



"AUTISM AND ASPERGER'S SYNDROME - ASSESSMENT AND TREATMENT"

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"Autism and Asperger's Syndrome - Assessment and Treatment"

3 CEU Credit Hours

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Course Description:

This course provides an excellent overview of the Autism Spectrum Disorders and Asperger's Syndrome, from signs and symptoms to treatment protocol, medications and research-based resources.

Course Objectives:

At the conclusion of this course, the professional will be able to:

1. Understand the common symptoms and treatment protocol for autism spectrum disorders.
2. Understand common symptoms and treatment protocol for Asperger's syndrome.

Purpose of this course:

The purpose of this continuing education course is to provide a current understanding of issues relevant to the mental health counselor concerning providing assessment and/or treatment services to adults and children suffering from autism spectrum disorders or Asperger's syndrome. Current government facts, guidelines and information is provided to assist counselors in clarifying current standards of care.

Course Outline:

Part 1: Reading of Course Introduction

Part 2: Reading of the course file (this document)

Part 3: Administration and Completion of the Evaluation of Learning Quiz

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3 Clock / Credit Hours



Your instructor is **Richard K. Nongard**,
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Autism and Asperger's Syndrome - Assessment and Treatment

INTRODUCTION

A Message from your Instructor, Richard K. Nongard

When the average American thinks of an autistic person, Dustin Hoffman in the movie *Rain Man* is generally the first image that comes to mind. This representation is both accurate and inaccurate at the same time, mostly because each diseased individual seems to be diseased in different ways; there is not one specific set of identifiable behaviors, intelligence quirks or emotional affect characterizations that apply across the board.

Perhaps because of this, Autism and Asperger's Syndrome are fascinating conditions from a clinical perspective; however, they can be devastating to the sufferers and their families and caregivers.

Since diagnosis of ASD and AS are on the rise, I would caution all professionals to take care with their assessment practice and to follow the 'team approach' diagnosis protocol outlined in this text, as unfortunately "fad diagnoses" do come around about every 5-10 years (i.e. repressed memory, ADHD, bipolar disorder...), and misdiagnosis is a terrible thing - not to mention a liability - for all parties involved.

Clearly, the more severe symptoms will be more readily apparent even in very young infants, but there are other issues to consider with diagnosis of older children, especially when considering the more 'minor' forms of the illness. One such consideration is the child's social conditioning.

For example, when children spend their lives watching TV for 2-6 hours a day and are subsequently programmed for a commercial every 11 ½ minutes, the fault is not necessarily the child's when they cannot sit still during a boring hour-long lecture. Consequently, ADHD may be the diagnosis handed out, but the real problem may simply be that their teacher has not adapted to today's media-driven time structure. Instead of handing out Ritalin left and right, maybe all of the teacher's students would benefit from shaking up the class time a little bit with varied and more engaging sensory activities.

Likewise, children who live in certain emotionally volatile households may have innately conditioned themselves to conceal their emotions and physical intimacy displays for protection purposes, and appropriate thorough assessment should include interviews with teachers and others outside the household who are close to the child in order to verify the consistency of the child's reported and/or demonstrated behaviors and affect.

I hope that you find the information in this course to be of benefit to your clients. Should you ever have any questions or concerns, please do not hesitate to contact us.



With all the best for your professional success,

Richard K. Nongard, LMFT/CCH

Autism Spectrum Disorders (Pervasive Developmental Disorders)

Not until the middle of the twentieth century was there a name for a disorder that now appears to affect an estimated 3.4 every 1,000 children ages 3-10, a disorder that causes disruption in families and unfulfilled lives for many children. In 1943 Dr. Leo Kanner of the Johns Hopkins Hospital studied a group of 11 children and introduced the label *early infantile* autism into the English language. At the same time a German scientist, Dr. Hans Asperger, described a milder form of the disorder that became known as Asperger syndrome. Thus these two disorders were described and are today listed in the *Diagnostic and Statistical Manual of Mental Disorders DSM-IV-TR* (fourth edition, text revision) as two of the five pervasive developmental disorders (PDD), more often referred to today as autism spectrum disorders (ASD). All of these disorders are characterized by varying degrees of impairment in communication skills, social interactions, and restricted, repetitive and stereotyped patterns of behavior.

The autism spectrum disorders can often be reliably detected by the age of 3 years, and in some cases as early as 18 months. Studies suggest that many children eventually may be accurately identified by the age of 1 year or even younger. The appearance of any of the warning signs of ASD is reason to have a child evaluated by a professional specializing in these disorders.

Parents are usually the first to notice unusual behaviors in their child. In some cases, the baby seemed "different" from birth, unresponsive to people or focusing intently on one item for long periods of time. The first signs of an ASD can also appear in children who seem to have been developing normally. When an engaging, babbling toddler suddenly becomes silent, withdrawn, self-abusive, or indifferent to social overtures, something is wrong. Research has shown that parents are usually correct about noticing developmental problems, although they may not realize the specific nature or degree of the problem.

The pervasive developmental disorders, or autism spectrum disorders, range from a severe form, called autistic disorder, to a milder form, Asperger syndrome. If a child has symptoms of either of these disorders, but does not meet the specific criteria for either, the diagnosis is called pervasive developmental disorder not otherwise specified (PDD-NOS). Other rare, very severe disorders that are included in the autism spectrum disorders are Rett syndrome and childhood disintegrative disorder. This text will focus on classic autism, PDD-NOS, and Asperger syndrome, but will first cover brief descriptions of Rett syndrome and childhood disintegrative disorder.

Rare Autism Spectrum Disorders

Rett Syndrome

Rett syndrome is relatively rare, affecting almost exclusively females, one out of 10,000 to 15,000. After a period of normal development, sometime between 6 and 18 months, autism-like symptoms begin to appear. The little girl's mental and social development regresses—she no longer responds to her parents and pulls away from any social contact. If she has been talking, she stops; she cannot control her feet; she wrings her hands. Some of the problems associated with Rett syndrome can be treated. Physical, occupational, and speech therapy can help with problems of coordination, movement, and speech.

Scientists sponsored by the National Institute of Child Health and Human Development have discovered that a mutation in the sequence of a single gene can cause Rett syndrome. This discovery may help doctors slow or stop the progress of the syndrome. It may also lead to methods of screening for Rett syndrome, thus enabling doctors to start treating these children much sooner, and improving the quality of life these children experience.*

Childhood Disintegrative Disorder

Very few children who have an autism spectrum disorder (ASD) diagnosis meet the criteria for childhood disintegrative disorder (CDD). An estimate based on four surveys of ASD found fewer than two children per 100,000 with ASD could be classified as having CDD. This suggests that CDD is a very rare form of ASD. It has a strong male preponderance.** Symptoms may appear by age 2, but the average age of onset is between 3 and 4 years. Until this time, the child has age-appropriate skills in communication and social relationships. The long period of normal development before regression helps differentiate CDD from Rett syndrome.

The loss of such skills as vocabulary are more dramatic in CDD than they are in classical autism. The diagnosis requires extensive and pronounced losses involving motor, language, and social skills.*** CDD is also accompanied by loss of bowel and bladder control and oftentimes seizures and a very low IQ.

**Rett syndrome*. NIH Publication No. 01-4960. Rockville, MD: National Institute of Child Health and Human Development, 2001. Available at <http://www.nichd.nih.gov/publications/pubskey.cfm?from=autism>

**Frombonne E. Prevalence of childhood disintegrative disorder. *Autism*, 2002; 6(2): 149-157.

***Volkmar RM and Rutter M. Childhood disintegrative disorder: Results of the DSM-IV autism field trial. *Journal of the American Academy of Child and Adolescent Psychiatry*, 1995; 34: 1092-1095.

What Are the Autism Spectrum Disorders?

The autism spectrum disorders are more common in the pediatric population than are some better known disorders such as diabetes, spinal bifida, or Down syndrome. Prevalence studies have been done in several states and also in the United Kingdom, Europe, and Asia. A recent study of a U.S. metropolitan area estimated that 3.4 of every 1,000 children 3-10 years old had autism. This wide range of prevalence points to a need for earlier and more accurate screening for the symptoms of ASD. The earlier the disorder is diagnosed, the sooner the child can be helped through treatment interventions. Pediatricians, family physicians, daycare providers, teachers, and parents may initially dismiss signs of ASD, optimistically thinking the child is just a little slow and will "catch up." Although early intervention has a dramatic impact on reducing symptoms and increasing a child's ability to grow and learn new skills, it is estimated that *only 50 percent of children are diagnosed before kindergarten.*

All children with ASD demonstrate deficits in 1) social interaction, 2) verbal and nonverbal communication, and 3) repetitive behaviors or interests. In addition, they will often have unusual responses to sensory experiences, such as certain sounds or the way objects look. Each of these symptoms runs the gamut from mild to severe. They will present in each individual child differently. For instance, a child may have little trouble learning to read but exhibit extremely poor social interaction. Each child will display communication, social, and behavioral patterns that are individual but fit into the overall diagnosis of ASD.

Children with ASD do not follow the typical patterns of child development. In some children, hints of future problems may be apparent from birth. In most cases, the problems in communication and social skills become more noticeable as the child lags further behind other children the same age. Some other children start off well enough. Oftentimes between 12 and 36 months old, the differences in the way they react to people and other unusual behaviors become apparent. Some parents report the change as being sudden, and that their children start to reject people, act strangely, and lose language and social skills they had previously acquired. In other cases, there is a plateau, or leveling, of progress so that the difference between the child with autism and other children the same age becomes more noticeable.

ASD is defined by a certain set of behaviors that can range from the very mild to the severe. The following possible indicators of ASD were identified on the Public Health Training Network Webcast, *Autism Among Us.*

Possible Indicators of Autism Spectrum Disorders

- Does not babble, point, or make meaningful gestures by 1 year of age
- Does not speak one word by 16 months
- Does not combine two words by 2 years
- Does not respond to name
- Loses language or social skills

Some Other Indicators

- Poor eye contact
- Doesn't seem to know how to play with toys
- Excessively lines up toys or other objects
- Is attached to one particular toy or object
- Doesn't smile
- At times seems to be hearing impaired

Social Symptoms

From the start, typically developing infants are social beings. Early in life, they gaze at people, turn toward voices, grasp a finger, and even smile.

In contrast, most children with ASD seem to have tremendous difficulty learning to engage in the give-and-take of everyday human interaction. Even in the first few months of life, many do not interact and they avoid eye contact. They seem indifferent to other people, and often seem to prefer being alone. They may resist attention or passively accept hugs and cuddling. Later, they seldom seek comfort or respond to parents' displays of anger or affection in a typical way. Research has suggested that although children with ASD are attached to their parents, their expression of this attachment is unusual and difficult to "read." To parents, it may seem as if their child is not attached at all. Parents who looked forward to the joys of cuddling, teaching, and playing with their child may feel crushed by this lack of the expected and typical attachment behavior.

Children with ASD also are slower in learning to interpret what others are thinking and feeling. Subtle social cues—whether a smile, a wink, or a grimace—may have little meaning. To a child who misses these cues, "Come here" always means the same thing, whether the speaker is smiling and extending her arms for a hug or frowning and planting her fists on her hips. Without the ability to interpret gestures and facial expressions, the social world may seem bewildering. To compound the problem, people with ASD have difficulty seeing things from another person's perspective. Most 5-year-olds understand that other people have different information, feelings, and goals than they have. A person with ASD may lack such understanding. This inability leaves them unable to predict or understand other people's actions.

Although not universal, it is common for people with ASD also to have difficulty regulating their emotions. This can take the form of "immature" behavior such as crying in class or verbal outbursts that seem inappropriate to those around them. The individual with ASD might also be disruptive and physically aggressive at times, making social relationships still more difficult. They have a tendency to "lose control," particularly when they're in a strange or overwhelming environment, or when angry and frustrated. They may at times break things, attack others, or hurt themselves. In their frustration, some bang their heads, pull their hair, or bite their arms.

Communication Difficulties

By age 3, most children have passed predictable milestones on the path to learning language; one of the earliest is babbling. By the first birthday, a typical toddler says words, turns when he hears his name, points when he wants a toy, and when offered something distasteful, makes it clear that the answer is "no."

Some children diagnosed with ASD remain mute throughout their lives. Some infants who later show signs of ASD coo and babble during the first few months of life, but they soon stop. Others may be delayed, developing language as late as age 5 to 9. Some children may learn to use communication systems such as pictures or sign language.

Those who do speak often use language in unusual ways. They seem unable to combine words into meaningful sentences. Some speak only single words, while others repeat the same phrase over and over. Some ASD children parrot what they hear, a condition called *echolalia*. Although many children with no ASD go through a stage where they repeat what they hear, it normally passes by the time they are 3.

Some children only mildly affected may exhibit slight delays in language, or even seem to have precocious language and unusually large vocabularies, but have great difficulty in sustaining a conversation. The "give and take" of normal conversation is hard for them, although they often carry on a monologue on a favorite subject, giving no one else an opportunity to comment. Another difficulty is often the inability to understand body language, tone of voice, or "phrases of speech." They might interpret a sarcastic expression such as "Oh, that's just great" as meaning it really IS great.

While it can be hard to understand what ASD children are saying, their body language is also difficult to understand. Facial expressions, movements, and gestures rarely match what they are saying. Also, their tone of voice fails to reflect their feelings. A high-pitched, sing-song, or flat, robot-like voice is common. Some children with relatively good language skills speak like little adults, failing to pick up on the "kid-speak" that is common in their peers.

Without meaningful gestures or the language to ask for things, people with ASD are at a loss to let others know what they need. As a result, they may simply scream or grab what they want. Until they are taught better ways to express their needs, ASD children do whatever they can to get through to others. As people with ASD grow up, they can become increasingly aware of their difficulties in understanding others and in being understood. As a result they may become anxious or depressed.

Repetitive Behaviors

Although children with ASD usually appear physically normal and have good muscle control, odd repetitive motions may set them off from other children. These behaviors might be extreme and highly apparent or more subtle. Some children and older individuals spend a lot of time repeatedly flapping their arms or walking on their toes. Some suddenly freeze in position.

As children, they might spend hours lining up their cars and trains in a certain way, rather than using them for pretend play. If someone accidentally moves one of the toys,

the child may be tremendously upset. ASD children need, and demand, absolute consistency in their environment. A slight change in any routine—in mealtimes, dressing, taking a bath, going to school at a certain time and by the same route—can be extremely disturbing. Perhaps order and sameness lend some stability in a world of confusion.

Repetitive behavior sometimes takes the form of a persistent, intense preoccupation. For example, the child might be obsessed with learning all about vacuum cleaners, train schedules, or lighthouses. Often there is great interest in numbers, symbols, or science topics.

Problems That May Accompany ASD

Sensory problems. When children's perceptions are accurate, they can learn from what they see, feel, or hear. On the other hand, if sensory information is faulty, the child's experiences of the world can be confusing. Many ASD children are highly attuned or even painfully sensitive to certain sounds, textures, tastes, and smells. Some children find the feel of clothes touching their skin almost unbearable. Some sounds—a vacuum cleaner, a ringing telephone, a sudden storm, even the sound of waves lapping the shoreline—will cause these children to cover their ears and scream.

In ASD, the brain seems unable to balance the senses appropriately. Some ASD children are oblivious to extreme cold or pain. An ASD child may fall and break an arm, yet never cry. Another may bash his head against a wall and not wince, but a light touch may make the child scream with alarm.

Mental retardation. Many children with ASD have some degree of mental impairment. When tested, some areas of ability may be normal, while others may be especially weak. For example, a child with ASD may do well on the parts of the test that measure visual skills but earn low scores on the language subtests.

Seizures. One in four children with ASD develops seizures, often starting either in early childhood or adolescence. Seizures, caused by abnormal electrical activity in the brain, can produce a temporary loss of consciousness (a "blackout"), a body convulsion, unusual movements, or staring spells. Sometimes a contributing factor is a lack of sleep or a high fever. An EEG (electroencephalogram—recording of the electric currents developed in the brain by means of electrodes applied to the scalp) can help confirm the seizure's presence.

In most cases, seizures can be controlled by a number of medicines called "anticonvulsants." The dosage of the medication is adjusted carefully so that the least possible amount of medication will be used to be effective.

Fragile X syndrome. This disorder is the most common inherited form of mental retardation. It was so named because one part of the X chromosome has a defective piece that appears pinched and fragile when under a microscope. Fragile X syndrome affects about two to five percent of people with ASD. It is important to have a child with ASD checked for Fragile X, especially if the parents are considering having another child. For an unknown reason, if a child with ASD also has Fragile X, there is a one-in-two chance that boys born to the same parents will have the syndrome. Other members of the family who may be contemplating having a child may also wish to be checked for the syndrome.

Tuberous Sclerosis. Tuberous sclerosis is a rare genetic disorder that causes benign tumors to grow in the brain as well as in other vital organs. It has a consistently strong association with ASD. One to 4 percent of people with ASD also have tuberous sclerosis.

The Diagnosis of Autism Spectrum Disorders

Although there are many concerns about labeling a young child with an ASD, the earlier the diagnosis of ASD is made, the earlier needed interventions can begin. Evidence over the last 15 years indicates that intensive early intervention in *optimal educational settings for at least 2 years during the preschool years* results in improved outcomes in most young children with ASD.

In evaluating a child, clinicians rely on behavioral characteristics to make a diagnosis. Some of the characteristic behaviors of ASD may be apparent in the first few months of a child's life, or they may appear at any time during the early years. For the diagnosis, problems in at least one of the areas of communication, socialization, or restricted behavior must be present before the age of 3. The diagnosis requires a two-stage process. The first stage involves developmental screening during "well child" check-ups; the second stage entails a comprehensive evaluation by a multidisciplinary team.

Screening

A "well child" check-up should include a developmental screening test. If the parent's child's pediatrician does not routinely check the child with such a test, ask that it be done. The parents' observations and concerns about the child's development will be essential in helping to screen the child. Reviewing family videotapes, photos, and baby albums can help parents remember when each behavior was first noticed and when the child reached certain developmental milestones.

Several screening instruments have been developed to quickly gather information about a child's social and communicative development within medical settings. Among them are the Checklist of Autism in Toddlers (CHAT), the modified Checklist for Autism in Toddlers (M-CHAT), the Screening Tool for Autism in Two-Year-Olds (STAT), and the Social Communication Questionnaire (SCQ) (for children 4 years of age and older).

Some screening instruments rely solely on parent responses to a questionnaire, and some rely on a combination of parent report and observation. Key items on these instruments that appear to differentiate children with autism from other groups before the age of 2 include pointing and pretend play. Screening instruments do not provide individual diagnosis but serve to assess the need for referral for possible diagnosis of ASD. These screening methods may not identify children with mild ASD, such as those with high-functioning autism or Asperger syndrome.

During the last few years, screening instruments have been devised to screen for Asperger syndrome and higher functioning autism. The Autism Spectrum Screening Questionnaire (ASSQ), the Australian Scale for Asperger's Syndrome, and the most recent, the Childhood Asperger Syndrome Test (CAST), are some of the instruments that are reliable for identification of school-age children with Asperger syndrome or higher functioning autism. These tools concentrate on social and behavioral impairments in children without significant language delay.

If, following the screening process or during a routine "well child" check-up, the child's doctor sees any of the possible indicators of ASD, further evaluation is indicated.

Comprehensive Diagnostic Evaluation

The second stage of diagnosis must be comprehensive in order to accurately rule in or rule out an ASD or other developmental problem. This evaluation may be done by a multidisciplinary team that includes a psychologist, a neurologist, a psychiatrist, a speech therapist, or other professionals who diagnose children with ASD.

Because ASDs are complex disorders and may involve other neurological or genetic problems, a comprehensive evaluation should entail neurologic and genetic assessment, along with in-depth cognitive and language testing. In addition, measures developed specifically for diagnosing autism are often used. These include the Autism Diagnosis Interview-Revised (ADI-R) and the Autism Diagnostic Observation Schedule (ADOS-G). The ADI-R is a structured interview that contains over 100 items and is conducted with a caregiver. It consists of four main factors—the child's communication, social interaction, repetitive behaviors, and age-of-onset symptoms. The ADOS-G is an observational measure used to "press" for socio-communicative behaviors that are often delayed, abnormal, or absent in children with ASD.

Still another instrument often used by professionals is the Childhood Autism Rating Scale (CARS). It aids in evaluating the child's body movements, adaptation to change, listening response, verbal communication, and relationship to people. It is suitable for use with children over 2 years of age. The examiner observes the child and also obtains relevant information from the parents. The child's behavior is rated on a scale based on deviation from the typical behavior of children of the same age.

Two other tests that should be used to assess any child with a developmental delay are a formal audiologic hearing evaluation and a lead screening. Although some hearing loss can co-occur with ASD, some children with ASD may be incorrectly thought to have such a loss. In addition, if the child has suffered from an ear infection, transient hearing loss can occur. Lead screening is essential for children who remain for a long period of time in the oral-motor stage in which they put any and everything into their mouths. Children with an autistic disorder usually have elevated blood lead levels.

Customarily, an expert diagnostic team has the responsibility of thoroughly evaluating the child, assessing the child's unique strengths and weaknesses, and determining a formal diagnosis. The team will then meet with the parents to explain the results of the evaluation.

Although parents may have been aware that something was not "quite right" with their child, when the diagnosis is given, it is a devastating blow. At such a time, it is hard to stay focused on asking questions. But while members of the evaluation team are together is the best opportunity the parents will have to ask questions and get recommendations on what further steps they should take for their child. Learning as much as possible at this meeting is very important, but it is helpful to leave this meeting with the name or names of professionals who can be contacted if the parents have further questions.

Available Aids

When the child has been evaluated and diagnosed with an autism spectrum disorder, the parent may feel inadequate to help the child develop to the fullest extent of his or her ability. As you begin to look at treatment options and at the types of aid available for a child with a disability, you will find out that there is help. It is going to be difficult to learn and remember everything you need to know about the resources that will be most helpful. *Write down everything.* If you keep a notebook, you will have a foolproof method of recalling information. Keep a record of the doctors' reports and the evaluation the child has been given so that his or her eligibility for special programs will be documented. Learn everything you can about special programs for the child; the more you know, the more effectively you can advocate.

For every child eligible for special programs, each state guarantees special education and related services. The Individuals with Disabilities Education Act (IDEA) is a Federally mandated program that assures a free and appropriate public education for children with diagnosed learning deficits. Usually children are placed in public schools and the school district pays for all necessary services. These will include, as needed, services by a speech therapist, occupational therapist, school psychologist, social worker, school nurse, or aide.

By law, the public schools must prepare and carry out a set of instruction goals, or specific skills, for every child in a special education program. The list of skills is known as the child's Individualized Education Program (IEP). The IEP is an agreement between the school and the family on the child's goals. When the child's IEP is developed, the parent will be asked to attend the meeting. There will be several people at this meeting, including a special education teacher, a representative of the public schools who is knowledgeable about the program, other individuals invited by the school or by the parent (they may want to bring a relative, a child care provider, or a supportive close friend who knows the child well). Parents play an important part in creating the program, as they know their child and his or her needs best. Once the child's IEP is developed, a meeting is scheduled once a year to review the child's progress and to make any alterations to reflect his or her changing needs.

If the child is under 3 years of age and has special needs, he or she should be eligible for an early intervention program; this program is available in every state. Each state decides which agency will be the lead agency in the early intervention program. The early intervention services are provided by workers qualified to care for toddlers with disabilities and are usually in the child's home or a place familiar to the child. The services provided are written into an Individualized Family Service Plan (IFSP) that is reviewed at least once every 6 months. The plan will describe services that will be provided to the child, but will also describe services for parents to help them in daily activities with their child and for siblings to help them adjust to having a brother or sister with ASD.

Treatment Options

There is no single best treatment package for all children with ASD. One point that most professionals agree on is that early intervention is important; another is that most individuals with ASD respond well to highly structured, specialized programs.

Before decisions are made about the child's treatment, the parent will want to gather information about the various options available.

Guidelines used by the Autism Society of America include the following questions parents and caregivers can ask about potential treatments:

- Will the treatment result in harm to the child?
 - How will failure of the treatment affect the child and family?
 - Has the treatment been validated scientifically?
 - Are there assessment procedures specified?
 - How will the treatment be integrated into the child's current program?
- Do not become so infatuated with a given treatment that functional curriculum, vocational life, and social skills are ignored.*

The National Institute of Mental Health suggests a list of questions parents and caregivers can ask when planning for the child:

- How successful has the program been for other children?
- How many children have gone on to placement in a regular school and how have they performed?
- Do staff members have training and experience in working with children and adolescents with autism?
- How are activities planned and organized?
- Are there predictable daily schedules and routines?
- How much individual attention will the child receive?
- How is progress measured? Will the child's behavior be closely observed and recorded?
- Will the child be given tasks and rewards that are personally motivating?
- Is the environment designed to minimize distractions?
- Will the program prepare me to continue the therapy at home?
- What is the cost, time commitment, and location of the program?

Among the many methods available for treatment and education of people with autism, applied behavior analysis (ABA) has become widely accepted as an effective treatment. *Mental Health: A Report of the Surgeon General* states, "Thirty years of research demonstrated the efficacy of applied behavioral methods in reducing inappropriate

behavior and in increasing communication, learning, and appropriate social behavior." The basic research done by Ivar Lovaas and his colleagues at the University of California, Los Angeles, calling for an intensive, one-on-one child-teacher interaction for 40 hours a week, laid a foundation for other educators and researchers in the search for further effective early interventions to help those with ASD attain their potential. The goal of behavioral management is to reinforce desirable behaviors and reduce undesirable ones.

An effective treatment program will build on the child's interests, offer a predictable schedule, teach tasks as a series of simple steps, actively engage the child's attention in highly structured activities, and provide regular reinforcement of behavior. Parental involvement has emerged as a major factor in treatment success. Parents work with teachers and therapists to identify the behaviors to be changed and the skills to be taught. Recognizing that parents are the child's earliest teachers, more programs are beginning to train parents to continue the therapy at home.

As soon as a child's disability has been identified, instruction should begin. Effective programs will teach early communication and social interaction skills. In children younger than 3 years, appropriate interventions usually take place in the home or a child care center. These interventions target specific deficits in learning, language, imitation, attention, motivation, compliance, and initiative of interaction. Included are behavioral methods, communication, occupational and physical therapy along with social play interventions. Often the day will begin with a physical activity to help develop coordination and body awareness; children string beads, piece puzzles together, paint, and participate in other motor skills activities. At snack time the teacher encourages social interaction and models how to use language to ask for more juice. The children learn by doing. Working with the children are students, behavioral therapists, and parents who have received extensive training. In teaching the children, positive reinforcement is used.

Children older than 3 years usually have school-based, individualized, special education. The child may be in a segregated class with other autistic children or in an integrated class with children without disabilities for at least part of the day. Different localities may use differing methods but all should provide a structure that will help the children learn social skills and functional communication. In these programs, teachers often involve the parents, giving useful advice in how to help their child use the skills or behaviors learned at school when they are at home.

In elementary school, the child should receive help in any skill area that is delayed and, at the same time, be encouraged to grow in his or her areas of strength. Ideally, the curriculum should be adapted to the individual child's needs. Many schools today have an inclusion program in which the child is in a regular classroom for most of the day, with special instruction for a part of the day. This instruction should include such skills as learning how to act in social situations and in making friends. Although higher-functioning children may be able to handle academic work, they too need help to organize tasks and avoid distractions.

During middle and high school years, instruction will begin to address such practical matters as work, community living, and recreational activities. This should include work experience, using public transportation, and learning skills that will be important in community living.

The Adolescent Years

Adolescence is a time of stress and confusion; and it is no less so for teenagers with autism. Like all children, they need help in dealing with their budding sexuality. While some behaviors improve during the teenage years, some get worse. Increased autistic or aggressive behavior may be one way some teens express their newfound tension and confusion.

The teenage years are also a time when children become more socially sensitive. At the age that most teenagers are concerned with acne, popularity, grades, and dates, teens with autism may become painfully aware that they are different from their peers. They may notice that they lack friends. And unlike their schoolmates, they aren't dating or planning for a career. For some, the sadness that comes with such realization motivates them to learn new behaviors and acquire better social skills.

Dietary and Other Interventions

In an effort to do everything possible to help their children, many parents continually seek new treatments. Some treatments are developed by reputable therapists or by parents of a child with ASD. Although an unproven treatment may help one child, it may not prove beneficial to another. To be accepted as a proven treatment, the treatment should undergo clinical trials, preferably randomized, double-blind trials that would allow for a comparison between treatment and no treatment. Following are some of the interventions that have been reported to have been helpful to some children but whose efficacy or safety has not been proven.

Dietary interventions are based on the idea that 1) food allergies cause symptoms of autism, and 2) an insufficiency of a specific vitamin or mineral may cause some autistic symptoms. If parents decide to try for a given period of time a special diet, they should be sure that the child's nutritional status is measured carefully.

A diet that some parents have found was helpful to their autistic child is a gluten-free, casein-free diet. Gluten is a casein-like substance that is found in the seeds of various cereal plants—wheat, oat, rye, and barley. Casein is the principal protein in milk. Since gluten and milk are found in many of the foods we eat, following a gluten-free, casein-free diet is difficult.

A supplement that some parents feel is beneficial for an autistic child is Vitamin B6, taken with magnesium (which makes the vitamin effective). The result of research studies is mixed; some children respond positively, some negatively, some not at all or very little.

In the search for treatment for autism, there has been discussion in the last few years about the use of secretin, a substance approved by the Food and Drug Administration (FDA) for a single dose normally given to aid in diagnosis of a gastrointestinal problem. Anecdotal reports have shown improvement in autism symptoms, including sleep patterns, eye contact, language skills, and alertness. Several clinical trials conducted in the last few years have found no significant improvements in symptoms between patients who received secretin and those who received a placebo.

Medications Used in Treatment

Medications are often used to treat behavioral problems, such as aggression, self-injurious behavior, and severe tantrums, that keep the person with ASD from functioning more effectively at home or school. The medications used are those that have been developed to treat similar symptoms in other disorders. Many of these medications are prescribed "off-label." This means they have not been officially approved by the FDA for use in children, but the doctor prescribes the medications if he or she feels they are appropriate for your child. Further research needs to be done to ensure not only the efficacy but the safety of psychotropic agents used in the treatment of children and adolescents.

A child with ASD may not respond in the same way to medications as typically developing children. It is important that parents work with a doctor who has experience with children with autism. A child should be monitored closely while taking a medication. The doctor will prescribe the lowest dose possible to be effective. Ask the doctor about any side effects the medication may have and keep a record of how the child responds to the medication. It will be helpful to read the "patient insert" that comes with the child's medication. Some people keep the patient inserts in a small notebook to be used as a reference. This is most useful when several medications are prescribed.

Anxiety and depression. The selective serotonin reuptake inhibitors (SSRI's) are the medications most often prescribed for symptoms of anxiety, depression, and/or obsessive-compulsive disorder (OCD). Only one of the SSRI's, fluoxetine, (Prozac®) has been approved by the FDA for both OCD and depression in children age 7 and older. Three that have been approved for OCD are fluvoxamine (Luvox®), age 8 and older; sertraline (Zoloft®), age 6 and older; and clomipramine (Anafranil®), age 10 and older. Treatment with these medications can be associated with decreased frequency of repetitive, ritualistic behavior and improvements in eye contact and social contacts. The FDA is studying and analyzing data to better understand how to use the SSRI's safely, effectively, and at the lowest dose possible.

Behavioral problems. Antipsychotic medications have been used to treat severe behavioral problems. These medications work by reducing the activity in the brain of the neurotransmitter dopamine. Among the older, typical antipsychotics, such as haloperidol (Haldol®), thioridazine, fluphenazine, and chlorpromazine, haloperidol was found in more than one study to be more effective than a placebo in treating serious behavioral problems. However, haloperidol, while helpful for reducing symptoms of aggression, can also have adverse side effects, such as sedation, muscle stiffness, and abnormal movements.

Placebo-controlled studies of the newer "atypical" antipsychotics are being conducted on children with autism. The first such study, conducted by the NIMH-supported Research Units on Pediatric Psychopharmacology (RUPP) Autism Network, was on risperidone (Risperdal®). Results of the 8-week study were reported in 2002 and showed that risperidone was effective and well tolerated for the treatment of severe behavioral problems in children with autism. The most common side effects were increased appetite, weight gain and sedation. Further long-term studies are needed to determine any long-term side effects. Other atypical antipsychotics that have been studied recently with encouraging results are olanzapine (Zyprexa®) and ziprasidone (Geodon®). Ziprasidone has not been associated with significant weight gain.

Seizures. Seizures are found in one in four persons with ASD, most often in those who have low IQ or are mute. They are treated with one or more of the anticonvulsants. These include such medications as carbamazepine (Tegretol®), lamotrigine (Lamictal®), topiramate (Topamax®), and valproic acid (Depakote®). The level of the medication in the blood should be monitored carefully and adjusted so that the least amount possible is used to be effective. Although medication usually reduces the number of seizures, it cannot always eliminate them.

Inattention and hyperactivity. Stimulant medications such as methylphenidate (Ritalin®), used safely and effectively in persons with attention deficit hyperactivity disorder, have also been prescribed for children with autism. These medications may decrease impulsivity and hyperactivity in some children, especially those higher functioning children.

Several other medications have been used to treat ASD symptoms; among them are other antidepressants, naltrexone, lithium, and some of the benzodiazepines such as diazepam (Valium®) and lorazepam (Ativan®). The safety and efficacy of these medications in children with autism has not been proven. Since people may respond differently to different medications, the child's unique history and behavior will help the doctor decide which medication might be most beneficial.

Adults with an Autism Spectrum Disorder

Some adults with ASD, especially those with high-functioning autism or with Asperger syndrome, are able to work successfully in mainstream jobs. Nevertheless, communication and social problems often cause difficulties in many areas of life. They will continue to need encouragement and moral support in their struggle for an independent life.

Many others with ASD are capable of employment in sheltered workshops under the supervision of managers trained in working with persons with disabilities. A nurturing environment at home, at school, and later in job training and at work, helps persons with ASD continue to learn and to develop throughout their lives.

The public schools' responsibility for providing services ends when the person with ASD reaches the age of 22. The family is then faced with the challenge of finding living arrangements and employment to match the particular needs of their adult child, as well as the programs and facilities that can provide support services to achieve these goals. Long before the child finishes school, the parent will want to search for the best programs and facilities for the young adult. Ask other parents of ASD adults about the services available in your community. If your community has little to offer, serve as an advocate for the child and work toward the goal of improved employment services.

Living Arrangements for the Adult with an Autism Spectrum Disorder

Independent living. Some adults with ASD are able to live entirely on their own. Others can live semi-independently in their own home or apartment if they have assistance with solving major problems, such as personal finances or dealing with the government agencies that provide services to persons with disabilities. This assistance can be provided by family, a professional agency, or another type of provider.

Living at home. Government funds are available for families that choose to have their adult child with ASD live at home. These programs include Supplemental Security Income (SSI), Social Security Disability Insurance (SSDI), Medicaid waivers, and others. Information about these programs is available from the Social Security Administration (SSA). An appointment with a local SSA office is a good first step to take in understanding the programs for which the young adult is eligible.

Foster homes and skill-development homes. Some families open their homes to provide long-term care to unrelated adults with disabilities. If the home teaches self-care and housekeeping skills and arranges leisure activities, it is called a "skill-development" home.

Supervised group living. Persons with disabilities frequently live in group homes or apartments staffed by professionals who help the individuals with basic needs. These often include meal preparation, housekeeping, and personal care needs. Higher functioning persons may be able to live in a home or apartment where staff only visit a few times a week. These persons generally prepare their own meals, go to work, and conduct other daily activities on their own.

Institutions. Although the trend in recent decades has been to avoid placing persons with disabilities into long-term-care institutions, this alternative is still available for persons with ASD who need intensive, constant supervision. Unlike many of the institutions years ago, today's facilities view residents as individuals with human needs and offer opportunities for recreation and simple but meaningful work.

Research into Causes and Treatment of Autism Spectrum Disorders

Research into the causes, the diagnosis, and the treatment of autism spectrum disorders has advanced in tandem. With new well-researched standardized diagnostic tools, ASD can be diagnosed at an early age. And with early diagnosis, the treatments found to be beneficial in recent years can be used to help the child with ASD develop to his or her greatest potential.

In the past few years, there has been public interest in a theory that suggested a link between the use of thimerosal, a mercury-based preservative used in the measles-mumps-rubella (MMR) vaccine, and autism. Although mercury is no longer found in childhood vaccines in the United States, some parents still have concerns about vaccinations. Many well-done, large-scale studies have now been done that have failed to show a link between thimerosal and autism.

A panel from the Institute of Medicine is now examining these studies, including a large Danish study that concluded that there was no causal relationship between childhood vaccination using thimerosal-containing vaccines and the development of an autism spectrum disorder, and a U.S. study looking at exposure to mercury, lead, and other heavy metals.

Research on the Biologic Basis of ASD

Because of its relative inaccessibility, scientists have only recently been able to study the brain systematically. But with the emergence of new brain imaging tools—computerized tomography (CT), positron emission tomography (PET), single photon emission computed tomography (SPECT), and magnetic resonance imaging (MRI), study of the structure and the functioning of the brain can be done. With the aid of modern technology and the new availability of both normal and autism tissue samples to do postmortem studies, researchers will be able to learn much through comparative studies.

Postmortem and MRI studies have shown that many major brain structures are implicated in autism. This includes the cerebellum, cerebral cortex, limbic system, corpus callosum, basal ganglia, and brain stem. Other research is focusing on the role of neurotransmitters such as serotonin, dopamine, and epinephrine.

Research into the causes of autism spectrum disorders is being fueled by other recent developments. Evidence points to genetic factors playing a prominent role in the causes for ASD. Twin and family studies have suggested an underlying genetic vulnerability to ASD. To further research in this field, the Autism Genetic Resource Exchange, a project initiated by the Cure Autism Now Foundation, and aided by an NIMH grant, is recruiting genetic samples from several hundred families. Each family with more than one member diagnosed with ASD is given a 2-hour, in-home screening. With a large number of DNA samples, it is hoped that the most important genes will be found. This will enable scientists to learn what the culprit genes do and how they can go wrong.

Another exciting development is the Autism Tissue Program (<http://www.brainbank.org>), supported by the Autism Society of America Foundation, the Medical Investigation of Neurodevelopmental Disorders (M.I.N.D.) Institute at the University of California, Davis, and the National Alliance for Autism Research. The program is aided by a grant to the Harvard Brain and Tissue Resource Center (<http://www.brainbank.mclean.org>), funded by the National Institute of Mental Health (NIMH) and the National Institute of Neurological Disorders and Stroke (NINDS).

Studies of the postmortem brain with imaging methods will help us learn why some brains are large, how the limbic system develops, and how the brain changes as it ages. Tissue samples can be stained and will show which neurotransmitters are being made in the cells and how they are transported and released to other cells. By focusing on specific brain regions and neurotransmitters, it will become easier to identify susceptibility genes.

Recent neuroimaging studies have shown that a contributing cause for autism may be abnormal brain development beginning in the infant's first months. This "growth dysregulation hypothesis" holds that the anatomical abnormalities seen in autism are caused by genetic defects in brain growth factors. It is possible that sudden, rapid head growth in an infant may be an early warning signal that will lead to early diagnosis and effective biological intervention or possible prevention of autism.

The Children's Health Act of 2000 **—What It Means to Autism Research**

The Children's Health Act of 2000 was responsible for the creation of the Interagency Autism Coordinating Committee (IACC), a committee that includes the directors of five NIH institutes—the National Institute of Mental Health, the National Institute of Neurological Disorders and Stroke, the National Institute on Deafness and Other Communication Disorders (NIDCD), the National Institute of Child Health and Human Development (NICHD), and the National Institute of Environmental Health Sciences (NIEHS)—as well as representatives from the Health Resource Services Administration, the National Center on Birth Defects and Developmental Disabilities (a part of the Centers for Disease Control), the Agency for Toxic Substances and Disease Registry, the Substance Abuse and Mental Health Services Administration, the Administration on Developmental Disabilities, the Centers for Medicare and Medicaid Services, the U.S. Food and Drug Administration, and the U.S. Department of Education. The Committee, instructed by the Congress to develop a 10-year agenda for autism research, introduced the plan, dubbed a "matrix" or a "roadmap," at the first Autism Summit Conference in November 2003. The roadmap indicates priorities for research for years 1 to 3, years 4 to 6, and years 7 to 10.

The five NIH institutes of the IACC have established the Studies to Advance Autism Research and Treatment (STAART) Network, composed of eight network centers. They will conduct research in the fields of developmental neurobiology, genetics, and psychopharmacology. Each center is pursuing its own particular mix of studies, but there also will be multi-site clinical trials within the STAART network.

The STAART centers are located at the following sites:

- University of North Carolina, Chapel Hill
- Yale University, Connecticut
- University of Washington, Seattle
- University of California, Los Angeles
- Mount Sinai Medical School, New York
- Kennedy Krieger Institute, Maryland
- Boston University, Massachusetts
- University of Rochester, New York

A data coordination center will analyze the data generated by both the STAART network and the Collaborative Programs of Excellence in Autism (CPEA). This latter program, funded by the NICHD and the NIDCD Network on the Neurobiology and Genetics of Autism, consists of 10 sites. The CPEA is at present studying the world's largest group of well-diagnosed individuals with autism characterized by genetic and developmental profiles.

The CPEA centers are located at:

- Boston University, Massachusetts
- University of California, Davis
- University of California, Irvine
- University of California, Los Angeles
- Yale University, Connecticut
- University of Washington, Seattle
- University of Rochester, New York
- University of Texas, Houston
- University of Pittsburgh, Pennsylvania
- University of Utah, Salt Lake City

The NIEHS has programs at:

- Center for Childhood Neurotoxicology and Assessment, University of Medicine & Dentistry, New Jersey
- The Center for the Study of Environmental Factors in the Etiology of Autism, University of California, Davis

Addendum to Autism Spectrum Disorders March 2006

Prevalence

The rate of autism found in a study published by the Centers for Disease Control (CDC) in 2003 is higher than the rates found from studies conducted in the United States during the 1980s and early 1990s, but was consistent with those of more recent studies. Debate continues about whether this represents a true increase in prevalence. Changes in the criteria used to diagnose autism, along with increased recognition of the disorder by professionals and the public may all be contributing factors. Nonetheless, it is clear that more children are being diagnosed with an ASD than ever before.

Data from the CDC's Atlanta-based program found the rate of autism spectrum disorder was 3.4 per 1,000 for children 3 to 10 years of age. Summarizing this and several other major studies on autism prevalence, CDC estimates that 2-6 per 1,000 children have an ASD (from 1 in 500 to 1 in 166). Compared to the prevalence of other childhood conditions, this rate is lower than the rate of mental retardation (9.7 per 1,000 children), but higher than the rates for cerebral palsy (2.8 per 1,000 children), hearing loss (1.1 per 1,000 children), and vision impairment (0.9 per 1,000 children).

For more information, the CDC published additional data on their Web site at http://www.cdc.gov/ncbddd/autism/asd_common.htm.

Fragile X

"For an unknown reason, if a child with ASD also has Fragile X, there is a one-in-two chance that boys born to the same parents will have the syndrome. Other members of the family who may be contemplating having a child may also wish to be checked for the syndrome." A distinction can be made between a father's and mother's ability to pass along to a daughter or son, the altered gene on the X chromosome that is linked to fragile X syndrome. Because both males (XY) and females (XX) have at least one X chromosome, both can pass on the mutated gene to their children.

A father with the altered gene for Fragile X on his X chromosome will only pass that gene on to his daughters. He passes a Y chromosome on to his sons, which doesn't transmit the condition. Therefore, if the father has the altered gene on his X chromosome, but the mother's X chromosomes are normal, all of the couple's daughters would have the altered gene for Fragile X, while none of their sons would have the mutated gene.

Because mothers pass on only X chromosomes to their children, if the mother has the altered gene for Fragile X, she can pass that gene to either her sons or her daughters. If the mother has the mutated gene on one X chromosome and has one normal X chromosome, and the father has no genetic mutations, all the children have a 50-50 chance of inheriting the mutated gene.

The odds noted here apply to each child the parents have.

In terms of prevalence, the latest statistics are consistent in showing that 5% of people with autism are affected by fragile X and 10% to 15% of those with fragile X show autistic traits.

Medications

While there are no drugs that are specifically approved by the Food and Drug Administration (FDA) for the treatment of autism, several FDA approved medications are typically used to address symptoms or other disorders in children with autism. Fluoxetine (Prozac) and sertraline (Zoloft) are approved by the FDA for children age 7 and older with obsessive-compulsive disorder. Fluoxetine is also approved for children age 8 and older for the treatment of depression.

Risperidone (Risperdal), olanzapine (Zyprexa) and other antipsychotic medications are used off-label for the treatment of aggression and other serious behavioral disturbances in children, including children with autism.

Off-label means a doctor will prescribe a medication that has been approved by the FDA, but for a different disorder or age. Though there are controlled studies supporting the efficacy of risperidone to treat these behavioral problems in children with autism, there is no FDA approved indication for use of these drugs in autism.

Disorders/Vaccinations

The Institute of Medicine (IOM) conducted a thorough review on the issue of a link between thimerosal (a mercury based preservative that is no longer used in vaccinations) and autism. The final report from IOM, Immunization Safety Review: Vaccines and Autism, released in May 2004, stated that the committee did not find a link. The report can be found at: <http://www.iom.edu/CMS/3793/4705/20155.aspx>.

A U.S. study looking at environmental factors including exposure to mercury, lead and other heavy metals is ongoing.

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What is Asperger syndrome?

Asperger syndrome (AS) is a developmental disorder that is characterized by:

- limited interests or an unusual preoccupation with a particular subject to the exclusion of other activities

- repetitive routines or rituals

- peculiarities in speech and language, such as speaking in an overly formal manner or in a monotone, or taking figures of speech literally

- socially and emotionally inappropriate behavior and the inability to interact successfully with peers

- problems with non-verbal communication, including the restricted use of gestures, limited or inappropriate facial expressions, or a peculiar, stiff gaze

- clumsy and uncoordinated motor movements

AS is an autism spectrum disorder (ASD), one of a distinct group of neurological conditions characterized by a greater or lesser degree of impairment in language and communication skills, as well as repetitive or restrictive patterns of thought and behavior. Other ASDs include: classic autism, Rett syndrome, childhood disintegrative disorder, and pervasive developmental disorder not otherwise specified (usually referred to as PDD-NOS).

Parents usually sense there is something unusual about a child with AS by the time of his or her third birthday, and some children may exhibit symptoms as early as infancy. Unlike children with autism, children with AS retain their early language skills. Motor development delays – crawling or walking late, clumsiness – are sometimes the first indicator of the disorder.

The incidence of AS is not well established, but experts in population studies conservatively estimate that two out of every 10,000 children have the disorder. Boys are three to four times more likely than girls to have AS.

Studies of children with AS suggest that their problems with socialization and communication continue into adulthood. Some of these children develop additional psychiatric symptoms and disorders in adolescence and adulthood.

Although diagnosed mainly in children, AS is being increasingly diagnosed in adults who seek medical help for mental health conditions such as depression, obsessive-compulsive disorder (OCD), and attention deficit hyperactivity disorder (ADHD). No studies have yet been conducted to determine the incidence of AS in adult populations.

Why is it called Asperger syndrome?

In 1944, an Austrian pediatrician named Hans Asperger observed four children in his practice who had difficulty integrating socially. Although their intelligence appeared normal, the children lacked nonverbal communication skills, failed to demonstrate empathy with their peers, and were physically clumsy. Their way of speaking was either disjointed or overly formal, and their all-absorbing interest in a single topic dominated their conversations. Dr. Asperger called the condition "autistic psychopathy" and described it as a personality disorder primarily marked by social isolation.

Asperger's observations, published in German, were not widely known until 1981, when an English doctor named Lorna Wing published a series of case studies of children showing similar symptoms, which she called "Asperger's" syndrome. Wing's writings were widely published and popularized. AS became a distinct disease and diagnosis in 1992, when it was included in the tenth published edition of the World Health Organization's diagnostic manual, *International Classification of Diseases (ICD-10)*, and in 1995 it was added to the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*, the American Psychiatric Association's diagnostic reference book.

What are some common signs or symptoms?

The most distinguishing symptom of AS is a child's obsessive interest in a single object or topic to the exclusion of any other. Some children with AS have become experts on vacuum cleaners, makes and models of cars, even objects as odd as deep fat fryers. Children with AS want to know everything about their topic of interest and their conversations with others will be about little else. Their expertise, high level of vocabulary, and formal speech patterns make them seem like little professors.

Children with AS will gather enormous amounts of factual information about their favorite subject and will talk incessantly about it, but the conversation may seem like a random collection of facts or statistics, with no point or conclusion.

Their speech may be marked by a lack of rhythm, an odd inflection, or a monotone pitch. Children with AS often lack the ability to modulate the volume of their voice to match their surroundings. For example, they will have to be reminded to talk softly every time they enter a library or a movie theatre.

Unlike the severe withdrawal from the rest of the world that is characteristic of autism, children with AS are isolated because of their poor social skills and narrow interests. In fact, they may approach other people, but make normal conversation impossible by inappropriate or eccentric behavior, or by wanting only to talk about their singular interest.

Children with AS usually have a history of developmental delays in motor skills such as pedaling a bike, catching a ball, or climbing outdoor play equipment. They are often awkward and poorly coordinated with a walk that can appear either stilted or bouncy.

Many children with AS are highly active in early childhood, and then develop anxiety or depression in young adulthood. Other conditions that often co-exist with AS are ADHD, tic disorders (such as Tourette syndrome), depression, anxiety disorders, and OCD.

What causes AS? Is it genetic?

Twin and family studies suggest there is a genetic vulnerability to AS and the other ASDs, but a specific gene for AS hasn't been identified. It is likely that multiple genes cause AS, since the symptoms and the severity of symptoms vary so widely among individuals.

Researchers recently identified an association between certain behavioral traits (the insistence on strict routines and repetitive behavior) in a group of children with autism and a specific gene – GABRB3. Another study discovered a strong association between autism and the mutation of a gene the researchers call ENGRAILED 2. Additional evidence for the link between inheritable genetic mutations and AS is seen in the higher incidence of family members of children with an ASD who have similar behavioral symptoms, but in a more limited form. For example they may have mild social, language, or reading problems.

Current research points to structural abnormalities in the brain as a cause of AS. These abnormalities impact neural circuits that control thought and behavior. Researchers think that gene/environment interactions cause some genes to turn on or turn off, or turn on too much or too little in the wrong places, and this interferes with the normal migration and wiring of embryonic brain cells during early development.

Researchers at the University of California , supported in part by the National Institutes of Health, have proposed the disorder stems from abnormal changes that happen during critical stages of fetal development. Defects in the genes that control and regulate normal brain growth create abnormal growth patterns, which cause overgrowth in some brain structures and reduced growth, or excessive cell loss, in others.

Using advanced brain imaging techniques, scientists have revealed structural and functional differences in specific brain regions between the brains of normal versus AS children. One study found a lack of activity in the frontal lobe of AS children when asked to respond to tasks that required them to use their judgment. Another found differences in brain activity when children were asked to respond to facial expressions. Other methods of investigating brain function have revealed abnormal levels of particular proteins in the brains of adults with AS, which correlate with obsessive and repetitive behaviors.

How is it diagnosed?

The diagnosis of AS is complicated by the lack of a standardized diagnostic screen or schedule. In fact, because there are several screening instruments in current use, each with different criteria, the same child could receive different diagnoses, depending on the screening tool the doctor uses.

To further complicate the issue, some doctors believe that AS is not a separate and distinct disorder. Instead, they call it high-functioning autism (HFA), and view it as being on the mild end of the ASD spectrum with symptoms that differ -- only in degree -- from classic autism. Some clinicians use the two diagnoses, AS or HFA, interchangeably. This makes gathering data about the incidence of AS difficult, since some children will be diagnosed with HFA instead of AS, and vice versa.

Most doctors rely on the presence of a core group of behaviors to alert them to the possibility of a diagnosis of AS. These are:

- abnormal eye contact
- aloofness
- the failure to turn when called by name
- the failure to use gestures to point or show
- a lack of interactive play
- a lack of interest in peers

Some of these behaviors may be apparent in the first few months of a child's life, or they may appear later. Problems in at least one of the areas of communication and socialization or repetitive, restricted behavior must be present before the age of 3.

The diagnosis of AS is a two-stage process. The first stage begins with developmental screening during a "well-child" check-up with a family doctor or pediatrician. The second stage is a comprehensive team evaluation to either rule in or rule out AS. This team generally includes a psychologist, neurologist, psychiatrist, speech therapist, and additional professionals who have expertise in diagnosing children with AS.

The comprehensive evaluation includes neurologic and genetic assessment, with in-depth cognitive and language testing to establish IQ and evaluate psychomotor function, verbal and non-verbal strengths and weaknesses, style of learning, and independent living skills. An assessment of communication strengths and weaknesses includes evaluating non-verbal forms of communication (gaze and gestures); the use of non-literal language (metaphor, irony, absurdities, and humor); patterns of inflection, stress and volume modulation; pragmatics (turn-taking and sensitivity to verbal cues); and the content, clarity, and coherence of conversation. The physician will look at the testing results and combine them with the child's developmental history and current symptoms to make a diagnosis.

Are there treatments available?

The ideal treatment for AS coordinates therapies that address the three core symptoms of the disorder: poor communication skills, obsessive or repetitive routines, and physical clumsiness. There is no single best treatment package for all children with AS, but most professionals agree that the earlier the intervention, the better.

An effective treatment program builds on the child's interests, offers a predictable schedule, teaches tasks as a series of simple steps, actively engages the child's attention in highly structured activities, and provides regular reinforcement of behavior. This kind of program generally includes:

- social skills training, a form of group therapy that teaches children with AS the skills they need to interact more successfully with other children
- cognitive behavioral therapy, a type of "talk" therapy that can help the more explosive or anxious children to manage their emotions better and cut back on obsessive interests and repetitive routines

- medication, for co-existing conditions such as depression and anxiety
- occupational or physical therapy, for children with sensory integration problems or poor motor coordination
- specialized speech/language therapy, to help children who have trouble with the pragmatics of speech – the give and take of normal conversation
- parent training and support, to teach parents behavioral techniques to use at home

Do children with AS get better?

What happens when they become adults?

With effective treatment, children with AS can learn to cope with their disabilities, but they may still find social situations and personal relationships challenging. Many adults with AS are able to work successfully in mainstream jobs, although they may continue to need encouragement and moral support to maintain an independent life.

What research is being done?

The National Institute of Neurological Disorders and Stroke (NINDS) is one of the federal government's leading supporters of biomedical research on brain and nervous system disorders. The NINDS conducts research in its laboratories at the National Institutes of Health in Bethesda, Maryland, and also awards grants to support research at universities and other facilities.

Many of the Institutes at the NIH, including the NINDS, are sponsoring research to understand what causes AS and how it can be effectively treated. One study is using functional magnetic resonance imaging (fMRI) to show how abnormalities in particular areas of the brain cause changes in brain function that result in the symptoms of AS and other ASDs. A large-scale study is comparing neuropsychological and psychiatric assessments of children with possible diagnoses of AS or HFA to those of their parents and siblings to see if there are patterns of symptoms that link AS and HFA to specific neuropsychological profiles. A clinical trial is testing the effectiveness of an anti-depressant in individuals with AS and HFA who exhibit high levels of obsessive/ritualistic behavior. Other investigators are conducting a long-range study to collect and analyze DNA samples from a large group of children with AS and HFA and their families to identify genes and genetic interactions that are linked to AS and HFA.

¹Adapted from the *Diagnostic and Statistical Manual of Mental Disorders IV* and the *International Classification of Diseases - 10*

For more information on neurological disorders or research programs funded by the National Institute of Neurological Disorders and Stroke, contact the Institute's Brain Resources and Information Network (BRAIN) at:

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6464) 301-443-8431 (TTY)
Fax: 301-443-4279

**National Institute on Deafness and Other Communication
Disorders Information Clearinghouse**
1 Communication Avenue
Bethesda, MD 20892-3456
nidcdinfo@nidcd.nih.gov
<http://www.nidcd.nih.gov>
Tel: 800-241-1044 800-241-1055 (TTD/TTY)

"Asperger Syndrome Fact Sheet," NINDS. Publication date January 2005.
NIH Publication No. 05-5624

THANK YOU FOR YOUR PARTICIPATION IN THIS COURSE



Richard K. Nongard, LMFT, CCH, CPFT
Executive Director

To receive continuing education credit for this course, you must have read this entire text file.

You must also complete and return the Evaluation of Learning Quiz and pay the CEU fee. (Instructions are on the next page.)

We always appreciate constructive input from our customers, so please feel free to fill in the "Additional Comments" section of the Grade This Course evaluation when you submit your quiz and payment.

"Autism and Asperger's Syndrome"

3 Continuing Education Clock Hours

Procedures to Receive CEU Credit:

- ⇒ This document contains all of the course materials you needed to read.
- ⇒ Now you must complete the required True/False Evaluation of Learning Quiz and submit it to our office along with your payment, in order to obtain your CEU certificate.

FOR ONLINE SUBMISSION:

Go back to www.FastCEUs.com and click the "QUIZ & PAY" button for this course.

On the page that opens, enter your information and take the T/F Quiz. When you click SUBMIT, the program will instantly grade your quiz, and provided you pass by at least 80%, it will then charge your credit or debit card.

Immediately, a new web page will open containing your Receipt and Certificate info, and a Link will be provided to access a fancy Certificate for you to Print and/or Save to your computer.

You will also receive an Email containing this same information and the link.

*You will **NOT** receive a paper certificate in the mail - This electronic system provides numerous options for you to print and save your CEUs.*

FOR FAX OR MAIL SUBMISSION:

Print the Quiz and Payment forms on the next few pages of this document, and complete the requested information.

Our 24-hour secure Fax number is **(888)-877-6020**.

If you fax your quiz and payment to us, please do NOT also mail it.

We process faxes within approximately 4 business hours after receiving them.

Faxes submitted late in the day or after hours will be processed the next business morning. However, all certificates are dated the date we receive your course quiz and payment.

*You will **NOT** receive a paper copy of your Certificate in the mail.*

Enter either your fax number or an Email address and we will send your CEU Certificate to the contact info you provide.

If you prefer to use a check or money order, please Mail the quiz and payment to:

**PeachTree Professional Education, Inc.
15560 N. Frank L. Wright Blvd, #B4-118
Scottsdale, AZ 85260**

EVALUATION OF LEARNING QUIZ - PAGE 1 of 4

PRINT & FAX or MAIL THIS PAGE AND THE ANSWERS PAGES TO OUR OFFICE

*** * * * OR * * * ***

You may complete and submit this information **ONLINE** by following this link:

<https://www.fastceus-store.com/quizzes/index.php?extension=autism-aspergers>

PLEASE NEATLY PRINT THE FOLLOWING INFORMATION:

NAME as you want it on your CEU Certificate: _____

Your professional cert/license with numbers: _____

ADDRESS for record keeping: Street: _____

City: _____

State: _____ Zip: _____

DAYTIME TELEPHONE Number: (_____)_____

We will FAX or EMAIL your CEU Certificate (no copy will be mailed).

— **CLEARLY PRINT** YOUR FAX # or EMAIL ADDRESS:

(IF you FAX us your Evaluations do NOT mail them. Please WRITE NEATLY so you get your CEUs.)

Autism and Asperger's Syndrome - Assessment and Treatment

This **3** Hour CEU Course is **\$49.00**

CIRCLE: Master Card Visa Discover Card American Express Check Enclosed

Card Number: _____

Card Expiration Date: _____ Security Code: _____

(Security Code = last 3 digits on back of card for MC, Visa, Discover - or 4 digits on front for Amex)

Signature: _____

Mail: PeachTree Professional Education, Inc.

15560 N. Frank L. Wright Blvd, #B4-118

Scottsdale, AZ 85260

Phone: (800) 390-9536 **Fax:** (888) 877-6020

EVALUATION OF LEARNING PAGE 2 of 4

"AUTISM AND ASPERGER'S SYNDROME"

3 Hours of Approved Continuing Education Credit

The purpose of the following Evaluation of Learning questions is to:

- A.) Verify that you have read the required course materials
- B.) Demonstrate an understanding of the practical application of the course materials
- C.) Officially document your participation and completion of this course

➡ ANSWER THESE 20 T/F COURSE EVALUATION OF LEARNING QUESTIONS

- T F 1. I have read the entire required .pdf text file for this course.
- T F 2. Autism spectrum disorders are characterized by varying degrees of impairment in communication skills, social interactions, and restricted, repetitive and stereotyped patterns of behavior.
- T F 3. Other rare, very severe disorders that are included in the autism spectrum disorders are diabetic syndrome and childhood integrative disorder.
- T F 4. A recent study of a U.S. metropolitan area estimated that 3.4 of every 1,000 children 3-10 years old had autism.
- T F 5. Children with ASD are slower in learning to interpret what others are thinking and feeling.
- T F 6. Never do children diagnosed with ASD remain mute throughout their lives.
- T F 7. Although children with ASD usually appear physically normal and have good muscle control, odd repetitive motions may set them off from other children.
- T F 8. If sensory information is faulty, the child's experiences of the world can be confusing.
- T F 9. Fragile X syndrome is the most common inherited form of mental retardation.
- T F 10. No assessment tools have been developed to assist in the diagnosis of autism.
- T F 11. By law, the public schools must prepare and carry out a set of instruction goals, or specific skills, for every child in a special education program.
- T F 12. There is no single best treatment package for all children with ASD.
- T F 13. Among the many methods available for treatment and education of people with autism, applied behavior analysis (ABA) has become widely accepted as an effective treatment.

CONTINUED →

EVALUATION OF LEARNING PAGE 3 of 4**Course Title: "AUTISM AND ASPERGER'S SYNDROME"**

- T F 14. To be accepted as a proven treatment, the treatment should undergo clinical trials, preferably randomized, double-blind trials that would allow for a comparison between treatment and no treatment.
- T F 15. Medications are often used to treat behavioral problems, such as aggression, self-injurious behavior, and severe tantrums, that keep the person with ASD from functioning more effectively at home or school.
- T F 16. Seizures are found in one in four persons with ASD, most often in those who have low IQ or are mute.
- T F 17. No Government funds are available for families that choose to have their adult child with ASD live at home.
- T F 18. The Children's Health Act of 2000 was responsible for the creation of the Interagency Autism Coordinating Committee (IACC).
- T F 19. There are no drugs that are specifically approved by the Food and Drug Administration (FDA) for the treatment of autism.
- T F 20. The most distinguishing symptom of AS is a child's obsessive interest in a single object or topic to the exclusion of any other.

GRADE THIS ONLINE COURSE! – Page 4

*It is helpful to us if you return this form via snail mail or fax,
along with your Quiz and Payment. Thank-you!*

Participant Assessment of Home Study CEU Course

AUTISM AND ASPERGER'S SYNDROME - ASSESSMENT AND TREATMENT

3 Credit Hours

**Please Rate the Following Statements from 1-5
(1 being the Lowest, 5 being the Highest.)**

- _____ 1. I found the PeachTree Online Home Study Course Instructions simple to follow.
- _____ 2. I found the PeachTree Online Home Study Course materials to be of professional quality, and easy to read.
- _____ 3. I found the PeachTree Online Home Study Course materials to be of educational value, relative, and useful to my counseling practice.
- _____ 4. I completed the 3 Hour PeachTree Online Home Study Course in approximately 3 hours.
- _____ 5. I would take another PeachTree Online Home Study Course, and/or recommend them to a co-worker.

ADDITIONAL COMMENTS: