

Science AMA series: I'm Tristram Smith, Ph.D., of the University of Rochester Medical Center. It's Autism awareness month, so I'm here to dispel some myths about Autism. Ask me anything!

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Abstract

Hi Reddit! I'm Tristram Smith, Ph.D., professor of Neurodevelopmental and Behavioral Pediatrics at the University of Rochester Medical Center. I've been studying and treating Autism Spectrum Disorder for several decades, and have written extensively on the effectiveness of early behavioral interventions for children with ASD. I've also spent time reviewing treatments for autism, many of which have not been studied extensively. (Most recently, a colleague and I published a review article that identified and catalogued a number of different treatments based on their effectiveness in peer-reviewed literature.) I also oversee a user-friendly website that provides capsule reviews on the science behind various interventions. Ask me about early intervention for ASD, myths about autism causes/treatment, or anything else! I'm signing off for now, but I'll leave a few links for people who want to learn more! NIMH Autism Spectrum Disorder CDC Interactive Autism Network

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TRISTRAM_SMITH [R/SCIENCE](#)

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Ask me about early intervention for ASD, myths about autism causes/treatment, or anything else!**I'm signing off for now, but I'll leave a few links for people who want to learn more!**

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Hi Tristram, thank you for doing this AMA! Two questions for you:

1. Autism awareness has made great strides in helping parents and clinicians recognize and diagnose autism. Several decades ago, however, our understanding of what autism is was very different. How many adults do you estimate are currently living with undiagnosed autism? What sort of challenges do they face?
2. There are preclinical studies showing that it may be possible to reverse symptoms associated with severe autism (MeCP2 gene therapy and Rett syndrome; IGF1 supplementation and Phelan-McDermid syndrome as examples). What are your thoughts on the prospects of these types of studies translating to humans? What types of improvement in quality of life can you envision? What type of language do you use when discussing these studies with people with autism and their caregivers, since talk of a "cure" can be so controversial?

Thanks and Meliora!

[SirT6](#)

Great questions!

1. Autism Spectrum Disorder can be diagnosed at any age. There is no lab test for Autism, so the

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diagnosis is based on careful assessment of the person and getting a thorough history and ruling out possible other medical issues. This means Autism can be diagnosed in adults but the diagnostic process is more difficult because it's more challenging to get the historical information. As far as we know, however, there are as many adults with Autism as there are children. But as you said, because we're now more aware of Autism than we used to be, most adults with Autism may not have been diagnosed.

2. I think studies of these populations are critical because they allow us to study a more distinct subgroup of people for whom we already know something about what caused their Autism. I'm cautiously optimistic that pre-clinical trials of experimental medications with these groups will eventually lead to improved outcomes for many people with Autism, but I expect the process will take a long time, because even in these subgroups, Autism is extremely complex. When discussing these studies, I think we should be thinking in terms of getting progressively better rather than having sudden breakthroughs or "cures."

What is the biggest myth you're trying to debunk at the moment; conversely, what are the most likely causes of autism that can be explained based on reliable research literature and therefore what are the most helpful treatments?

[ScienceLit16](#)

In my work, I've been most concerned about how many unproven treatments there are. I think it's important for people with Autism and their families to find trustworthy information about what is being scientifically shown to be helpful and to be able to get access to those treatments. Mainly what works are specialized behavioral and educational treatments that focus on improving social communication, and addressing other issues that may be associated with Autism, such as anxiety or sensory sensitivities. In some cases, certain medications can also be helpful with these associated issues. See previous answers for what we know about causes.

I'm fairly ignorant to autism, so these might be poor questions.

1. With autism falling on a wide spectrum, do you think most people are slightly autistic to some degree?
2. Is the objective of autism treatment to "cure" the disease, or is it to help people with autism cope in society with the disease?
3. What made you choose this area of research?

[karma_is_for_nerds](#)

1. Scientists have found that everyone has some characteristics of Autism, and some people have more than others. Scientists refer to this as the "broader Autism phenotype" and have even developed a couple of measures to assess it.
2. Since we don't know exactly what causes Autism, we don't yet have a cure, so treatment does focus on helping people with Autism be as successful as possible and promoting acceptance and support in the community.
3. When I was in college I had the opportunity to be a buddy for an adult with Autism. He used to beat me badly in checkers and stump me with vocabulary quizzes, yet he struggled to hold down a job or live on his own. I was both fascinated and touched by my relationship with him and sought to study Autism in graduate school. My graduate work encouraged me to stay in the field because I found

we were making some genuine headway and finding some effective therapies in people with Autism.

Hi Dr. Smith,

I have frequently heard many people claim that some early childhood interventions for ASD, such as Applied Behavior Analysis therapy, are cruel and should not be done, as they are attempting to change a child's personality. This view often seems to come from people who believe that ASD is more an example of extreme introversion rather than a true disorder. As someone who used to be an ABA therapist but who never specialized in ASD research, I've of course tended to disagree with this view, but never looked into the reasons for /against it. As an expert, what are your thoughts on this?

Thanks!

[fmpastafarian](#)

I don't think any reputable treatment attempts to change a child's personality or destroy their individuality in any way. Rather, ABA and other behavioral therapies aim to help the child express themselves more effectively, prepare them to succeed in their schools and communities, make friendships, and hopefully lead more fulfilling, happier lives.

This does mean teaching them to engage in some behaviors more often or differently and engage in other behaviors less often, but that doesn't mean it's trying to change who they are.

Is there any recent research that really excites you when it comes to helping people with autism?

[togaboy531](#)

One exciting development is that many recent studies, including some here at the University of Rochester Medical Center, have shown practical ways that professionals can help parents or caregivers promote their children's development. The right interventions can make a meaningful difference for the parent and child in just a few weeks time.

Essentially, we can help parents become "amateur scientists" in addition to being experts on their children -- we can show methods to help them understand what their child is doing and figure out ways they can help. This can help a caregiver feel more in control of a situation, which helps the child and also helps reduce a caregiver's stress level. It's encouraging to see that there is more recent research going on to help the caregivers in addition to the child.

Hi what is your opinion on the gender gap on asd and autism diagnosis, do you think there might be a gender bias and if so how can we over come this? Also is treatment different for boys and girls? If so how?

[paperconservation101](#)

Currently, the best estimate is that there are about 4.5 times as many boys as girls with Autism. Unfortunately we don't know why Autism is more common in boys. On average, girls with Autism tend to have slightly more cognitive and language delays than boys, but there are many exceptions to this. Recent research suggests that girls may have a little more difficulty than boys fitting into peer groups, but we don't know whether this is because girls' social interactions tend to be more complex or whether there is any difference in how they get along with their peers.

Hi Dr Smith, thanks for doing this AMA.

My younger brother is 6 and is due to be tested for autism in the coming weeks by various doctors and experts. Currently those who interact with him (GP, teachers etc.) are torn between thinking that he's just a young child acting out, and actually falling somewhere on the spectrum. He's not shown many of the more common signs (difficulty with facial expressions, eye contact, verbal communication etc) but he can be very difficult to deal with, such as having tantrums when things don't go his way or are part of his usual daily routine, without going into vast detail.

It was my understanding that autism generally developed closer to adolescence; is this a misconception? And what sort of signs should we be looking out for as he continues to develop as he grows? Finally, if you have time, what can we do to support him if he is diagnosed as falling on the spectrum?

[OldBoltonian](#)

Signs of Autism emerge in the first three years of life, and pediatricians and other professionals should be monitoring for these signs and helping families connect to additional evaluations if indicated. For Autism, early diagnosis and early treatment are ideal, so it's important to go ahead with diagnostic evaluations if you suspect a child may have Autism.

However, since it can be hard to tell whether behavioral concerns are related to Autism or something else, diagnosis at age 6 or older is also quite common. Once diagnosed, specialized behavioral and educational interventions are important. Because people with Autism are very different from one another, the person who conducts the evaluation will be a key resource in identifying the kinds of services would best meet the child's needs.

As for what you can do to support him: Educate yourselves on what resources are available in your community -- through schools and other agencies -- and learn about the various evidence-based practices that exist.

What has gut bacteria got to do with Autism? Is there any research looking into this at all?

[lewkus](#)

There's been a lot of recent interest in how the microbiome might relate to brain functioning. The parent organization Autism Speaks has begun funding research on how the microbiome might relate to Autism. At this point, however, we don't know of any specific connections -- only that it's an important topic to research.

Hi prof Smith, recently I read the book [Neurotribes](#), by Steve Silberman. This book's premise is that we have treated autism as a disorder to be cured for too long, and he proposes that we see autism simply as a different way of looking at the world, not something that's good or bad. He says that as long as we try to cure autism we're actively pushing autistic people to the sidelines, instead of incorporating them into the world in their own way.

As an autistic person myself I recognised quite a bit of this line of thinking, and do agree with the premise to a large extent. Are you aware of the book and, if so, what do you think of this line of thinking? To what extent should we try to treat autism, and to what extent should we help autistic people deal with the world without teaching them how to be 'neurotypical'?

[Zygomatico](#)

The book offers a valuable perspective on the history of research and treatment involving people with Autism, particularly highlighting some of the mistakes that professionals have made over the years.

Regarding treatment more generally, it's important to keep in mind that people with Autism are very different from one another. Some are happy, independent adults who don't want or need treatment; however, others are nonverbal or can't keep from hurting themselves or other people, and are frequently in distress. So I believe it's important to have treatment available for those people.

I have a few questions:

1. What significant differences in symptom presentation are there between adults and children with autism? Is there a benefit to adult diagnosis?
2. I have heard that people on the autism spectrum have a higher rate of being transgender than neurotypical people. If this is true then what might cause this phenomenon?

[starfall-invoker](#)

1. Often, there is a lot of continuity in symptom presentation over time. However, there are some trends, and individual differences in symptom presentation become larger over time. Social communication often improves as a person becomes an adult, although it usually remains an area of difficulty. Early diagnosis and early treatment is ideal, but there are therapies available that can be helpful for people with autism at any age.
2. There is some preliminary evidence that may be the case, but researchers are only now starting to examine this systematically, so we're not close to knowing whether it's true or why.

Hello Dr. Smith!

Is it true that there is no longer an Asperger's Syndrome? I've had this discussion with several people, with conflicting reports. Some say that it no longer exists as a separate diagnosis, but that it falls under the spectrum umbrella of Autism. Others say it is still very much alive.

[TheFlatulentOne](#)

Although there are many individual differences among people with Autism, researchers have not found a reliable or valid way to divide Autism into subgroups such as Asperger's or pdd-nos. For this reason, the latest edition of the psychiatry diagnostic manual just has one category, Autism Spectrum Disorder, with extensive discussion of the individual differences within this category.

I was diagnosed with pdd-nos and mcdd when i was 5.

Prior to the disorder mentioned behaviour i had epilepsy.

After some severe epilepsy episodes i started to express pdd-nos/mcdd behaviour and after a year of observation i was diagnosed.

Could epilepsy have triggered the disorders, and if so: was it a cause or effect ?

My parents were warned that due to the disorders 'place' in the spectrum, it is also associated with schizophrenic disorders and in some cases can develop or unfold over time.

Usually between the age of 16-30.

I am 22 now and have no reason to believe i am schizophrenic.

My question regarding this is: is there still a chance that schizophrenia reveals after a few years from now, or should i have already been experiencing some of the symptoms associated with schizophrenia?

And is the whole schizophrenia relating to Autistic disorders even true?

Thank you so much for doing this AMA and hopefully you will be able to read and answer this.

[mastaloui](#)

There is an association with epilepsy, Autism, and a number of other developmental brain disorders. Usually, signs of Autism appear first, but not always, and we don't yet know what the cause-effect relationships are.

There is no known association between Autism and schizophrenia -- it doesn't increase the risk, nor does it protect against getting it. Schizophrenia usually does appear before the age of 22, however.

How frequently do you see autism comorbid with other conditions like sensory processing disorder, developmental coordination disorder, ADHD, etc.?

Also, do you feel they made the best choice in the DSM5 combining PDD-NOS, Aspergers, and ASD?

THANKS FOR MAKING TIME TO ANSWER QUESTIONS!

Parents of yet-to-be officially diagnosed kiddo and early childhood intervention social worker

[jallent](#)

Co-occurring problems are the norm, rather than the exception, in people with Autism. Some of the most common ones are ADHD, emotion dysregulation, anxiety, selective feeding, and difficulty sleeping.

See the above answer about combining the categories.

Do you have an opinion (in terms of its portrayal of autism) on the book **The Curious Incident of the Dog in the Night-time**? Either way it's great literature in my opinion and my understanding is that it is currently being used in university curriculum as a resource for students studying to work with autistic children. I'm interested to hear what an expert has to say about its scientific veracity (assuming that you are familiar with the novel).

[EzeDoes_It](#)

I liked both the book and the play! I think it is a realistic portrayal of Autism in many ways, although not all people with Autism have the special skills that the protagonist does.

Do you believe we will ever be at a point that we can screen for autism prenatally, and if so, how long do you think it will be until we are at this point?

[Supermans_Boner](#)

I hope we will one day reach that point, but we're still a long way away. The search for a biomarker is a major area of research, but we don't have one yet!

where's the line between being introvert and being autistic?

[mokoko__](#)

Lordkronos gave a good answer to this question.

A common misunderstanding is the belief that people with Autism don't interact at all with others. While some are socially withdrawn, others are very eager to interact.

Thank you for doing this AMA Dr. Smith.

Obviously, the debate over whether or not our current vaccine schedule or the vaccines themselves cause or contribute to autism spectrum disorders is a growing issue in our society. The science says that vaccines do not cause ASD's but so many anti-vaccine proponents use social media as a tool to spread their harmful information, often quoting Doctors or misquoting physician's, using memes and nonsensical comparisons which so many people latch onto.

If there are any anti-vaccination supporters reading this AMA (which I'm sure there are), what solid evidence or findings could you or the medical community provide to (hopefully) change the minds of these people?

[Reaper1-9](#)

Vaccines do not cause autism. However, it's true that we don't understand why some children start showing signs of Autism in the second year of life after developing typically beforehand. If we did have a scientifically-based explanation, I think we could put an end to unfounded theories.

Thank you for doing an AMA on this very interesting and sort of loaded field.

There seems to be a gender gap within autism diagnoses. Do we know why more males are diagnosed than females? Is it socially biased as ADHD diagnosis once was, or is there a genetic reason for the discrepancy?

Also, are we any closer to understanding the mechanism of the spectrum? Is it genetic, environmental or a combination of both?

Thank you again for taking the time to do this, it's appreciated.

[Alantha](#)

See my above answer to paperconservation101!

Doctor, thank you. Not to corner you (okay, to corner you), what is your opinion of Autism Speaks?

[placeholder](#)

Autism Speaks has done a great job of raising awareness of Autism, advocating for legislation to help people with Autism and their families, and supporting research. I agree that more could be done to raise awareness of the many gifts that people with Autism have. We can leave it at that :)

Hi. Someone once said that my inability to feel hunger and thirst can be a result of my asperger. Is there any truth to this?

[koproller](#)

A researcher at URM -- Loisa Bennetto -- has shown that people with Autism Spectrum Disorder do differ from others in how they perceive the taste and smell of foods. She is currently investigating the possible causes of these differences. The important thing to make sure is that the differences don't get in the way of opportunities to socialize at meal times and to check with health care professionals to make sure that the nutrition is adequate.

I know that early detection and early intervention are the key to helping calm the effects of autism. In your opinion do you think any specific treatment or therapy stands to be the gold standard for ASD? What are the strengths and weaknesses of these therapies?

Thank you for this AMA

Edit: I should specify, I'm asking specifically for areas in communication (e.g. Increasing MLU, or helping with non-verbal ASD patients).

[KissmePinky](#)

Specialized behavioral and educational interventions are usually the primary treatments. For helping nonverbal children, these interventions involve a combination of breaking skills down into small units that the child can successfully learn and helping adults be sensitive and responsive to any effort the child makes to communicate so they can build on this communication. These strategies can be quite helpful but aren't cures.

Is there a correlation between ASD and oxytocin production/receptors? A family friend of ours is a psychologist who was doing some research into oxytocin and how down regulated receptors manifest themselves in behavior. One of the things she mentioned were the drugs used to 'kick-start' the birthing process (forgot the official terminology). Apparently they flood the brain with oxytocin, deactivating/downregulating the receptors in the process. My mother was treated with these drugs and I am diagnosed with Asperger's so it got me wondering if the two could be correlated.

[Spectahhh](#)

There are some studies underway to test whether oxytocin might help improve social functioning in people with Autism, but we don't have reliable evidence that abnormalities in oxytocin receptors cause Autism.