Foundations of Autism Spectrum Disorders: An Online Course

Session 2

Characteristics of Learners with Autism Spectrum Disorders


Upon completion of Session 2, learners will:

1. list the core triad of features that characterize the autism spectrum disorders.
2. describe social skills that are often delayed or lacking in learners with autism.
3. identify communication and language characteristics that are commonly observed in learners with ASD.
4. describe the repetitive behaviors/restricted interests that frequently are observed in learners with ASD.
5. identify challenges that may arise from unexpected changes in the routines of learners with ASD.
6. describe how differences in sensory responses in learners with ASD can affect learning, social interactions, and behavior.
7. describe receptive language and auditory processing characteristics that may impact learning and development in learners with ASD.
8. define “generalization” and describe its relevance to ASD.
9. describe the potential impact of ASD on adaptive functioning.

As discussed in Session 1, autism spectrum disorders are characterized by a core triad of diagnostic features: (a) impairments in social interaction; (b) impairments in communication; and (c) restricted, repetitive, and stereotyped patterns of behavior, interests, and activities. Although all learners with ASD exhibit these features, the severity of the symptoms and the range of cognitive abilities vary tremendously from person to person. In the following sections, a brief overview of each of the core characteristics is provided. Each description of core characteristics will apply to many learners with ASD, but few apply to everyone. For example, some learners with ASD make eye contact in a natural, comfortable way. Some learners with ASD rarely make eye contact at all. Other learners with ASD may have learned that eye contact is an important component of social interactions and communication and work hard to make eye contact, but their use of eye contact may seem mechanical and awkward. In addition, even if eye contact is present, it may not be smoothly integrated with other forms of communication such as words or gestures. Following the sections on each of the core characteristics, a discussion of developmental changes in the characteristics of autism, as well as additional learning characteristics and needs, is provided.
Impairments in Social Interaction
The basics of social interaction develop rather easily and naturally, without explicit instruction, for the majority of people. Between 6 and 18 months, most infants spontaneously develop joint attention, the ability to coordinate visual attention of something of interest (a bottle, a toy, etc.) with that of another person. In other words, learners can follow the gaze or gestures of another person (i.e., respond to joint attention), and can use their own eye gaze and gestures to encourage others to attend to the same things they find interesting (i.e., initiate joint attention). Young children with autism, however, often are delayed in their use of eye gaze, in pointing and understanding others’ use of pointing, and in showing others things that are of interest to them (Mundy & Burnette, 2005). As implied by the diagnostic criteria, many learners on the autism spectrum never become proficient in these skills.

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Log in to the ASD Video Glossary from the Autism Speaks website at http://autismspeaks.player.abacast.com/asdvideoglossary-0.1/autismspeaks/login.

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<td>Video Clip Title: Sharing Attention, Enjoyment, Interests, or Achievements with others</td>
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A common misconception about autism is that learners with ASD are not interested in social interaction. While some may prefer solitary activities, others seek out social interactions, but have difficulty doing so skillfully. For those who do develop friendships, time spent together is often focused on shared interests, such as video games, or in physical play, such as riding bikes. Frequently, a child with ASD will be most successful with adults or with younger children rather than same-aged peers. Group interactions and activities are typically challenging for learners with ASD.
Because of impairments in social interaction, learners with ASD often are not successful in their attempts to interact with others and interpret social cues. As such, two core skills are needed for learners with ASD to be socially successful: (1) recognizing and understanding emotions and beliefs of self and others and (2) understanding that another person has thoughts and feelings that are different from one’s own, a construct described as *theory of mind* (Baron-Cohen, Tager-Flusberg, & Cohen, 2000).

Young typically developing children acquire the basics of theory of mind, including the ability to interpret body language and facial expressions, quite early (i.e., three-to-four years of age) without any explicit instruction (Wellman, Cross, & Watson, 2001). For young children with ASD, understanding of self and others often is delayed and impaired (Baron-Cohen, 1993). Much of the research on theory of mind with young children has focused on the use of “false belief tasks” which require both typically developing children and children with autism to take the viewpoint of another. An example of this type of task is provided in Case Example 1. For a graphic example of theory of mind, view the following Web site: [http://www.holah.karoo.net/sallyanne.gif](http://www.holah.karoo.net/sallyanne.gif).

**Case Example 1. Theory of Mind False Belief Task**

A child watches while a puppet named Eddie places a toy car under a cup and then leaves. After Eddie has left, another puppet comes along and moves his toy car into a box, without Eddie witnessing this switch. Then, Eddie returns, and the child participant is asked where Eddie will search for his toy car, under a cup or in the box. Often the child is asked where she believes the toy car is located as well. A typically developing child will tell the examiner that Eddie will look for his car under the cup. However, a child with ASD would say that Eddie will look in the box, thereby demonstrating his inability to take the viewpoint of another person.

As children enter elementary school, they also begin to understand irony, sarcasm, and white lies; the distinction between literal and non-literal speech; and metaphors, indicating a more advanced ability to understand the beliefs of others. Learners with ASD often struggle with these aspects of communication, even when they have good verbal and communication skills (Twachtman-Cullen, 2000).

**Impairments in Communication/Language**

The development of communication is atypical in learners with ASD. Many learners with ASD experience delayed or atypical communication and language development, while others never learn to talk at all (Sturmey & Sevin, 1994). Indeed, some estimates suggest that between 30% and 50% of learners with autism fail to acquire useful spoken language (National Research Council, 2001). Among the majority who do learn to communicate effectively, language is often delayed, and there frequently are differences in the way that language develops. For example, some infants/toddlers with ASD start...
to use words, but then stop talking or making progress in their language development (Landa, 2007). This regression of early communication skills occurs in 25%-30% of children with ASD between 15 and 24 months of age and is not only characterized by a loss of verbal communication, but also gestural communication, such as waving and pointing, and social skills, such as making eye contact and responding to praise (Werner & Dawson, 2005).

More recently, scientists have come to realize that late onset of symptoms of autism is characterized either by regression (skill loss) or by a developmental plateau. A developmental “plateau” is marked by a failure to progress and transform simpler behaviors into more advanced social and communication skills (Chawarska et al., 2007; Siperstein & Volkmar, 2004). These two late onset patterns, which are often seen in relationship to communication, can be difficult to distinguish. Moreover, many children with a reported regression already have a number of developmental delays prior to the regression itself (Goldberg, Thorsen, Osann, & Spence, 2007; Ozonoff et al., 2005; Siperstein & Volkmar, 2004; Werner, Dawson, Munson, & Osterling, 2005), and some children with clear signs of autism in the first year of life also experience skill loss in the second year (Werner & Dawson, 2005).

Thus, some have suggested four different onset patterns: early (before 12 months) onset of symptoms without skill loss, late onset of symptoms seen in skill loss (regression) without early symptoms, early onset combined with later skill loss, and late onset without skill loss (developmental plateau) (Ozonoff et al, 2010). Another way to think about how autism starts is that children may reach the threshold for diagnosis at different points in the first three years of life, involving different amounts and/or combinations of early signs, slowing development, lack of progression, and frank losses (Landa et al., 2007; Rogers, 2009; Ozonoff et al, 2010).

It is important to be especially vigilant for other signs of ASD in children who display regression of skills in any area. One large-scale longitudinal study of toddlers by Lord, Shulman, and DiLavore (2004) found that language regression after normal language onset was unique to autism and not found among children with other developmental delays.

### Video Clip Activity

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<td><strong>Video Clip Title:</strong> Expressive and Receptive Language: Sounds, Words, Prosody</td>
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In addition to mutism (not using language) and delayed language development, there are other common communication deficits for learners with ASD. Scheuermann and...
Webber (2002) describe the communicative phenotype in ASD as including unusual tone of voice and inflection, reversing pronouns, having a lack of variety in sentence structure, and using immature or simplistic grammar (e.g., a child referring to himself as “you”). Still others may be overly formal in their speech patterns (and vocabulary), and sound like “little professors” (Twachtman-Cullen, 2000; Wetherby, Prizant, & Schuler, 2000). Echolalia, the persistent repetition of auditory stimuli in what often appears to be a non-communicative or stereotypic way (Rhode, 1999), is another language feature often displayed by learners with ASD. Echolalia includes, for example, repeating or “echoing” back what another person first said, or repeating lines from a commercial, video, or movie over and over.

Even children and adults with ASD who develop good communication skills often have difficulty conversing with others (Rubin & Lennon, 2004). These difficulties include the inability to generalize and/or spontaneously apply learned communication skills across settings and people (Sigafoos, O’Reilly, Schlosser, & Lancioni, 2007) and are frequently related to the pragmatics of a conversation (e.g., knowing how to keep the conversation going, knowing how to end a conversation appropriately). Reciprocity is usually lacking or limited in the conversations of persons with ASD have with others, significantly impacting social interactions. For example, a person with ASD may be able to talk at length about a topic of strong interest to himself, but may have difficulty continuing when the conversational partner raises or tries to switch to another topic. Interestingly, some researchers have suggested that for some learners with ASD, echolalia may help learners with ASD maintain a social communicative interaction with others (Prizant & Rydell, 1984).

Another area of communication that can be problematic for learners with ASD is in understanding the non-literal use of words and phrases. For example, knowing that “it’s raining cats and dogs” has to do with a heavy rain storm, not with little animals falling from the sky, or that “What’s up?” is a question about what’s going on, not about the ceiling tiles, birds, or stars. Concrete, rather than abstract, thinking may result in literal interpretation causing significant communication problems, as well as problems in general understanding for learners with ASD (Twachtman-Cullen, 2000).

The tendency to think in rather concrete ways can also be seen in the imaginative play of learners with ASD, which is typically delayed and impaired. Children may like to stack blocks, move animals in or out of a barn, or act out favorite scenes from a video.

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However, it is rare to see children with ASD spontaneously use an unrelated object to represent another object; that is, engage in symbolic play (e.g., use pencil as an airplane) or creatively develop a new story line with available toys (Rogers, Cook, & Meryl, 2005). Addressing and promoting imaginative play skills is particularly important because it serves as the basis for learning many important social, communicative, and cognitive skills.

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**Category:** Communication  
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**Video Clip Title:** Make Believe or Social Imitative Play  
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In summary, communication/language is an important domain for diagnosing and intervening with learners having ASD. Assessment and programming will likely center around initiation of communication/conversations, expressive-verbal language, joint attention/gestures – non-verbal language, receptive language, and pragmatics (conversational skills).

**Restricted, Repetitive, and Stereotyped Patterns of Behavior, Interests, and Activities**

Another core characteristic of ASD is the presence of restricted, repetitive, and stereotyped patterns of behavior, interests, and activities. The following sections provide a description of each of these patterns of behaviors as well as how they are manifested in learners with autism.

**Repetitive behaviors.** Many people are familiar with some of the repetitive behaviors that are quite common in learners with ASD, such as rocking or spinning, hand or arm flapping, odd hand postures, spinning objects, and twirling string. Not all learners with ASD engage in such specific behaviors (i.e., someone with Asperger’s disorder may have intense and restricted interests but not display repetitive behaviors). Interestingly, many typically developing young children may engage in some repetitive behaviors. A key difference is that children with ASD may have more frequent, more intense, and longer-lasting repetitive behaviors than typically developing children, and these behaviors and interests may impede learning and optimal development (Bodfish, Symons, Parker, & Lewis, 2000).

**Restricted interests and activities.** Interests in narrowly focused topics are very common in learners with ASD (Twachtman-Cullen, 2000). Sometimes the topic of interest is not unusual developmentally (e.g., a young child who loves Thomas the Tank Engine, a 10-year old boy who is riveted by video games). What may be unusual with these interests
in learners with ASD is the narrowness or intensity of the interest and how difficult it may be for them to engage in more functional and meaningful activities.

Other interests may be more unusual (e.g., a fascination with door hinges or orange letter Hs), or more intense than in most other children, such as having an encyclopedic knowledge of dinosaurs by age 4 (Twachtman-Cullen, 2000). Often, learners with ASD appear to spend enormous amounts of time thinking about, talking about, and wanting to engage in activities related to these interests, and may have trouble shifting attention away from these topics, thus interfering with learning and other activities that promote optimal development.

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**Category:** Repetitive Behaviors and Restricted Interests  
**Sub category:** Restricted Patterns of Interest  
**Video Clip Title:** Preoccupation with Restricted Patterns of Interest  
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*Development of routines and insistence on sameness.* Another hallmark of autism is the development of routines and the insistence on engaging in the same routines repeatedly. For example, a change in routine can cause intense anxiety as illustrated in Case Example 2.

**Case Example 2. Stereotyped Patterns of Behavior**

Molly, a six-year-old with ASD is picked up at school everyday by her mom, Sheila. They typically follow the same route home because Sheila knows that Molly becomes quite upset when they go a different way. Today, Molly’s dad, Jerry, had to take his car to the mechanic. Because of this, Sheila and Molly must pick him up at work. As they pull out of the school parking lot, Sheila drives in the opposite direction of their house. Molly quickly realizes that they are not going the way they usually go and begins to yell, “Not right! Not right!” Sheila tries to explain to Molly that they must go get Daddy, but this does not help comfort Molly who continues to yell and cry during the entire trip to Jerry’s work and then home.

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**Category:** Repetitive Behaviors and Restricted Interests
Difficulty with transition may be a problem for learners with autism. That is, it is often hard for persons with ASD to stop one activity in which they are engaged and then shift to another activity. For example, a young child in preschool may become extremely upset and have a tantrum when the regular daily routine is interrupted due to a field trip to the state fair. Another child may find it difficult to leave the block center to join her peers during circle time. A toddler with ASD may have difficulty moving from one play activity to another.

Developmental Changes in the Characteristics of Autism

The autism spectrum disorders are developmental disorders, in that there are differences in development that have a lifelong impact. However, the specific symptoms of autism that are evident at one stage of life are not the same as the symptoms observed in the same person at a different stage in life. Symptoms and skills often improve as children mature and as they learn new skills (McGovern & Sigman, 2005). Thus, young children initially could have significantly delayed language, but become competent speakers by the time they enter elementary school. One toddler with extreme sensitivity to touch may have much less difficulty with sensory input by adolescence, while another may still find certain clothes impossible to wear because of the way they feel.

Additional Learning Characteristics and Needs

Learners with ASD have characteristics and learning needs that are included in the diagnostic criteria (e.g., communication, social skills), as well as unique learning needs and experiences that are not part of the diagnostic criteria. To understand and work effectively with learners with ASD, it is important to understand these characteristics and needs, which can have a profound effect on learning, understanding, interaction, and behavioral adjustment. These unique characteristics can include: (a) sensory issues, (b) cognitive and learning features, (c) generalization difficulties and prompt dependence, (d) uneven skill profiles, (e) adaptive behavior deficits, and (f) visual processing strengths. An in-depth discussion of each of these learning characteristics and needs is presented in the following sections. Unusual responses to sensory information have been reported in learners with autism dating back to Kanner’s first descriptions of his eleven patients.

Sensory Issues

Unusual sensory features have been reported in 42% to 88% of school-aged children with ASD (Baranek, Parham, & Bodfish, 2005). Learners with ASD often have
heightened or decreased experience of sound, lights, movement, touch, smell, and/or taste. Fascination with sensory experiences, such as spinning objects, watching patterns of light between one’s fingers, or rubbing soft objects on one’s face, is frequently observed.

Differences in sensory responses can contribute to distractibility and difficulty in shifting attention, and heightened sensitivity can lead to avoidance behaviors. On the other hand, reduced sensitivity may be associated with the seeking of sensory input. Differences in sensory responses can have a profound impact on learning and on social experiences and interactions, as well as behavior.

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For some, sensory experiences can be overwhelming, or sometimes even painful. Temple Grandin, an adult with ASD, described her oversensitivity to sound and touch in this way:

> When people touched me, I experienced an overwhelming drowning wave of over stimulation. … Certain noises affected me like a dentist’s drill hitting a nerve. … I often became anxious when balloons were present because I was afraid they would pop. Other noise that hurt my ears were the school bell’s ringing and the hum of the big industrial vacuum cleaner that was used to clean the elementary school classrooms (Grandin, 2005, pp. 1280-1281).

Because sensory issues can interfere with functioning in daily life, team members working with learners with ASD should assess their influence on learning, development, and interactions with others. Occupational therapists typically assess atypical sensory responses, as well as fine motor skills and activities of daily living.

### Cognitive and Learning Features
Although some persons with ASD have average to above average intelligence (Levy, Hyman, & Pinto-Martin, 2005), many have difficulties associated with imitating others, receptive vocabulary and auditory processing, extracting meaning, and executive function. Because these skills have such a direct influence on cognition and learning for children and youth with ASD, team members must be aware of them so that they can be addressed effectively in the classroom and community.
Imitation deficits. Young typically developing children imitate their caregivers and other adults in their environment, both verbally and motorically. As typically developing children start to interact with other children, they imitate one another, increasing their knowledge and understanding of the world around them. Because imitation has such a powerful influence on learning, parents and teachers often teach through demonstration, and frequently request imitation (Rogers, et al. 2005). However, the imitation skills of children with ASD tend to be poor, impeding their ability to learn new skills. Although many children with ASD eventually acquire imitation skills, impairments in the nature and quality of imitation often persist throughout life (Rogers, et al. 2005). Case Example 3 demonstrates the difficulties that many children and youth with autism have in imitating others’ actions.

### Case Example 3. Imitation Deficits

David is a three-year-old boy with ASD who receives services in an inclusive public school pre-kindergarten program. During circle time, his teacher, Mary, often reads books and sings songs with the children. Today, Mary is singing “The Wheels on the Bus.” As she sings the song, Mary demonstrates the actions that go with it. The typically developing children in the class begin to sing and imitate the actions along with her. David, however, sits and looks at Mary or watches the children on the playground through the window. Mary redirects David’s attention back to the song, but he quickly turns to watch the children outside again.

Joint attention. Joint attention can be described as the capacity of a child to maintain a common focus with another person on an event or object in the immediate environment. In typical infants, joint attention behaviors begin to emerge in the 6 – to 12-month period and increase in frequency and range of behavior used in the second year of life (Legerstee et al., 2007). Joint attention is an intentional communication act and is a vehicle for learning language from others. Thus, in joint attention the young child focuses on the person and the object at the same time through gaze shifts, gestures, and verbal communication. Joint attention is an area of weakness for young children with autism. Case example 4 provides an example of a infant/toddler with joint attention difficulties.

### Case Example 4: Joint Attention

Reggie is an 18 month old toddler with ASD who is receiving intervention services in his home. Reggie’s mother has been frustrated that her son does not seem interested in interacting with her, preferring to play with his stacking rings by himself. The early interventionist focuses on structuring joint attention activities that can be carried out in the home as a priority family and child outcome on the IFSP. As such, she is assessing the array of behaviors that Reggie does use to communicate and will develop strategies for the parents to use when engaging Reggie in play.
Receptive language/auditory processing weaknesses. Communication deficits are included in the diagnostic criteria for autism; however, the criteria focus on the expressive use of language (e.g., speaking). Many learners with ASD also have delayed or impaired receptive language skills that are needed to understand what others are saying (Tager-Flusberg, Paul, & Lord, 2005). Children and youth with ASD often need extra time to process, or think about, what has been heard before they can respond to another person’s request for interaction or information.

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Extracting meaning: Strong attention to detail and weak central coherence. Central coherence is a term coined by Frith (1989) to describe the process of taking incoming information, considering the information in its context, and seeing the “big picture.” Overall, many learners with ASD have relative strengths in focusing on details of tasks or situations, and they show relative inattention to wholes (Happe, 2005). This style of processing might make it easier to see the “leaf” rather than the “forest,” and may help to explain why some learners with autism display interest in seemingly minute details (e.g., the hinge on a door, wheels of toy car).

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Executive function: Planning, flexibility, and shifting attention. Executive function refers to a set of cognitive behaviors that are thought to be mediated in the frontal lobe of the brain, including planning, organization, flexibility, and the ability to inhibit behavioral responses. Research on executive function in learners with ASD has consistently documented difficulties in executive function. In particular, it is very common for learners with autism to have problems with flexibility in thinking and in shifting attention (Ozonoff, South, & Provencal, 2005). These characteristics can make it difficult for learners with
ASD to adapt to daily life. For example, a student with ASD may be looking at a worksheet when the teacher gives instructions. The child may not be able to quickly stop thinking about the worksheet in order to pay attention to the teacher. Without basic planning skills, the simple task of getting dressed might take a nine-year-old an hour or two, even though he is capable of putting each item on independently. Flexible problem solving is often challenging for a person with ASD, who might start thinking about a problem one way and have a very difficult time “letting go” of the original approach in order to try something new.

**Generalization Difficulties and Prompt Dependence**

Inability to generalize and prompt dependence can prevent children and youth with ASD from acquiring and mastering new skills. Learners with autism have difficulty with generalizing newly acquired skills to different settings (Mesibov, Shea, & Schopler, 2005; Schreibman, 2000). This challenge may be related to difficulties in extracting meaning (e.g., understanding the most important or relevant details of a task) and flexibility in thinking. Thus, a child might learn to wash his hands in the sink at home, but not be able to apply this sequence of actions when he is standing at the sink in the classroom or in a restaurant. A teenager might have learned how to ask for help from his teacher, but it might not occur to him that he can ask anyone else in the classroom, at home, or in the community for assistance.

Prompt dependence, on the other hand, refers to the tendency for a person to wait to perform a task or respond to instructions until he or she is given a prompt to do so. It is quite common for learners with autism to become prompt dependent (Mesibov et al. 2005). In other words, children with autism may view the prompt as part of the routine. For example, a boy who is asked “Give me the cup” might wait until his mother holds out her hand before he picks it up and hands it to her.

**Uneven Skill Profiles: Individual Variability**

Most learners with ASD display significant variability across skill areas (Williams, Goldstein, Carpenter, & Minshew, 2005). For example, an eight-year-old child might use adult vocabulary, but not be able to carry on a reciprocal conversation with another person for more than a couple of minutes. In reading, she might be decoding words at a high school level, but display only a second grade level of reading comprehension. This same child could have a level of mastery of self-care skills that is more typical of a four-year-old. Although it is not common, some learners have isolated peak, or splinter, skills such as being able to figure out the day of the week for November 7 in 1954, or an exceptional talent in painting or playing an instrument. The challenge for parents, teachers, and others is to avoid expecting that the person with ASD will complete or understand all skills at a level that is similar to his or her stronger skills.

**Adaptive Behavior**
Learners with ASD often have delays in adaptive behavior that are greater than would be expected given their cognitive abilities (Volkmar, Carter, Sparrow, & Cicchetti, 1993). Adaptive behavior refers to the practical and social skills that enable people to function in everyday life. It includes the ability to communicate, to engage in social interaction, to use academic skills functionally (e.g., using money, telling time), to perform daily living skills (e.g., eating, dressing), to cope with strong emotions, and to complete domestic skills (e.g., washing the dishes, and to engage in vocational activities).

Many people learn how to do most of these activities with little or no explicit instruction; however, learners with ASD have difficulty with aspects of everyday functioning. Interestingly, the degree of impairment in daily living skills tends to be greater for learners who display average to above average cognitive ability than for those who have intellectual disabilities (Bolte & Poustka, 2002; Schatz & Hamden-Allen, 1995). This suggests that many learners with ASD would benefit from instruction in adaptive behavior skills such as dressing, toileting, and eating so that they can understand and master these skills. However, taking a concrete skill (e.g., counting money) and generalizing it for a functional and abstract purpose (e.g., budgeting) is typically more difficult for persons with ASD than for same-age peers with the same cognitive level. Many skills also can be challenging because of the level of organization or judgment required. For example, a college student with ASD may have difficulty doing his laundry, deciding which clothes to wear, and fixing himself breakfast. Most of these practical, everyday activities are not typically taught in school to students of average intelligence. For students with ASD, however, there is the need for adaptive skills to be assessed and systematically taught if deficient.

**Visual Processing Strengths**

In contrast to the difficulties in understanding spoken language, many learners with ASD have strengths in visual processing skills (Mesibov et al., 2005; Quill, 1997; Schuler, 1995). In her writings and speeches, Temple Grandin has been an eloquent spokesperson for the importance of visual thinking in at least some learners with ASD by describing how she primarily “thinks in pictures” (Grandin, 1995). Although not everyone with ASD has visual strengths, visual supports for learning and performance provide permanent products that can remain in place to support memory and organization. Information about visual supports and how to use them with children and youth with autism will be covered later in this online course.

Throughout this section, in-depth discussions of the triad of core characteristics associated with autism spectrum disorders, as well as additional learning characteristics and needs that are present across the lifespan have been provided. A deeper understanding of these characteristics will enable team members to better address the challenges and difficulties that children and youth with ASD encounter on a daily basis.
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References


