

Foundations of Autism Spectrum Disorders: An Online Course

Session 5 Factors that Affect Learning and Development

National Professional Development Center on Autism Spectrum Disorders (2008). Session 5: Factors that affect learning and development. In *Foundations of autism spectrum disorders: An online course*. Chapel Hill: FPG Child Development Institute, The University of North Carolina.

Session 5

Upon completion of Session 5, learners will:

1. identify and describe three settings/placement options where learners with ASD may receive education and/or early intervention.
2. identify curriculum areas that should be addressed when working with learners with ASD.
3. describe transition processes for infants and toddlers with ASD and for children with ASD who transition from preschool to kindergarten.
4. identify the elements of successful programmatic transitions for learners with ASD in middle and high school.
5. describe the required components of a programmatic transition plan for learners with ASD graduating from high school.
6. discuss the concept of a tiered-team membership and identify team members at each level.
7. identify four related health issues that often occur with ASD.
8. identify the major behavioral/emotional symptoms in autism that are sometimes targeted by psychotropic medications.
9. explain the difference between complementary and alternative therapies.

Due to the diversity of individuals with ASD, there is no single instructional approach that can meet the needs of every student. Goals and objectives in IFSPs and IEPs guide the selection of evidence-based practices and appropriate instructional strategies to achieve desired student outcomes. Guiding principles inform the selection and implementation of these practices. Factors that will influence the development of individualized plans and how they are implemented include, age and developmental level, current skills and needs, learning style, and other issues related to autism. Families' concerns and priorities for promoting learning and the development of their learners also are factors to consider when determining appropriate educational services and supports for individual learners. For example, some learners can be appropriately served in inclusive settings, while others will be more successful in special education classrooms with learners with ASD and other disabilities

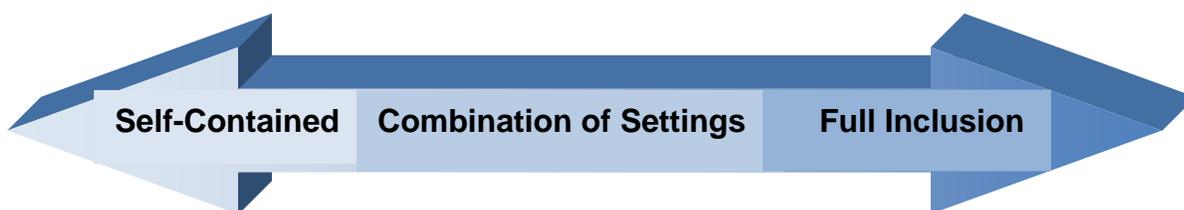
In Session 5, factors that influence the learning and development of learners with ASD are discussed. These include educational/intervention factors such as placement options/settings in which intervention/education is provided, curriculum components that are important for individuals with ASD, programmatic transition planning, and

collaboration among practitioners and families using a tiered teaming approach. Other factors that can affect outcomes and progress for individuals with ASD include health concerns, medications (psychopharmacology), and complementary and alternative therapies. An understanding of these factors can help practitioners and families in selecting evidence-based practices for individuals with ASD, as well as in the development of IFSPs and IEPs.

Settings/Placement Options for Intervention

Learners with ASD often receive services in one or more settings from a continuum of placement options. Intervention settings that are available to learners with ASD vary across states and school districts; however, decisions about placement should be based upon federal legislation that requires school systems to provide services to learners with disabilities, including autism spectrum disorders, within the least restrictive environment, or LRE (IDEA, 2004). The figure below illustrates the continuum of intervention settings that are commonly available for learners with ASD. On one end of the continuum, learners with ASD can receive services in settings that are fully inclusive. That is, they spend all of their time in general education settings that include same-age typically developing peers. Self-contained classrooms and programs are at the other end of the continuum. In these settings, learners with ASD receive intervention alongside other learners with ASD with disabilities. In the middle of the continuum, learners with ASD receive services in a combination of inclusive and self-contained settings. Across the age span, learners with ASD and their families may have an assortment of placement options that are available to them; however, these options depend upon a variety of factors including (1) resources with available communities and school districts, (2) the developmental level and learning needs of individual learners with ASD, and (3) family priorities regarding their child's education.

Figure 1. Continuum of Intervention Settings



When determining placements for individual learners with ASD, IEP teams identify the option that is most appropriate for each child/student based on IEP or IFSP goals and objectives and on IDEA 2004 guidelines for serving learners in natural and/or least restrictive environments. For all learners with ASD, IEP teams should begin by looking at full inclusion and the types of supplementary aids and services that might be needed to support successful inclusion. If fully inclusive settings do not seem appropriate even with additional services and supports, team members should continue to discuss settings that include opportunities for interactions with typically developing peers until the most appropriate placement option is agreed upon by all team members. This

decision-making process helps teachers, families, and other team members determine the most appropriate intervention setting and LRE for individual learners with ASD. In the following section, descriptions of the various intervention settings that might be available to learners with ASD are provided.

Inclusive Programs and Classrooms

Inclusive programs and classrooms are settings in which learners with ASD receive services with typically developing peers. The rationale for educating learners with ASD within inclusive classrooms is that they have more opportunities to observe and model skills and behaviors exhibited by typically developing peers (Karabinos, 1997; Owen-DeSchryver, Carr, Cale, & Blakely-Smith, 2008). Inclusive settings are available from early childhood through high school; however, full inclusion becomes less common as learners with ASD progress through elementary school. However, with thoughtful planning, meaningful inclusion opportunities can be identified for secondary students. In general, inclusion opportunities are best arranged for students by capitalizing on their areas of strength and individual interests. Selecting appropriate inclusive opportunities involves team members identifying classes (or times of day) when students will either be most successful with course content and activities (e.g., a student interested in science attends science class with modifications) or can access IEP goals through alternate outcomes (e.g., a student who enjoys organizing supplies is a teacher's assistant in an art class and is responsible for maintaining art materials.) Family child care centers, child care centers, and early intervention centers often provide opportunities for young children with ASD to interact with typically developing peers (Craig, 1997; Golbeck & Harlan, 1997; Karabinos, 1997).

Related services professionals typically provide support to learners with ASD on-site either in the classroom or through a pull-out model (e.g., student receives related services in a room separate from the classroom). Embedded intervention, or the use of intervention strategies implemented within the context of daily routines and activities, often is used to help young children with ASD learn and develop new skills. With older learners, specific strategies (e.g., portable visual schedules, books on tape, visual supports) are used to improve learners' auditory, visual, social, and physical engagement (Goodman & Williams, 2007). The quality of services and strategy selection will vary, however, according to the resources available across school districts as well as practitioners' expertise and experience in providing intervention and/or education to learners with ASD (Odom & McEvoy, 1988).

Self-Contained Programs and Classrooms

Self-contained special education classrooms may be selected as settings in which learners with ASD receive services. These classrooms often are housed in public schools and are available to learners starting in early childhood through high school. Learners with ASD who receive most of their services in self-contained special education classrooms may have limited access to typically developing peers (Odom & McEvoy, 1990). In early childhood self-contained classrooms, emphasis often is placed on social and communication skills development, while academic skills often are the primary focus for older children and adolescents (Gottwald & Pardy, 1997). Learners

with ASD may be taught in special education classrooms serving learners with a variety of disabilities (often called cross categorical classes) or in classrooms that are designed specifically for learners with ASD. Some learners with ASD who receive services within self-contained settings may have opportunities to interact with typically developing peers during certain classes and settings such as physical education, music, art, and lunch. During these types of activities, teachers often focus on promoting social interactions with peers, implementing strategies to enhance communication and social skills, and promoting appropriate behavior in normalized settings (Zhang & Griffin, 2007). The services and placement options available to learners with ASD and their families vary across school districts.

Resource Rooms

For elementary-aged children and adolescents with ASD, educational services may be provided in resource rooms. Resource rooms are often the settings where learners with ASD receive supplemental one-on-one or small group instruction that helps them keep up with their peers in inclusive settings (Yang, Schaller, Huang, Wang, & Tsai, 2003). Some learners who are able to access some or all of the general education curriculum, but still need some support to be successful in a general education setting, spend part of their time in a resource room. This resource room sometimes serves as a 'home base' for students with ASD who need a place prepare for the day's events, take a break from a stressful situation, or recover after a meltdown (Coffin, 2011). Some learners with Asperger's syndrome, for example, may attend social studies, science, and math classes with typically developing peers, but may need the support provided by a resource room teacher for communication/language based subjects such as language arts and reading.

Other Intervention Settings

Home-based intervention. Toddlers with ASD often are served in homes because homes are considered the child and family's primary context for learning and relationship development. Within this setting, early interventionists use family-centered support to complete assessments, collaborate with parents and other team members to develop Individualized Family Service Plans (IFSP), provide intervention to children with ASD, and work with parents to implement strategies at home when practitioners are not present (Mott, 1997). As children transition to preschool services, a classroom-based program often becomes the primary setting for intervention.

The home as an intervention setting traditionally has been associated with infant and toddler services because it is considered the LRE for this age group; however, young children as well as older children and adolescents with ASD also can receive services within this context. Often, the focus of these services with older learners is to increase family involvement, augment the learner's language and communication skills, support families in addressing prioritized needs, and assist families in the use of resources available to them in the home setting (Powell, 1990). A variety of intervention programs also can be applied within the home for learners with ASD across the age span that often are not provided by local schools and districts. For example, some behavioral

treatment models (e.g., discrete trial training) are implemented by trained interventionists in homes to help learners acquire target skills and to supplement the instruction that is being provided in other intervention settings (Sheinkopf & Siegel, 1998).

Community resources for middle and high school students with ASD. Many middle and high school students with ASD receive services outside of the school setting. For instance, some communities and school districts offer opportunities for learners with ASD to take part in social skills group interventions, job coaching programs, or extracurricular activities in clinic-based or mental health settings. These types of settings help bridge the transition from school to community, while also helping adolescents with ASD acquire essential skills that will be needed as an adult (Barry, Klinger, Lee, Palardy, Gilmore, & Bodin, 2003; Mandell, Walreth, Manteuffel, Sgro, & Pinto-Martin, 2005; Orsmon, Krauss, & Seltzer, 2004).

Curriculum Areas

The curriculum for learners with ASD should include the content and subject areas that are provided and accessible to other learners of the same age and developmental level, with accommodations and modifications, as appropriate. As noted earlier, this is referred to in IDEA (2004) as “access to the general curriculum” and has been identified as a guiding principle for working with learners with ASD.

In addition, other curriculum areas are of critical importance for most individuals with ASD and should be included on the student’s IEP (Boswell, 2005; Dawson & Osterling, 1997; NRC, 2001). These areas are related to the core characteristics of ASD and the cognitive and learning needs of individuals with ASD that have been discussed in previous sections of this course. In the *Guiding Principles* session, the importance of helping individuals with ASD become as independent and socially responsible as possible was noted. At all ages, the curriculum and supports provided to learners with ASD should prepare them for future independence and employment. The specific goals and objectives on IFSPs and IEPs will vary based on age, existing skills, developmental levels, and the settings involved. In addition to the general curriculum, the following areas should be considered for learners with ASD: social and communication skills, play and leisure skills, self-help/adaptive skills, self-advocacy and coping skills, the functional application of academic and cognitive skills, and motor skills.

Social and Communication Skills

Given the core features of ASD, social and communication skills are important curriculum components for most individuals with ASD. Within intervention, education, and community settings, teachers and other practitioners promote the development of these skills through a variety of intervention strategies that are described later in the *Interventions for Learners with ASD* session of the online course. Systematic instruction often is essential to help learners with ASD acquire the skills needed to initiate and maintain interactions with peers and adults. While developing functional speech is

critical, other facets of social communication such as voice tone and conversational skills are also important targets for intervention.

Play and Leisure Skills

Play skills and the use of leisure time are not usually included in the curriculum for typically developing learners older than kindergarten age, but are of central importance for individuals with ASD of all ages. Play and leisure skills facilitate social development and relationships, improve quality of life, and enable individuals to engage in appropriate behavior in the unstructured or loosely structured settings in which individuals with ASD so often have behavioral difficulties.

Self-Help and Adaptive Skills

Daily living and organizational skills are central to success in school, in the workplace, and in most other contexts. Learners with ASD who are adaptable and who are able to complete self care activities independently are more easily integrated into home, school, and community activities. Learners with ASD should be able to work independently for a block of time and complete a series of tasks. Visual supports often are useful in helping learners with ASD accomplish tasks (e.g., checklist, work system). Initially, learners with ASD may need instruction in activities of daily living (e.g., dressing, eating), vocational skills, or domestic skills. Skills that are needed to be successful in school, community and recreational, or work settings – such as standing in a line, finding one’s way around the building, or knowing when and how to interrupt a teacher or supervisor, – should be identified, assessed, and taught, with emphasis on current and future settings.

Self-Advocacy and Coping Skills

As learners reach middle and high school, skills for self-advocacy should be considered. An adolescent who is moving from high school to college must be able to self-advocate with advisors and professors in order to access accommodations at the college level. It is also important to be able to explain one’s strengths, weaknesses, and needs to employers and supervisors. In addition, the development of coping skills, such as how to identify one’s emotions, strategies for reducing levels of anxiety or anger, and managing emotionally difficult situations, is an important skill area for many individuals with ASD.

Functional Application of Academic and Cognitive Skills

The regular curriculum includes pre-academic and academic skills and, to a limited extent, some functional applications of these skills. Many individuals with ASD will need additional focused instruction in the functional application of academic skills, including using skills in real life settings (generalization).

Motor Skills

Adequate fine and gross motor skills often are needed to imitate gestures, movements, and other activities that can be the focus of intervention. Imitation and modeling are sometimes used to teach communication as well as social and play skills to learners with ASD. Some learners with ASD may need explicit instruction in motor planning and

sequencing in order to participate in these types of interventions. More specific intervention strategies will be provided later in this course.

Programmatic Transition Planning

Transitions often are challenging for individuals with ASD, whether small transitions between activities at home or school, changing classes, or more significant transitions such as switching schools or moving from school to work settings. Regardless of the perceived magnitude of the transition, plans must be in place to facilitate these transitions and foster success.

With respect to the 'larger' or programmatic transitions, positive outcomes require communication and collaboration within and across agencies, particularly at the early childhood and young adult systems level. The need for interagency collaboration, parent and child involvement, and transition planning is underscored in IDEA 2004. Fortunately, the IFSP or IEP provides a means by which communication and collaboration can be enhanced to facilitate learners' academic and functional achievement.

Early Childhood

Prior to age 5, children may be served under a single lead agency or by a combination of agencies, often separated by age ranges. That is, children birth to three are served by a lead agency (e.g., early intervention, mental health) and then another entity (usually a school district) is designated as the lead agency when a child turns three. At age three, if not before, children with developmental disabilities become eligible for services through the public school system, or local education agency (LEA). To relieve anxiety in families and children and to facilitate children's optimal development and learning, transition from Part C (i.e., infant-toddler) to Part B (i.e., preschool) services should be as smooth and seamless as possible.

Federal legislation through IDEA 2004, Part C helps facilitate effective transitions in early childhood by mandating that (1) state interagency coordinating councils develop plans for early childhood transition, (2) the individualized family service plan (IFSP) includes a transition plan, and (3) a transition planning meeting occurs at least 90 days (but perhaps as much as 9 months) prior to transition from Part C Early Intervention Services to Part B, Section 619 Preschool Services (National Early Childhood Transition Center, 2004). If the lead agency is not the LEA, the LEA is required to participate in transition planning conferences arranged by the designated lead agency.

Elementary

Moving from preschool services to kindergarten/elementary school is a major transition for any child and family, but this shift can be more stressful and challenging for learners with ASD and their families. Plans for this transition should be part of the IEP and, ideally, include a 'transition evaluation' that helps identify strengths and needs as well as current information to guide educational programming. An effective transition plan assists in structuring the child's day, providing continuity of services when possible, and

identifying appropriate regular and special education programs, as well as autism supports for the school or LEA.

While the elementary school years may offer stability in terms of having an IEP in place and attending the same school for several years, there are still significant transitions that occur as learners learn to work with different teachers, change classes, move from building to building, and from grade to grade. Ongoing communication among parents, teachers, and related service personnel can lead to effective transition plans that increase the probability that learners will be able to successfully adapt to new settings and to become increasingly independent.

Middle and High School

The transition from elementary to middle school is another major step for learners with ASD. Preparing the student, family, and professional staff for this transition is crucial to sustain gains and to ensure the acquisition of new social and academic skills. It becomes increasingly important to involve learners in the planning of their educational programs. During the middle school years, learners with ASD should be included in career development activities that may include job shadowing, informational interviews, jobs around the school, and prevocational courses. Critical to the development of learners' independence is their involvement in IEP meetings and parent/teacher conferences. Some learners with ASD may benefit from self-determination training as they begin to attend and participate in these meetings and conferences. Self-directed IEPs and learners trained and supported to lead IEP meetings are hallmarks of high quality transition plans. Also, during middle school, learners are typically offered career interest surveys. Learners with ASD who enter 8th grade should have a vocational assessment to identify interests and abilities. With these interests and abilities in mind, professionals and families can find learning and recreational opportunities and volunteer experiences that will help prepare learners for future employment.

Individualized education programs (IEPs) are used to plan, implement, and monitor educational services as soon as learners become eligible for special education. While IEPs traditionally include plans for specific therapies and educational accommodations, IDEA mandates that transition activities also be included on IEPs, beginning at age 14 (or younger if determined appropriate by the IEP team). Specifically, transition planning must be included no later than the first IEP to be in effect when the child is 16, and updated annually thereafter. Steere, Rose, and Cavaiuolo (2007) interpret this requirement as providing guidance regarding upper age by which planning must begin, but also as providing flexibility on how soon teams might begin planning. Certainly, conventional wisdom suggests that academic choices related to transition could begin as early as age 13 or 14 when many schools and families discuss four-year plans for coursework either before or during the freshman year of high school (Organization for Autism Research, 2006).

All members of the IEP team, including the student and his or her family, should participate in transition planning and assessment during the middle and high school years. Additional team members may include teachers of vocational or technical

courses, representatives from the department of vocational rehabilitation, along with relevant community members. If learners are employed part time or involved in a youth apprenticeship or school-work program, their employers or supervisors may play an important role on the transition planning team.

Graduation from High School

An important focus of transition planning for learners nearing their high school exit is to prepare and support families and learners as they move from a point of entitlement (via IDEA) to eligibility (i.e., one must meet certain criteria to qualify for services). Along with this change is a move from fairly immediate access to services to often lengthy waiting lists (Steere, et al., 2007).

Transition services are now defined as “a coordinated set of activities for a child with a disability that (a) is designed to be within a results oriented process, that is focused on improving the academic and functional achievement of the child with a disability to facilitate the child’s movement from school to post-school activities, including post-secondary education, vocational education, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation; and (b) is based on the individual child’s needs, taking into account the child’s strengths, preferences, and interest; and includes instruction, related services, community experiences, development of employment and other post-school adult living objectives, and, if appropriate, acquisition of daily living skills and provision of a functional vocational evaluation.” (IDEA, 2004; 20 U.S.C. 1401-3)

Even with transition planning being mandated by IDEA, as indicated above, and a required IEP component for learners age 16 and older, many in the field find the language and scope limiting (Steere et al., 2007). Halpern (1994) provides a definition that takes into account both transition planning and service delivery, within the framework of school to adult life:

Transition refers to a change in status from behaving primarily as a student to assuming emergent adult roles in the community. These roles include employment, participating in post-secondary education, maintaining a home, becoming appropriately involved in the community, and experiencing satisfactory personal and social relationships. The process of enhancing transition involves the participation and coordination of school programs, adult agency services, and natural supports within the community. The foundations for transition should be laid during the elementary and middle school years, guided by the broad concept of career development. (Halpern, 1994, p. 117)

Between the ages of 18 and 21, teachers and families may decide that it is appropriate to apply for adult services such as Supplemental Security Income, Medical Assistance, and other adult support programs and services. Should learners be deemed eligible for vocational rehabilitation, a Division of Vocational Rehabilitation (DVR) counselor will assess the eligibility of learners prior to high school exit. This determines whether

learners are eligible for vocational services, such as job coaching and training. As with earlier transitions, this planning process should include all members of the IEP team, including the learner and his or her family, and representatives from post-school and support agencies such as the state DVR, Developmental Disabilities (DD) services, or other adult service providers.

Planning and supporting the numerous transitions that occur for learners with ASD can be a time-consuming and lengthy process involving numerous and changing participants – the only constant often being the child and family. However, the importance of transition planning cannot be emphasized enough because it is the process that identifies, develops, and documents the skills, challenges, goals, and tasks required for the student to move through school to the world of adult work, living, and community participation (Organization for Autism Research, 2006).

Collaboration among Practitioners and with Families

Given the complexity of providing individualized and specialized services for learners with ASD, the value of having the input of professionals from multiple disciplines cannot be over-emphasized. In a collaborative team approach, Cloninger (2004) suggests a tiered team membership consisting of *core*, *extended*, and *situational* levels. The membership at each level may differ and will be determined by the age and needs of individuals with ASD and their families, IFSP or IEP goals, and the skills and experiences of professionals on the team. In addition to educators, early interventionists, and parents, related services personnel may be involved at each level depending on the nature and frequency of services (e.g., direct, indirect, and/or consultative). Speech-language pathologists, physical therapists, and occupational therapists are related services required by IDEA (2004) for learners who have speech, language, or motor difficulties that impede educational progress. Additional professionals such as psychologists, social workers, counselors, vision or hearing specialists, behavioral specialists, and vocational specialists may be invaluable team members.

Examples of each level of a tiered team are provided below (Cloninger, 2004, p. 20-21).

- *Core* team members would be persons who have almost daily contact and interaction with the child such as the parents, general and special educators, early interventionists, paraprofessionals, and the student.
- *Extended* team members would be those who have regular but less frequent contact, such as weekly or biweekly, with the child. This might include related services personnel (e.g., occupational therapists, speech/Language pathologists, or physical therapists).
- *Situational* team members may include professionals who are called in for specific purposes or at specific times such as a psychologist or behavior specialist, pediatrician, assistive technology specialist, or career counselor.

In the following section, brief role-descriptions are provided of selected professionals who are frequently involved in intervention programs with learners with ASD. For ease of discussion, basic team membership by tiers is presented. However, team membership is not static, meaning that as the needs of individuals with ASD and their families change, membership will vary.

Core Team

As core team members, educators, early interventionists, and paraprofessionals will have regular, almost daily, contact with learners with ASD and their families. Interaction with the learners and families at this level may be highly dependent on individualized needs, as well as the setting for service delivery (e.g., community setting or self-contained special education class), and must include an appreciation of the culture, routines, and priorities of families.

Families. Clearly, the families of learners with ASD play an integral and constant role on the team and can be critical to the success of any intervention plan. Family members, legal guardians, or caregivers are vital members of the core team because they have the most knowledge of their learners and the greatest stake in their learner's future. As children mature, they may become more actively involved in developing the IEP and planning for the future.

Special and general/regular educators. Learners with disabilities are eligible for special education services through the public schools beginning at age 3 years or earlier as defined by state regulations (Ruble & Gallagher, 2004). Teachers play an important role in identifying learners who need screening and assessment, making appropriate referrals, and participating on the IEP team, both for planning and implementation. In fact, IDEA (2004) Part B requires that a child's IEP team include both a special and regular education teacher. This partnership provides unique opportunities to plan educational services that address the least restrictive requirement of IDEA 2004. The regular educator is often responsible for determining whether a child needs positive behavioral interventions and supports, for identifying necessary program modifications (i.e. identify specific curricular materials and classroom activities that are critical for academic progress and social success), and for making appropriate accommodations. Special educators work collaboratively with the regular education teacher and other team members to help design individualized programs and instructional strategies, and collect data to determine the effectiveness of the intervention(s).

Specific to learners with ASD, teachers must be familiar with evidence-based practices including, but not limited to, methods of applied behavior analysis, naturalistic learning, incidental teaching, socialization, communication, adaptation of the environment, and the effective use of data collection systems (NRC, 2001). Teachers need to know which practices have been demonstrated to be effective for learners with ASD, as IDEA (2004) requires that learners receive services based on peer-reviewed research to the extent possible.

Early interventionists. For very young children, early interventionists typically provide services within a natural environment such as the home or day care setting. They typically work one-on-one with children on skill-building activities across a variety of domains and with families to translate effective practices that can be implemented at home and to address family concerns and priorities. In addition, they may share developmental recommendations and strategies with child care providers. Working within the context of children's natural environments and familiar routines, early interventionists promote numerous opportunities for practice and generalization of new skills. Close collaboration with parents during this early period may optimize families' involvement in their children's care, including their participation as team members and their commitment to intervention services.

Paraprofessionals. Often overlooked as team members, paraprofessionals provide essential services to persons with ASD. Many paraprofessionals are involved daily with learners with ASD and have unique opportunities to talk with and share strategies with families. For example, teacher assistants may be the team members who are asked to implement a particular intervention strategy in the classroom setting and who see parents at the beginning or end of each day. As more learners with ASD are identified, funding sources and professional expertise may become limited; thus, the contribution of trained paraprofessionals is likely to become more critical.

Extended Team

Extended team members may include related services personnel who provide regularly scheduled interventions with learners; these services can be delivered in homes, child care programs, or school settings. Services may be delivered in individual or group situations, conducted as a pull-out or push-in service, and may be provided by one or more professionals at a time. For example, if the goal is related to eating/self-feeding, the speech-pathologist and occupational therapist might work together with the child and teacher in the classroom during lunchtime. Often, the frequency and duration of the interventions are determined by the IFSP or IEP team.

Speech- language pathologists. The role of speech language pathologists (SLP) in the treatment of ASD has broadened over the years and includes much more than articulation and expressive and receptive vocabulary. The SLP will often focus on learners' pragmatic or social use of language, whether through the use of words, eye gaze, facial expressions, gestures, or visual symbols (e.g., pictures). Time may be spent working on speech patterns and qualities such as voice quality, pitch, loudness, rhythm, and rate, or on the use of augmentative and alternative communication (AAC) (Cloninger, 2004). Speech-language pathologists can play an important role in helping learners participate in classrooms and social activities through the use of social scripts, pictures, prompts, or other strategies such as aided language stimulation or augmentative and alternative communication.

Occupational therapists. Occupational therapists (OT) are traditionally recognized for their work with individuals in activities of daily living such as fine motor skills and adaptive behaviors. OTs often work with individuals with ASD on fine motor skills, such

as buttoning and handwriting, as well as self-help skills, such as bathing and dressing. For the developmentally disabled population, and for ASD specifically, the role of the occupational therapist has greatly expanded over the past two decades. OTs often address challenges in processing and responding to sensory stimuli that are frequently associated with ASD, including hypo- or hyper-sensitivity, sensory regulation, behavioral manifestations, motor planning, arousal, and attention. An OT may be particularly helpful in creating a carefully designed, personalized schedule of daily activities that provides the sensory input learners need to stay focused and organized throughout the day. Although there is limited research that supports the efficacy of sensory interventions, anecdotal reports from practitioners and families suggest that some strategies may be useful in helping individuals filter out extraneous sensory information and focus on more relevant information, or simply to avoid negative behaviors that appear to result from sensory overload. More research is needed to validate the efficacy of most sensory-based treatments (Baranek, 2002; Baranek, David, Poe, Stone, & Watson, 2006; Rogers & Ozonoff, 2005).

Physical therapists. While most learners with autism may not have significant physical impairments, there are learners who have co-morbid conditions (e.g., cerebral palsy, Down syndrome) delayed motor development, or low muscle tone. Physical therapists (PTs) may be involved with young children to help develop skills such as rolling, sitting, or crawling. With older learners, more subtle issues related to balance, gait, positioning, or tone may require attention. The motor clumsiness of learners with Asperger's disorder frequently prompts referrals to physical therapists. Physical therapists often are involved in interventions such as adaptive PE and can provide referrals to, or intervention through, community recreation programs.

Psychologists. Psychologists are often asked to take a lead role in the diagnostic process for learners suspected of having an ASD, particularly in terms of examining cognitive and academic strengths and needs, adaptive behavior, social skills, and behavioral characteristics of autism. Working as a member of an interdisciplinary team, psychologists can share these observations with other team members, including families, and thereby be used to develop IFSP and IEP goals and objectives. Psychologists can provide insight about the impact of specific learning styles on participation in the general curriculum, including consideration of skills such as self-management and play/social skills. Psychologists may also conduct functional assessments of challenging behaviors that may be helpful in identifying factors that can be changed to promote more successful participation in the general curriculum (Ikeda, 2002). Psychologists have expertise in understanding and addressing the social-emotional behaviors and needs of learners with ASD.

Social workers. Social workers are team members in the assessment process and in the development and implementation of services to learners with ASD and their families. This discipline brings a unique perspective to the interdisciplinary team in terms of values, knowledge, and skills related to understanding and working with families. For example, teams must understand family dynamics and functioning so that recommendations are understood and accepted by parents or other caregivers. Social

workers are often able to provide information about cultural, religious, and social factors that influence the acceptance of a disability, parenting practices, and use of public services (Center on Human Development and Disability, 2008). Social workers can be instrumental in assisting families in finding support groups, parent-to-parent networks, respite care, and other beneficial resources (Powers, 2000). Social workers may help integrate the family's hopes with their strengths, stresses, coping abilities, and resource needs through the identification of appropriate implementation strategies (Cook, 2000) for IFSP and IEP goals and objectives.

Situational Team

Situational team members are those who may be involved at various times and to differing degrees, depending on the learner's needs, skills, and age. These team members may include nurses, audiologists, physicians, behavior specialists, nutritionists, vision specialists, vocational rehabilitation specialists, and career counselors. Not all learners will need each of these professionals; in contrast, some may need rather frequent contact with one or more of such specialists. Team members at this level may be defined by a child's special health care needs, or a family's needs and resources. Additionally, as learners mature and begin preparation to leave the public school setting for work or community living, professionals from agencies outside the public schools will become integral members of their team.

Interdisciplinary Team Example

One intervention strategy that often is utilized with individuals with ASD is augmentative and alternative communication (AAC). AAC is defined as being a group of components including symbols, aids, strategies, and techniques that are used by individuals to improve communication (Beukelman & Mirenda, 1998). Numerous professionals play valuable roles in assessing learners for potential AAC use and then working with them to learn to use a specific system or device as independently as possible. Psychologists and educators can help determine the cognitive and academic skills of the individual, working together to identify curriculum needs. Speech-language pathologists are critical in identifying the student's symbolic understanding, message capabilities, and needs. Occupational therapists play a critical role in AAC in terms of identifying access capabilities (e.g., direct select, head control, eye gaze) and assisting with feature matching (i.e., effective use of the system) and tool selection (e.g., picture exchange, electronic). Physical therapists offer critical information about positioning, mobility, and access. Social workers can help the family identify potential funding sources to purchase AT/AAC equipment. The team works collaboratively to make decisions and provide recommendations, teaching, and support for individuals with ASD and their families. The use of AAC can range from low- or no-tech (e.g., objects, pictures) to high-tech options such as computers or electronic devices (e.g., PDAs).

Health Considerations

In the first half of this session, we focused on educational issues and procedures that affect learning and development. Now the focus will shift to other factors that may affect learning and development for learners with ASD. The health of individuals with ASD and medical management issues can contribute to learning and development. Specifically, related health issues, psychopharmacology, and complementary and alternative therapies may influence individuals' behavior and functioning in school, home, community, and leisure/recreation settings.

Related Health Issues

Learners with ASD have the same health care needs as learners without disabilities and are entitled to the same health promotion and disease prevention activities (American Academy of Pediatrics, 2001). While there is no specific medical treatment for ASD, several associated medical issues that could affect the learning environment and interventions warrant periodic monitoring. Issues that have been reported in learners with ASD include seizures, gastrointestinal problems, allergies, and sleep disturbances. These are briefly reviewed below.

Seizure Disorders

Learners with autism spectrum disorders are at increased risk for seizure disorders. From one-fourth to one-third of individuals with ASD will develop seizures during their lifetime, with peak incidence in the preschool years and again in adolescence (Tuchman & Rapin, 2002). Learners with ASD therefore should be monitored for any activity that suggests seizures. If seizures develop, anticonvulsant medications typically will be prescribed, and this treatment will be assessed and monitored regularly by a physician. Teachers may be asked to report activity during the school day that suggests seizures to the parents or, with consent, to the physician. This collaboration is important because the nature and regularity of seizures may change and necessitate modification in medication dosage and frequency.

Gastrointestinal Problems (GI)

Another potential medical issue for learners with ASD is an increased risk of gastrointestinal (GI) problems. Although it is not as clear whether learners with ASD are at increased risk for GI problems, a number of reports have described an increased frequency of GI issues (including gastro-esophageal reflux, diarrhea, and constipation) in children with ASD (Molloy & Manning-Courtney, 2003). Informal reports from parents and others (e.g., evaluation centers) have included frequency rates as high as 40-50%, but there have been few population-based surveys in the United States to systematically study whether GI problems occur more often in individuals with ASD (Levy & Hyman, 2005). Recent studies conducted in the United Kingdom and Finland suggest that the rates of gastrointestinal disturbances in children with ASD are similar to those found in the general childhood population (Filipek, 2005).

Food Allergies

Related to concerns about gastrointestinal difficulties, families frequently question whether food allergies or sensitivities are present. In particular, sensitivity to gluten (wheat) or casein (milk) has been suggested (Levy & Hyman, 2005). While there have been some reports of decreased GI symptoms by following a gluten- and/or casein-free diet, no data from controlled studies have confirmed this diet as a treatment for symptoms in individuals with ASD (American Academy of Pediatrics, 2001; Schultz & Robins, 2005). Scientific studies are being conducted to evaluate the nutritional and behavioral effects of this diet.

Sleep Disturbances

A final medical issue that also is a concern for families of learners with ASD is sleep disturbances. In fact, sleep disturbances have been a recognized feature of ASD for over 25 years. The most common sleep disturbances in individuals with ASD are sleep induction (getting to sleep), awakening during the night (staying asleep), and awakening early in the morning (Schultz & Robins, 2005). These sleep patterns, often coupled with an insistence to follow unusual bedtime routines, can be challenging for the entire family and can affect learners' energy levels during the day while at school. Medications are sometimes used to treat these disruptive sleep patterns, but there is little empirical information about their efficacy in learners with ASD. A review of treatment options is included in the American Academy of Pediatrics' recent publication on the management of children with ASD (Myers & Johnson, 2007). Access to this full report is available on the American Academy of Pediatrics website: www.aap.org/healthtopics/Autism.cfm.

Psychopharmacology

A large variety of medications have been used to target various behavioral and emotional difficulties in individuals with ASD. Research has shown that about half of children with ASD have received medication as part of a treatment program (Langworthy-Lam, Aman, & Van Bourgondien, 2002). Other studies also report that a high proportion of children and adults with ASD receive psychotropic medication (Scahill & Martin, 2005). Despite this frequent use, there are relatively few well-controlled studies examining the efficacy and safety of most of these medications for individuals with ASD. Even fewer studies include children with ASD (Manning-Courtney et al., 2003; Scahill & Martin, 2005). However, an increasing number of randomized, double-blind, placebo-controlled clinical trials are underway (see reviews by Myers & Johnson, 2007; Scahill & Martin, 2005).

Myers and colleagues (2007) indicate that the behaviors and emotional symptoms of individuals with ASD that are commonly treated with medications fall into the following categories:

- repetitive behaviors and behavioral rigidity;
- hyperactivity, impulsivity, and inattention;
- aggression, irritability, and self-injury;
- sleep dysfunction;
- anxiety, and

- symptoms of depression.

The available literature supports drug treatment for only three of these symptom groups—repetitive behaviors, hyperactivity (not necessarily impulsivity or inattention), and irritability and associated behavior problems such as aggression or self-injurious behaviors. The classes of medications that may be prescribed for these behaviors and symptoms include the atypical neuroleptics, stimulants, antidepressants (especially the selective serotonin reuptake inhibitors or SSRIs), and alpha-2-agents. Sleep dysfunction, anxiety, and depression can occur in ASD and drug treatment is sometimes considered. However, there is insufficient evidence or clinical consensus to guide practice at this point. Medication of any kind should be used as a complement to behavioral interventions to manage behavioral and emotional symptoms associated with ASD. Table 1 summarizes the most commonly prescribed medications used to assist with managing some behavioral/emotional symptoms associated with ASD.

When an atypical neuroleptic is prescribed for individuals with ASD, it is most commonly prescribed to treat severe outbursts and aggressive behaviors. Following large, carefully controlled clinical studies, risperidone (an atypical antipsychotic medication) has become the first medication to receive FDA approval for treating aggression, self-injury, and temper tantrums in children and adolescents with ASD (McDougle, et al., 2005; Myers & Johnson, 2007).

Table 1. Potential Medication Options for Selected Behavioral Symptoms Associated with ASD	
Symptom(s)	Class of medication
Repetitive behaviors and behavioral rigidity	<p><i>Selective serotonin reuptake inhibitors (SSRIs)</i> (e.g., fluoxetine, sertraline, fluvoxamine)</p> <p><i>Atypical neuroleptics</i> (e.g., risperidone, olanzapine)</p>
Hyperactivity	<p><i>Stimulants</i> (e.g., methylphenidate, dextroamphetamine)</p> <p><i>Alpha-2 adrenergic agonists</i> (e.g., guanfacine)</p>
Irritability, aggression, self-injury	<p><i>Atypical neuroleptics</i> (e.g., risperidone, olanzapine)</p> <p><i>Alpha-1 antagonists</i> (e.g., naltrexone)</p>

Stimulants have been used to treat hyperactivity, hyper-arousal, inattention, and impulsivity, which frequently are reported by families and teachers as problems for learners with ASD. Although some early studies of stimulant medication did not find them to be effective with learners with ASD, more recent studies have found some learners with ASD to show improvement in hyperactivity, inattention, and impulsivity when treated with methylphenidate (Myers & Johnson, 2007). Similarly, recent studies have reported behavioral and emotional improvements in samples of adults and learners with ASD who have been treated with SSRIs (Hollander, Phillips, Chaplin, et al., 2005; Moore, Eichner & Jones, 2004).

There are, of course, concerns about efficacy and side effects when any medication is used with learners with ASD. In their review of psychopharmacology and ASD, King and Bostic (2006) refer to the “sometimes exquisite sensitivity of patients who have ASD” (p. 171). This refers to the frequent observations of doctors that low doses of psychotropic medications are sometimes more effective than larger doses with individuals with ASD. Furthermore, individuals with ASD do not always respond to such medications in the same way that the majority of patients without ASD respond. Side effects are a specific concern. For example, while stimulant medications are indeed effective in some learners with ASD, there is a lower positive response rate to this class of medications than in learners with hyperactivity and attention symptoms who do not have ASD. There also have been more frequent adverse effects such as increased irritability and anxiety, and exacerbation of tics (King & Bostic, 2006). The SSRIs also have caused worsening of behavioral difficulties in some learners with ASD (Scahill & Martin, 2005). Another side effect that can be significant for some individuals is the common association – that is seen in many patients, not just those with ASD – between the use of atypical neuroleptics and increased appetite and weight gain (King & Bostic, 2006).

These concerns point to the importance of careful medical oversight of medications. Identifying quantifiable methods to assess whether a medication is having the desired effects include observations from parents and those who work with the child such as teachers and therapists (Myers & Johnson, 2007). Teachers and school health personnel should be aware of the medications that learners with ASD are taking, the possible side effects of those medications, and the intended benefits of the medications. Parents and physicians may request information about the behavior of learners while at school so that the benefits of the medications can be assessed in multiple environments such as home, classroom, and playground.

Complementary and Alternative Interventions

Survey studies have shown that as many as 50% of families with learners with ASD use or have tried complementary and alternative treatments (Davis & Darden, 2003; Institute of Medicine, Committee on the Use of Complementary Medicine, 2005; Green, Pituch, Itchon, Choi, O’Reilly, & Sigafos, 2006). Complementary refers to treatments used in addition to conventionally prescribed interventions to enhance the effect. Alternative treatments are those that are substituted for more traditional behavioral and educational interventions.

It is understandable that families seek treatments and solutions to the issues they face in parenting, as well as supporting and educating, a child with ASD. Families often learn about treatments in the newspaper, in magazines, on the Internet, and from other parents. However, it is difficult for families to assess whether there is scientific support for these complementary and alternative therapies. Parents may consult teachers and other professional service providers for information about a variety of complementary or alternative interventions. Therefore, it is important for practitioners to stay informed about the efficacy of these interventions.

As suggested by Levy, Kruger, and Hyman (2008), currently popular complementary and alternative treatments can be grouped into two major categories—treatments that are biological and those that are non-biological. The most popular *biological treatments* include specialized diets (gluten-free/casein-free diet); nutritional supplements (B6/magnesium, folic acid, vitamins C, B12, A); and detoxification regimens such as chelation (Levy & Hyman, 2005; Levy et al., 2008). *Non-biologic treatments* that purport to address core deficits in ASD also have been popular. These include interactive metronome therapy, auditory integration training, craniosacral manipulation, hyperbaric oxygen therapy, dolphin therapy, and facilitated communication (Levy et al., 2008; Schechtman, 2007). A list of the more popular interventions with brief descriptions of the nature of the current scientific evidence for each is provided in Table 2.

As indicated in Table 3, some of these interventions have been well studied (such as secretin and facilitated communication), while others have either not been studied or research is currently underway. When there is little research to support the effects of such treatment, it can be difficult for a family to decide whether to pursue an alternative intervention. The guidelines suggested in Figure 2 may be helpful to families who are weighing the pros and cons of complementary and alternative treatments.

Session Summary

As noted in this session, the learning and development of children and adolescents with ASD can be affected by educational factors such as placement options/settings, curriculum components, and collaborative teaming. In addition, factors such as co-occurring health issues (seizures, gastrointestinal problems, food allergies, sleep disturbance) and medical management can impact learning and developmental outcomes, as can the use of medications. Finally, many families implement complementary and alternative interventions with their children. By using a family-centered approach and interdisciplinary teaming, practitioners should be able to collaborate with families about the status of all of these factors and their potential impact on behavior and outcomes. With this collaborative approach, practitioners and families will be able to identify appropriate placement options/settings and curriculum and will be able to continuously monitor the impact of health, medication, and complementary/alternative therapies on learners' outcomes and progress.

Table 2. Complementary and Alternative Interventions*		
Category	Intervention	Empirical Evidence
Biological	<i>Gluten-free/Casein-free diet</i>	No published controlled studies on effects of diet in ASD
	<i>Supplements B6/Magnesium Vitamins A, C, B12</i>	B6/magnesium-clinical trials have not documented efficacy. Inadequate research evidence
	<i>Chelation</i>	Lack of epidemiologic evidence that mercury toxicity is a factor in ASD
	<i>Secretin</i>	Multiple controlled studies did not confirm efficacy
Non-biological	<i>Interactive metronome therapy</i>	No studies to document efficacy in children with ASD
	<i>Auditory integration training</i>	Studies using blind methods do not demonstrate effect on behaviors measured
	<i>Craniosacral manipulation or therapeutic massage</i>	No studies to document efficacy
	<i>Facilitated communication</i>	Blind studies unable to demonstrate accuracy beyond chance
	<i>Dolphin-assisted therapy</i>	Studies methodologically flawed, no studies document efficacy
	<i>Hyperbaric Oxygen Therapy</i>	No scientific evidence for use in treatment of ASD or other developmental disabilities
* Parts of this table were adapted from: Levy et al., 2008, pp. 538-539		

Table 3. Evaluation Guidelines when Considering Nontraditional Therapies in Autism

When considering a nontraditional therapy or treatment approaches for your child with autism, it is important to ask questions and carefully assess the program being offered. The following points should serve as guidelines:

I. PROGRAM DESCRIPTION

- What is the treatment program?
- Is there written information, a program description, detailed brochure, etc?
- Exactly what is involved for the child and the family?
- What is the length of treatment?
- What is the frequency of sessions?
- How much parent time is required?
- What are the financial costs?
- Does the treatment program focus on one particular skill or is it a general, comprehensive approach?
- Do parents, care providers, teachers, others need to be trained in the treatment technique?
- Is there coordination between the treatment program and other individuals/services working with the family (e.g., teachers, therapists, doctors)?
- Are the treatment program goals individualized for each person and family?
- Is there follow up and/or support after treatment termination?

II. RATIONALE AND PURPOSE OF PROGRAM

- What is the rationale, philosophy, or purpose underlying the treatment program?
- How is the philosophy tied to the specific treatment techniques?
- How were the philosophy and treatment methods developed (e.g., scientific research, clinical experience, application or extension from a related field such as learning disabilities or mental retardation)?
- Are you comfortable with or do you agree with the philosophy of the program?

III. CREDENTIALS OF THE PROGRAM DIRECTOR AND STAFF

- What is the background of the program staff?
- What training and professional credentials do the program staff have?
- What is the staff's training and experience in autism?
- What is their understanding of the nature of the disorder?
- How much experience have they had in providing this type of treatment?
- Is the program staff open to questions and input from the family or other professionals involved with the child?

IV. EFFECTIVENESS OF THE PROGRAM

- What is the supporting evidence for the effectiveness of the program?
- Is there any independent confirmation of the effectiveness of the treatment program?
- What are the possible negative effects or side effects of the treatment?
- What impact might the program have on the family's life style?

Division TEACCH, Retrieved March 31, 2008 from http://www.teacch.com/info_evaluation.html

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