

“I can’t get my words out!”

How a therapist can assess and address Multiple Sclerosis related cognitive challenges.

[00:00:00] **Laura Hancock, PhD:** Honestly, the invisibility of these symptoms, I think is also one of the themes that I hear from patients the most often, and that contributes to feelings of helplessness, feelings of hopelessness, not being understood by other people and feeling dumb. I also get that message a lot from my patients. Does these cognitive challenges make them feel dumb and so therapists can absolutely be helpful there and intervening there and help people work through those emotions and those feelings and help reframe the situation and rewrite the meaning of that.

[00:00:41] **Meghan Beier, PhD (2):** Welcome to the find empathy podcast, where we discuss the interaction between health and emotions. My name is Dr. Meghan Beier, a clinical psychologist, specializing in chronic illness and disability.

[00:00:56] **Laura Hancock, PhD:** Um,

[00:00:58] **Meghan Beier, PhD (2):** up to 65% of people with multiple sclerosis experience changes in their cognition. And a third of people are already experiencing challenges at the time of their diagnosis.

From my experience, there is such a huge overlap between mood and cognition that they almost can't be untangled. We have all experienced this a bit. When we think about experiences like being in an argument, and then an hour later, when you've calmed down, you think of 47 other things you wish you had said, or having trouble thinking clearly after the death of a close loved one.

But when you're living with multiple sclerosis and are more prone to both mood and cognitive symptoms, the overlap is so much more important to explore. I often hear from people that cognitive lapses create anxiety, like when somebody is having trouble getting their words out. So they stop accepting invitations to lunch with their friends, or maybe it triggers grief.

They've always been at the top of their class and learning came easily and now they're struggling to learn new things. So they feel they're losing part of themselves for this episode on cognition, I'm going to do something a little bit different instead of one interview with a person living with MS. I went back

through all the interviews we've done so far this season, and found quotes from our guests, with MS, about cognition, many individuals on the podcast actively called out cognitive challenges.

And one example is Kathy Chester from episode eight,

[00:02:32] **Kathy Chester:** looking back, well, I'll say this. I feel that. Pre-diagnosis I feel like I can see now MS. Symptoms and signs all the way back to high school. Actually I can see cognitive issues where they thought it was add and things like that. And I thought, I don't think I just got an onset of ADD in my junior year.

That doesn't really make sense, things like that. And even some just like just cognitive things that I would go to take a test. And, and I was in subjects that I just, I loved and I take a test and it just, it wasn't there. I was, I had studied, studied, and I knew things. I was helping the, my other friends.

Like, no, you've got this. And then all of a sudden I would take the test and it'd be like searching for these answers. And, um, so then fast forward and you're doing like college stuff, and then you're doing like, Getting certified. And then I'm doing stuff to, to become a trainer and I'm like studying and studying.

And I'm just like, what is happening with what is going on with me? And so those were like some of my first symptoms before diagnosis that I just didn't understand, you know, why I was having so much trouble with small things. Like, you know, I'm fast forwarding now to when my kids were little. So I still wasn't diagnosed my older ones.

I was helping with their homework. And it was like, all of a sudden addition was gone. I went to do like a simple multiplication with my oldest and it was like not there. And so, you know, everyone around you is trying, cause no one knows you can't see MS so, and for me, for sure, it wasn't visible and they're all like, you're just tired. You've got a lot going on and I'm like, okay, sounds good.

[00:04:20] **Meghan Beier, PhD (2):** If they didn't describe cognitive challenges openly. Many made offhand remarks about feeling cognitively foggy or having trouble finding a word. One example comes from Tyler Campbell, who we interviewed for episode three.

[00:04:37] **Tyler Campbell:** But the one thing that I say is make it a forefront conversation for males and females, because we're, we have those conversations about optic neuritis possibilities.

We have those brain fog type of conversations. We have the fatigue you know, a lot of the big things, the big agendas, the, the drop foot, the paralysis, the equilibrium, the, the, the [00:05:00] pain, um, the tremors. We have those types of things. This thing is just as much important I feel as all of the others. So, so go ahead and mention that

[00:05:10] **Meghan Beier, PhD (2):** with more and more resources online and better medical training, many individuals with MS are aware that cognitive challenges are common. However, that is not always the case. In the past, MS was considered a disease of physical disability, things like chronic pain and cognitive challenges were not thought to be part of the condition.

So it's not uncommon to come across people like Ashley pike from episode one who were initially unaware that MS can also result in cognitive challenges and changes.

[00:05:45] **Ashley Pike:** You know, I knew that, you know, I could be wheelchair bound or that there may be a day. I won't be able to walk unaided without some like a cane or, you know, the, uh, the walking crutches or something like that.

You know, I knew that I had some heat sensitivities or that, you know, I may have days where I don't feel well, you know, so I knew a lot about that. And, you know, I knew, um, I also could wake up and be blind one day from, you know, optical, neuritis, um, So there was things that I knew about that. Um, I probably didn't say that.

Right, but you get what I'm saying. Um, but, uh, getting into, you know, passing the initial grad school and getting into what I'm studying now, and also from the can-do MS. That I was part of and other groups, you know, that I've learned from all these professionals is, I didn't know that there was more than just physical disability with MS.

And that has been completely eyeopening for me, opened up a whole new horizon of research and also living with my disease. You know, you get into the cognition side and, you know, I didn't know that outside of being physical, physically disabled, that I could be cognitive cognitively disabled. You know, that was something I didn't know at all.

And that has changed the game for me for so long. But you only think of MS being a physical disability disease. And, you know, when I got into the research,

I learned that 60%, at least of people that stop working and are disabled, aren't because of physical it's because can't mentally do their job anymore.

And that was like a jaw dropper for me, you know? And this is something that is affecting a lot of people that aren't in wheelchairs, aren't using crutches can go run marathons, can go play sports. And that's something that definitely needs an attention. That's that big red flag in my head that, Hey, we're, we're missing these group of people.

I can say that. I feel like I fit in that group. I don't have any physical limitations, but there are some times where I just, you know, the brain fog is it's real. There's some things that you don't think about and you look back and you're like, man, those are issues. And those are specific. And we can do something about that.

I didn't know. I thought this is it. I'm just done. There's things that can be done. And there are things that we need to look at so that we can do more about it.

[00:08:18] **Meghan Beier, PhD (2):** As Ashley mentioned in the quote we just heard and has also been highlighted in the past couple episodes on employment, many people with MS lose or leave their jobs due to cognitive challenges.

It takes creativity, planning, and often external supports to overcome these challenges and to keep people working from our episode on employment, Kathy Reagan, young shared that she lost her job one day when she had a panicked realization that she couldn't tell the break from the gas pedal.

[00:08:51] **Kathy Reagan Young:** And my doctor, my neurologist at the time said to me, it's good that you are a stay at home mom because stress stress is very bad for you. So don't ever for people with MS. Don't go back to work. So I knew from that point on that. He had never stayed home with kids, obviously, because that is the most stressful job I've ever had. And so when my kids, when my youngest was in school full time, which was, let's see, uh, two years later, then I went back to work and I went full-time and, and loved it for as long as I could love it.

But my MS. Put the brakes on the stress did get to be too much. I hate that he was right. But anyway, that's a whole nother story about him being right or not, but it was a lot of stress and it really started affecting me. I didn't, um, one day I couldn't differentiate between the brake and the gas pedal, and I knew that that was.

[00:09:49] **Meghan Beier, PhD (2):** As Kathy noted, this may have been an exacerbation. There is evidence in multiple sclerosis for cognitive exacerbations. In one small study, it was [00:10:00] found that individuals with MS had increased difficulty with attention and memory during an acute relapse with improvement. When gadolinium enhanced lesion load had decreased, or essentially when they were recovering from the acute relapse, their cognition got better.

These are important pieces to keep in mind when our patients are experiencing acute changes in thinking, helping them to get assessed by the neurology team and to not make any fast decisions. During periods of stability, helping patients understand the functional impact of fatigue can also help you and them develop work arounds as shared here again by Kathy Reagan.

[00:10:43] **Kathy Reagan Young:** So I am not a digital native, and tech is really tough for me, period. Even if I didn't have lesions on my brain, this is just not something that comes naturally to me. So that's challenging. And then you add cog, fog and fatigue. Ah, that was the number one biggest issue for me and CA and still continues to be an issue now and how I've learned to sort of mitigate that is when I learn something new.

So let's just call it doing, um, you know, a podcast interview. Yeah. There is some tech involved there. And what I did was when I was clear, I wrote down step-by-step exactly what I do exactly where I save files, you know, exactly what button to push, literally everything. And if I'm able to. Record myself doing something on line on the computer.

I do that. And I have one place where I put all of those recordings because on those really cog foggy days, I can sit down at my computer and think, what is this box on my desk? I don't know what to do with this. I see I'm supposed to be recording something. I don't know how to, I just can't even think of how to start, but I know where that is.

And I go and look, and I look it up and I have it labeled very clearly, you know, like how to record a podcast. And it is literally that clear and, and how to enter in accounts receivable and all those sorts of things that can be so overwhelming if I am not clear-minded and I need to be right at that moment, I have put together my SOPs you know, for every single step that I do.

And so anything new, I'm doing another step-by-step.

[00:12:37] **Meghan Beier, PhD (2):** We also know that cognitive challenges do not stand in isolation. They impact work as we've already heard. And they also impact family systems. There's a role for couples and family therapists to adjust the changes in family systems. And we can hear more about that here from Dr. Roz Kalb from episode four.

[00:13:00] **Roz Kalb, PhD:** So let's say one person in the couple was the problems. One is the more organized manager of things and the other person executed tasks? Well, maybe it was fabulous with the kids and planned and suddenly that organizer has MS cognitive issues and the skills that they brought are compromised.

And then you have a support partner who is really out of his or her death. I didn't have to keep the bills organized the children's activities and the household and the taxes. And because that, wasn't what I was so good at my partner used to do those, they each have to learn how those couples need a lot of help.

[00:14:06] **Meghan Beier, PhD (2):** We could probably go further finding even more quotes, but I just wanted to share a few real life examples about the interplay and impact of cognitive challenges.

Our following experts share even more first, we're going to hear from Dr. Laura Hancock a neuropsychologist that specializes in multiple sclerosis.

She describes the common challenges, individuals with MS. Experience and a really unique angle that she brings to this interview is Dr. Hancock's former career. She started her vocational life as a therapist, then later returned to school to become a neuropsychologist. So she shares some unique insights into how these challenges might show up in the therapy room and how a mental health provider can support their patient or modify therapy.

If these challenges are present, we will end with Dr. Rashika Prakash, [00:15:00] a clinical psychologist and neuroscience researcher that specializes in using mental health interventions, like mindfulness to improve cognitive and emotional health in individuals with multiple sclerosis. Her research is fascinating and she also shares very practical suggestions and resources for clinical application let's get started.

And I hope you enjoy these interviews.

Dr. Laura Hancock

[00:15:32] **Meghan Beier, PhD (2):** Okay. So today we have Dr. Laura Hancock and I'm so excited to have you on the show today to talk about cognition.

[00:15:39] **Laura Hancock, PhD:** Absolutely. Thanks so much for inviting me to be here. I'm really excited to be here too, and really excited that you're doing this podcast. I think it's a great learning opportunity.

[00:15:49] **Meghan Beier, PhD (2):** Can you share your experience and background, including what brought you to working with people that are diagnosed with MS?

[00:15:56] **Laura Hancock, PhD:** So I've been working with people who have MS since 2008. When I went back to graduate school to get my PhD in my research lab in graduate school, I was, my mentor was doing projects with people who had multiple sclerosis and we collaborated with a local MS. Expert neurologist. And so throughout my time in that program, we did several projects together.

And part of my job in that lab was to go to clinic and talk to people who have MS and talk to them about our research projects, recruit them for studies, if they were interested and, you know, obviously work with them doing the studies. And what I learned through that process, you know, the science of what we were doing was interesting and important, but better than that, I just really fell in love with the people.

Um, the people who have MS. Just really struck me in terms of their commitment to other people who have MS their willingness to participate in something, even if they didn't necessarily perceive that they specifically would benefit from the results of the study. They told me they wanted to do it, to help other people with MS and to help other people live better lives.

And I was just in total. Um, of, of them and the, um, selflessness, um, and also the struggles that they went through. And so I decided then that that's what I was going to do once I was done with training. Um, but then, you know, after I finished all of my training and I came to the university of Wisconsin and set up my MS specific clinics and practice, I learned that my uncle had primary progressive MS.

And so it really just drove it home even more. How important this work is that you're doing that I'm doing it. We're all doing to help people MS live their best

lives and to try to help them be hindered as little as possible by the challenges that MS.

[00:17:58] **Meghan Beier, PhD (2):** Absolutely. I had many of the same reactions when I first worked with people living with MS and in the MS clinic, in my doctoral program.

And, uh, that was one of the reason, the people living with it is what drew me into doing this work. Absolutely. You know, and as you know, uh, this podcast is really geared towards mental health providers in the community who may not have as much experience or expertise in MS. And one of the things that many people come in with is cognitive challenges.

So can you share how common are cognitive challenges with multiple sclerosis?

[00:18:35] **Laura Hancock, PhD:** So in research studies it varies a little bit from study to study, but in general, we think it's around 45 to 70% of people living within us are going to struggle with cognitive challenges. But beyond that, the severity of the cognitive challenges also.

Varies widely. So again, we're going to have a group of people who are unaffected for their whole lives, which is great, but among the people who are affected there, there's going to be a wide spectrum. So there are going to be people who have maybe just a few pretty mild issues that can be worked around, can be rehabilitated, can be strengthened.

And then there are going to be people who have really significant or profound changes in cognition that that drastically interfere with the quality of their lives or interfere with their ability to provide care for themselves and everything in between. So, one thing I like to tell my trainees when I'm teaching them about MS, is that once you've met one person with MS you've met one person within us and, and you can't necessarily make predictions on your next person with MS.

That you need based on that one, because the challenges can vary

so important to remember. And what is the difference in prevalence between the different types of [00:20:00] MS?

So the prevalence is much higher in progressive forms of MS. Um, and again, the research varies here, but in general, prevalence is higher with people who have secondary, progressive or primary progressive.

MS. And I know we're kind of getting away from those old categories in clinical work, but we're still using them a lot in research. Um, and that's often how we categorize things. So, but it, you know, it's, it's really a very wide spectrum and I certainly anecdotally have examples of people with primary progressive MS.

Who might have significant physical disability, but no cognitive symptoms. And then I've got people with relapsing forms of MS who, um, it's the opposite, but yes, in general, There aren't very many, uh, generalizations, I guess we can make in MS, because of this variability. Um, but in general, the cognitive issues that people with MS.

Experience can build over the disease course. So the longer someone has had disease, the more opportunities there have been for these kind of symptoms to start and to accumulate.

[00:21:13] **Meghan Beier, PhD (2):** Absolutely. Yeah, I think you're, you're hitting a really important point, right? That there is so much variability. And so we don't want to make assumptions about each person that walks into our office because it may be very different depending on the person who comes in, you know, and you mentioned that, you know, there's not a lot of generalities, but I think that, uh, or generalizations that we can make, but a lot of the things that I hear that people are afraid of are.

The extreme ends. So if they have cognitive challenges, they're really thinking about dementia. So can you share a little bit about what are the common cognitive challenges that people with MS. Experience on both kind of the mild end and on the extreme end?

[00:21:59] **Laura Hancock, PhD:** Sure. So, um, you're absolutely right. Those generalizations are hard for us to make, but when we look across studies, we do see some themes that are coming up.

And I also see those themes kind of playing out in my own clinics. And I'm sure you've seen them in your own clinics as well. Um, I would say what, what people tell me what they're experiencing in the way they describe it is forgetfulness concentration. And they use this term brain fog, which is a little nebulous, but generally the way people describe that to me is that they sometimes feel as though their head is sort of in the clouds and they can't really.

Um, ground themselves in those moments when they're experiencing this fog, it's like there there's a thick fog in their brain, but they can't clear away, um, in order to organize their thoughts, um, more efficiently, um, losing train of

thought while speaking, while in a conversation for getting words and expressing themselves in conversations.

And I would say that these kinds of symptoms can happen to a mild degree or, or to a severe degree. And processing speed is actually probably the most common issue people with MS. Face in terms of cognitive symptoms. So processing speed is like the brain's reaction time. It's, um, how quickly the brain can communicate with, from one part to another, which is the, the root of all cognitive processes and the root of all communication in the brain.

And it might sound, you know, if you're not someone who's very familiar with cognition, it might sound like processing speed is sort of innocuous. Like, well, if it's a little bit slower, that's okay. Right. You can just kind of work around that. Um, but it's actually not, it's, it's a significant challenge for people living with MS.

Um, processing speed is the foundation of most of our cognitive processes. So for instance, if you're, you know, if your patient is having a conversation with their significant other or with their boss and their processing speed is slow, they might not actually be able to encode everything that was said in that conversation.

And so later they feel forgetful. Because they don't remember everything that happened in that conversation, but that's not necessarily a problem in, in the network of systems that help us remember information, learning to remember information it's that that information was never available to become encoded in memory because the brain was still processing, trying to take it all in.

So this foundation of processing speed is really important in terms of real, everyday symptoms that people experience in real everyday problems that the [00:25:00] clients, you know, the people with MS. Who you're trying to help, might be dealing with.

[00:25:05] **Meghan Beier, PhD (2):** Yeah. And, you know, I often hear from a work standpoint, people will say, What used to take me an eight hour day is now taking me 10, 12 plus hours.

And so that processing speed is, is also causing people to have to put so much more time and energy into every activity, which is also exhausting, exhausting. And then we have that interaction with fatigue, right? So it, it becomes very cyclical and very impactful in people's lives.

[00:25:36] **Laura Hancock, PhD:** Yeah, I could totally agree.

I can't tell you how many patients I have who are basically tell me that they're going to work. They're staying longer than their peers or, you know, other members of their team. And that's, if they have a job that allows them to do that, you know, not every person has a job where, well, if it takes you 10 hours instead of eight, oh, well, So, you know, these patients will tell me that, you know, they go to work and, uh, they work really hard.

They're really tired by the end of the day. And they basically come home and get right in bed and get up the next day and kind of do it all over again. They're not able to engage in the rest of their lives. They're not able to go to the soccer games or go to the, you know, the, the plays that their kids are putting on at school, or do any other sorts of activities that they want to do for a fulfilling life.

[00:26:35] **Meghan Beier, PhD (2):** Absolutely. Are there any other ways that cognitive challenges might show up in everyday life?

[00:26:43] **Laura Hancock, PhD:** What I hear from my patients most often, is they're a little bit different in different contexts? So work and home life might be a little bit different or spending time with friends might be different. So at work I hear things.

I'm having trouble remembering what was said or decided in a meeting I'm having trouble communicating quickly in conversations with my peers or my supervisor. I'm having trouble learning something new. We have this new software program, we have this new process that I'm supposed to do. And other people seem to be getting it faster than I do substituting words or taking a long time to find the right word um at home.

It's similar, but a little bit different. So things like remembering what your spouse said, the plan was for dinner, or who's going to get the kids. Who's going to drop them off vers, versus pick them up. Um, feeling like their head is in a cloud, which makes it hard to focus to pay the bills or remember what it was that you had intended to do that night.

And so these are the symptoms that people describe as making them feel dumb, um, which contributes to sadness, loneliness, anxiety, helplessness, you name it. So these cognitive symptoms are not necessarily impacting intellect. They're still the bright, smart person they always were, but they do impact these day-to-day skills, which makes people feel dumb and makes people feel like they're in intellect.

And part of their essence has changed because of these cognitive issues. And these issues are also invisible. As we mentioned, they get comments from other people. I can't tell you how many of my patients, I'm sure your patients have said that too. That, well, you don't look sick. Yeah, what's wrong. Why do you, why do you need to be, have extra days off of work?

Why, why do you get FMLA? You don't look sick, or why is the boss giving you fewer things to do? And that's a real, everyday life struggle that I think therapists can be really mindful about sort of checking in with their patients who have MS or these kinds of things happening to them, because then you can help them walk through that and get to the other side.

[00:29:11] **Meghan Beier, PhD (2):** I'm so glad that you also highlighted sort of how these things are interpreted by other people. You know, I've even heard in the home setting that people, their spouses or their partners or their kids, they don't quite get it and it's interpreted as something else. So if somebody doesn't respond right away, it's interpreted as them not listening or not caring, or if they are forgetting something, their spouse might interpret it as like they didn't listen to them or they didn't care about what they had to say.

Or even sometimes I've heard family members who take some small cognitive change and they blow it up. You know, even if the person with MS is not over interpreting that, they start to think that this is more serious than the person themselves. And I think all of [00:30:00] those interactions are so important and definitely an avenue that a therapist could intervene with.

[00:30:06] **Laura Hancock, PhD:** Absolutely. Yeah. Uh, becomes this communication issue and this miscommunication issue at home. And, um, you know, I've also had patients who, you know, they are doing a great job of adapting to the changes that they've experienced and they're implementing some of these strategies and even the, that could be misinterpreted by a significant other or coworker or, or the kids in the family.

Um, and so, yeah, I think this is a really important part of this process for us to understand, right?

Yeah. It's kind of, you know, role shifts and communication, so important. So really, really great examples and definitely avenues for intervening. Wanted to kind of also touch on how do you think some of these cognitive challenges might show up in a therapy room?

So if somebody is doing psychotherapy with somebody that has these cognitive challenges, how might that look and maybe what are some of the adaptations that the therapist could make that would help, uh, mitigate some of those problems? Absolutely. I think these symptoms are likely to create challenges in the therapy room.

Um, so as a therapist, you might notice that your client is having difficulty needing concepts explained or repeated multiple times, having trouble completing homework, um, difficulty connecting or linking concepts like cause and effect, sorts of things in their everyday lives problems. We're calling discussions or discoveries from previous sessions.

Keeping that momentum going from session to session and building on what the work that you've been doing. Um, difficulty participating in shared problem solving and trouble staying organized, and any one of those could, could present really big challenges in, in the context of therapy. And so, you know, as a therapist, if you notice these things happening with your client, uh, one thing to do would be to bring it into the room and talk about what they're struggling with.

See if they can identify where they're having the greatest difficulty and then trying to adapt as much as you can. Could you provide a written brief summary of the important things that happened in a session that they could take home, read through, read through multiple times, take notes on it, if they want to, um, could you provide simplified handouts?

So things that maybe aren't as dense, um, things that are more straightforward, could you possibly get them, uh, hooked up with a neuropsychologist, a rehabilitation psychologist, some other professional who could help identify exactly where these weaknesses lie in order to number one intervene and, uh, do some rehabilitation, but also number two, help inform you in terms of what the types of things that you can do in session, that would be helpful.

[00:33:30] **Meghan Beier, PhD (2):** Great. Those are all really good suggestions. And I do that often where I will take notes throughout the session, and then I will give those notes to the person that I'm working with so that they have a record of what we talked about and what are the goals, um, that, that we establish together. So that was such a good suggestion.

I was recently asked about. In MS. And, uh, one of the thoughts that I had about that was that there's probably a cognitive component. So when people are having that trouble with getting up and going, or they're really not, um,

engaging in activities as much, uh, some people might see that as a mood problem and might go see a therapist.

What do you think about there being a cognitive component to that?

[00:34:21] **Laura Hancock, PhD:** I think this is a really interesting question. So I will say I am not up to date on this research, so I can't comment specifically on what the research shows, but I think just it's done my clinical experience and based on my work with other individuals too, you know, I focus my practice on people with MS, but I also see other adults as well.

I do think that there is a cognitive component to the. Behavioral symptom of apathy that you or I, or other therapists would, would see in the room.

[00:35:00] And I think I would suspect again, I'm completely speculating here. Um, I would suspect that it has a lot to do with, um, the systems that help with initiation, um, the systems that help with even some, to some degree, you know, task management, that sort of thing.

Um, and for many patients it may be a combination of mood and, uh, sort of cognitive, um, more, more purely cognitive sorts of symptoms that are resulting in this behavior that we see in clinic.

[00:35:38] **Meghan Beier, PhD (2):** Yeah. Thank you. That's kind of what I was thinking as well, but if I find any good research on that topic, I'll put it in the show notes so people can understand that a little bit better.

[00:35:48] **Laura Hancock, PhD:** It makes total sense. You know, cause the, the I'm just, um, this is way too general, but like in, within the frontal lobes, there's a network. And that in part of the many things that it does, it regulates like the raw emotion coming from the midbrain and the amygdala and these other structures. And so I would imagine if, if there's damage to that network, that it could create what we sort of see as like neuropsychiatric symptoms.

Um, but also problems with initiation and apathy, you know, and apathy is, is in Alzheimer's disease. That's one of the, the symptoms that some, some people there's some research to support this. That's sort of like part of the prodrome. It might be one of the things that sort of shows up first before maybe there's even measurable, uh, you know, issues with memory.

And like a classic Alzheimer's disease. Well, that, I mean, I don't really like the word organic when we're talking about anything that happens in, you know, like some people say like, depression is not organic, it's organic, it's coming from

neurotransmitter imbalance. Like how much organic, uh, more organic can you get, but you know, it has to be coming from, from that process too.

Like, there's gotta be some kind of like loosening of connections or, um, you know, lack of communication with some of that network. But I just, I can't talk about it more specifically. Yeah,

[00:37:21] **Meghan Beier, PhD (2):** no problem. Okay. Thank you. Thank you for going off on that tangent with me,

[00:37:26] **Ruchika Prakash, PhD:** I love a tangent.

[00:37:28] **Meghan Beier, PhD (2):** So we talked about kind of how the cognitive symptoms might show up and what happens in everyday life.

But why do people with MS. Experience changes in their cognition?

[00:37:40] **Laura Hancock, PhD:** The disease itself causes. To simplify things, damage in the brain. So it causes focal lesions, which are marked by inflammation and demyelination, which destroys axons, uh, eventually and eventually results in loss of neurons. So this damage that's created by the disease increases over time and that results in atrophy of the brain or loss of tissue in the brain and brain gets smaller.

And it can't do as many things as it could when it was bigger. Um, so in more practical terms, basically that means that there are areas of damage in the brain that prevent it from going about its normal activities. Its normal means of communication, normal processes. Um, before this damage becomes very widespread though, is where our opportunity to intervene lies.

Um, I know Dr. Prakash will be explaining more about how the brain can adapt. But I think it bears mentioning here that just because you have a client who's living with MS and might be experiencing some cognitive change does not mean that we can't do something about it does not mean that they are stuck in that place.

And if we intervene, then we can have a significant impact in terms of the quality of that person's life.

[00:39:03] **Meghan Beier, PhD (2):** Absolutely. A hundred percent agree. If the therapist is working with somebody who they suspect is having cognitive challenges, what's the next steps. What kind of assessments are recommended?

[00:39:18] **Laura Hancock, PhD:** That's a great question.

Um, I think this is something that we all need to have on our radar as therapists. Um, no matter which type of patient you're working with, um, in an ideal world, if I could write the rules of the world, every person with Ms would well, there would be no. Ms. Aside from that every person with Ms would get an evaluation as close to their diagnosis as possible, so that we can establish a good baseline, understand that there are any weaknesses right now, and figure out ways that we can intervene.

Um, the that's doesn't always happen. Um, and, [00:40:00] uh, you know, so if that does happen, though, for someone with MS, um, then you could do regular screening, um, ideally, you know, maybe that would be the primary care provider or the neurologist just sort of checking in periodically to see, all right, when do we need to have another evaluation to sort of rewrite this plan for intervention and rewrite this plan for keeping this person as healthy as possible and maintaining cognitive skills?

Um, so screening involves the use of a brief tool that can be used by lots of different types of professionals, as long as they get some training in how to do it and some education and how to do it. Um, so the goal of screening would be to identify individuals who may be experiencing problems in order to get them referred to a specialist who can do a more in-depth evaluation.

Um, and that can be done by several different types of professionals, neuropsychologists, rehabilitation, psychologists, speech, language pathologists, and occupational therapists. So if you think that your patient is having some of these challenges and you know, they're not hooked up with this kind of network of providers, you could perhaps communicate with their primary care provider to make this recommendation or help them find someone in your community that they could go see directly.

[00:41:24] **Meghan Beier, PhD (2):** You know, and you make a really good point. I agree with you that it would be great if every person as close to their diagnosis could get baseline cognitive evaluation. Unfortunately, that doesn't happen for most people. Um, I'm thinking back to a prior episode where Dr. Sullivan from the Mellon center, um, said that they do four session intervention for mood for every new patient that's diagnosed and it gives them, it sort of sets them up for success.

It gives them some initial plans for how to manage their mood over the course of this new diagnosis. And I almost think that something similar for cognition

would be fantastic. Um, so, uh, you know, one thing that I've heard from many patients and you probably have as well, is that if people knew how cognition might impact their lives or their work, then they could have.

Better able to prepare. So I think sometimes a therapist, this might be a really good option to intervene as well. If you're working on other things, goal setting, problem solving, this might be another thing to wrap in. You know, how, if this shows up for you, even if you're not experiencing it now, how might you go about managing it or who who's on your medical team that you might go see?

Uh, so, so having a plan in mind for if and when it shows up.

[00:42:45] **Laura Hancock, PhD:** Absolutely. Absolutely. And then obviously providing support to the person as they're going through that. Um, I love that idea of having four sessions with a mental health professional, right after diagnosis. I imagine that it's done, it's doing so much good for those people.

Um, and helping them even just to process what just happened. I just got this diagnosis. And what does that mean? I think that's wonderful. You know, actually I was in an international symposium. Last year. And I believe the woman was from Austria. And she said, when someone gets diagnosed here, they immediately get referrals to a cognitive rehabilitation specialist to a mental health provider, to PT, OT.

And I think another discipline that I can't recall off the top of my head. And she said, it happens for every single person. They can go as much as they want, because of course their medical system is very, very different than here in the United States. And I just can't imagine the quality of those lives compared to the quality of some of our patients who don't have those benefits and advantages.

So I guess I'm always sort of thinking, all right, what are the ways that we can try to make, make this happen for our people here, given the limitations that we have, you know, can we try to offer these interventions?

[00:44:15] **Meghan Beier, PhD (2):** Right. Yeah. I mean, it just, something like that in the beginning might set somebody on a totally different trajectory or just be able to recognize these things faster so they can get treatment earlier.

And it doesn't wait until the last minute. So, yeah.

[00:44:30] **Laura Hancock, PhD:** Yeah. Which is why, what you're doing is so important because as a therapist, I was a master's level therapist before I went

back to get my PhD and this kind of resource would have been so helpful to me to better understand the people I was working with and help be that person who gets them hooked up with the things they needed to help change their trajectory.

[00:44:54] **Meghan Beier, PhD (2):** Well, I hope so. So thank you for saying that. So we are going to dig into with [00:45:00] Dr. Prakash, the interventions for cognitive challenges. You know, a lot of what she researches is really focused on mindfulness and things like that. So just more generally, can you share your thoughts about cognitive interventions?

What are strategies or interventions that people with MS. Can use to improve some of these cognitive symptoms?

[00:45:22] **Laura Hancock, PhD:** It's a great question. I think this is the most important part of the getting together with someone who can evaluate cognition, um, is what do we do about it? And there's a lot of great clinical interventions.

There's a lot of great research in this area too. So one, there's several different ways that an individual can engage in this type of process. Um, so one way would be to do some self-directed use of strategies and interventions. This may not be the right choice for every person. Um, but people with MS can implement strategies, um, recommended by their providers.

Such as keeping frequently used items together and keep them in their in a regular spot in the home, like always keeping keys, wallet, and phone in the same place, using a combination of a pillbox organizer and automated reminders for taking doses of medications. And in this population of people, some people are taking injectable medications.

And so I always recommend putting like a dried bean or something into the pill box organizer as a placeholder for the days when you need to take your injectable, because it needs to be stored in the fridge or someplace else. Oh, great idea. Writing things down, but you have to keep those notes organized.

Um, and sometimes when organizational skills are not a person's strong point or that's one of their weaknesses, then notes can kind of get unwieldy. And so encouraging people to maybe keep all of the notes in a notebook, um, or keep all of the notes on a whiteboard at home. That's in the kitchen, um, reviewing notes at the end of the day, rewriting notes, we know that repeating new information helps us learn that information and put it into the memory store.

So that is available later. So activities like rewriting notes and reviewing them at the end of the day provides that rehearsal. Naturally. I also like to call it the most socially acceptable cognitive strategy because everyone writes things down. You know, you don't stick out in a meeting if you're writing things down at work because many responsible people are writing things down.

Allowing or allotting more time if possible, to complete tasks. So this is one of the ways that we could combat problems with processing speed. Uh because we don't necessarily have any other, we don't have a pill that can help us improve processing speed. Um, so trying to rearrange one's environment to help set you up for that success if possible.

But again, I noticed as well as you do not, everyone has a job that allows this. Not everyone has a home life that allows this. Not every task will allow you to sort of take as much time as you need, but if you can take that time, that will help as well. And then making a to do list for tasks you want to accomplish on a given day, but be willing to carry items over onto the next day to do list if you need to and learning how to give yourself grace to make that shift, that maybe I'm not going to accomplish all of these things today. And that's okay.

[00:48:46] **Meghan Beier, PhD (2):** I think that last sentence is one of the biggest things that therapists can do to help with some of these cognitive challenges is that helping people learn to give themselves grace, because there's so many emotions that come up for people when they're noticing these cognitive changes and it can go into areas of grief.

It can go into feeling panicked when that word won't come out, or I've lost my keys again, conflict with family who doesn't understand these cognitive challenges. So I think that emotional side is just as important. And I'm glad you highlighted that as, as all of those kind of practical suggestions as well.

[00:49:28] **Laura Hancock, PhD:** Honestly, the invisibility of these symptoms, I think is also one of the themes that I hear from patients the most often is, and that contributes to feelings of helplessness, feelings of hopelessness. Um, not being understood by other people and feeling dumb. I also get that message a lot from my patients is these cognitive challenges make them feel dumb and so therapists can absolutely be helpful there and intervening there and [00:50:00] help people work through those emotions and those feelings and help reframe the situation and rewrite the meaning of that.

[00:50:08] **Meghan Beier, PhD (2):** Right? Yeah,

[00:50:09] **Laura Hancock, PhD:** absolutely. So beyond self-directed intervention, there's also tons of support in the literature and also just real life for the role of rehabilitation professionals in terms of, um, intervening to help with these cognitive issues.

Um, we touched on this a little bit before, but B there are lots of different professions that would be qualified to do this. So neuropsychologists rehabilitation, psychologists, rehabilitation, counselors, vocational rehabilitation is a term you might hear in your practice, speech, language pathologists, who are also called speech therapists and occupational therapists.

And to me, the advantage of working with a rehabilitation professional is you get the benefit of not only their training, but also their education and their, um, experience. Um, so for instance, at UW, we are blessed to have rehabilitation professionals who work specifically with our neurology patients, including people with MS.

And so they bring a lot of experience to bear in each interaction they have with someone. Um, psychotherapists obviously can be helpful here too, because even if you are not an expert in cognition, you are an expert in how to help people accomplish new things and how to help people accomplish the goals that they want to reach for themselves.

And so you bring that expertise into the room. You could use elements of cognitive behavioral therapy to help you do that. Acceptance and commitment therapy. To help you do that. Motivational interviewing behavioral activation to help support these efforts that the person is trying to do. And then I think there is a role here for computerized cognitive training.

It's not. Necessarily the most popular option. It's not the best option. The best option would be to work one-on-one with someone who has this experience and expertise. So I don't think it should take the place of that type of intervention or that type of resource. But I think there is some promise here for meeting an unmet need, um, which would be like people with significant physical disability who have a hard time getting to a doctor's office, uh, people who can't drive anymore and transportation challenges abound, um, especially during the pandemic individuals who live in rural areas and can't access that type of professional without driving for four hours one way.

Um, so, you know, I conducted a randomized controlled trial of computerized cognitive training for people with MS. Several years ago. The literature supporting this type of intervention has grown a lot since then. Um, especially

over the last decade on the whole it's mixed. So there are studies that say, this really doesn't do anything.

Uh, but there are studies that say that it does help. Um, so I think we have a lot to learn in terms of, does it help certain people best? How, how much of this type of thing do we need in order to see it help people. But if, if you don't have any other options, uh, for a person to be able to use, perhaps that could be something, um, that could be useful.

Um, and then addressing additional factors that influence optimal cognition is something that I think therapists are positioned to do, and definitely in, in their wheel house in terms of expertise. Um, so we're working to improve, improve sleep habits. Sleep quantity. You know, a lot of us live this life, especially in America where we're just not going to bed when we should, you know, maybe we can fall asleep okay. And stay asleep. Okay. But we're, we're not allowing enough time for sleep. So working with someone to help improve their sleep.

Working with the work that you're doing to help improve their depression and anxiety is having an effect on their cognitive skills. Um, it's indirect, but it's really important.

And then there's also good literature supporting the positive impact that physical activity has not only on mood, but also on cognition and fatigue. So it's kind of a, win-win win for people who have MS to engage in that type of activity.

[00:54:38] **Meghan Beier, PhD (2):** That's awesome. There's so many good suggestions there and, you know, thank you for sharing that very comprehensive picture of all the different ways that cognition can be.

We can intervene on cognition. I know people are going to ask what the program is that you did your randomized control trial on. So would you mind sharing that?

[00:54:58] **Laura Hancock, PhD:** I don't mind sharing. [00:55:00] So it's, the product has changed names since I used it, but now it's called brain HQ like headquarters. So if you Google brain HQ, you'll find it.

The company is called posit science. Um, so the company that created this product, it's a really great product. It has good science behind it. The company was started by neuroscientists and they worked with neuropsychologists. Um, and way back when it was first beginning, including Glenn Smith, who's now at the university of Florida.

You know, if I'm remembering the history of this company correctly, the original goal was to develop a product that could help prolong brain health in older age. And help potentially stave off cognitive decline. So that was the original intent. They worked with video game developers to make the product fun.

It's not maybe as fun as candy crush, I will admit,

but it is fun and engaging. You are in points, there's music, there's good graphics. Um, but the games are challenging and the games are, um, rooted in science and rooted in, you know, neuroscience, literature. Um, and so, you know, it's the, one that I'm most familiar with. It's the one that I have suggest to my patients who I think might benefit from it.

If. If they can't work with a rehabilitation professional, or if they're reluctant to do, um, or if they're still working and they're really busy, this kind of thing could take place at eight o'clock at night. You know, when you have time to do it, it wouldn't necessarily have to be during normal business hours.

So I think it could potentially meet some unmet needs. Although I do want to acknowledge that we have a long way to go in terms of really understanding how this type of intervention needs to be delivered for it to be successful for most people.

[00:57:08] **Meghan Beier, PhD (2):** Right. Well, I'm glad that you said brain HQ. Cause that's the one that I also recommend to people.

So we're in alignment there. Um, it's like the one that I recommend because of all of the reasons that you shared, it didn't start as a product to sell to people. It started as something that they were developing to help people. And then it transitioned into a product that people could use commercially.

So to me that felt more comfortable and that there was a lot more data behind it before it went commercial. So thank you for also sharing that history because it's, it's an important thing to consider when you're recommending these kinds of computerized interventions.

Well, thank you so much for spending so much time sharing, you know, about cognitive symptoms and people with MS.

And also how a community therapist might be able to intervene and help with these symptoms. If people want to follow your research or your work, where can they find out about your work online?

[00:58:08] **Laura Hancock, PhD:** You can find me on twitter at Laura Hancock PhD. I'm also on Instagram at the same handle at Laura Hancock PhD.

Um, you can look up my webpage at the university of Wisconsin, although it's not updated as frequently as those other social media sites are.

[00:58:27] **Meghan Beier, PhD (2):** Great. Well, thank you again.

[00:58:29] **Laura Hancock, PhD:** You're welcome. It was a real pleasure.

Dr. Ruchika Prakash

[00:58:32] **Meghan Beier, PhD (2):** I hope you enjoyed that interview with Dr. Laura Hancock. We are now switching to an interview with Dr. Rashika. She's a licensed clinical psychologist who has been doing research on lifestyle interventions in people with MS for the last 19 years, she is the advisor for the clinical neuroscience lab, where she works with PhD students, undergraduate students and postdoctoral associates to better understand how physical activity training and mindfulness meditation helps improve cognition, reduce depression and anxiety and impact brain plasticity.

In individuals with multiple sclerosis, she has published over 78 peer reviewed journal articles and her research is funded by the national Ms society and the national institutes of health. She is also a member of the psychosocial wellness group at the national MS. Society and frequently presents her research on topics of psychosocial wellness to various public audiences.

I hope you enjoy this interview with Dr. Prakash.

Thank you so much Dr. Prakash for being here today. Can you share a little bit about your experience, your background, including what brought you to working with people that are diagnosed with.

[00:59:55] **Ruchika Prakash, PhD:** Hi everyone. I'm Ruchika Prakash. I am a professor in the department of [01:00:00] psychology at Ohio state university.

I'm also a licensed clinical psychologist and my research interests really have focused on looking at the effects of different mind-body interventions. So I've done work with exercise training, and I've done work with mindfulness meditation and how that can be leveraged to improve cognitive and emotional health in individuals with multiple sclerosis.

My big interests are around rehabilitation of what I think, both cognitive and affective disturbances, because they do tend to go hand in hand, especially when we think about clinical populations, but otherwise as well, I got started with this work in my doctoral program. So, um, I was interested in exercise interventions and we had a collaborator who was doing research on multiple sclerosis.

And when I looked at the population was really interesting because in addition to, and this was back in 2003, so we're going back a long time ago, so there was a lot of focus on physical symptoms that individuals with MS were experiencing, but not a lot. Uh, now, you know, cognition is a big thing.

Everyone talks about cognitive deficits within multiple sclerosis, but back in the day, no one was really talking about it. And we know that with white matter disruptions, as grey matter, disruptions, there are bound to have, there are bound to be cognitive deficits. And so we got interested in looking at the effects of exercise interventions or even at the time we were doing more correlational studies, whether cardio-respiratory fitness or if physical activity was associated with better cognitive functioning in individuals with MS. So that's what I did for my doctoral work was looking at the association between, uh, cardio-respiratory fitness and cognitive and neural health and individuals with MS.

And when I started my faculty position here at Ohio state, I've continued that work and really moved into the territory of clinical trials, where we are systematically evaluating if exercise training, as well as mindfulness meditation can improve cognitive health and those with MS.

[01:02:08] **Meghan Beier, PhD (2):** That's great. And, and just so people know a little bit more about who you are and the work you're doing. Can you share about the lab at Ohio state? You know, I think you do work with MS, but you also work beyond MS. So I thought it would be helpful just to share a few sentences about.

[01:02:23] **Ruchika Prakash, PhD:** Sure. So the lab that I direct, it's the clinical neuroscience laboratory. And it's basically a team of researchers who are dedicated to improving cognitive and neural health.

And as a Dr. Beier you just mentioned, I've work with individuals with multiple sclerosis, but I also do a lot of work with healthy, older adults, and just focus on how, what, what are different mind-body interventions that support healthy aging. And so my team comprises of doctoral students, a predominantly in clinical psychology, but also in cognitive neuroscience.

And then post-doctoral scholars, undergraduate research assistants and lab managers, all of us come together, really to conduct these evidence-based clinical trials to systematically examine how different interventions may target cognitive functioning in these two populations that we work with.

[01:03:18] **Meghan Beier, PhD (2):** Oh, that's great. Now you kind of hinted at my next question. Um, when you were talking earlier, but from your website, it looks like you have sort of two themes in your research, sort of what causes cognitive and emotional symptoms as well as what are targets for improving, um, those challenges that people have. But before we dive into some of the research, I'd really love for you to explain that link between cognition and emotion, because I think sometimes they're kept separate.

Even we have neuropsychologists who tests cognitive functioning. We have psychologists who do interventions for emotion, and I think there's much more of an overlap than we really give credit for. So I'd love for you to sort of share a bit about that link.

[01:04:01] **Ruchika Prakash, PhD:** Absolutely, I think you said it really well that in the literature, we often think about these as separate mental terms.

And in fact, there are a group of researchers and especially ones who tend to study these mental terms from a brain perspective. So neuroscientists, who would say that these terms like cognition, emotion, attention, perception are epistemically sterile. There's a lot of overlap in terms of these terms.

And especially when you look at clinical populations and I've done a lot of. If I'm a research end of things, but also from a clinical end of things, is that cognition and emotion, they both involve information processing, and it's hard to think about cognition that's not motivated or that doesn't have an emotional component in it.

And now there's debate in the literature, whether cognition gets subsumed under emotion or emotion gets subsumed under cognition. I tend to think of it as the latter, but they do tend to go hand in [01:05:00] hand. And so I think when you are assessing cognitive functioning, having a sense of. The emotional profile of

your clients and off your participants really goes a long way in for us to understand what is the cognitive status of an individual.

And also when you design interventions, right? So if we design interventions that don't take into account the emotion, regulation goals of our our participants are our clients, the interventions are less likely to generalize. So in the work that we do in our lab, and it's one of the reasons why I've gravitated so much towards mindfulness meditation is to, when you're thinking about interventions, where I want to put my money in and where I want to study them systematically, it seems like interventions that target these interrelated processes of cognition and emotion may fare much better than other interventions.

Also, when you think about the neurocircuitry that kind of supports these emergent constructs of cognitive control, for example, or emotion regulation, there's a lot of overlap in terms of the cortical, subcortical circuitry that supports both of these functions. So say I think that there's a lot of value in studying them together and how they tend to go together in different clinical populations.

[01:06:16] **Meghan Beier, PhD (2):** Oh yeah, absolutely. And I think even just working with people clinically, it's much more obvious. I mean, I'm thinking of somebody I saw many years ago who was really struggling with one cognitive assessment and then as we paused and he took some deep breaths.

And then we restarted the assessment. All of a sudden he was able to do it. Right? So that emotional piece had such a huge impact on how he was performing cognitively and if I had just driven us through. It probably would have been a totally different result.

[01:06:47] **Ruchika Prakash, PhD:** Absolutely. And you see this layout in inter in clinical settings all the time. It's when researchers decide not to take a look at that and not tune into it. And that's when we have a problem. But I do think that these constructs has such a vital role to be studied together.

[01:07:02] **Meghan Beier, PhD (2):** Well, Dr. Hancock talks about what types of cognitive changes occur for people with MS. But I was wondering if you could share a little bit about why these cognitive changes happen. So what's, um, what's the underlying basis, what's the etiology for some of these changes.

[01:07:19] **Ruchika Prakash, PhD:** Yeah. You know, we still don't know exactly what the eitiological pathway is in terms of the co in terms of the cognitive changes that we see. But one of the things that we know is that the

cortical and subcortical circuitry that supports a lot of these cognitive functions is disrupted within individuals with multiple sclerosis, right?

So, but first to follow as we age, there are disruptions in white matter pathways, as well as, uh, gray matter that supports cognitive functioning. But with the damage in the myelin sheath, uh, that's caused by multiple sclerosis. You see that white matter tracks are much more disrupted and the pathways are much more disrupted and these are, uh, connected.

Uh, the white matter pathways are the ones that connect the cortical nodes or the gray matter with one another. And when we think about information processing, right, that's what cognition is. It's a lot of information processing that happens in the brain and we're thinking about complex cognitive information processing.

So even just having this conversation, we require sustained attention, right? So we have to focus. I have to focus in on what you were saying and maintain that attention. It's also working memory. You're asking me a question. I have to remember that and think about all of the information that I have and then episodic memory.

We recalling all of that information. So all of this is a by-product of really significant interactions among a number of different cortical regions. And a lot of that interaction is possible because of the white matter pathways that are in our brain. So with multiple sclerosis, it's a bit at the disruptions are severe that it causes cognitive changes and it causes the cognitive decline that we often see in individuals with MS.

But that is one pathway. There are so many other things that are happening, right? So inflammation has been another mechanism of action that has been proposed to impact the neural pathways that we have in the brain, which then ultimately impact cognitive functioning. Um, so while I think we can't really speak to the exact ecological pathways, it's the destruction in the white matter connections, as well as the cortical nodes that seem to play a pivotal role in explaining the cognitive changes that we see in.

[01:09:38] **Meghan Beier, PhD (2):** A lot of times I get asked from my own patients, um, you know, where in the brain, you know, do I have a lesion in this area and that causes this symptom. And so can you share a little bit about that question?

[01:09:51] **Ruchika Prakash, PhD:** Yeah, this is a really interesting question. And a lot of people tend to think that there's this one-to-one mapping in terms of where the [01:10:00] lesion in the brain is and what kind of function it would impact.

The truth of the matter is that the brain is a resilient organ and there's so much plasticity in the brain that having a lesion in one particular pathway does not necessarily transfer translate to having lots of functioning for every single individual in that one domain. And in fact, there are beautiful case studies where we've seen that there's significant damage to the brain.

Um, and in fact, there's part of the brain that's completely missing, but the person goes on and works just a, and they have like no loss of functioning. So that is pretty remarkable as well. So there isn't a one on one mapping with where you will see the lesion and how, uh, it will impact your functioning.

And in fact, a lot of it depends upon. How the brain, you know, the brain is known to rewire the connections. So if you loose one, uh, so if there's a lesion in the brain, the neurons do kind of rewire and form other connections that would support functioning. Um, and I don't think that there are there's conclusive evidence as to why we see certain deficits in some individuals and not in other individuals.

One of the hallmarks of multiple sclerosis really is this heterogeneous presentation of lesions right? So it's not the case that every person with multiple sclerosis has a lesion in the Corpus callosum. So it is pretty distributed. And as a result of which the symptom presentation that you see can be also pretty varied, varied as well.

So there, isn't a good answer to saying, oh, I have this lesion. So that's the function I'm going to lose. And in fact, it's going to be pretty heterogeneous in terms of its symptom presentation. Does that answer your question?

[01:11:45] **Meghan Beier, PhD (2):** Yes, absolutely. And it's exactly kind of what I share with people as well. And I think it's really important for us to remember that, you know, so just because you have a lesion in one part of your brain doesn't mean that you're not able to still do that function or that you can't gain some function back in that area.

So now I want to dive into some of the intervention work that you've done, because I find it incredibly valuable. I talk about it a lot with my patients in two

of the recent papers that I saw in the last couple of years, um, you described a four week mindfulness based training versus computerized cognitive testing.

And, um, my understanding just from, you know, broad strokes is that you saw some improvements, both in emotion regulation, as well as cognitive functioning and in two areas that we often see impacted by MS. Processing speed and working memory. Um, so can you share a little bit more about that study and the findings.

[01:12:40] **Ruchika Prakash, PhD:** All right. Happy to talk about that. So, first of all, I'll start by explaining what we did in this study. Um, so this study was looking at, and it's, what's called a stage one pilot study. So if you look at NIH, uh, stage models for behavioral interventions, basically any kind of, for any kind of intervention, whether it's pharmaceutical intervention or behavioral intervention, kind of the work that we do, whether it's exercise, training, computerized, cognitive training, or mindfulness meditation, you want to go through a series of cyclical processes where you can causally say that, you know, my, this intervention that we're doing is what's improving cognitive health.

And one of the first evidence that you collect, it's called stage one pilot evidence. So what we've been able to do so far. Uh, conduct a stage one pilot study, where we have some pre- preliminary and promising support for mindfulness meditation to improve cognitive functioning and reduce emotion, dysregulation and individuals with multiple sclerosis.

And we do need a lot more studies in the future, especially stage two efficacy studies where we could causally and with more robustness say that mindfulness meditation actually benefits cognitive health. But in this pilot study, what we did was that we, uh, had about 60 participants that we've included into this study.

And we randomized them into a mindfulness meditation group, uh, and adaptive cognitive training groups. So they played computerized video games.

And then the third one was a wait list control group. And we wanted to see if mindfulness meditation over and above both a wait list control group, because that's a group that does not do anything, but also a very active control group.

And one that's used in the literature all the time, improving cognitive functioning. If with mindfulness meditation, we could see improvements greater

than both of these two groups and emotion dysregulation. That was the primary outcome variable of this study and in mindfulness meditation, right? It's, it's a term that has been hyped up during the pandemic.

And we talk about it all the time. And if nothing else, like people are stressed out. There's systemic racism. There's all sorts of biases. We say, Hey, go do mindfulness. That's really not the answer first to fall for systemic racism. But what we did was that [01:15:00] we created a manualized intervention. Where, and we go with this definition of mindfulness, it's been proposed by Jon Kabat-Zinn that when you think of mindfulness, mindfulness is about paying attention.

And the way that you pay that attention is that it's purposeful. So it's intentional and you pay attention to what's happening in the present moment. And you're opening up to the experiences of the present moment, but you're doing so in a framework that promotes acceptance. And non-judgment. So the two things that are integral in this definition, and this definition forms the basis of our four week and eight week program that we're doing now.

Um, and what we, what this definition emphasizes is that mindfulness really works on helping you sustain your attention. So in a given moment, our mind, our minds have a wandering tendency, right? So we're thinking about the past. We're thinking about the future, even as people are listening to this podcast are thinking about this argument that they had with someone or their making dinner plans.

So there's always something going on in our mind, but mindfulness is really about intentionally committing to the present moment. So sustaining your attention. But also we teach a lot of principles and a lot of attitudinal foundations on doing so in an accepting and nonjudgmental way, because when you focus in on the present moment, right, like, especially with individuals with multiple sclerosis, if let's say there are very powerful, painful sensations that they're experiencing, your clients may say, you know what?

I don't actually want to focus in on the present moment. I don't want to attend to what my sensory experiences are, but the idea is if we can do so in a non-judgmental and accepting way, we could actually open up to those painful sensations, painful, tough processes or challenging emotions. And so that's what we teach over the course of the four weeks and adaptive cognitive training.

Really that group essentially played video games on the computer and they met with us the same way that the mindfulness group. So there was a group component to it as well. And the wait list control group was just a pre and a post

test. And the primary outcome variable that we wanted to study was emotion dysregulation um, and emotion dysregulation is a trans diagnostic construct that underlies both mood and anxiety disorders. And what we found was that people who engage participants, who, with MS who engaged in mindfulness, meditation showed reductions and emotion dysregulation after the training, especially when you compare it to their pre-scores but this reduction was more than the reduction that we saw in the adaptive training, the cognitive training group and the weightless control group. So that was pretty remarkable because it was only a four week intervention. It was 60 participants. Uh, and, and that's why when I started by saying all of this, I provided the background on pilot studies.

This is preliminary promising support, and we need to do more studies with larger sample sizes to see if this effect actually replicated. So that was the primary outcome. But as Megan, you were saying, we were also interested in looking at cognitive functioning. There's one of the hallmark symptoms of MS.

And it's something that we're all focusing on as well. And our hypothesis really was at both the mindfulness too and the adaptive cognitive training group, which show improvements in, uh, cognitive functioning. We certainly did not hypothesize that mindfulness would show or improvements over and above the adaptive, cognitive training group.

So for working memory, actually. So we used, uh, the measure that everyone loves within the MS community, the paced auditory serial addition test, uh, and I know your clients and your participants listening on this would be like, they would have every time you put an individual with MS in front of the PASAT they're like, oh my God, not this again.

Yeah. So what we actually found was that all three groups, including the waitlist control showed improvements on the PASAT score. And this improvements, you know, us neuropsychologists would say, it's not related to any intervention.

It doesn't matter what you did. If you did mindfulness, you got better. If you did weightless control, you got better. And if you did adaptive cognitive training, you got better, better. So basically what that is is that it's practice effect. So the second time you do anything, you of course get better at it.

As all groups showed changes in PASAT. So, and we basically said it concluded in that paper, that PASAT is not a good measure of working memory. It's not a process pure measure. Not that there are too many process,

fewer measures, but PASAT specifically is amenable to practice effect. So we should not be using that.

But what we found is that processing speed, showed, found that mindfulness in people who engage in mindfulness, meditation showed improvements in processing speed. So this was your symbol digit modalities test over [01:20:00] and above the adaptive cognitive training group, as well as them a weightless control group.

So this was a really interesting finding in one week hope that does replicate, uh, in future studies. But, um, yeah, so that was that, that was the two papers that were the two papers that we published on this work.

[01:20:17] **Meghan Beier, PhD (2):** Oh, that's great. Yeah. I think I read a while ago, a paper that talked about how performance on PASAT has, is largely due to anxiety or stress.

So it's really a very flawed measure in many ways. So are you doing additional studies on this, um, or kind of what's the next steps? Um, what research are you doing to replicate some of those findings in the pilot study?

[01:20:42] **Ruchika Prakash, PhD:** Absolutely. And here's a shout out to the national MS. Society to fund our research so that we can do the next step.

Uh, but, uh, so the next step for this is what's called again, stage two efficacy study. Um, that really includes a large number of participants. So we have a grant that's actually actively under review at the national institutes of health, where we are proposing to have 150 participants go through this intervention.

Um, and we decided to drop the weight list control group because now that we have a more, uh, active now that we have these findings, we don't need to necessarily compare it to a passive group. So the idea is that we are going to have 150 M individuals with multiple sclerosis go through the mindfulness intervention and compared to an active control group.

But what was also missing in our pilot study, which is I think really an important empirical question is what are the maintenance effects. So, yes, we see in improvements right after the intervention, people engaged in the work. They, we saw improvements in cognition as well as emotion dysregulation, but are these effects maintained over the course of six months or a year?

So the next study that we're doing is not only is it going to be a highly well powered study with 150 participants, but we're going to follow up individuals for a whole year and conduct assessments at, uh, you know, right after the intervention. But at six months follow up at 12 months follow up. But also importantly, we've designed an, a mobile application called healthy MS, where we've taken a lot of our practices, all of our mindfulness practices, but also our practices for the control group.

And that is available on this app. And so people. Will be provided with this app, even once the intervention is over. So that they can continue to engage in the practices over the course of the year. And then we can ask systematically questions like, um, you know, is there a dose-response relationship? So do people who engage in more practices?

Are they the ones that continue to get better? They plateau out at certain time. One question that I often get with mindfulness work is, well, how much should I be practicing? Is it like 10 minutes, 15 minutes? I always say, even if it's one minute, that's one minute more than what you would have practice.

So, you know, whatever time people can find in their schedule, we encourage them to practice. But that's an empirical question, right? Is it that 15 minutes of practices are sufficient to see the cognitive changes that people are interested in? Or is it pretty tough practice? We invite our participants to engage in about 30 minutes of practice, four or five days a week.

But we will be with this app data that we're collecting, or hopefully, you know, whenever the study gets funded, we will collect, we can systematically ask if, uh, engagement in 15 minute versus 30 minute practices can help. See, you can see the cognitive changes that we're interested in seeing.

[01:23:43] **Meghan Beier, PhD (2):** Oh, that's fantastic. Is this app going to be available more widely? Once that study is over and funded and which may be several years down the line, but I know I'm going to get that question from people.

[01:23:56] **Ruchika Prakash, PhD:** Absolutely. And that's been, my vision always is to take all of our materials and make them publicly available. Uh, but before, you know, that's the thing with a lot of these mindfulness based apps and the market is almost saturated with this, but we don't have any concrete

because of their efficacy and actually seeing the kind of benefits that we want to see. So if I put an app out there, I would like to make sure that it was actually

successful in seeing, showing the benefits that we're interested in showing. Uh, so the hope would be to do all the the preliminary work with these randomized clinical trials, and then make that app freely available.

But one of the things that we did do during the pandemic. 'cause we, we wanted to release our materials, uh, eventually, but the pandemic just really brought forth the mental health concerns that so many individuals were experiencing. So we launched a YouTube channel and just basically published all of our, um, um, meditation practices and all of our descriptions of different components of mindfulness it's freely available on a [01:25:00] YouTube channel.

So if anyone wants to access and engage in some practices, that could be a good starting point for them.

[01:25:06] **Meghan Beier, PhD (2):** Oh, great. That's great. Cause I was going to ask you sort of, if clinicians wanted to do something similar with their patients or do mindfulness exercises, what resources or training manuals do you recommend?

And that's a good starting point and we'll definitely put that in the show notes. Are there other resources or manuals that you recommend.

[01:25:25] **Ruchika Prakash, PhD:** Uh, I don't know if there have been training manuals, but there are lots of teacher trainings that are available. They are more time intensive and really cost prohibitive.

If you ask me they, they end up being thousands of dollars to get certified in mindfulness, but a lot of our doctoral students in clinical psychology, right? Like we get trained with third wave psychotherapy, acceptance and commitment therapy, but also mindfulness based programs. Um, so I think if you went to weekend teacher training and still at were, you know, we're doing your clinical work, especially intervention based work, those are practices that you can start incorporating, uh, in some of the work that you're doing, but there are tons of mindfulness resources.

So UCLA, for example, if you go on their center for mindfulness or UCS D for that matter, They have a number of meditative practices that are available. But my hope eventually, one of the other things that we're working on is what's called I MBSR internet based mindfulness based stress reduction program.

And this is a fully asynchronous. Program that we want to make available that follows the platform of an eight week mindfulness based stress reduction

program. But it's something that people can do at their own pace and their own pace as well as on their own time. Um, and so that has all of the practices embedded.

So that's hopefully also something that we will be releasing in the next couple of years that would allow individuals to do MBSR programs on their own without feeling like they're lost in a sea of meditative practices.

[01:26:57] **Meghan Beier, PhD (2):** I have a selfish question just from a clinical perspective, you know, a lot of times getting back to your question earlier, were your statement earlier, where people were asking you sort of, how much should they do.

Um, sometimes I will talk with people that you don't necessarily always have to sit down and do a full on meditation, um, that sometimes if you use those themes that you learn in those sit down, um, meditations that you can practice mindfulness, sort of throughout the day, right? While you're eating, you can pay more attention to what the food tastes like while you're in the shower, you can pay more attention to what the smell of the soap smells like.

Um, and just by doing that, you know, for even 30 seconds while you're in those different zones or when it comes to mind that that is also practicing mindfulness, but I am not an expert. So I wanted to check with you and see if that is good advice, bad advice.

[01:27:53] **Ruchika Prakash, PhD:** 16 benefits. So very insightful way of thinking about mindfulness, right?

I call it mindfulness a lifestyle intervention. And when I, what I mean by that is that it's a radical shift with the way we approach our everyday lives. Uh, so you really could be bringing mindfulness to almost every conversation and every interaction or every experience that you're having. Right? Like even this conversation right now, I could very well be thinking about a grant proposal that's due today at 5:00 PM or about the fact that then right after that, I have to take my kids to swim lessons.

Our lives are busy. Our lives are chaotic. And mindfulness really is an opportunity to bring some calmness and peace to the work that we're doing while being fully engaged with, uh, the, uh, with the present moment. So from that perspective, I find it very empowering work. It's not something cause a lot of people tend to equate mindfulness with passive acceptance of everything that's going around them.

But if it, if anything, it's the opposite. So I really do agree with you that you could be bringing in mindfulness into every experience that you're having. It's very hard to do after 12 years of engaging in formal meditation. I can not every experience allowed to have like, you know, experiences where you're just like cringe up a little bit and that.

That's okay as well. And you have to give yourself compassion and others compassion as well. But I do, you know, you and I both work with clients who really suffer from mood and anxiety disorders and they have a lot of things that they have to process. And I think when. Uh, invite my clients to these formal meditative practices.

I often say these formal meditative practices, if it's five minutes, 15 minutes or 30 minutes, they're the ones that forms the anchor for when you find yourself in chaotic situations, when you find yourself emotionally dysregulated, or wanting to react, not having the formal meditative practices anchoring you down, doesn't let you bring mindfulness to that experience that you want to.

So that's why I always [01:30:00] encourage some sort of formal meditative practices. If this is a lifestyle, or this is an approach that you want to implement in your lives, but even if let's say right now is not the time for you to do that, I would certainly advice to say, yes. You know, you could still bring mindfulness to the present moment experiences, but it's a hard construct for lots to digest.

They're just like, what does that even mean? Um, so definitely go to at least one MBSR program to fully understand what does it actually mean to open up to the present moment experiences?

[01:30:30] **Meghan Beier, PhD (2):** Yes, absolutely. A great advice. I think it's really important to practice those skills before you try and implement them, because if you don't practice them ahead of time, it's like you said, I think I I've also found even for myself that it's hard to implement those practices without something formal or taught ahead of time.

I love everything we're talking about. I also just wanted to highlight that, you know, mindfulness may not be the only type of intervention for cognitive and emotional challenges. Um, and this is sort of a broad question. I know you've done research in terms of exercise and video games, addressing cognition and other areas.

Are there other strategies that you think are helpful for mental health providers to direct their patients, to, um, for addressing cognition over and above or adjacent to mindfulness.

[01:31:20] **Ruchika Prakash, PhD:** I think that's a really important point to drive down. Anytime I'm talking about mindfulness is that mindfulness is one pathway to cognitive health.

I know. So a promising pathway, we still don't have conclusive evidence on, on a lot of those things, but I've had clients and, you know, we worked in settings where it just does not work for people and that's perfectly fine. It's not the be all and end all. It's not a panacea, any kind of a way there's much more promising support for exercise interventions and specifically aerobic exercise interventions to get your cardio-respiratory fitness up for that, to improve cognitive functioning.

In fact, um, we did some preliminary cross-sectional studies that found this association between higher levels of fitness and cognitive functioning, but there have been lots of exercise trials. So clinical trials where they've trained individuals to improve their aerobic capacity, aerobic fitness, and then looked at pre post changes.

And they often find that processing speed and working memory are the two components that are highly impacted with exercise interventions. Uh, when it comes to video games, when it comes to cognitive training, I think the jury is still out on it. I, uh, there are very polarizing views on this perspective.

Our own work has found that cognitive training does not particularly show too many benefits for individuals with multiple sclerosis. If you train people on a particular test, they get better on that task, but it doesn't generalize to lots of other things, but there have been some studies that have found that it does generalize to some tasks that are very closely related to the things that you are training people on.

But I think the jury on cognitive training is still out in terms of work. Theoretically, it makes so much sense. Like as a cognitive neuropsychologists are like, absolutely you train people on cognitive tasks, they should get better on different cognitive tasks, but they don't particularly generalize. Uh, and I wonder to what extent is, I don't know if you've done too many of these cognitive training.

I always try to do it myself before I have other people do it.

But some of the older cognitive training modules where it's so boring, like I could have, I can see myself doing exercise training. I can see myself doing mindfulness meditation for hours, but I'd like you given, I can do that. But when you you're telling me to do 30 hours of cognitive training, it was just not motivating enough

and that's why this emotion cognition is so important, right? When people are so frustrated or bored or fatigue, they're not going to get the benefits out of it but nowadays, like a lot of cognitive training platforms are very engaging and they have. Lots of interesting elements to it. I think so. I think there would, that would be an empirical question to ask as if motivating and engaging cognitive training produces better benefits, as opposed to one of the video games I have used a long time ago with something called space fortress.

It was just very painful to do so I can imagine why people would not want to do it at all. Uh, so yeah, I think that's an empirical question. Uh, and we'll learn more about cognitive training, I think as things move along.

[01:34:31] **Meghan Beier, PhD (2):** Absolutely. Yeah. And I think one of the things just getting back to that emotion cognition connection is one thing that I really emphasize with my patients is that.

You know, we can do lots for cognition or there's lots of different interventions that we can try, but we also have to address that any time that there's a word finding problem or any time, you know, you forget something, the negative self-talk that you know, where you're beating yourself up and then feeling terrible about it.

And so [01:35:00] if you know, we can work on that cognitive thing, but there's not a magic wand. That's going to make every cognitive mistake go away, even if you didn't have MS. And so I just love that your work integrates both of those pieces. It's so important. You have so many things coming up in the future. If people wanted to follow your work, see that YouTube channel, just continue to follow along with the work that you're doing, where can they find you online?

[01:35:27] **Ruchika Prakash, PhD:** I'm not very active online. I should, I do have a Twitter profile. I use it for all sorts of things. Uh, but mostly to talk about academic, Twitter and academia, it's, uh, it's my full name Ruchika Prakash, so people can follow me over there, but I should probably post a little bit more about the MS work that we do, especially the mindfulness work.

We have another paper, hopefully that would be coming out on mindfulness and how it impacts use of emotion, regulation strategies. Um, and, um, so we'll definitely be tweeting about that, but that's a good place to follow and the YouTube channel has all of our materials available and I can send you a link to that.

[01:36:06] **Meghan Beier, PhD (2):** Wonderful. And I'll put that in the show notes. Thank you so much for taking the time to share about your work and these resources that clinicians and patients can access. So again, thank you for your time and I really appreciate you being.

[01:36:19] **Ruchika Prakash, PhD:** Absolutely. Thank you for having me and thank you for this wonderful discussion.

It's always nice to talk about mutual interests and how we can help improve the lives of people with multiple sclerosis.

Conclusion

[01:36:33] **Meghan Beier, PhD (2):** Thank you so much for listening and we look forward to you joining us in the next episode. Make sure to subscribe, to be alerted when new episodes launch, if you would like continuing education credits for listening to this episode, please head over to findempathy.com/learn.

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