



## **NVLD: A Visual-Spatial Disorder**

### **Lauren Clouser:**

Welcome to The LDA Podcast, a series by the Learning Disabilities Association of America. Our podcast is dedicated to exploring topics of interest to educators, individuals with learning disabilities, parents and professionals to work towards our goal of creating a more equitable world.

Hi everyone. Welcome to the LDA podcast. We're here today with two NVLD researchers, Amy Margolis, Ph.D. and she is a stress, trauma and resilience professor of psychiatry and behavioral health at the Ohio State University and also the head of the Strategy, Learning and Development Research Innovation Center at the Child Mind Institute.

With us also is Prudence Fisher, a professor of clinical psychiatric social work and psychiatry in the Division of Child Psychiatry at Columbia University and a research scientist at New York State Psychiatric Institute. I'm now going to pass the ball to our education director, Dr. Monica McHale Small, who will be leading the interview.

### **Dr. Monica McHale-Small:**

Hi everyone. Amy and Prudence, I'm so happy that you're with us today because we get a lot of questions at LDA about NVLD nonverbal learning disabilities. So we're really interested in finding out more about your expertise and what got both of you interested in this topic. Amy, do you want to start?

### **Amy Margolis:**

Sure. I first became interested in understanding NVLD, or had an encounter with a student with NVLD, when I was working as a tutor after college and had read a neuropsych report on this student, and it said they had a nonverbal learning disability, and that's why I was trying to teach them math. And then I moved on in my career from that to learn to do these evaluations, and then worked with kids for 10 years and trained other psychologists to do the same and saw a fair number of children in the practice who were having problems in school and it wasn't a classic language based learning disability.

And I thought that was really interesting, and I wanted to learn more about how we could help those children and other children. So I went to Columbia actually to respecialize in research focused on learning disorders. And there I started looking at some brain-imaging data that we had available and was able to really think about what happens in the brain when people have differences in their verbal abilities, from their spatial abilities, and vice versa. And then we were off and running from there.

### **Dr. Monica McHale-Small:**

Okay. And Prudence, how about you?

**Prudence Fisher:**

For me, actually, I've been in child psychiatry a long time and I've always been interested, well, mostly always been interested in assessment. And when the DSM 5 came out, which was in 2013. Before that, I was an advisor to some of the DSM committees, because I'm somebody who does psychiatric assessment and interviews for kids and parents, and I knew the DSM stuff. And so we have a foundation who was very interested in getting NVLD into the DSM. And they knew that Columbia had done a lot of work on DSM stuff. And they came to our department and spoke with me and I explained what the process would be from my observations. And that was 2017, I think. And they asked me if it would be something I'd be interested in working on.

And initially I didn't know that much about NVLD, except I had a nephew who had been diagnosed with NVLD and he had had a very good neuropsych evaluation. And it really explained a lot to me and to his mother about things that he couldn't do as well as one would expect, given the level of his intelligence. A lot of stuff that we were sort of interpreting as being oppositional behavior or just things we were asking him to do that we didn't do right and was a lot to do with having a visual spatial problem. So when they asked me, I was interested.

**Dr. Monica McHale-Small:**

And the two of you are working together now on this project, correct?

**Amy Margolis:**

Yeah, I think since the beginning, really. You know, I was initially funded by this same organization to think about how we can understand this as a discrete disorder. They actually funded us to bring a group of students in who had a diagnosis of NVLD and confirm the diagnosis, and then acquire more phenotypic data or neuropsychological test performance data and interview data about these children. And a brain imaging protocol that I oversaw. And then Prudence, at the same time, was working on a literature review of the definition of NVLD.

And then we really came together after we each conducted those separate projects and said, our work is really so overlapping and so important to put together for this DSM initiative. And so we've been really working hand in hand since then, both still working on analyzing large data sets to understand subtypes of NVLD, or what are the drivers of NVLD, and also collecting new data to see if we can understand. Well, actually collecting new data to try to assess whether the new definition that we've created for this new reconceptualized NVLD as developmental visual spatial disorder works. We've really been partners on that.

**Dr. Monica McHale-Small:**

Well, how about one or both of you talk a little bit more about exactly what is NVLD? What do we mean by nonverbal learning disabilities, and this new name that you are proposing for the disorder?

**Amy Margolis:**

Yeah, I think that as a neuropsychologist, everybody used their own approach. And the point of Prudence's literature review was to go through and find the commonalities. And what we discovered was that everybody focused on some sort of visual spatial problem. And it dovetailed pretty well with the research definitions that I was using to define my cohort of NVLD kids that we were going to see for imaging. And what this really boiled down to was, do they have a visual spatial problem which could be defined through a number of different tasks? What is a visual spatial? So putting the blocks together on block design, or looking for sequences and patterns in matrix reasoning, or identifying what's visually wrong in a picture, or doing mental spatial rotation or navigation tasks, all of those kinds of tasks were used by different studies to characterize a visual spatial problem. But every study had a visual spatial problem.

And then the studies also usually had some additional problems, like problems in social function or problems in math function, or problems in motor or problems in executive function. So this is really our very clear research criteria definition. Now, if we take a large data set and we don't ever see the kids, but we have all of their test materials, we make a provisional diagnosis of NVLD based on: do you have a visual spatial problem? And then do you have a problem in two out of four of these associated areas: math, motor, social function, or executive function. And that's for NVLD. And I think that's pretty much how the field does it now.

But we have moved away really, from Byron Rourke's definition, which was very syndromic and was kind of like, you have to have a whole bunch of things and a little bit of this and a little bit of that, and that's not very helpful for making a clear diagnosis. And the research wasn't supporting this syndromic view, and nor was the DSM supporting a syndromic view.

So the DSM is all about having a single deficit for a disorder. Like we have a language disorder, or we have an attention disorder, or we have a developmental coordination disorder. And so when we did all this work, Prudence and I hosted two conferences at Columbia, funded by the NVLD Project over a number of years, and invited experts from around the world, both in NVLD and in other neuropsychiatry problems, Autism, ADHD. So not true believers of NVLD.

And we all came together, and over two day periods, two times, and also with lots of email and communications in between conference calls and votes...and we've detailed all of this in our recent paper that came out in the Journal of the American Academy of Child and Adolescent Psychiatry, where we report on the decisions of this working group to reconceptualize NVLD as developmental visual spatial disorder.

We do that because the core feature that all of the definitions always had was a visual spatial problem. And the DSM is focused on having categories that are about a single problem. That's why we call it developmental visual spatial disorder. We think it belongs in DSM because all the other areas of cognition have a neurodevelopmental disorder attached to them. Attention disorder, language disorder, motor disorder, learning disorder, social disorder. But we don't have a visual spatial disorder. And so that was really one of our main arguments.

And then once we could get accepted, hopefully we will, into the DSM, then the other argument is people need access to a single definition so we can do research and so people can get diagnoses and get cared for.

**Dr. Monica McHale-Small:**

Yeah. So maybe talk a little bit more about that. So what is the history of the disorder and its inclusion in the DSM? So it used to be in the DSM, correct?

**Amy Margolis:**

Never. No.

**Dr. Monica McHale-Small:**

It never was.

**Amy Margolis:**

No.

**Prudence Fisher:**

But what happened is in the DSM you would have learning disorder not otherwise specified. So NVLD came out of the field of learning disabilities. So there would be people having problems, but it wasn't a verbal problem. It's nonverbal. They were not the verbal kids. And so that's how it got its name. A lot of people didn't understand it. If you say people have nonverbal learning disability, for the person on the street, they say, oh, he doesn't talk.

They all say that. So it's like naming something, something is not right. So that is a problem. But it came out of a learning disability. So it was other than a verbal learning disability.

**Amy Margolis:**

And also I think in fairness, in the 1960s when researchers were getting really interested in learning problems, they saw a whole lot of kids with language based learning disorders. And we came to understand dyslexia and other kinds of reading disorders. But in the clinic there were kids who were coming who were having trouble in class with academics who didn't have a language based learning problem. And so who were those kids? And that's who Johnson and Michael Bust first identified and called nonverbal because it wasn't a language based learning problem. And the other problem was that on the IQ tests that they were using, there was verbal IQ and there was performance IQ. And if you ask someone what's performance IQ? They say, well, it's not verbal. So yeah, I think this is partly why it wasn't called visual spatial.

**Prudence Fisher:**

Yeah, so that's where it came from. And in terms of child psychiatry, the learning disorders have always gotten sort of short shrift.

**Amy Margolis:**

Oh, for sure. I mean, when I came to psychiatry to study learning disorders, people asked me, why are you going to study that? We can't treat it.

**Prudence Fisher:**

And so it was sort of over to the side. But you know, it has a lot in common with the others. Like when we renamed it developmental visual spatial disorder, the developmental is giving a nod that we wanted it in the neurodevelopmental chapter, something you start in childhood. And what all those disorders have in common is they all have executive function problems. They are different kinds of...But they all have them.

**Amy Margolis:**

And I will say there was a moment in time when people used to think that NVLD was the neuropsychologist equivalent of the psychiatrist's Asperger's, and which has now been subsumed into autism spectrum disorder as high functioning autism. But I think that they're quite different. And we've actually published on this, we've published that even though both groups have social problems as rated by their parents, the circuits in the brain that underlie that social function or dysfunction is different between the two groups.

So from the outside looking in, it's like, oh, they all have social problems, so they're the same. But that's not really fair. That's kind of like looking at kids who have a behavior problem and saying, oh, they're all the same. But someone could have ADHD and someone else could have autism. They have the same behavioral problem.

**Prudence Fisher:**

You can have DVSD and have ADHD. You can have autism. So it's like the way it's a classification system, right? Like you have this group of symptoms or problems.

**Dr. Monica McHale-Small:**

So I have two thoughts there. Well, could you have NVLD or developmental visual spatial disorder and a learning disability?

**Amy Margolis:**

Yes, yes, absolutely. And I think you could meet criteria for a reading disorder. Even though the zeitgeist that's out there is oh, if you have NVLD or DVSD, you have excellent verbal skills. That still could be true. And you could have a reading disorder. You can have excellent verbal skills and have a reading disorder. That's totally accepted.

And I think the kind of reading problems that I've encountered in children with NVLD or adults is more around comprehension than word reading accuracy. And I have a hypothesis about what might drive that, which is partly that they have trouble making a mental image in their mind of what they're reading. But that hasn't been tested empirically.

**Dr. Monica McHale-Small:**

So how do kids with NVLD, how do they present in school? What are the things that would lead a parent to consult with someone and say, hey, something's going on with my child?

**Amy Margolis:**

So it's interesting. I mean, generally kids with dyslexia get picked up much earlier because they are the kids who can't learn the letters of their own name, and they can't learn to spell their name or write names, and then they're having trouble learning to read words, and that all those expectations happen earlier. And the children with NVLD oftentimes don't get picked up until third grade, when they're expected to derive meaning or inferences from what they're reading rather than the word reading accuracy.

Now, that's not to say that these children wouldn't also sometimes have trouble with math that can get picked up in first, second grade. But oftentimes it's just not the marker that teachers are really focusing on. And so it is missed, or that their problems haven't emerged yet. And so they really start having trouble in later elementary school with like, learning fractions, learning math that requires a lot of algorithms and processes like long division. And so those are things to look for.

And I think what I often tell parents is that these are kids who, when they see something new, or something that they know but is presented in a new way, they say, I don't know how to do that. And then you show them how it's like the old way and they know how to do it. And to me, that's a real hallmark. So, for example, learning fractions, if you're learning to add fractions and they're written horizontally next to each other, they know how to do it. But if you put the fractions vertical, they're like, what's that? I've never seen that. And it's the same math,  $1/2$  plus  $1/3$ , right? But written vertically versus horizontally. And they're like, oh, I can't do that. And then if you say, actually it's the same, then they know how to apply the rules.

So it's something, I think, I've always thought about handling things that are novel. But that's sort of what I would call, as a researcher, what I would call a latent variable. It's something that cuts across a lot of the ways that we look at how children perform. And it's not something we test in and of itself. So its novelty is a component of most of the visual spatial tasks and that might be sort of driving why those are hard for them. Whereas language based tasks are not very novel, usually because we engage in conversation all the time.

So I think in school, what I tell parents is if you notice that your child really looks like the deer in the headlights when something is new, but then as soon as they have a cue, they can get it, that's one classic way. And thinking about problems like, as I said, in math or in reading comprehension are another way.

And another thing that we see a lot over from later middle school into later elementary school into middle school is trouble in science with understanding meaning from pictures and diagrams. So, you know, the circulatory system is really challenging when they have to learn: here's the aorta, and here are the lungs, and here are all the veins and arteries, and label everything.

That's really hard unless they have a teacher who understands that they need everything to be mediated verbally. They just need things explained in words. They need the picture really explained.

And so oftentimes in high school these will be kids who are much better in algebra class, which is very verbal. Whatever you do to one side of the equation, you're going to do to the other side of the equation, as opposed to tell me why a rhombus is a special rectangle. That's really hard. But then if they get all the rules of these are all the rules for a rectangle, and as you get more and more specific, you'll get different shapes. And there are three different shapes you can get. And if you do it like that with them, they can memorize this and actually learn it. So I think those are some of the features of academics. And I could let Prudence talk about social development.

**Prudence Fisher:**

Well, I was going to say something else. I mean, I think that what has happened historically with people who get a diagnosis of NVLD is they're typically middle class or upper middle class or wealthy. They're kids who were very verbal. You know, people used to think it'd be really high and verbal and low on performance. So they were doing fine and having lots of conversations and stuff. And then they sort of hit a wall. And then the parents take them and get them tested and then they figure out what's going on.

Like all of a sudden he's not doing this, or he's not acting this way, he's lazy and whatever. The parents scrub their hands. We got to see what's wrong with Johnny. They get him tested and they go, oh, so that's what's happening. And so you know that a lot of the clinical stuff, until very recently, was very limited and in terms of who was in the samples, because it didn't get recognized. Other people who had different parents, different backgrounds, they just thought they were dumb.

**Dr. Monica McHale-Small:**

Right.

**Prudence Fisher:**

So it wasn't recognized as something that's underlying other things. And I think that's changed. And I think that by not requiring people to be highly verbal to get this or whatever, I think it's going to make visual spatial problems much more recognizable to the typical person or hopefully teachers.

**Dr. Monica McHale-Small:**

So that's good. Teachers. Let's get back to teachers and education. So how do these kids get served? Are they recognized as having a disability or not? And what does that mean for these kids?

**Prudence Fisher:**

I mean that's one of the reasons we want to get into the DSM is because there are many people who've had a child who has nonverbal learning disability. They go and they talk to the teacher.

I've had my child tested. What's that? It's hard.

**Amy Margolis:**

I think the other thing I'll say is from the clinician standpoint and being in schools, what happens is kids get tested, and the basic psychological tests that the schools do are kind of enough to get your hands around is this NVLD or not? Because there are visual spatial tests on the IQ test that's traditionally given, and then they do measure things, and they do think about is the child having trouble socially, is the child having trouble with executive function, is the child having trouble with math, or motor, or something else at school? And so they could meet criteria for either NVLD or DVSD, but they're not categories that are used or classifications that are used.

So what I see happening on the clinical side is that clinicians who do the assessment will, if they're aware of NVLD, they will oftentimes talk about it in a report as a set of challenges that explain all of the kids problems, but that they're going to code for diagnostic purposes. The things that the child does meet criteria for that are codable and in the book.

So oftentimes what we saw in our prevalence papers, we published a paper where we looked in three large data sets across North America and replicated this finding in three different data sets that the prevalence of NVLD was somewhere around 3%. And we looked in one of those data sets they had. It was heavily weighted for psychiatric problems. So kids were recruited because their parents were worried about their performance in school. And what we found was that the most common diagnosis that children had was ADHD and the second most common diagnosis was anxiety.

And those are things that kids with NVLD often have. And there was a subset of children in this data set whose parents brought them in because they were worried about them, who got no clinical diagnosis and met our criteria for NVLD. And so that was actually in our submission to DSM, like, hey, look, not only are we not doing right by these kids because there's not a single definition, but some of these children are getting no diagnosis because they have their own category and it isn't captured by any other category. And so that's why we need to be in the book.

But if we believe that this is a discrete disorder, which I think our research is really pointing to, so that children and adults can have services, but what happens in school right now is then they'll have an IEP meeting and get classified as other health impaired and get services for ADHD or classified as whatever the classification in your state is to capture an anxiety disorder and hopefully they get services that address these...I would call them ancillary problems, the attention problems, the anxiety problems. But they aren't getting visual spatial deficit driven treatments per se. We don't actually have those. That's what I'm hoping we'll raise money for in the next five years, is to develop treatments that we can test if we improve your visual spatial early, because we know early intervention is so important.

If we can work on your visual spatial early, like age three, age four, age five, age six, does that

improve your trajectory? We need to do a lot of awareness work around that. If you think about when you had kids and you went to the pediatrician, they ask you, when does your child walk? Supposed to be at one. When does your child talk? Supposed to be by age two. Those are the milestones. Walk at one, talk at two.

No one has a milestone for doing puzzles, route finding, navigation, these things. Prudence and I together have written a 30 item screener for parents about the kinds of behaviors that children show when they have a visual spatial problem. And these are important things, like they can't figure out when to cross the street because they're having trouble judging the speed at which a car is moving toward them. Or they have trouble on the soccer field because they don't know how fast the ball is coming toward them. Or they run the wrong direction. They forget which way is their team's goal and the other team's goal.

So anyway, we've written this 30 item screener, and we hope that that will start to be used more widely. And we're also trying to develop a test like impact testing that sports teams do where they measure your reaction time before the season starts on a computer in the school library. And then after you have a head injury on the field, you can return to play decisions based on performance. And we're hoping to develop a test that measures visual spatial that we could deploy for all 6 year olds and 7 year olds across the country, the same way they measure your eyesight and your hearing. We just have no idea if children have a visual spatial problem. And from our estimates, it's about 3 million children in North America.

**Prudence Fisher:**

But there are certain accommodations you can make if you know somebody has a visual spatial problem. And we work with somebody on a paper. Like if you're treating somebody who has a visual spatial problem, you're treating them for anxiety. Some of the common anxiety treatments make you do some visualization. Well, you're not good at it. You probably should change that. Or even in terms of, instead of the teacher writing something on the board and they have to write something down, just give them the instructions. Or it's just like, why make them do that?

Or in the case of my nephew, he went to a school where he had problems with writing. Just because a lot of kids have sort of fine motor problems and they use D'Nealian writing and it's like cursive. People with NVLD can't do that. I mean, they just can't do it. And the school didn't know. They just thought he was being oppositional. He really couldn't do it, you know, so if you are aware of things that might be difficult, you can accommodate, or decide how to do things, or not make kids do things that they really can't do. And then often teachers can get annoyed at these kids, they don't understand what's going on.

**Dr. Monica McHale-Small:**

Yeah, there's a lot of things that teachers could do, but unfortunately, a lot of times they won't do that unless they have a disability. So that is the issue. So I have a couple of thoughts. I want to just talk about how this presents in adulthood before we wrap up.

But when you were talking and when you were describing all these things and how these children present in school, a lot of that is like how many kids with learning disabilities present in school. And I sometimes think that maybe we define, especially in IDEA, we define learning far too narrowly. That, yeah, it's basic reading, it's reading comprehension, it's math calculation, etc. It's the five or six different areas. But we're learning all the time. Everything in school is learning, and every novel thing we do in life is learning. And maybe we gotta kind of rethink what really is a learning disability and what isn't, because if it impacts learning, maybe it is a learning disability.

**Amy Margolis:**

I think you'll like this, Monica. When I got my first grant after I went to Columbia to respecialize after 10 years as a clinician, the first grant I got was to study a group of kids, and measure their brain structure and function, who have learning disabilities and learning disorders. And the title, the working title of my grant internally was Where is the Learning and Learning Disorders? Because I really believe the brain is a computing machine, and it computes in different ways. It detects errors, it detects patterns.

I really am Gibsonian in my approach to understanding development. Meaning, I think we look at a set of information and pull meaning out of it. We don't integrate parts together. That's not how the brain works. And so I think that what we don't have a good handle on is, first of all, what are these cognitive processes that equal learning?

If you ask people, how do you define what it means to learn something? They'll be dumbstruck. It's a great question. At a cocktail party, they look at me and they're like, well, what do you mean? And I'm like, well, how would you know if someone learned something? Would it be because you told it to them and they remembered it tomorrow? Would it be because you told them a rule and they changed their behavior? Like, what does it mean to learn something? And would it be that I understood this rule here and I applied it somewhere else? Like, what do we really mean? And once we get a handle on what we mean, that we could see with the naked eye, how does that relate to what's going on in the brain? And then how do those circuits that allow us to do these things allow us to put together sounds and symbols to learn to read?

I mean, the brain was not wired..We didn't come out of the womb fully formed to be able to read. And evolutionarily speaking, we only had language like too soon ago for the brain to have evolved to be a reading machine. It's a computing machine, but it isn't naturally computing reading, it's computing other processes that allow us to read, which I think is your point. And that this broader definition of a learning disorder needs to understand these capacities. And then we could probably get at personalized or precision oriented interventions for learning disorders, which is what I've been writing proposals for for the last five years trying to get funded. Like how do we understand what the cognitive process is that's going wrong for this child and then approach that so that they can acquire the downstream academic skill?

**Prudence Fisher:**

Yeah, I think you're absolutely right about schools, but the fact is people back off and just think about academics. But kids spend a lot of time in school. You learn social stuff. And that's why people, when you think about homeschooling kids and they don't have the social interactions, I mean, schools do a lot, but teachers are paid to teach you to read or do whatever. But in the meantime, you know, they have a lot of social emotional learning programs in schools. And I think a lot of that is probably being cut back. So we can measure if they can read something, it's just a misunderstanding of like, if you spend most of your waking life during a week in school, it's not just the 20 minute math problems. And I think there is a lot of pushback on why we have to do that when we're taught to teach them that. So you do run into that problem. It's a fairly big problem.

**Dr. Monica McHale-Small:**

So I think that learning disabilities affect more areas of your life than just reading, writing and math. But before we end, I do want to touch on the idea that, you know, these disorders, no matter whether they're learning disabilities or ADHD or NVLD, developmental visual spatial disorder, they're lifelong. So what can someone expect in adulthood and what kinds of struggles or what happens when people transition out of school and into life?

**Prudence Fisher:**

I think these disorders are lifelong. If you have a visual spatial problem, it doesn't go away. We know that people with visual spatial problems have problems driving without getting into accidents, parallel parking, stuff like that. I mean, it's a big problem. Navigating, getting lost. You know, now that people have GPSs on their phones, it's less of a problem, not having a good sense of direction, not noticing things that other people would notice, not being able to read facial expressions. You know, facial expressions go really fast. And if you have a visual spatial, you're not picking up on certain things other people are picking up on.

So, I mean, I can't say what the research would say because there isn't research on it. I mean, I did do a survey, which we're writing up now, where we had like 200 people who said they had a diagnosis of NVLD. And we asked them about different kinds of problems they had, and they continued to have those problems. Like some of the problems about following directions. A lot of the things that we listed as symptoms, they continued to have when they were adults.

We assume it will be sort of like kids with ADHD. I assume kids with ADHD have, really, a lot of ADHD and they grow up. They might not meet the diagnostic criteria anymore for DSM, but they do have some of the problems from ADHD of impulsivity, not paying attention, making quick, too quick decisions, stuff like that. That can continue to cause problems.

**Amy Margolis:**

I mean, I would add that I think I agree with you, Monica. It's a lifelong problem. A learning disorder or DVSD or autism, any of them. And people may learn strategies, work around, but that doesn't mean they don't deserve accommodations and access to treatment.

And I think one of the things I'm seeing in the literature right now that I find very worrisome, that is clearly relevant to having NVLD, is a new idea that I disagree with, that if you have anxiety, that we should not give you extra time because that just allows you to engage in avoidance. And that is an argument that some researchers at teachers college have been making that avoidance is a main feature of anxiety.

That's true. But having extra time to address your anxiety disorder during tests does not give you an anxiety disorder. Which is sort of what they're saying, that by having an accommodation of extra time, we're making your anxiety disorder worse. And I would argue, first of all, that the rules and the laws that protect the people to have accommodations are not meant to provide treatment. They are meant to level the playing field so that you can access treatment and deploy strategies you learn in treatment during testing time.

And that's why people who have anxiety need extra time, because they need to deploy their strategies. And I think that this idea is very conflated and confused, that if we give you extra time, we're allowing you to engage in your avoidance and making you sicker, that it is just so confused because the accommodations are not meant to be a treatment. And people do need these accommodations in order to access their knowledge and demonstrate their capacity, which is what the Americans with Disabilities Act entitles them to.

So I think this is very relevant for people with NVLD, DVSD. It was the second most common disorder that they have as a diagnosis. And I also think that people with anxiety and NVLD really need special treatment. If you look at the gold standard treatments for anxiety, many of them rely on visual spatial processes. Prudence and I have published a paper where we talk about the implicit reliance on visual spatial abilities that are in cognitive behavioral therapy and suggest ways to change this. And what I would love to do next is write a manual and do a clinical trial and see if this really improves treatment for people with visual spatial problems who have anxiety symptoms. And those don't go away. We know that stays with you for your life. So we really do need treatments.

**Dr. Monica McHale-Small:**

Yeah.

**Prudence Fisher:**

Yeah.

**Dr. Monica McHale-Small:**

Well, I think we could keep talking about this for a long time. Yes, we'll end here. But I think this was a really great conversation, a lot of food for thought. And we really appreciate you being here today.

**Amy Margolis:**

We appreciate being invited. Thank you.

**Lauren Clouser:**

Thank you for listening to the LDA podcast. To learn more about LDA and to get valuable resources and support, visit [LDAAmerica.org](http://LDAAmerica.org).