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Autism Spectrum Disorder

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About 1 in 59 children has been identified with Autism Spectrum Disorder (ASD). ASD is reported to be 4 times more common among boys than girls. ASD affects all racial, ethical, and socioeconomic groups. The purpose of this journal article is to explain the history of Autism, different types of Autism, the characteristics, sign/symptoms, and medical conditions associated, the diagnosing process, genetic factors, environmental factors and more. The debate about the vaccinations and how some parents still believe that vaccines are making children Autistic are discussed throughout. Genetic testing is emphasized because the topic is of special interest. In the article are included charts from the organization showing gene list and charts that shows evidence of how individuals are placed on the spectrum, including how severe or mild. The goal of the article is to find out if this disorder originates from genetics or from the environment.

Keywords: Autism Spectrum; Autism; ASD

Autism Support of West Shore defines Autism Spectrum Disorder (ASD) or Autism as both general terms for a group of complex disorders of brain development. These disorders are characterized, in various degrees, by difficulties in social interaction, verbal/nonverbal communication, and repetitive behaviors. It appears that autism originated from early brain development. The most noticeable signs and symptoms of autism tend to show between 18-36 months old. Both children and adults with autism typically show difficulties in verbal and nonverbal communication, social interactions, and leisure or play activities (Autism Support of West Shore, 2014).

The huge debate about what causes Autism Spectrum Disorder is that the parents and caregivers believe its vaccines that are given to the children by physicians. The physician and researchers believe it's the elements in the environment or genetics from the parents that are causing the autism disorder.

ASD affects all racial, ethical, and socioeconomic groups, the Center for Disease Control and Prevention states that 1 in 59 children has been diagnosed as autistic. This increase the percentages from previous years which statistics showed that 1 in 68 children two years prior. Autism is most commonly amongst boys than girls. It's estimated that about 1 out of 48 boys and 1 in 252 girls are diagnosed with the disorder in the United States (Autism Speaks, n.d.).

History of Autism

In the early 20th century the first sight of Autism was in 1911 by Eugen Bleuler, a psychiatrist from Switzerland, who used the term to describe a unique cluster of symptoms that were traditionally thought to simply be symptoms of schizophrenia. The Greek word "autos" which means "self". Autism was originally used to describe extreme social withdrawal that was common with psychiatric diseases that presented with psychosis. Although it is now known that autism and schizophrenia are two unrelated disorders, autism was not classified as its own disorders in any diagnostic manual until 1980 (appliedbehavioranalysisprograms.com, n.d.). Also in the 1940s researchers in the United States began to use the term "Autism" to describe children with emotional or social problems. Leo Kanner, a doctor from Johns Hopkins University used it to explain the behavior of several children he studies who acted withdrawn (WebMD, n.d.).

Types of Autism

There are three different types of Autism Spectrum Disorder and below are the following disorders and definitions for the conditions:

- *Autistic Disorder (Autism Disorder)*: individuals with autistic disorder usually have significant language delays, social, communication challenges, unusual behavior, and interests. Also, they have an intellectual disability. (Autism definition, who it affects, and the types | ASWS | W. Michigan, n.d.)
- *Asperger Syndrome*: individuals with Asperger Syndrome usually have some milder symptoms of autistic disorder, they might have social challenges and unusual behaviors and interests. However, they typically do not have problems with language or intellectual disability. (Autism definition, who it affects, and the types | ASWS | W. Michigan, n.d.).
- *Pervasive Developmental Disorder (PDD-NOS/ Atypical Autism)*: individuals who meet some of the criteria for autistic disorder or Asperger Syndrome, but not all, may be diagnosed with PDD-NOS. People with PDD-NOS usually have fewer and milder symptoms than those with autistic disorder. The symptoms may cause only social and communication challenges. (Autism definition, who it affects, and the types | ASWS | W. Michigan, n.d.)

Characteristics

Behavorial

Individuals on the spectrum may show abnormal behavior due to difficulties they have responding to their environment. Their behavior is mainly an attempt by them to communicate their feelings or to cope with a situation. Behavior problems may occur when their sensitivity to a sound, smell, or something they may have seen or felt. Other behaviors may include:

- Unusual intense or focused interests
- Stereotyped and repetitive body movements such as flapping and spinning
- Insistence on sticking to routines such as traveling the same route home each day and doing things in exactly the same order every time

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- Unusual sensory interests such as sniffing objects or staring intently at moving objects
- Sensory sensitivities including avoidance for everyday sounds and textures such as vacuum cleaners, hair dryers, and sand (Autism Spectrum Australia, n.d.).

Social Interaction

Individuals with autism have difficulty establishing and maintain relationships. They do not respond too many of the non-verbal forms of communication that many of us take for granted like facial expressions, physical gestures and eye contact. They are often unable to understand and express their needs just as they are unable to interpret and understand the needs of others. This impairs their ability to share interests and activities with other people. For this reason they may appear distant. Because they are often delayed in their speech and struggle to make sense of other non-verbal forms of communication, they may withdraw into repetitive play and behavior and avoid interaction. Their difficulties with social interactions may manifest in the following ways:

- Limited use and understanding of non-verbal communication such as eye gaze, facial expression and gesture
- Difficulties forming and sustaining friendships
- Lack of seeking to share enjoyment, interests and activities with other people
- Difficulties with social and emotional responsiveness (Autism Spectrum Australia, n.d.)

Communication

Individuals with autism often have communication difficulties in one form or another. There are some individuals with autism who speak fluently, others who are speech impaired to varying degrees and others still, who are unable to speak at all. Of those who can speak, they will often use language in a very limited or unusual way. Their line of conversation may involve repeating your phrases or words back to you or asking the same questions over and over. Individuals with autism will usually only talk about topics that are of interest to them which makes the give and take in communication difficult. They have difficulty interpreting non-verbal form of communication like facial expressions, hand gestures and other body language. Impaired communication is characterized by:

- Delayed language development
- Difficulties initiating and sustaining conversations
- Stereotyped and repetitive use of language such as repeating phrases from television (Autism Spectrum Australia, n.d.)

Signs and Symptoms

Research has shown that ASD begins from birth and last throughout the individual's life, although symptoms may improve over a period of time. Some children with an ASD show hints of future problems within the first few months of life. In other cases, symptoms might not show up until 24 months or later. Some children with an ASD seem to develop normally until around 18-24 months of age and then they stop gaining new skills, or they lose the skills they once had. An individual with an ASD might:

- Not respond to their name by 12 months
- Not point at objects to show interest (points at a fire truck driving past) by 14 months
- Not play pretend games (feeding the doll) by 18 months
- Avoid eye contact and want to be alone
- Have trouble understanding other people's feelings or talking about their own feelings
- Have delayed speech and language skills
- Repeat words or phrases over and over (echolalia-meaningless repetition of another person's spoken words as a symptom of psychiatric disorder)
- Give unrelated answers to questions
- Get upset by minor changes
- Have obsessive interests
- Flap their hands, rock their body, or spin in circles
- Have unusual reactions to the way things sound, smell, taste, look, or feel (Autism definition, who it affects, and the types | ASWS | W. Michigan, n.d.).

Associated Medical Conditions

Other medical conditions associated with ASD are Obsessive Compulsive Disorder (OCD) this is common amongst teens and adults with autism then it is in the general population. However, it can difficult to recognize OCD symptoms from repetitive behaviors and restricted interests. Schizophrenia and Autism both involve challenges with processing language and understanding other people's thoughts and feelings. Clear differences include schizophrenia's psychosis which often involves hallucinations. In addition, autism's core symptoms typically emerge between ages 1-3 years; schizophrenia emerges in early adulthood (Autism Speaks, n.d.).

Attention Deficit and Hyperactivity Disorder (ADHD) affects an estimated 30 to 60 percent of individuals with autism, versus 6 to 7 percent of the general population. ADHD involves a persistent pattern of inattention, difficulty remembering things, having trouble with managing time, organizational task, hyperactivity and/or impulsivity that interferes with learning and daily life. In some cases, symptoms of ADHD can overlap with those of autism. As a result, ADHS can be difficult to recognize in someone on the spectrum. Anxiety disorder affects up to 42 percent of individuals with autism, by differentiation they affect an estimated 3 percent of children and 15 percent of adults in the general population (Autism Speaks, n.d.).

Eating/ feeding issues affect around 7 out of 10 children with autism. These issues can include extremely restricted food habits and aversion to certain tasted and texture. Many adults with autism likewise describe food aversions and restricted eating patterns. These challenges often stem from autism-related hypersensitivities and/ or a strong need for sameness. Chronic overeating is another issue which can lead to obesity. This can stem from an inability to sense when "full" and/or eating a soothing sensory behavior. Pica is eating of non-food items this is very dangerous habit often associated with autism. It appears to be most common amongst children severely affected by autism (Autism Speaks, n.d.).

Disrupted sleep over half of the children with autism as far as 4 in 5 have one or more chronic sleep problems. Many adults on the spectrum likewise have difficulty falling asleep and staying asleep through the night. These sleep issues tend to

worsen behavioral challenges, interfere with learning and decrease over the quality of life. Gastrointestinal (GI) disorders are nearly eight times more common among children with autism than other children. Lastly, Epilepsy (seizure disorder) affects up to a third of individuals with autism, by contrast, it affects only 1 to 2 percent of the general population (Autism Speaks, n.d.).

Diagnosing

Diagnosing ASD can be difficult, since there is no medical test, like a blood test, to diagnose the disorders. Doctors look at the child's behavior and development to make a diagnosis. ASD can sometimes be detected at 18 months or younger. By age 2, a diagnosis by an experienced professional can be considered very reliable. However, many children do not receive a final diagnosis until much older. This delay means that children with an ASD might not get the help they need. Diagnosing an ASD takes two steps:

- *Developmental Screening*
- *Comprehensive Diagnostic Evaluation* (Center for Disease Control and Prevention, 2015).

Developmental screening is a short test to tell if children are learning basic skills when they should, or if they might have delays. During developmental screening, the doctor might ask the parent some questions or talk and play with the child during an exam to see how she learns, speaks, behaves, and moves. A delay in any of these areas could be a sign of a problem. All children should be screened for developmental delays and disabilities during regular well-child doctor visits at:

- 9 months
- 18 months
- 24 or 30 months (Center for Disease Control and Prevention, 2015).

Additional screening might be needed if a child is at high risk for developmental problems due to preterm birth, low birth weight or other reasons. In addition, all children should be screened specifically for ASD during regular well-child doctor visits at:

- 18 months
- 24 months (Center for Disease Control and Prevention, 2015).

Additional screening might be needed if a child is at high risk for ASD (e.g., having a sister, brother or other family members with an ASD) or if behaviors sometimes associated with ASD are present. It is important for doctors to screen all children for developmental delays, but especially to monitor those who are at a higher risk for developmental problems due to preterm birth, low birth weight, or having a brother or sister with an ASD. If your child's doctor does not routinely check your child with this type of developmental screening test, ask that it be done.

If the doctor sees any signs of a problem, a comprehensive diagnostic evaluation is needed (Center for Disease Control and Prevention, 2015).

Comprehensive Diagnostic Evaluation. The second step of diagnosis is a comprehensive evaluation. This thorough review may include looking at the child's behavior and development and interviewing the parents. It may also include a hearing and vision screening, genetic testing, neurological testing, and other medical testing. In some cases, the primary care doctor might choose to refer the child and family to a specialist for further assessment and diagnosis. Specialists who can do this type of evaluation include:

- *Developmental Pediatricians* (doctors who have special training in child development and children with special needs)
- *Child Neurologists* (doctors who work on the brain, spine, and nerves)
- *Child Psychologists or Psychiatrists* (doctors who know about the human mind) (Center for Disease Control and Prevention, 2015).

Genetic Factors

There's still no evidence from research to show what causes ASD scientists are still conducting research. However, they have learned that there are likely causes for multiple types of ASD. There may be many different factors that make a child more likely to have ASD, including environmental, biologic and genetic factors. Most scientists agree that genes are one of the risk factors that can make an individual more likely to develop an ASD. Children who have a sibling or parent with an ASD are at greater risk of also having an ASD.

ASDs tend to occur more often in an individual who has a certain medical condition. About 10% of children with an ASD have an identifiable genetic disorder, such as Fragile X syndrome, tuberous sclerosis, Down syndrome, and other chromosomal disorders. Some harmful drugs taken pregnancy have been linked with a higher risk of ASD, for example, the prescription drugs thalidomide and valproic acid. Poor parenting practices isn't a cause of ASD is not true. There is some evidence that the critical period for developing ASD occurs before birth (Autism definition, who it affects, and the types | ASWS | W. Michigan, n.d.).

Genetic Testing

SPARK for Autism is a landmark research project aim to make important progress possible. SPARK stands for 'Simons Foundation Powering Autism Research for Knowledge,' and the mission is simples: they want to speed up research and advance understanding of autism to help improve lives (Discover SPARK: Autism Article, n.d.). On their website they have a chart for genes listed. The ones associated with autism are listed below in figure 1:

1q21.1	DDX3X	PTCHD1
2p16.3	DHCR7	PTEN
3q29	DMPK	RAI1
7q11.23	DSCAM	RIMS1
15q11.2-q13.1	DYRK1A	SCN1A
15q13.3	EHMT1	SCN2A
16p11.2	EP300	SETBP1
17p11.2	FMR1	SETD2
17q12	FOXP1	SETD5
22q11.2	GIGYF2	SHANK2
22.q13.3	GRIN2B	SHANK3
ADNP	IQSEC2	SLC6A1
ADSL	KIAA2022	SLC9A6 (NHE6)
AHDC1	MBD5	SON
ALDH5A1	MBOAT7	STXBP1
ANK2	MECP2	SUV420H1
ANKRD11	MED13L	SYNGAP1
ARID1B	MYT1L	TBCK
ASH1L	NF1	TRIP12
ASXL3	NIPBL	TSC1/2
AUTS2	NLGN2	TSHZ3
BCKDK	NLGN3	TSHZ3
BCKDK	NLGN2	UBE3A
BCL11A	NRXN1	UPF3B
CACNA1C	NRXN2	VPS13B
CDKL5	NRXN3	WAC
CHD2	NSD1	ZBTB20
CHD7	PACS1	
CHD8	POGZ	
CREBBP	POMGNT1	

Figure1. Copy number variants (CNVs) are in yellow. Single genes are in white. There are 11 CNVs and 78 single genes, which are selected by a medical genetics committee that meets bi-annually to review candidate autism genes and make updates to the SPARK gene list.

Copy number variation or CNV refers to the duplication or deletion of stretches of a chromosomal region. These can be as large as megabases or smaller than 1,000 base pairs. Studies that haves been conducted linked the copy number variation to a higher risk of developing several disorders, including Autism. According to a geneticist at the Baylor College of Medicine in Houston by the name of Arthur Beaudet, "CNVs are the most common cause of Autism that we can identify today, by far" (Copy number variation, n.d.).

The deletion of 16p11.2 is probably the most well-known copy number variant linked to Autism. Deletions in this region have been detected in as many as one percent of individuals with Autism Spectrum Disorders. However, a large clinical study of 3,450 people, published in October 2010, suggests that although 16p11.2 CNVs almost always result in some symptoms of autism, only about 30 percent of people with the deletion warrant an actual diagnosis. In 2008 study, researchers identified 277 CNVs in 427 unrelated individuals with Autism. In 27 of these individuals, the CNVs are de novo, meaning that they appear in children with Autism, but in their healthy parents (Copy number variation, n.d.).

Environmental Factors

Environmental factors play a huge role in the development of autism is a crucial area of study. As we know that genetics strongly influence the risk of developing ASD. However, genetics alone do not account for all instances of Autism. For good, reason the increasing prevalence of Autism has generated great concern in the potential involvement of toxins in our environment. For example, prenatal exposure to the chemical thalidomide and valproic acid has been linked to increased risk of Autism. Autism Speaks remains strongly committed to advancing the understanding of both genetic and environmental risk factors for autism. One important area of research concerns how environmental influences interact with genetic susceptibility (Environmental Factors in Autism, n.d.).

Some experts also suspect that exposure to heavy metals and other toxins in the environment raises your risk of ASD. Some prescription drugs, such as thalidomide and valproic acid, have also been linked to ASD. If your birth mother takes these drugs while she's pregnant, it may raise your risk of developing the disorder (Healthline Editorial Team, 2016).

Vaccinations

Every child needs 2 doses of chickenpox vaccine. The first dose is given at 12–15 months and the second at 4–6 years. Your child needs 5 doses of DTaP vaccine. The first dose is given at 2 months, the second at 4 months, the third at 6 months, the fourth at 15–18 months, and the fifth at 4–6 years.

There were three myths that claimed that vaccines cause Autism. (1) The combination of measles-mumps-rubella vaccines causes autism by damaging the intestinal lining. (2) Thimerosal, an elthymercury-containing preservative in some

vaccines, is toxic to the central nervous system. (3) The simultaneous administration of multiple vaccines overwhelms or weakens the immune system (Offit, 2010).

In 1998 a study was conducted by Andrew Wakefield, a British gastroenterologist, stated that MMR vaccine (measles, mumps, and rubella) causes Autism which sent a lot of parents in panic mode. In results a lot of parents were avoiding their children to get vaccinated because of fears of their child becoming Autistic. Another study by Wakefield was conducted in 2002, where the results were flawed for the reasons that his first and second studies were incorrect. As a result of the false claims Dr. Wakefield had his licenses revoked and the CDC plus other health care agencies had to back track his statement about vaccinations being linked to Autism. However, by this time a lot of people already made the mindset that they weren't getting their child vaccinated.

In result, twenty epidemiologic studies have shown that neither thimerosal nor MMR vaccine causes autism. These studies have been performed in several countries by many different investigators who have employed a multitude of epidemiologic and statistical methods. The large size of the studied populations has afforded a level of statistical power sufficient to detect even rare associations. These studies, in concert with the biological implausibility that vaccines overwhelm a child's immune system, have effectively dismissed the notion that vaccines cause autism. Further studies on the cause or causes of autism should focus on more-promising leads (Offit, 2010).

Therapies and Interventions

Every child or adult with autism has unique strengths and challenges, so there is no one size fits all approach to autism treatment and intervention. Each autism intervention or treatment plan should be tailored to address the person's specific needs (Autism Speaks, n.d.). The following are different type of behavioral treatments and interventions.

Applied Behavior Analysis (ABA)

Applied Behavior Analysis (ABA) is a therapy based on the science of learning and behavior.

- Applied Behavior Analysis (ABA): ABA therapy applies our understanding of how behavior works in real situations. The goal is to increase behaviors that are helpful and decrease behavior that is harmful or affect learning. This type of therapy helps increase language and communication skills, improve attention, focus, social skills, memory, and academics as well as decrease problem behaviors.

This method of behavior analysis has been used and studied for the deceased. They have helped many kinds of learners gain different skills from healthier lifestyles to learning to a new language. Therapists have used ABA to help children with autism and related developmental disorders since the 1960s (Autism Speaks, n.d.). Applied Behavior Analysis involves many techniques for understanding and changing behavior. ABA is a flexible treatment:

- Can be adapted to meet the needs of each unique person
- Provided in many different locations – at home, at school, and in the community
- Teaches skills that are useful in everyday life
- Can involve one-to-one teaching or group instruction

Pivotal Response Treatment

Pivotal Response Treatment, or PRT, is a behavioral treatment for autism. This therapy is play-based and initiated by the child. PRT is based on the principles of Applied Behavior Analysis (ABA). Goals of this approach include:

- Development of communication and language skills
- Increasing positive social behaviors
- Relief from disruptive self-stimulatory behaviors

The PRT therapist targets "pivotal" areas of a child's development instead of working on one specific behavior. By focusing on pivotal areas, PRT produces improvements across other areas of social skills, communication, behavior, and learning. Pivotal areas include:

- Motivation
- Response to multiple cues
- Self-management
- Initiation of social interactions

Motivation strategies are an important part of the PRT approach. These emphasize natural reinforcement. For example, if a child makes a meaningful attempt to request a stuffed animal, the reward is the stuffed animal, not candy or other unrelated reward. Children are rewarded for making a good attempt, even if it is not perfect. PRT was developed by Dr. Robert L. Koegel, Dr. Lynn Kern Koegel and Dr. Laura Shreibman at the University of California at Santa Barbara. It was previously called the Natural Language Paradigm (NLP). This approach has been used since the 1970s (Autism Speaks, n.d.).

Early Start Denver Model (ESDM)

The Early Start Denver Model (ESDM) is a behavioral therapy for children with autism between the ages of 12-48 months. It is based on the methods of applied behavior analysis (ABA). Parents and therapists use play to build positive and fun relationships. Through play and joint activities, the child is encouraged to boost language, social and cognitive skills (Autism Speaks, n.d.).

- Based on an understanding of normal toddler learning and development
- Focused on building positive relationships
- Teaching occurs during natural play and everyday activities
- Uses play to encourage interaction and communication

ESDM therapy can be used in many settings, including at home, at a clinic, or in school. Therapy is provided in both group settings and one-on-one. It has been found to be effective for children with a wide range of learning styles and abilities. ESDM can help children make progress in their social skills, language skills, and cognitive skills. Children who have significant learning challenges can benefit just as much as those without learning challenges. Parent involvement is a key part of the ESDM program. Therapists should explain and

model the strategies they use so that families can practice them at home (Autism Speaks, n.d.).

Occupational Therapy

Occupational therapy (OT) helps people work on cognitive, physical, social, and motor skills. The goal is to improve everyday skills which allow people to become more independent and participate in a wide range of activities. For people with autism, OT programs often focus on play skills, learning strategies, and self-care. OT strategies can also help to manage sensory issues. The occupational therapist will begin by evaluating the person's current level of ability. The evaluation looks at several areas, including how the person:

- Learns
- Plays
- Cares for themselves
- Interacts with their environment

The evaluation will also identify any obstacles that prevent the person from participating in any typical day-to-day activities. Based on this evaluation, the therapist creates goals and strategies that will allow the person to work on key skills. Some examples of common goals include:

- Independent dressing
- Eating
- Grooming
- Using the bathroom
- Fine motor skills like writing, coloring, and cutting with scissors

Occupational therapy usually involves half-hour to one-hour sessions. The number of sessions per week is based on individual needs. The person with autism may also practice these strategies and skills outside of therapy sessions at home and in other settings including school. Some OTs are specifically trained to address feeding and swallowing challenges in people with autism. They can evaluate the particular issue a person is dealing with and provide treatment plans for improving feeding-related challenges (Autism Speaks, n.d.).

Speech Therapy

Speech-language therapy addresses challenges with language and communication. It can help people with autism improve their verbal, nonverbal, and social communication. The overall goal is to help the person communicate in more useful and functional ways. Communication and speech-related challenges vary from person to person. Some individuals on the autism spectrum are not able to speak. Others love to talk, but have difficulty holding a conversation or understanding body language and facial expressions when talking with others.

A speech therapy program begins with an evaluation by a speech-language pathologist (SLP) to assess the person's communication strengths and challenges. From this evaluation, the SLP creates individual goals for therapy. Common goals may include improving spoken language, learning nonverbal skills such as signs or gestures, or learning to communicate using an alternative method (such as pictures or technology) (Autism Speaks, n.d.).

Examples of the skills that speech therapy may work on include:

- Strengthening the muscles in the mouth, jaw and neck
- Making clearer speech sounds
- Matching emotions with the correct facial expression
- Understanding body language
- Responding to questions
- Matching a picture with its meaning
- Using a speech app on an iPad to produce the correct word
- Modulating tone of voice

Some people with autism find that using pictures or technology to communicate is more effective than speaking. This is known as Alternative Augmentative Communication (AAC**)**. Examples of AAC methods include:

- Sign language
- Picture exchange communication system (PECS)
- iPads
- Speech output devices (such as Dynavox)

The speech-language pathologist can help to identify which AAC method (if any) is right for someone with autism and teach him/her how to use the method to communicate. The speech-language pathologist can help to identify which AAC method (if any) is right for someone with autism and teach him/her how to use the method to communicate (Autism Speaks, n.d.).

Verbal Behavior (VB)

Verbal Behavior (VB) therapy teaches communication and language. It is based on the principles of Applied Behavior Analysis and the theories of behaviorist B.F. Skinner. This approach encourages people with autism to learn language by connecting words with their purposes. The student learns that words can help them get desired objects or results. Verbal Behavior therapy does not focus on words as labels only (cat, car, etc.). Rather, it teaches *why* we use words and how they are useful in making requests and communicating ideas. Language is classified into types, called "operants." Each operant has a different function. Verbal Behavior therapy focuses on four-word types:

- Mand: A request, such as saying "Cookie," to ask for a cookie
- Tact: A comment used to share an experience or draw attention, such as "airplane" to point out an airplane
- Intraverbal: A word used to respond or answer a question, such as "Where do you go to school?" "Castle Park Elementary"
- Echoic: A repeated, or echoed, word, such as "Cookie?" "Cookie!" This is important as imitating will help the student learn.

VB and classic ABA use similar techniques to work with children. VB methods may be combined with an ABA program to work towards communication goals (Autism Speaks, n.d.).

Floortime

Floortime is a relationship-based therapy for children with autism. The intervention is called Floortime because the parent gets down on the floor with the child to play and interact with the child at their level. Floortime is an alternative to ABA and is sometimes used in combination with ABA therapies. The goal is for adults to help children expand their "circles of communication." They meet the child at their developmental level and build on their strengths. Therapists and parents engage children through the activities each child enjoys. They enter the child's games. They follow the child's lead. Floortime aims to help the child reach six key milestones that contribute to emotional and intellectual growth:

- Self-regulation and interest in the world
- Intimacy, or engagement in relationships
- Two-way communication
- Complex communication
- Emotional ideas
- Emotional thinking

Therapists teach parents how to direct their children into more and more complex interactions. This process, called "opening and closing circles of communication," is central to the Floortime approach. Floortime does not work on speech, motor or cognitive skills in isolation. It addresses these areas through its focus on emotional development. Overall, this method encourages children with autism to push themselves to their full potential. It develops "who they are," rather than "what their diagnosis says" (Autism Speaks, n.d.).

Relationship Development Intervention (RDI)

Relationship Development Intervention (RDI) is a family-based, behavioral treatment which addresses the core symptoms of autism. It focuses on building social and emotional skills. Parents are trained as the primary therapist in most RDI programs. RDI helps people with autism form personal relationships by strengthening the building blocks of social connections. This includes the ability to form an emotional bond and share experiences with others. RDI builds on the idea that "dynamic intelligence" is key to improving quality of life for individuals with autism. Dynamic intelligence means the ability to think flexibly:

- Understand different perspectives
- Cope with change
- Integrate information from multiple sources (e.g. sights and sounds)\

There are six objectives of RDI:

1. Emotional Referencing: the ability to learn from the emotional and subjective experiences of others
2. Social Coordination: the ability to observe and control behavior to successfully participate in social relationships
3. Declarative Language: the ability to use language and non-verbal communication to express curiosity, invite others to interact, share perceptions and feelings and coordinate your actions with others
4. Flexible Thinking: the ability to adapt and alter plans as circumstances change
5. Relational Information Processing: the ability to put things into context and solve problems that lack clear cut solutions and have no "right and wrong" solutions
6. Foresight and Hindsight: the ability to think about past experiences and anticipate future possibilities based on past experiences

RDI involves a step-by-step approach to build motivation and teach skills. The teaching plan is based on the child's current age and ability level. The parent or therapist uses a set of step-by-step, developmentally appropriate goals. The initial goal is to build a "guided participation" relationship between parents and child, with the child as a "cognitive apprentice" (Autism Speaks, n.d.).

Once this relationship is in place, the family advances through a series of developmental goals for their child. The goal of this process is to improve "neural connectivity," or brain function. Parents, teachers and other caretakers continue to use the principles of RDI in the child's daily life. They use positive reinforcement to help the child improve social skills, adaptability, and self-awareness (Autism Speaks, n.d.).

TEACCH Program

The TEACCH® Autism Program is a clinical, training, and research program based at the University of North Carolina – Chapel Hill. TEACCH was developed by Dr. Eric Schopler and Dr. Robert Reichler in the 1960s. It was established as a statewide program in 1972 and has become a model for other programs around the world (Autism Speaks, n.d.).

TEACCH uses a method called "Structured TEACCHing." This is based on the unique learning needs of people with ASD, including:

- Strengths in visual information processing
- Difficulties with social communication, attention and executive function

Structured TEACCHing provides strategies and tools for teachers to use in the classroom. These help students with autism to achieve educational and therapeutic goals. The Structured TEACCHing approach focuses on:

- External organizational supports to address challenges with attention and executive function
- Visual and/or written information to supplement verbal communication
- Structured support for social communication

This method supports meaningful engagement in activities. It also works to increase students' flexibility, independence, and self-efficacy. Structured TEACCHing

strategies can be used alongside other approaches and therapies (Autism Speaks, n.d.).

Autism Awareness

Autism Awareness is the term used to describe the activities that take place, typically during the month of April, to educate the public about Autism Spectrum Disorder. It was originally declared by the Autism Society in April of 1970 and since then April has become National Autism Awareness Month in the U.S. and World Autism Awareness Day (www. autism society.org, 2016).

Organizations have been raising awareness for over 45 years. There's a growing trend within the autism community to evolve that term into "autism acceptance." So many of us—parents and autistic individuals—feel that we need to move the public past simple awareness into greater understanding and a deeper connection to autism if we ever hope to create compassionate, caring and accepting communities. The Autism Awareness Puzzle Ribbon is the most recognized symbol of the autism community in the world. Autism prevalence is now one in every 59 children in America. Show your support for people with autism by wearing the Autism Awareness Puzzle Ribbon (www. autism society.org, 2016).

Financial Costs

The financial cost is a lot on a parent of a child with autism and much more with the government. In the U.S. Autism services cost an estimated $236-262 billion dollars annually. (bloomberg.com, 2014). The cost of individual lifelong care can be reduced by 2/3 percent with early diagnosis and intervention (Jarbrunk, 2007). Moreover, the cost of a lifespan is estimated to be $2.4 million for an individual with intellectual disability and $1.4 million for an individual without an intellectual disability (bloomberg.com, 2014).

Conclusion

Autism is a very unique and complex disorder the help for these individuals is extremely needed. Over the years of research, traditional and contemporary approaches are enabling us to understand and treat these individuals. It is also important to mention that caregivers and professionals are beginning to realize that the symptoms of autism are treatable and there are many interventions that can make a significant difference in the individual. With continuing research and technological growth, a solution for Autism is not far away.

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