



Autism Spectrum Disorder (ASD)

Autism Spectrum Disorder (ASD) is a developmental disorder that involves challenges in social interaction, communication, and behavior. The signs, possible effects, and severity of ASD are different in every person.

Etiology

There is no single cause identified that directly affects ASD but data suggests that autism results from different sets of causal factors that manifest in characteristic behavioral symptoms. Such factors are genetic, neurobiological, and environmental.

Onset

ASD is usually diagnosed around ages of 2-3 when presented with symptoms like poor eye contact, no response to sounds, voices or name, unusual attachment to an object, and not sharing interests. In some cases, children present neuro-typically for the first few years before they begin displaying delays and a loss of previously gained skills. For example, a child may develop some language or meaningful gestures such as pointing as expected, but then lose those skills.

The DSM V divides ASD into three severity levels, based on social communication impairments and restricted, repetitive patterns of behavior:

Prevalence

According to the Center for Disease Control and Prevention (CDC), about 1 percent of the world population has ASD as well as an estimated 1 in 59 children in the U.S. ASD is three to four times more commonly diagnosed in boys than girls.

LEVEL 1 REQUIRING SUPPORT	LEVEL 2 REQUIRING SUBSTANTIAL SUPPORT	LEVEL 3 REQUIRING VERY SUBSTANTIAL SUPPORT
Problems with inflexibility, poor organization, planning, switching between activities, which impair independence. Poor social skills, difficulty in initiating interactions, attempts to make friends are odd and unsuccessful.	Marked difficulties in verbal and nonverbal social communication skills. Markedly odd, restricted repetitive behaviors, noticeable difficulties changing activities or focus.	Severe difficulties in verbal and nonverbal social communication skills. Very limited speech, odd, repetitive behavior, many express their basic needs only.



Characteristics

ASD is a complex developmental condition that differs from person to person in severity and combinations of characteristics. Specific characteristics can range from mild to severe and may also change overtime. Characteristics must be present in the early developmental period but may not become fully manifest until later age or may be masked by learned strategies in later years.

Characteristics of ASD	
Category	Examples
Communication	<ul style="list-style-type: none">- Reduced sharing of interests and emotions- Delayed language development- Difficulties initiating and sustaining conversations- Stereotyped and repetitive use of sentences or words
Social Interaction	<ul style="list-style-type: none">- Difficulty relating to people, things and events- Difficulty reading facial expressions- Avoiding eye contact or preferring to be alone- Challenges in understanding or responding to social cues- Deficits in developing/maintaining/understanding relationships
Behavior	<ul style="list-style-type: none">- Restrictive and repetitive patterns of behaviors, interests and activities- Stereotypy (hand flapping etc)- Having significant need for a predictable routine or structure- Exhibiting intense interests in activities that are uncommon for a similarly aged child- Having unusual and sometimes intense reactions to the way things smell, taste, feel and/or look

Twice Exceptionality (2e) and ASD

“Twice Exceptional” is a term used to refer to individuals with one or more disabilities presenting alongside one or more exceptional strengths. Scholars and clinicians are increasingly recognizing that students with ASD can also be cognitively and academically gifted. In fact, some broad characteristics of highly gifted children overlap with characteristics of students with ASD. For example, many individuals with ASD exhibit traits like focused interest on a topic, strong spatial awareness, and superb memory for facts and details.



Treatment/Services Available

According to research, early intervention treatment can greatly affect a child's development. Such early intervention therapy helps the child talk, walk and interact with others. There are a number of treatments available to help with ASD including cognitive training, discrete trial training, pivotal response training, speech therapy, social skills training, occupational therapy, physical therapy and Applied Behavior Analysis (ABA). ABA is a very prominent treatment for ASD which includes intensive skill building and teaching educational sessions with the purpose of providing structure, direction, and organization for the child. As for medication, there are currently none that can cure ASD, but some medications can help manage symptoms such as high energy levels, instability to focus, depression, or seizures.

Additionally, there are a variety of treatments not based on research or scientific evidence that are advertised as being effective for ASD. Despite being controversial and having little or no research supporting these treatments as being effective or even safe, these treatments can gain popularity. These include treatments such as vitamin therapy, dietary interventions such as gluten or casein free diets, facilitated communication, sensory integration and chelation therapy, among others. In some cases, these treatments can be potentially dangerous and financially straining. Parents and caregivers are advised to be cautious, rely on scientific evidence-based treatments and consult with their doctor before starting any treatments not based on research.

Physiology

- Problems with genetic code development involving multiple brain regions.
- Increased gray matter in the frontal and temporal lobes
- Decreased white matter compared with gray matter by adolescence
- Decreased neural sensitivity to dynamic gaze shifts in infancy
- processing and hemispheric asymmetries in event-related potentials
- Disruptions in normative patterns of social neurodevelopment that contribute to a diminished attention to social stimuli



ASD and COGx

Students with ASD often present with learning difficulties, most commonly challenges with attention, comprehension, reasoning, metacognition, and executive functions such as impulse control, cognitive flexibility, planning & problem-solving. They also tend to be twice exceptional, meaning they present with a significant cognitive strength along with a significant cognitive weakness. This variation in abilities can make learning frustrating, especially if they are only engaged at a level where they are struggling or at their 'lowest common denominator.'

The COGx approach to ASD cases is to leverage the student's strengths and interests to address their gaps or weaknesses. In addition to customized training for strengthening core cognitive skills, COGx programs aim to enhance metacognition so that students become more aware of their behaviors and learning process. Programs include both teaching and transferring evidence-based strategies that students can employ to learn more effectively and efficiently in any setting, while the in-person component of sessions provides an opportunity for students to practice their social and language skills.

References and Additional Resources:

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