

# Understanding Autism: The quest to understand the complex world of autism spectrum disorder (ASD)

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In the quest to understand the complex world of autism spectrum disorder (ASD), it is crucial that we approach this topic with empathy and compassion. Autism affects millions of individuals worldwide, and as we strive to support and uplift those living with ASD and those who have children with autism, it is essential to gain a deeper understanding of its possible causes. By exploring these potential factors, we can foster a more inclusive and informed society.

**Let's begin...**

The number of children diagnosed with autism is increasing rapidly, hence attracting the public's attention. However, there are conflicting views on the causes of autism spectrum disorder. This post will shed some light on the theories regarding the onset of autism

Evidence from a wide range of studies suggests that autism is highly hereditary. However, studies also indicated the significant contribution of the environmental factors. For example, there has been a high risk of ASD with fetus exposure to higher testosterone levels. The theory was confirmed by researchers who used the literature from a child and adolescent twin study in Sweden (CATSS)

The study done by Curatolo & Mazzone showed a greater likelihood of ASD in female co-twin with elevated testosterone compared to male co-twin. These findings disproved the contradictory hypothesis that male co-twins had a higher risk of ASD development.

## **Fetus susceptibility**



The immune system response may cause complications during

pregnancy and may result in preterm birth and an underweight baby (Curatolo & Mazzone, 2017). Moreover, the suggested antidote for pregnancy complications is the influenza vaccination for pregnant women. This vaccine is supposed to lessen the likelihood of complications during pregnancy. Further, an extensive study was conducted that evaluated pregnant women during the first, second, and third trimesters, considering confounding variables. There was no evidence of an association between influenza vaccination and ASD risk (Curatolo & Mazzone, 2017).

## **Anti-depressants, Anti-Epileptic, and Anti-Asthmatic**

Evidence shows that exposure to a particular medication during pregnancy can be detrimental to the fetus and could increase the risk of motor development, language, and social skills; these traits are highly associated with autism spectrum disorder.

Some of the medications include anti-depressants, anti-epileptic, and anti-asthmatic (Gyawali & Patra, 2019). Another detrimental risk factor connected with prenatal exposure is valproate. Exposure to valproate has an adverse impact on neurodevelopment, increasing the chances of the onset of autism in children.

However, the study also highlighted the possibility of confounding factors such as smoking while pregnant, women experiencing seizures, and parents' age; for example, pregnancy after age 35 is considered a high-risk pregnancy (Gyawali & Patra, 2019).

To learn more about causes, symptoms, and researched-based treatments

## **SSRI**

A meta-analysis study suggested an increased risk of autism

associated with pregnant women exposed to SSRI, an anti-depressant that inhibits the abortion of serotonin. However, due to confounding factors like maternal mental illness, the study was inconclusive.

In a different meta-analysis, the researchers review SSRI association with autism by assessing pre-conception, first and second trimester. The first and second trimesters showed a significant risk of autism development.

However, the SSRI link to autism during the third trimester was not concluded due to unknown factors. Over the years, many cohort studies have resulted in inconclusive findings due to potential maternal mental disorders, medical history, the presence of comorbidity disorders, and family history of autism spectrum disorder (Gyawali & Patra, 2019).

## **Mercury (Hg) Exposure**

Another environmental risk factor associated with ASD includes mercury (Hg). Research evidence shows that when Hg is transformed to methylmercury (MeHg), it becomes highly toxic and hazardous to the human brain due to its ability to permeate the blood-brain barrier. Studies show that a young child's brain is especially susceptible to MeHg and may cause long-term neurological damage.

Therefore, pregnant women or breastfeeding mothers must avoid the consumption or inhalation of food high in MeHg. For example, foods like tuna are incredibly high in concentration of MeHg, and these toxins can be transferred from the mother to the fetus through the placenta and to the child through breastfeeding (Ye et al., 2017).

# Genetic and Environmental Association



The theories I find most likely to be reliable are the genetic and environmental association with ASD. Decades of research literature have corroborated these theories, making them most credible, considering other controversial hypotheses from different studies.

Research suggests that genetic factors play a significant role in the development of autism. Certain gene mutations or variations can contribute to the onset of ASD. It is important to remember that genetics alone do not determine everything; rather, they create a predisposition that interacts with other environmental factors.

However, though genetics plays a significant role in the etiology of ASD, the disorder is also regarded as heterogeneous. This was evident in a 2016 meta-analysis that indicated the heritability rate of ASD to be 74-93%. However, the study also noted the importance of non-genetic factors (Lord et al., 2018).

Notably, a study on siblings reported a higher rate of 7-20% susceptibility in individuals with older siblings diagnosed with autism, with boys showing more likelihood than girls (Lord et al., 2018). I do believe that environmental factors play a significant role in the causation of the disorder.

There have been debates surrounding environmental risk factors, including vaccines, viruses, mercury, diets, and allergens (Frith & Happé, 2005). These hypotheses do not have evidence data to corroborate them; therefore, future studies are needed to determine the association.

### **Neurological Differences:**

Autism is characterized by unique neurological differences in how the brain processes information and perceives the world. These differences affect an individual's social interaction, communication skills, and patterns of behavior. Such variances are not flaws or deficiencies but rather reflect the beautiful diversity of human cognition.

### **Epigenetic Factors:**

Epigenetics explores how environmental factors can influence gene expression and function. It is believed that epigenetic changes might be involved in the development of autism. The interplay between genetic predisposition and environmental exposures can potentially impact gene regulation and contribute to the onset of ASD.

### **Immune System Dysfunction:**

Recent studies have implicated abnormalities in immune system functioning as a potential cause of autism. Inflammation and immune dysregulation may contribute to altered brain development and functioning. Understanding these mechanisms can help design interventions that focus on immune system modulation for improved outcomes.

## **Environmental Toxins**

Environmental factors may also contribute to the development of autism. Prenatal exposure to certain substances, such as maternal use of certain medications or exposure to toxins, has been suggested as a potential risk factor. Additionally, complications during pregnancy or birth, such as premature birth or low birth weight, might increase the likelihood of developing ASD.

Other areas of interest researchers regarding the environment associated with ASD in children include the environmental toxins shown to directly contribute to about 3% of developmental abnormalities when exposed during pregnancy (Ye et al., 2017).

Exposure to toxins is detrimental to a fetus, especially at the early pregnancy stage (first trimester). This is due to the higher susceptibility level of the brain's development at this developmental stage. Early toxin exposure can result in a lower form of clinical problems or a severe dysfunction that can potentially cause autism (Ye et al., 2017).

Though the hypothesis on ASD causes is controversial and inconclusive, there is consensus on the spectrum's heterogeneous nature. Including genetics and environmental factors as core contributing factors to the disorder's etiology (Ye et al., 2017).

## **Heavy Metals**

For example, heavy metals are significantly detrimental to infants and the first years of life. Exposure has been shown to result in neurological defects, developmental delays, and social and intellectual impairment. These unfavorable impacts on early lives are associated with their underdeveloped immune system and inability to process and detoxify toxins (Ye et al., 2017).



Decades of studies on autism have yielded controversial data on the disorder; however, when it comes to the onset of ASD, there has been a consensus in association with genetic and environmental factors (Campisi et al., 2018).

## **Congenital Disorder**



A study done decades ago suggested that ASD was a congenital disorder; this theory was corroborated by other researchers years later. Moreover, the theory also inferred that ASD was multiple inheritances that parents passed down to their children.

The misinterpretation that autism in children resulted from unresponsive parenting was linked to this theory of multiple inheritances of ASD (Imamura et al., 2020). Some researchers corroborated the hypothesis that cold parenting does provide an environment that poses the risk of autism in children.

However, Increasing studies show that the primary cause of autism is genetics, rating at 91-93% (Imamura et al., 2020). In summary, it is safe to conclude that genetics is the principal etiology of ASD, considering the consensus on



decades of research literature on the disorder. Though research data has also highlighted environmental association with ASD, most researchers have confirmed genetic association with ASD.

***When it comes to finding reputable resources for parents of children with autism, it's essential to consult reliable sources that provide evidence-based information. Here are 5 reputable websites to consider:***

1. Autism Speaks ([www.autismspeaks.org](http://www.autismspeaks.org)): Autism Speaks is one of the largest autism advocacy organizations globally. Their website offers comprehensive information on autism, including resources for parents, research updates, advocacy efforts, and community support.

2. Centers for Disease Control and Prevention ( ) – Autism Spectrum Disorder ([www.cdc.gov/ncbddd/autism/index.html](http://www.cdc.gov/ncbddd/autism/index.html)): The CDC's website provides reliable information on autism spectrum disorder, including data, research, screening tools, and resources for parents and healthcare professionals.

3. National Institute of Mental Health (NIMH) – Autism Spectrum Disorder ([www.nimh.nih.gov/health/topics/autism-spectrum-disorders-asd](http://www.nimh.nih.gov/health/topics/autism-spectrum-disorders-asd)): NIMH is a leading research institution focused on mental health. Their website offers resources on autism spectrum disorder, treatment options, and ongoing research studies.

4. Autism Society ([www.autism-society.org](http://www.autism-society.org)): The Autism Society is a well-established organization that provides educational resources, support groups, and advocacy for individuals with autism and their families. Their website includes information on various topics related to autism and connects individuals to local chapters and support networks.

5. American Academy of Pediatrics (AAP) – Healthy Children ([www.healthychildren.org](http://www.healthychildren.org)): AAP's Healthy Children website offers a comprehensive section on autism with information for

*parents, including early signs of autism, developmental milestones, treatment options, and resources to navigate various challenges.*

***Although these websites are reputable and provide evidence-based resources, remember to consult with professionals in the field, such as pediatricians, therapists, and educators who specialize in supporting individuals with autism. They can provide personalized guidance and recommend additional resources based on your child's specific needs.***

***To parents and individuals navigating the multifaceted world of autism, it is crucial to approach this journey with empathy and compassion. Autism is not a condition to be feared or stigmatized but rather an integral part of the human experience. By fostering understanding and acceptance, we can create a society that values and uplifts each unique individual.***

***To those who have not experienced the multifaceted world of living or caring for someone with ASD, your love, support, and advocacy are paramount in enhancing the lives of autistic individuals. Together, let us continue to learn, grow, and embrace the beauty and diversity of the human spectrum.***

**Thank you for reading our post on the causes of autism. We hope you found it informative. Let us know your thoughts in the comments section.**