his family and friends and to comment on these feelings. Everyone was very excited about Jared's growing social awareness. Then one day Jared asked his teacher, "Can I look in the mirror to see how I am feeling?" The true meaning behind expressions of feelings continued to elude him.

Without social perspective-taking, children with autism find it difficult to predict the behavior of others and therefore seek social interactions that are predictable. Without an understanding of social concepts such as others' mental states, they find it difficult to monitor, predict, and adjust to ongoing social and communicative interactions

THE PARADOX OF SOCIAL-COMMUNICATIVE INTERACTION

Social interaction is an unpredictable and dynamic activity that requires integrating contextual, language, and social information. The striking polarity between the learning patterns of children with autism and the requirements of social-communicative interaction illuminates the social challenges faced by children with autism. As indicated in Table 2.1, the basic learning patterns of children with autism contrast sharply with social-communicative demands. The following case highlights the discrepancy between the learning style associated with autism and the demands of social-communicative interaction:

Five-year-old Mark liked numbers. If given the choice, Mark would write numbers during the whole school day. At his school team's initial meeting, Mark's teacher brought a copy of his handwritten number chart (from 1 to 482 in precise columns and rows). She reported that he successfully completed academic worksheets but would not participate in group discussions. He also did not play with the other

Table 2.1. The paradox for children with autism

Learning style pattern	Requirement of social-communication
Repetitive	Flexible
Organized	Dynamic
Predictable	Random
Visual	Multisensory
Concrete (physical)	Social

children, and the team wondered why. Through a discussion of Mark's activity preferences, they began to understand the paradox between his learning strengths and social struggles and why interaction with peers was hard for him. This understanding helped the team make decisions about appropriate support for Mark.

Mark focused on information that made sense to him and disregarded social activities that did not. His number chart was a predictable, organized, repetitive, visual, and concrete activity that allowed for sustained and focused attention. His interest in that particular item was, in many ways, representative of the learning style of individuals with autism. Numbers, by their very nature, are patterned, sequential, and infinitely orderly. Interest in numbers, letters, books, computers, and videos—as well as manipulative toys and other play activities containing these same elements—is commonly observed in children with autism.

In contrast, typical social and communicative interactions are unpredictable, dynamic, and random; they are multisensory experiences that require flexibility and social understanding. An appreciation of this sharp contrast is useful in understanding the social challenges and instructional adaptations that are necessary for promoting social growth in children with autism.

CORE SOCIAL AND COMMUNICATION CHALLENGES

Two core skills are the foundation for all later social and communication development: nonverbal social-communicative interaction and imitation. Children must be able to engage in shared attention that is mutually meaningful and imitate others to develop social and communicative competence.

Reciprocal Interactions

Nonverbal reciprocal interactions—exchanging eye gaze, gestures, and other messages—lay the foundation for successful social skills and communication. This process is challenging for children with autism due to their restricted learning patterns and difficulty maintaining the natural pace of social interactions. In the absence of understanding the process of reciprocal interactions, they interact in atypical ways or demonstrate shared attention in more limited contexts. As they acquire effective means to interact with others, they are socially motivated to maintain their success. The next two cases illustrate these diverse patterns:

Three-year-old Zachary laughs aloud whenever his parents tickle him or swing him in the air. He looks at them the whole time they play these social games to indicate that he wants to continue playing. Zachary uses eye gaze to sustain many activities that are pleasurable and meaningful. Zachary does not, however, understand that he can also use eye gaze to make other requests or to share interests with his parents.

Ten-year-old Nicholas was taught that the acceptable way to get someone's attention was to tap him or her on the wrist. Consequently, Nicholas awakened his

mother one night at 3:00 A.M. by pulling off the bed covers in search of her wrist. Once he found it, he tapped it, then said, "Help." It turned out that he had a high fever. The means he used to initiate social interaction, even when sick, was always done in precisely the same way.

Imitation

The ability to imitate gross motor movements, fine motor movements, and actions witl toys and objects is necessary for social learning. Children with autism vary significantly i their ability to imitate what others do. Gross motor, fine motor, and oral-motor plannin is challenging for some children (Hanschu, 1998). In addition, there is often a differenc between spontaneous imitation in natural contexts and elicited imitation in structure contexts. The children may imitate what others do but not understand what their action mean.

Kevin, 5 years old, was having no success imitating an adult in the context of an artificially structured activity. After months of face-to-face contact with his teacher and practicing various fine motor movements, Kevin was only passively cooperative. Yet, in a different setting, Kevin was following his peers' play on the playground equipment, and he imitated the children when they danced to music. His ability to imitate seemed to be driven by motivation and meaning.

Four-year-old Becka was also unsuccessful in structured programs to build fine motor imitation. With toys and objects, however, Becka quickly learned to imitate an adult's simple play actions. Becka, like typically developing children, learned to imitate through simple play. Body awareness emerged later.

SOCIAL CHALLENGES

Social skills encompass virtually every aspect of daily living. For young children, soci mastery is usually defined by the quality of solitary play skills, social play with peers, an socioemotional relationships.

Solitary Play

Children's play reflects an understanding of their social experiences. Children explor how to use toys or materials. They reenact personal experiences. The play skills of chi dren with autism are a window into what they understand. The repetitiveness of the play reflects a more limited understanding of how to use toys in creative ways. This poir was demonstrated by an informal survey of the activity preferences of 100 young childre with autism. Popular responses included the following: playing physical games, using computer, watching videos, looking at books, completing puzzles, and using fine mot manipulatives (Quill, 1997). Each of these activities can be done in the same way agai and again, or, in the case of videos, the same information can be seen repeatedly in th exact same way. The following vignettes describe this characteristic:

Three-year-old John plays alone with toys for hours. Each time he plays with sand, he sifts it through his fingers. Each time he uses blocks, he lines them up in a precise row. Each time he looks at a book, he counts the page numbers from cover to cover. In every situation, John's play consists of one predictable behavior.

Eric is 5 years old and enjoys playing with cars, but in a way that differs from other children his age. Eric's play can be described as "one toy, one action." Eric focuses on one aspect of cars and repeats the same action. Whereas typically developing children are usually interested in many things that cars can do

(e.g., ride, go fast and slow), including in relation to other toys (e.g., carry people, go to a garage), Eric's play consists of spinning the wheels repeatedly.

Six-year-old Polly's solitary play consists of elaborate reenactments of favorite books and videos. Line by line, she replays the stories with toys. The reenactments are precisely the same each time.

Justin, a 4-year-old, was learning to use playdough in a variety of ways. He initially preferred cutting little balls and lining them up in a row. His teacher and preschool friends showed him that other things could be built using animal- and letter-shaped cookie cutters. The first day that his teacher was not directly involved in the activity, she watched Justin using the letter cookie cutters. Within a few minutes, he had spelled out Mighty Joe Young, the title of his favorite movie, in playdough.

Social Play

Social play is complex. Children explore toys and materials, watch and imitate others, and interact verbally and nonverbally with peers. All of these components of play occur simultaneously and flexibly in typically developing young children. Social play also requires social perspective-taking, reciprocity, and creativity. The ability to integrate all of these pieces is a monumental challenge for children with autism, as shown in the following examples:

Frank, a 7-year-old, watches other children during structured activities and plays alone during unstructured activities. His ability to make sense of his peers' activities occurs only when they are all doing the same activity at the same time. When all of the children are doing something different, Frank chooses to play alone.

Tony, a 6-year-old, struggles to understand how to play with his peers at recess. Tony wants to interact with his peers but does so by talking about his favorite movie, The Sound of Music. Every day, he repeatedly asks his classmates questions about The Sound of Music and becomes agitated when they do not know the answers to his questions or ignore him. Tony has difficulty understanding that his interest is not shared by his friends. Furthermore, he finds the social requirements of recess overwhelming.

Eight-year-old Kenny participates in many after-school activities with friends. Kenny and his friends swim, ice skate, ride bikes, and go horseback riding. In addition, they go to the library, children's museums, and the movies. His mother finds that these activities allow Kenny to share experiences with other children without any expectations to cooperate or converse. Any play that requires cooperation or conversation is frustrating for him.

Group Activities

Groups vary in size and predictability. Group activities that are predictable—during which everyone is doing the same thing at the same time—are easier for the children with autism to join. In addition, children with autism are often more successful with group activities that have a predictable sequence of events (e.g., games with rules). The next profiles demonstrate this idea:

Eight-year-old Derek was preparing for a school holiday performance with his class. His teacher placed a blue piece of tape on the stage floor to remind Derek

where to stand. She knelt in front of him, touched his shoes, and said, "Derek, toes stay on the blue, okay?" She left the stage and as the children began to sing, Derek stood on the blue tape with his fingers touching his toes, singing joyfully. Derek was following his teacher's gestural directions and did not notice that his behavior differed from that of the other children in the group.

Sally's ability to attend in her first-grade classroom varies according to activity. During reading time, Sally quietly focuses her attention on the pages of the book because the group activity is organized, predictable, and sequential. When discussion begins, Sally becomes distracted and disorganized and starts talking to herself. She is unable to follow the complexity and random flow of group discussion.

Abby is in second grade. She and her mother have made a list of all of the children in her class and decided daily who will be that day's special friend. This special friend is given a red ribbon to wear for the day. Any time that Abby gets confused during group activities, she can look for her special friend wearing the red ribbon to ask for assistance. This helps Abby participate in groups more easily.

Community Outings

The complexities of community activities place great demands on children with autism. They appear more successful in the community when efforts are made to preview upcoming events and help the children feel calm and organized in the setting. This point is demonstrated by the following cases:

Six-year-old Pete was most relaxed during any rhythmic activity, such as listening to books on tape or reciting the alphabet. He was frightened of haircuts, so his teacher made a special storybook about getting a haircut and recorded an accompanying song for him. Pete listened to the story and song as well as practiced getting pretend haircuts at school and the barbershop until the actual haircut day arrived. He had mastered all the steps of getting a haircut except the actual snip. With all of the supports and practice, the barber made his first cut and Pete did fine.

Kathleen, a 6-year-old, went to church with her family. She sat quietly whenever the music was playing but looked for other things to do when the priest was talking. She especially liked running up to people who wore hooded jackets so that she could grab the string to twirl. Once a special church bag containing a Walkman tape player and music along with a rosary (to twirl) was provided, Kathleen was an "angel" at church.

Socioemotional Relationships

Relationships are built on mutually enjoyable, meaningful interactions. The learning patterns observed in children with autism profoundly influence their experience and understanding of interactions. They may only notice extreme expressions of emotion and miss subtle socioemotional messages. They also misinterpret the meaning of others' messages. They make concrete and often incorrect associations between their perceptions and the meaning of others' social and emotional messages. Atypical or unexplained emotional responses can result from these misinterpretations.

The development of relationships is further complicated by the sensory sensitivities, anxiety, and compulsive rituals common in children with autism. Sensitivity to sound or touch can affect their level of comfort interacting with others. Sensory sensitivities can result in atypical ways of seeking comfort from others; attachments to parents and other sig-

nificant caregivers may be expressed in an atypical manner as well. Anxiety and compulsive rituals also influence the quality of reciprocal interactions. These factors all affect the development of meaningful, pleasurable relationships. As the following vignettes exemplify, this is a challenge for the children's families, teachers, and friends:

Justin is 3 years old and very attached to his mother, who has short blonde hair and wears glasses. At his new school, Justin finds comfort by hugging a teacher who has short blonde hair and wears glasses. He cries with all other adults.

Joshua is a 4-year-old who is very attached to his family. His separation anxiety started with him screaming each time someone in his family left the house. Soon, just the sound of the garage door opening triggered an outburst. Joshua's preschool teacher made a chart called "Who's at School; Who's at Home" for the classroom. The children moved their photos to "school" upon arrival and to "home" upon dismissal. This was successful in calming Joshua at school, so his teacher decided to make a "Who's at Home; Who's Outside" chart for Joshua's family. When Joshua's family left for work the next day, Joshua began to scream. His mother carried him to the chart and moved his father's photo to "outside," and Joshua immediately calmed down. He pointed to "Mommy" and "Joshua" on the chart for reassurance that they were "at home" and remained fine. The entire family continues to use the chart because it helps Joshua understand that they will eventually return any time they leave the house.

Leslie, who is 5 years old, enjoys watching videos. While watching Bambi with her family, Leslie's mother narrates the movie and describes actions and feelings. As Bambi is a sad movie, the name soon became Leslie's definition of "sad." Thus, whenever Leslie is sad, she says, "Leslie's Bambi."

Tom, a 7-year-old whose mother had died 2 years earlier, was nonverbal. With his limited language understanding, his teaching team still felt it was important to explain to Tom the loss of his mother. A book of photos of each family member was developed, with the pictographic symbol for "sad" next to his mother's picture and a symbol for "happy" next to photos of all other living family members. Tom always carried the book in school and at home, and it was shared with him daily. A few weeks later, Tom's father commented that every night Tom went to bed with his photo album and opened it to the picture of his mother.

Ricky liked to complete puzzles with one particular girl in his kindergarten class. His favorite puzzle was of a chicken. Ricky became so excited about playing with his friend that every day he asked her to play the chicken puzzle. Soon he began to approach her dozens of times a day, say, "Chicken, chicken," and laugh. He eventually became uncontrollably excited whenever he saw or heard anything related to chickens. This was how Ricky expressed the joy of his friendship.

COMMUNICATION CHALLENGES

Successful communicative interaction requires that a child quickly attends to and understands the meaning of rapidly changing multisensory, language, social, and affective information. Communicative flexibility poses the biggest challenge for children with autism. Differences are observed in the reasons children with autism communicate, the form of their communication, and the range of topics that they select. A routinized style of communication characterizes the children's efforts. Their communication patterns appear to be the means for creating meaningful interactions amid perceived social chaos.

Initiating Communication

Children with autism often need concrete cues to remember what to say. Without these tangible cues, they often cannot think of something novel to say. This point is demonstrated in the next vignettes:

Lance arrives at preschool every day with a smile. He stops at the doorway, and his teacher says, "Good morning, Lance," to which he replies, "Good morning, Ms. Anne." His teacher then directs him to put his things in his cubby and make a play choice. This exchange is a daily routine. One morning, Anne was out of the classroom when Lance arrived. He stood at the doorway and waited. Becoming increasingly agitated, he stated, "Good morning, Lance; good morning, Lance. Say 'Good morning' Ms. Anne. Good morning, Lance." He stood and rocked at the door, repeating the words that, in his mind, initiated the arrival routine.

Bruce, age 4, used speech to request food and toys but never commented about his activities. Yet, Bruce was interested in a peer's augmentative and alternative communication (AAC) system. One day during snack time, Bruce sat next to his friend and used the voice output system to comment about his snack: "This is good," he said. Bruce also used it to comment on another child's behavior by saying, "Mad, loud." The symbols on the AAC device served as a concrete reminder to Bruce of things he could say.

Nina was 6 years old and screamed when people were too close to her. Many intervention plans were tried to get Nina to replace screams with the phrase "Go away." She was so anxious during the actual situations that she was unable to organize herself to use these words. Because Nina was so motivated by videos, her teachers decided to videotape examples of family members and school friends saying "Go away" when others were too close. There were 10 different episodes on the final tape. Nina was interested in the tape, and soon after she viewed it, she began using the words "go away" with prompting.

Echolalia

Children with autism use echolalia for a variety of reasons. Echolalia typically reflects context-specific learning of whole messages. The generation of novel ideas and messages is more difficult because it is an analytical process that requires flexibility in thinking and planning. *Immediate echolalia*, the partial or exact repetition of a message immediately after it is heard, is common. Many children, unfortunately, have learned to repeat what is said without understanding the meaning of the message. *Delayed echolalia*, the partial or exact repetition of a message at a significantly later time than when originally heard, is also common. It is linked to a specific person or setting and, thus, reflects the child's less effective efforts to link language meaning with events. Echolalia can be manifested in various ways, as shown in these examples:

Six-year-old Danny enjoys listening to books on audiotape. He quickly memorizes a book and then repeats the entire book, including the sound effects that indicate that it is time to turn the page.

Bobby is 4 years old and has been taught to imitate language out of context. A typical exchange between Bobby (B) and his teacher (T) follows:

T: Bobby, what is it?

B: What is it?

T: Say, "It's blue."
B: It's blue.
T: Good boy.
B: Good boy.
T: (presents next item)
B: What is it?
T: Yes, what is it?
B: What is it?
T: Bobby, look; say, "Green."
B: Say green.

Bobby obviously understands that communication is an exchange; however, he does not understand the meaning of the messages shared.

Kim was a 5-year-old girl whose communicative intent was often difficult to determine. She spoke in full sentences, but the purpose of her message was often hard to understand. Kim's favorite activity was watching videos, so she made associations, based on some concrete similarity, between people she met and characters from a video. The first time she met her kindergarten teacher, Kim said, "There's no place like home; there's no place like home." Her teacher was wearing a pair of red shoes, and this reminded Kim of Dorothy's ruby slippers and famous words in The Wizard of Oz. During the entire school year, Kim would say, "Good morning, Ms. Sandy; there's no place like home" each time her teacher wore those shoes to work.

Reciprocal Conversation

The complexity of reciprocal conversation requires combining all of the components of cognitive, language, social, emotional, and communication development. Children with autism do their best to interact with others, applying their own understanding of the situation. Frequently, this entails engaging in routinized conversations:

The process of teaching conversation exchanges to 8-year-old James was an education for his teacher. Just when she thought that James had learned to generalize a particular message, he would remind her of his learning style. For example, James had been practicing asking the question, "Where is _____?" through many games and activities. One game entailed his posing the question, "Where is _____?" Then they would go on a treasure hunt, find the item, and James would say, "I found it." One day, he was looking for a CD-ROM for his computer. His teacher asked, "Do you want the CD? Where is it?" After looking among the CDs for a few minutes, James announced, "I found it." His teacher said, "Where is it? You found it?" James replied, "Where is it?" and the circular conversation continued. James comprehended many pieces of the "say-search-find" activity, but the exact meanings of the words used continued to elude him.

Shana, 9 years old, is striving to understand other people's feelings. Her struggle to comprehend the sentiments of others is demonstrated by the following conversation between Shana (S) and a visitor (V) to her classroom:

S: Were you here before?
V: Yes, I visited your school in October.
S: Was your hair long or short?

V: My hair looked almost the same.
S: I remember it longer. I don't like it now.
V: Oh, I like it.
S: What I said, how do you feel?
V: A little uncomfortable.
S: What I said, and now you're sad?
V: Yes, I'm a little sad. I like compliments. Do you remember learning about giving compliments?
S: Yes. Next time I will say, "I like your hair," and you will be happy.

DRIVEN TO SAMENESS

Ritualistic behaviors dominate the social and communication patterns of children with autism. Rituals seem to express the children's emotional state or understanding and can be an expression of enjoyment, discomfort, fear, or confusion. Rituals can reflect limited skills or be a child's attempt to create order in a confusing social environment. Research is in its infancy regarding the source of many ritualistic behaviors and the relationship between rituals and related anxiety disorders, obsessive-compulsive disorders, and other neurological disorders.

Accounts given by individuals with autism provide some insight into this little understood characteristic. For instance, adults with autism have described their ritualistic behavior as a strong internal drive, a pleasurable experience, or a means to compensate for an overstimulating environment. Alex, a woman who was diagnosed with autism in childhood, explained, "I have pleasurable rituals that help me function and other rituals that are disturbing for me," and "Rituals happen because I have no internal organizational system" (Michaels, 1998). As an adult with autism, Barron described his childhood experiences with rituals: "I loved repetition. Every time I turned on a light I knew what would happen. When I flipped a switch, the light went on. It gave me a wonderful feeling of security because it was exactly the same each time" (Barron & Barron, 1992, p. 143).

The rituals that individuals with autism employ are almost limitless, as illustrated in the next vignettes:

Gary is 3 years old and has learned the names of body parts through the book and song There's a Frog on My Nose. Gary enjoys looking at the book, listening to the song, and touching the body parts named. He also enjoys listening to the song and following directions from a frog puppet used by his mother. Whenever the puppet instructs him to touch a body part that is not a part of the original book, Gary screams. He has generalized the activity to new materials, but the specific body parts that he associates with the frog song have to stay the same.

Matt is 4 years old and insists that objects in his house remain in the same place. One day, Matt's aunt was visiting and having tea with his mother. Matt's mother had tea with milk; his aunt had plain tea. Matt asked his mother for milk. She poured him a glass of milk, and he turned to pour it in his aunt's cup. His mother said, "No." Matt then began to scream, pointed to the teacup, yelled "Milk," and began to cry. When his aunt handed him her teacup, he quickly calmed down, poured some milk into her cup until it looked the same as his mother's, and happily walked away.

Six-year-old Caroline's rituals are marked by her insistence that the daily routine be predictable. Caroline becomes extremely upset when certain events interrupt the routine. Examples include when her teacher is absent, when Friday's normal

school lunch (pizza) is not offered, or when her mother stops on the drive home from school to run an errand.

Michelle has been collecting and carrying red objects since she was a toddler. On her first day of kindergarten, she arrived at school carrying a large red bag containing 10 pounds of red objects. In addition, her attention was fixated on all red things in the classroom. She would scream when stopped from gaining access to anything red in the room, regardless of location or ownership. It took a year for her to accept the school rule that she could only carry one red item.

Linda, at age 4, never used her left hand for anything other than carrying a blue miniature toy with her at all times. Previous efforts to remove the blue toy resulted in days of panic and refusals to eat and sleep. Only when a lovely blue box that played soft music was placed near her—to hold her blue toy—was Linda gradually able to let go for increasing periods of time. As long as she could see her toy, she was calm. Linda's interest in blue miniatures gradually evolved into a lovely collection of pretty blue boxes that contain beautiful and unusual blue items.

Mia's second-grade teacher has 15 colorful cards hanging in the classroom that define social terms in concrete ways. For example, cope *means "try three more times, then ask for help";* change *means "I don't know what is next"; and* patience *means "use the relaxation procedure while waiting." When Mia was asked which of the social rule cards was easy to follow, she looked at her cards for a long time and then replied, "Cope." When Mia was asked which of the social rule cards was difficult to follow, she immediately replied, "Change; I don't like change."*

UNKNOWNS

The scientific literature of the past decade has shed light on the complexity of autism. Nevertheless, anyone who has lived with or worked with a child having autism recognizes that the research does not capture the diversity of children with the disorder. The autism continuum is broad and contains many unknowns. The various behaviors of individual children are constantly challenging what specialists think they know about autism. The following vignettes are important to the continued pursuit of understanding autism and humbling to those who dedicate their lives to helping the children:

Bonnie, an 8-year-old who was nonverbal, came to a new school with a history of screaming and vocal outbursts. The behavior gradually worsened over time, even with intensive behavioral intervention. In her new environment, an astute observer noticed that Bonnie had a number of motor rituals that inhibited her movement. For example, she would stop at a doorway if the floor changed appearance and would rock three times before crossing the threshold. Bonnie would also move up and down three times before sitting on or rising from a chair. Whenever these patterns were interrupted by an adult through physical prompting, she would scream or yell. Allowing Bonnie to engage in her movement rituals resulted in the gradual elimination of her screaming.

Marty was a nonspeaking 4-year-old who frequently thrashed his body. At times, his body movements seemed spastic and uncontrollable. There were days when Marty would appear to be in pain and would not eat or sleep. For instance, Marty would be calm while watching a video and then suddenly scream and throw his body to the ground. Neurological testing revealed nothing. Intense behavioral intervention was discontinued after 6 months due to lack of progress and an increas-

ing refusal of food. The focus of Marty's program shifted to helping him feel comfortable. He wore heavy vests, weighted hats, and headphones; used a pacifier; and was silently prompted through all tasks. Another child in Marty's class used a set of elaborate communication boards with about 50 messages on each board. One day, after one of his episodes, Marty took one of the communication boards, grabbed an adult's hand, and spontaneously pointed to the following sequence of pictographs: "help," "mad," "drink." Marty, who originally appeared to have no comprehension of language, spontaneously communicated his pain. After that, his team and family tested him and found better understanding and use of language through AAC systems. In addition, Marty's negative behaviors were significantly reduced after neurologists conducted a more thorough examination and prescribed appropriate medication.

Allysa was a verbal, happy, 8-year-old who stopped talking after a week-long battle with strep throat in January. There was no medical reason for her mutism. A number of interventions were attempted, but she consistently smiled and refused to talk; instead, she used writing to communicate. A few months later, an elaborate story was written for Allysa to explain that her throat was okay and that she could talk after eating a lozenge. Each morning, Allysa's mother would give her a lozenge, reassure her that her throat was okay, and ask her to say something. Allysa continued to smile and to refuse to speak. Family and professionals working with Allysa became increasingly concerned after 6 months of silence. Finally, on Friday, July 11, Allysa took her lozenge and said, "Okay, Mommy." What was the "magical" solution that prompted Allysa to speak? Through careful reflection, the team discovered that Allysa stopped talking on Friday, January 11 (J-11). Why, then, did she not talk on June 11? It was not a Friday, and Allysa apparently connected Friday, J-11 with her speech patterns.

Julian, at age 6, had made significant progress in all areas of development except receptive language. His responses to verbal directions continued to be random even though his hearing was normal. Eventually, Julian's family and team began to notice an unusual pattern. Whenever Julian was sick with a fever, he consistently employed echolalia and responded to verbal information. All other times, he did not respond to verbal language and engaged in self-talk intermittently. Julian continues to follow this pattern.

SUMMARY

Autism is a spectrum of disorders that manifests in diverse ways. This chapter illustrates some learning, social, and communication experiences of children with autism. A complex disorder requires complex solutions. The challenge for educators and families is to respect children's struggles with social and communication challenges while trying to build success in those areas. Assessment and intervention, which are addressed in the following chapters, must take into account each child's unique learning style and social perspective in order to build skills and meaningful relationships.