

Shining with ADHD by The Childhood Collective

Episode #223: ADHD Medication and Brain Development: Let's Break it Down

Mallory: But the big, the big takeaway here, this is the really interesting part, is that the brains of children taking stimulant medication were no different than the typically developing group on those brain scans. So again, this doesn't mean that stimulant medication is fixing ADHD. We can't show cause and effect with this study. This was just a cross-sectional study, but it does add to this growing research suggesting that stimulant medication is supporting typical brain growth and develop in some of those areas that we know are associated with ADHD.

Katie: Hi there. We are The Childhood Collective, and we have helped thousands of overwhelmed parents find joy and confidence in raising their child with ADHD. I'm Katie, a speech language pathologist.

Lori: And I'm Lori.

Mallory: And I'm Mallory. And we're both child psychologists.

Lori: As busy mamas ourselves, we are on a mission to support ADHD parents on this beautiful and chaotic parenting journey.

Mallory: If you are looking for honest ADHD parenting stories, a dose of empathy with a side of humor and practical tools, you are in the right place.

Katie: Let's help your family shine with ADHD.

Lori: Today I'm here with Katie and Mallory and we're talking all about ADHD medication. As a psychologist who frequently evaluates kids for ADHD, I hear from parents all the time that they never wanted to consider medication or that they hoped other therapies and supports would be good enough.

Katie: Yeah, I feel like this is a really common decision for parents. And it feels like there's just a lot of really loud opinions from some social media, maybe members of your family, friends, you know, just, there's so many myths out there about ADHD. And a lot of the

information, particularly about medication is just not rooted in the current research. You know, parents are wondering and googling, like, will ADHD medication change the way my child's brain works? What are the long-term risks of taking ADHD medication? And, you know, we have been in this space for a long time and we just feel like there's this imbalance of the way that medication is represented in the media. So, we're going to be spending some time over the next few months talking about some of those myths about medication and some of the fears, really real fears that we as parents experience when we think about or talk with other people about ADHD meds. And this is definitely not to pressure anyone into making a specific decision, but we feel like there's just a lot of information out there that's negative about medication and we want to make sure that if you're a listener of this podcast, that you have all the facts so that you can make the decision that makes the most sense for your family.

Mallory: Absolutely. And I think as a psychologist, more so than any other diagnosis, when a family even comes in for an initial evaluation and ADHD is on the table, families already have very strong opinions about medication. This is not the case with any other diagnosis we see coming into our office except ADHD. Parents will tell you right off the bat, if it's ADHD, we're not gonna medicate. And I'd say that's a very common sentiment. And so, as professionals, we're talking with parents all the time who really are overwhelmed by this decision. And as Katie was saying, like, we wanna be really clear, this episode isn't about convincing anyone to medicate their child. We get that it's a very personal decision. It's something you should talk to your child's doctor about. Every child is different. Every child has unique needs. But we want to really walk you through some of the current research on ADHD medication so you can be confident in your decision, whichever decision that is. So today, we're going to be covering what stimulant medication actually does in the brain, what some of the more recent and newer research is showing about brain development, and why researchers have started using words like neuroprotection when talking about ADHD treatment.

Lori: Yep. So, we kind of want to shift your mindset a little bit to considering not just what are the risks of taking ADHD medication for your child, but we also want to start to ask that question of what are the risks of leaving significant ADHD symptoms untreated? Because it really isn't just a neutral kind of subject and we're going to talk a little bit more about that.

Katie: Yeah. And I think the goal, too, just being to release some of that stigma. And I know for a lot of us, there's maybe some guilt or questioning and so before we even dive into this very interesting topic, ladies, I feel like we all need a little coffee to dive into this. But before we really jump in, we want to start with just a very quick reminder about what ADHD is. So, if you've been listening for a while, you know that ADHD is a neurodevelopmental condition. Meaning it's actual differences in your child's brain. Or if you have ADHD or your partner has ADHD, this is not about laziness or bad parenting. This is not about our kids that are just not trying or they don't care. You know, there's definitely situations where I know my kids don't care about certain things, but we know that ADHD is affecting a lot of aspects of the brain. These are things like executive functioning, their ability to regulate their attention, their ability to manage their emotions, impulse control, even the way that our brain processes rewards, like how long you can wait to get a reward and how big the reward needs to be. Like, these are actual differences in ADHD brains. And we know that our ADHD brains are developing differently. And a big piece that we talk about in the research is what's called dopamine. So, dopamine is a neurotransmitter and it plays a really important role in things like motivation, reward, focus, being able to stay with a task, being able to start a task. So, you probably have heard about dopamine, but dopamine really isn't the only piece that's affected because ADHD truly is affecting multiple aspects of the brain, multiple neurotransmitters and the systems that regulate those neurotransmitters. So, if we haven't totally lost you, that's what's happening at the brain level. So, we just want to remind you that ADHD is very real and it is something that's different that's happening in your child's brain.

Mallory: Absolutely. And kind of understanding dopamine and what it's responsible for when it comes to motivation and reward helps us, it helps explain why kids with ADHD often struggle with tasks that are really repetitive or are not very stimulating, or tasks that are not providing immediate feedback or immediate rewards. So, we hear parents say things like, my child can focus on video games for hours, but they can't start homework, right. So that actually connects how ADHD brains respond differently to things that are interesting, things that are novel, things that feel urgent. Nothing like that timeline that's just an hour away or starting that project that's due tomorrow, right. And it's important because I think sometimes parents hear medication and they immediately feel guilty, like they should be able to somehow fix what their child is struggling with just better parenting or more discipline. But if ADHD is a brain-based condition, which it is, it makes sense that treatment might involve the brain or medication as well.

Lori: Yes. And it's important to kind of remember that medication isn't going to teach your child skills. It's just going to help support those brain structures so that they're working more efficiently. So, for a lot of kids what we see is it just creates enough space for them to kind of be able to engage in some of those skill building strategies. Being able to engage effectively in using visual schedules or engaging in routines in the morning or at bedtime or starting homework or getting chores done or things like that. So, it just even with friendships, like helping with some of that impulse control so they're not like hitting immediately or they're able to regulate their emotions a little bit better. So again, it's not the whole picture. There's still other treatments and we talk about those all the time, but it does sometimes allow kids, you know, that ability to regulate enough to put those skills into practice.

Mallory: So, another really common thing that we hear from parents coming into our office who, again, are like instantly against meds is they already have, like, they remember this kid from elementary school who was taking ADHD medication and was a zombie. I feel like almost every parent, like, has this story, like, oh, but Johnny in first grade, he was taking stimulant medication, and he was out of it. Like, it totally changed him. He was a zombie. And one thing that we really want parents to understand is that stimulant medication is not supposed to sedate children. It's not supposed to change who they are. We're not trying to, like, create a new child or a different child. The goal of stimulant medication is to help the brain regulate more effectively. And stimulant medications primarily work on, as we mentioned, the dopamine, but also the norepinephrine systems in the brain. And so, for many kids medications improve things like sustained attention, impulse control, ability to tolerate frustration, task initiation. So, getting started kind of without delay. That often emotional reactivity, zero to 60 in no time flat. So, we're improving these real challenges without changing the child, without changing their personality.

Katie: Yeah. And I think a really important thing for parents to keep in mind is if you see that you try a stimulant medication or any medication, and it changes the way that your child interacts or it changes their personality, that's definitely something you'd want to talk about with your doctor, because it's probably not the right medication. So, what we would want to see for a child, let's say they are just starting out with a stimulant and I like to think of an analogy of going to a birthday party. And a child with ADHD. For any of us who've ever taken our kid to a birthday party may have a lot of impulsive behaviors at a birthday party. Okay, not every kid, but you might see them, like, sticking their finger just to get a little bit of

frosting or splashing all the kids in the pool when the other kids are not doing that or grabbing something because they thought it looked really cool and they just wanted to see it, and they might grab it out of someone's hand, right. So, these are some common sort of ADHD behaviors that we might see. And when a child is on that stimulant medication, if it's the right dose and the right medication, that's just going to help them to slow down enough to think through what's about to happen. And so, you might see them pausing before grabbing a toy and saying, hey, can I see that? Or you might see them, you know, getting in the pool and checking out to see what are the other kids doing around me and reading the room a little bit. And so, the stimulant isn't gonna, it shouldn't be changing the way that your child interacts entirely, but it might be opening up a little bit of a buffer of time where they can problem solve and use some of those skills that they do have to be able to navigate a social situation like a birthday party.

Mallory: Yeah, I think that's so important for parents. Like, there is the distinction between, like medication maybe that really isn't the right dose, the right medication for your child. But also, we are gonna see some changes in behavior and in that way that's desirable. We see them, you know, having a more enjoyable, fun time at the birthday party when there is a little bit more of that impulse control and frustration tolerance and things like that. And so again, we're not changing who your child is. We're just lowering this barrier enough for your child's brain to work better, to work more effectively when it comes to a lot of these executive functioning skills. And this is why stimulant medication is considered a first line treatment for ADHD in school age children. the American Academy of Pediatrics recommends FDA approved stimulant medication along with behavioral supports, which we talk all the time about, for children 6 years and older with ADHD. And that recommendation for stimulant medication for 6 and older is based on decades of research showing that stimulant medication is one of the most effective treatments that we currently have for these core ADHD symptoms.

Katie: Yeah. So, I think a lot of us are probably really curious like, okay, so you've talked about the research, but what actual research has been done? So, one of the biggest studies that we have on this was called the MTA study. It stands for the multimodal treatment study of children with ADHD. And this was really significant because it was a very large study. It had 600 children in it, and it was a really well controlled study. And the purpose of the study was to figure out which treatments are the most effective. So, they were able to compare different

treatments. So, medication management, behavioral therapy, combined treatment where you had medication management and behavioral therapy versus routine community care. And the outcome of that study is that they found that when you had carefully monitored medication treatment, either alone or when it was combined with behavioral therapy, was more effective for reducing the core symptoms of ADHD than just the behavioral therapy alone. And we are obviously really big fans of behavioral therapy; that's a lot of what we teach and support here. But this is what the study showed, is that when you had the medication piece, it was more effective overall. Obviously, we know that does not mean that meds are the only support kids need. It does not mean that every child needs to take medication or that this should be automatic. But it does help parents to understand why professionals will say yes, stimulant medication remains one of the most evidence-based treatments that we have for ADHD.

Lori: So, one area that's been getting a lot of attention right now is brain imaging research which has really shown, and there's many, many studies showing differences in brains of people with ADHD, so kids and adults. And what the imaging shows is smaller brain volume in different areas of the brain. So, I'm going to get a little technical here, but areas like the cerebellum, the basal ganglia, and then frontal lobe white and gray matter. So, if you're kind of like, I have no idea what you're talking about, white and gray matter, let me kind of talk a little bit about that. So white matter helps different parts of the brain communicate a little bit more efficiently. So, think of it like a communication highway in the brain. Whereas gray matter is the actual brain tissue involved in processing information. So what is really important, and we're going to talk about some key studies here, but there have been more than 30 studies that are showing that people and kids who take stimulant medication in childhood for several years or more are showing improved brain growth and development in various areas of the brain, including the cortex, the cerebellum, the basal ganglia, and some of that white and gray matter. So, one study that was done in 2019, it was only boys and men, which is not great...

Katie: Of course it was!

Lori: I know, it's so weird. So, I do want to preface that, however, we're talking about this study because it was the most well controlled type of research study, randomized, double blind, placebo-controlled study. So, it was a very strong research design where we can focus on very specific effects. And so, they found that stimulant treatment was associated with

changes in white matter development in boys with ADHD, but not necessarily adults, kind of indicating that again, that stimulant treatment in childhood can potentially be changing volumes and areas of the brain. So, treatment in childhood is an important kind of topic.

Mallory: And so, as Lori was saying, the researchers have also been looking at these gray matter differences. And again, as she said, gray matter is the actual brain tissue that's involved, as she said, with processing information, but also regulating emotions, motivation, attention, decision making. And there's an even more recent study in 2024 that had over 6,000 kids 9 to 11 years old. So, one of the largest studies that we have showing these brain differences and they were looking at three different groups of children. So, some of the children had ADHD and were taking stimulant medication, some of the children had ADHD but were not taking medication and then there was a large control group of, neurotypical kids. And what this study found was that children with untreated ADHD, so those not taking medication showed structural differences in different brain regions, including the right insula and the nucleus accumbens, but the big, the big takeaway here, this is the really interesting part, is that the brains of children taking stimulant medication were no different than the typically developing group on those brain scans. So again, this doesn't mean that stimulant medication is fixing ADHD. We can't show cause and effect with this study. This was just a cross-sectional study, but it does add to this growing research suggesting that stimulant medication is supporting typical brain growth in and develop in some of those areas that we know are associated with ADHD.

Katie: Yeah, this is such important research for parents to really understand and it's really changing the picture of what we understand about medications and what they can do to help support brain development. So, this is where we may have heard of ADHD researcher Russell Barkley using the word neuroprotection. And what he's talking about with neuroprotection is this idea that when we effectively treat ADHD, this can actually help support healthier long-term functioning and development over time. So, we're not talking about curing ADHD, we're not talking about changing our kids' personalities. The goal here is to reduce those long-term negative effects. And the truth is, research has really been clear that people who have untreated ADHD are at a higher risk for a lot of scary things. Things like academic struggles, injuries, car accidents, that impulsive decision making, anxiety, depression, low self-esteem, even substance use. And as parents, these are heavy topics, like things that I

personally do not like to think about. But when our kids are not supported correctly, then this is the possible outcome that we're looking at with untreated ADHD.

Mallory: And I think this is where the information that's like easily and readily available to parents is really failing them because a lot of this information on social media is missing this nuance and it's missing this really important piece here. Where a lot of information that parents are getting is that taking medication is risky and it comes with side effects and it's something that you really need to think long and hard about. But then the conversation around not medicating your child is that that's a neutral choice. But as Katie just said, there's actually a lot of negative outcomes that come with untreated ADHD. Like she said, increased car accidents and increased incidences of substance abuse. So not medicating is not just simply a neutral decision, that potentially has consequences as well. But again, like social media misses this nuance and that's where a lot of parents are consuming their information, but it's so important to understand that not treating ADHD carries those real risks as well. But again, I just want to, you know, return back to medication isn't right for every child. So, I also don't want this to come off as if you're not medicating, you're putting your child at significant risk.

Lori: And to kind of say too like, behavioral therapy is a treatment, like, so if you're choosing behavioral therapy that's still treating ADHD, that's not a neutral topic. And the research is clear too that like behavioral therapy is effective. But we, but again we're kind of highlighting some of the research specifically showing changes in the brain with medication. Just before we kind of wrap up, one thing to remember, medication is just one part of a treatment plan for a child with ADHD. It's one tool in a toolbox. We still again really strongly recommend, you know, executive functioning supports and school accommodations and, clear routines at home, changing the environment at home. Medication doesn't magically teach skills, like organization and coping strategies, so we have to kind of use this in combination with some of those other behavioral strategies that we talk about all the time on here.

Mallory: Absolutely. So, we hope this episode helps you move away from those fear-based conversations towards more balanced evidence-based decisions. And our key takeaway is that research is increasingly showing that untreated ADHD is not neutral and that appropriately treating ADHD may help support healthier long-term brain development and functioning over time, which is so exciting. Medication is not the right choice for every child, but

families deserve balanced, evidence-based conversations about both the risks of treatment and the risks of untreated ADHD or not treating. And if you want a parent friendly guide to ADHD treatment options for kids, we've linked our free guide in the show notes for you. And as always, we're here to support you.

Katie: Thanks for listening to Shining with ADHD by your hosts, Lori, Katie, and Mallory of The Childhood Collective.

Mallory: If you enjoyed this episode, please leave us a review and hit subscribe so you can be the first to know when a new episode airs.

Lori: If you are looking for links and resources mentioned in this episode, you can always find those in the show notes. See you next time!