



Episode 347: The Neuroscience of Calm During Stressful Times With Dr. David Rabin

Child: Welcome to my Mommy's podcast.

This podcast is sponsored by BLUblox. That's B-L-U-B-L-O-X, which is an advanced light-filtering eyewear company. You've probably seen pictures of me on social media wearing orange glasses of various types at night. And here's why. In nature, we aren't exposed to certain types of light after dark, specifically, blue light, because that type of light signals the body that it's daytime. That in turn suppresses melatonin and can interfere with sleep. This is the reason that a really dramatic study found that camping for seven days straight with no artificial light at all could actually completely reset and heal circadian rhythm and help a lot of light-related problems, like seasonal affective disorder. This is also the reason that I wear orange glasses after dark to block these types of light and protect my sleep, which I am adamant about protecting. I also wear certain types of yellow glasses and anti-fatigue glasses during the day if I want a computer to reduce eye fatigue. BLUblox has orange glasses and yellow glasses. Their orange glasses for nighttime wear are designed to block 100% of the wavelengths between 400 nanometers and 550 nanometers, which are the ones that are studied to interfere with sleep and melatonin production, and circadian rhythm. My kids also wear these kinds of glasses at night. And I noticed a difference in their sleep as well, which is a huge win for a mom. This is especially important when we're watching a family movie at night or looking at any kind of screen as the artificial light, there is a source of blue light and can interfere with sleep. You can learn more, they have a ton of educational content and check out all of their innovative protective glasses by going to blublox.com/wellnessmama and using the code `wellnessmama` to save 15%.

This podcast is brought to you by Wellnesse, a new company I co-founded to bring the best personal care products from my family to yours. Our whitening toothpaste is based on my DIY formula that I have been making and perfecting for over a decade. Now, after almost 100 rounds of tweaking the formula and thousands of positive reviews, I could not be more proud to share this with your family. Have you ever read a tube of normal toothpaste? I did when my older kids were little, and I found a warning that said, "Warning, keep away from children. Do not swallow. If ingested contact Poison Control or seek medical attention immediately." That seemed a little extreme for something that I was putting in my mouth and my children's mouth multiple times a day. And I didn't want my kids using something that often that I would need to call a poison control center if they accidentally swallowed. I set out to create a truly safe and effective alternative. And the Wellnesse Whitening toothpaste is just that. It's designed to support the oral microbiome and the natural process of saliva and teeth so that teeth can stay white and strong. This dentist approved formula is safe for the whole family and will leave your teeth shiny and your breath fresh. You can check out our toothpaste and our completely natural hair food hair care products at wellnesse.com. An insider tip, if you grab an essentials bundle or try autoship, you will lock in a discount so that you can try everything at a great price.

Katie: Hello and welcome to the Wellness Mama Podcast. I'm Katie from wellnessmama.com and wellnesse.com. That's wellness with an E on the end, which is my new line of personal care products that are both safe and effective including hair care, toothpaste, and hand sanitizer.

In this episode which is very timely right now, we focus on some really relevant topics like dealing with feelings of stress, isolation, loneliness, overwhelm, uncertainty, also things like navigating ADD and ADHD in our kids. And now for many of us who are also serving as teachers for our kids during these unusual times, as well as things like PTSD, depression, anxiety, and many other topics. Because I'm here with Dr. David Rabin who is a board-certified psychiatrist, a translational neuroscientist, an inventor, and an entrepreneur who specializes in the treatment of posttraumatic stress disorder, depression, anxiety, and substance use disorders, and who is doing research right now currently on a device called the Apollo, specifically for ADD and ADHD. Dr. Rabin developed the Apollo which is a breakthrough wearable technology that uses the neuroscience of touch and vibration to combat the negative effects of stress. During his research at the University of Pittsburgh, he developed this. And it's a device that I personally use and really love and notice a big difference from. And they are in the middle of doing studies on this with like I said kids with ADD and ADHD. It's a really incredible technology.

Dr. Rabin is also helping to organize the world's largest controlled study of psychedelic medicines in collaboration with colleagues at Yale, the University of Southern California, Mt. Sinai, and MAPS, which is the Multidisciplinary Association of Psychedelic Studies to determine the mechanisms of the dramatic therapeutic benefits observed following psychedelic-assisted psychotherapy in treatment resistant mental illness. He is one of the most intelligent incredible experts I've ever talked to on a lot of these topics, and he does not disappoint in this episode. We go deep on a lot of these topics, and I think you will really enjoy as much as I enjoyed recording it. So without further ado, let's join Dr. David Rabin.

Dr. Rabin, welcome. Thank you for being on the podcast again.

Dr. Rabin: Thank you so much for having me, Katie. It's a pleasure as always.

Katie: Well, I'm excited to chat with you again. I'm a huge fan of your work. And our first episode got a great response. And I think there's so much more that we can add in this second episode. I think to start, obviously, all of us are kind of learning to navigate a lot of new uncertainties right now and things that a few months ago we didn't have to deal with. And so, I would guess that people are under a lot more stress and uncertainty than normal. And so, I'd love for that to start...let's start broad there and talk about some of these kind of changing turbulent times and ways that we can navigate that stress.

Dr. Rabin: I think that's a great place to start. I think that we are under, you know, particularly high amounts of stress right now on a daily basis, different than maybe what we're used to, but still very stressful nonetheless. And, you know, I think you really hit on it, which is that one of the major things that drive stress for us is sort of grappling with uncertainty. And one of the interesting things about that that I talk about with my clients all the time and that was on sort of my own personal journey as well, was learning to not spend a lot of time trying to control things that are completely uncertain and sort of out of my hands because what we realized from the theory of how anxiety management is taught and mental health and as a psychiatrist and a psychotherapist and a neuroscientist, we studied this a lot.

And what we see is that one of the central, most important things to always remember about anxiety, and anxiety being sort of these negative intrusive thoughts, constant worry, feeling overwhelmed and restless all the time, that stems from trying to spend as...you know, are basically allocating energy and resources of our attention, which we only have so much attention. We spend more of those resources thinking about things we cannot control than thinking about things that we can control. And ultimately, the more percentage of our attention we spend on thinking about things that we can control, like our breath, like making ourselves healthy, you know, having meaningful interactions with loved ones and things of that nature. Those things all contribute to us feeling less anxious and more positive on a mood level and also improve our energy and our ability to sleep, and sort of that, you know, creates what we call like reverberations throughout other parts of our lives where our bodies just start to recover better because we're not spending that time thinking about all the things that are out of our hands.

And so, that is one of the most important things that I think we can all use in this time, myself included. And this something that I have to remind myself of on a daily basis, particularly when things are very busy but over time as we practice techniques like this, like learning to put our attention, which is something that's really valuable, you know, our attention is something that only certain things deserve our attention. And when we spend our attention giving it a priority to things that really deserve it, like self-healing techniques, self-breath, you know, what we put into our bodies, how we exercise, you know, how we heal ourselves, all of these kinds of things, who we choose to spend valuable, meaningful time with, all of those things start to create these really positive feedback loops that contribute to a sense of happiness and fulfillment in our lives, even at our most stressed out, and overwhelming times.

Katie: That makes sense. And I know, obviously you would know this much better than I would, but from what I've read in books and different studies, a couple of the more difficult things to wrestle with from a stress perspective mentally are uncertainty and also loneliness. Like isolation is a really big mental stressor from what I've read. In fact, I've heard it compared to the physical effects even compared to being a smoker with how much of an effect it can have on the body. And so, there are a lot of people who are in isolation much more than normal and certainly navigating uncertainty much more than normal. Are there any strategies we can use from home that can help with the physical and the mental ramifications of that?

Dr. Rabin: Absolutely. I'm so glad you brought that up because I think that's something that we often don't talk about enough. And I think the first place to start is there is a fundamental difference between loneliness and then the concept of loneliness and being alone. And the way that we describe being alone, which is where most of us are. Most of us are alone, physically alone. You know, we don't necessarily, when we're isolated and we don't have loved ones around or our family and friends, we don't necessarily...we don't have those people right around us physically, so we're alone by, you know, by definition or our description of our environment. But we are not necessarily lonely. And I think loneliness starts to tap into this other meaning or connotation of feeling like we are, you know, not necessarily loved or that we may not get love or affection the way we need it.

And not only do we not have it right now, but we also may not get it in the future and we don't know when we're going to get it. And I think the reason that's so important to understand the difference between being alone and feeling lonely or being lonely or lonely person is that being alone is something that is actually very powerful for us in the way that we heal ourselves. Oftentimes, it's very difficult for us to start making changes to our routine. And like we were mentioning earlier and we talked about in the last podcast that we did together, you know, some of these self-healing techniques like, you know, positive...you know, everyone talks about diet and exercise, which are obviously very important, but there's other things that are really important that we don't talk about enough.

Like introspection, looking into ourselves, gratitude, feeling grateful for being able to breathe, being able to control the way that we think about ourselves and about our bodies. Being able to feel our heartbeat to, you know, be able to do progressive, take time to do progressive muscle relaxation to self-massage, right? There are certain parts of the body like putting pressure on our chest and put it with one hand or putting pressure on the inside of the outside of the ear. All of these things are very gentle ways that can pretty quickly improve the sense of calm in the body that can help induce a sense of safety and recovery response. And so, I think that, you know, what's really important is that if we look at being alone as always being equal to lonely, then we're missing out on a lot of the opportunity.

That being alone affords us to start to work on ourselves without the influence other people around. And oftentimes it's easier to change ourselves and to change our behavior, to learn how to adapt, to learn new techniques, new skills when we're alone actually than it is when we're with others. And so, being alone can actually be looked at as a challenge to overcome that when we do overcome that challenge, as we are all able to do, we're all adapters. We're incredibly adaptive creatures and that's what makes us human. And that is why we are at the top of the earth food chain, if you will. And so effectively, by approaching being alone as a challenge that we can overcome, then as we start to do things that help us feel better in that state of being alone, then we start to recognize that we are growing from that experience rather than that experience bringing us down or making us less, or actually that challenge forces us to become stronger and better versions of ourselves.

And so, and this is also similar to what we talk about in the psychotherapy space obviously, but also in the psychedelic medicine, assisted psychotherapy healing space, and also in a lot of Eastern and tribal medicine practices that have been used for thousands of years for chronic illness and mental health. I would argue that loneliness is a problem, but loneliness can be what we call reframed as the challenge of overcoming being alone. And that challenge allows us all of these opportunities to start to work on ourselves in ways that we might not have thought of before. And again, you don't have to look at my work. But if you'd like to go to apolloneuro.com and we have lots of tips about how to work on your health and build resilience when you're alone.

But there's tons of other people out there that have done this work, and there's wonderful meditation techniques and wonderful breathwork techniques in particular, that are really, really helpful to practice. I think above all though, gratitude, which is one of the hardest and most powerful techniques, if you've never done it, it is also the most important. And by practicing gratitude, starting with being grateful for being alone,

that automatically changes the way that we look at being alone. And we start to separate what being alone is from being lonely. And we separate that from our identity, and that all of a sudden sets us on a path towards feeling like a hell of a lot better.

Katie: I'm so glad you brought up gratitude because I think, you know, this is something that's talked about in a lot of self-help circles. We hear about it on a lot of, you know, podcasts. It's been a big topic in books recently and I think it still often gets discounted because people think like it can't make that big of a difference or like, "Yeah, I should be grateful and optimistic, but also I really need to fix this problem." And they don't realize just how profoundly slowly shifting your mindset toward gratitude can be. And like, I'm sure there are studies, and you could speak to this much better than I could, but how that actually manifest itself in psychological changes over time. Are there any other practical strategies that you would give for making that shift? Because I know it can seem overwhelming. If you're not in that place, the idea of trying to get into a place of gratitude can seem like an uphill battle for sure.

Dr. Rabin: Yeah. So, I think there are a number of techniques. My favorite techniques are actually...and I think we've talked about this before. There's two sets of techniques. I don't want to overcomplicate it, but these are all sort of thinking and emotional techniques. And I really like these because I use them with everyone and myself and they're incredibly effective. They're very old techniques that go all the way back into Eastern medicine that had been used for thousands of years. And I think why they've stood the test of time is because they work so well and they're also free. And so I think gratitude is one of the major foundations of all of these techniques because gratitude is the way that we start to look at a situation or an experience from the "why me" perspective, or the, "Oh God, please make it stop" perspective, to the, "Okay, if I'm grateful for this experience, what could I possibly get out of it that's positive or constructive along the line of growth?"

And so that is why gratitude is sort of at the foundation. One of the things that I think is the most helpful to think about with gratitude is with anger. When we get angry, we often think of anger as being a very destructive, negative emotion. But anger is just a signal that there's something off in our environment or something off in us that needs to be worked on. It's a signal. All emotions are signals in different ways. It's just easier to feel grateful for joy than it is to feel grateful for sadness or anger. The problem is when we don't practice gratitude for things like anger and sadness instead of actually working through the anger and the sadness and figuring out what the source of it is, what happens is we oftentimes turn that anger or sadness inward on ourselves and then we start to feel a lot of the stress that goes along with, you know, harboring anger and sadness, like resentment, depression, sleep disturbances, all of these things.

And so, you know, starting to practice gratitude on a moment-to-moment basis as often as we can really, from the moment we wake up to the moment we go to bed, which can just be as simple as first thing in the morning, write down gratitude, and then just try to think about things that you're grateful for, even if it's just being grateful for waking up or being grateful for being able to take a breath. Any of those being a grateful for being able to eat breakfast, any of those things are fantastic ways to start. And then the same before you go to bed and eventually that becomes automatic. I think why that's important is because gratitude forms this foundation of trust in ourselves that is supported by these four principles called the four pillars. And these are the very old principals that've been around for a long time.

And so, it starts with gratitude. And then from gratitude goes to forgiveness, which is really focused on self-forgiveness, forgiving ourselves for mistakes that we've made, knowing that we all make mistakes. There's not a single human on the face of the earth that has not made mistakes. And that when we start to understand that, then we're able to forgive ourselves for those mistakes. Recognizing that those are opportunities for growth. And then the next step above that is compassion. Compassion is often difficult to understand with respect to ourselves. But I think that the most common, best way to think about it as compassion is like patience for ourselves and patience for the world to allow things to unfold as they will. We often think when we look at the world, we look at ourselves and say, "Why aren't we here? We're here but we want to be there. Why can't I be there right now? Why is this not already moving along the way that I...on the timeline that I expect it to?"

And so, that forces us to rush the process, which actually leads us to make more mistakes. Trying to avoid failure, we rush the process, we make more mistakes, we want things to happen faster. Compassion is that practice of allowing things to unfold as they will and just doing the best we can but understanding that we will make mistakes. Things will come up, you know, and we're just going to do the best we can knowing that things will come up and things will unfold as they will. And then all this sort of comes together and culminates in the practice of self-love. And over time, as we practice those four pillars, that forms the foundation of trust in ourselves that allows us to overcome very, very difficult times like we're in right now.

Like loneliness or feelings of loneliness, feelings of consistent anger or whatever it might be that's bothering us. These four free tools are incredible tools that help us to...and they support each other and it can be practiced at the same time. They don't have to be independent and they work together to help support that. And I think that there's the other four, and a lot of these coming fours, which is interesting. The other four tools that are a little bit more obvious about how to practice are called the four agreements, which are the four agreements we make with ourselves to ensure a fulfilling life that's aligned with growth and healing. And the four agreements are always do your best, which we just talked about. Don't take anything personally. Don't make expectations, and always be true to your word.

And these things are sometimes difficult. We all know that we're good at some of those and not so good at others. But these serve as guidelines that when you make an agreement with yourself intentionally and say, "I intend to follow these agreements for myself," then what happens is the change starts to happen on its own over time. And so, it's about starting to change the way that we focus our attention and the way that we think about ourselves starts to change the way that other people think about us. And it starts to change the way that we feel. And it can happen in as short as a day or as long as a few weeks. But the point is that as we start to practice these techniques, then the sooner we practice and the more we practice, the more we actually literally retrain our neural pathways in our brain to, instead of feeling upset and angry ourselves every time we feel sad or every time something bad happens, we start to actually feel joy at the opportunity that that challenge presents for us to grow and get better. And it literally shifts the entire neural networks that support the way that we see the world.

Kate: I love that. I'm a big fan of the four agreements as well. And I think you're right. I think that the shift and focus is so important. And to get vulnerable from it and I can share from my own life. An example of that, when all the shutdowns first started happening that first week, I found that I was like almost completely unable to eat. I was extremely angry. I was working out four times a day and I had this like weird...like I wanted to fight and I had no idea where that was coming from. I ended up exploring it with the therapist and realized that it went back to sexual trauma I had much earlier in life, in high school. And basically what I had done is I had built frameworks to keep me safe so that I would never feel helpless again in any area of life.

So, I had things in relationships that I did to feel safe. I had ways to protect myself physically. So, I felt safe. Like I had systems for everything. So, I never had to feel helpless because that emotion was so devastating in that moment that I never wanted to feel helpless again. And I had spent years processing that trauma and had not been triggered in a long time. I thought I had totally gotten through it. And it wasn't until there was something much bigger than me that I could not do anything about that it re-triggered that helplessness and that anger. And it really caught me by surprise because I thought I had completely dealt with it. And like you said, that anger can always be a clue as to kind of something that's going on. And so, I had to like really consciously shift my focus those first couple of weeks.

A, to realize what was going on. And then to shift into gratitude and focusing on the things I did have control over, which was I can spend more time with my kids, I can spend time outside, I can focus on the positive, I can make time for gratitude and movement. But it was a hard thing and I think a lot of people are facing varying degrees of that kind of mental thing to work through right now. And it is difficult. But I think also like to your point, if we make good use of this time and we focus on the positive, we could emerge from this with incredible habits and a focus on gratitude and things like maybe slowing down normal life a little bit, not doing so many activities, spending more time with family, making time for cooking at home more or gardening or, you know, so many of these things that we're doing now that we maybe didn't do before that I love that. I love the practical focus on making that a habit because I think it really does have a dramatic impact over time.

Dr. Rabin: Absolutely. And I'm so grateful that you were willing to share that personal story with us. I think that your experience of what you just described is such a powerful metaphor for what we all go through when we have...we've all had times in our lives that we may not even remember as traumatizing, consciously, we may not even be aware, but there were always times in our lives for pretty much all of us where we felt out of control and we felt, you know, like we didn't know what was going to happen and it was extraordinarily scary or threatening. We've all been in those kinds of situations and I think that what we often do is we build up these things called protectors, which you very well described. We use these a lot in MDMA assisted psychotherapy and psychedelic psychotherapy where we help people work through and understand, "Hey, this is something that you did when you were a child or when you were a teenager to learn how to cope with this tremendous amount of stress without any one showing you or teaching you how to deal with these emotions."

So, now you have protectors, you have what we call sometimes firefighters, which might be anger or resentment or these kinds of things of this nature that come out every time we are reminded of that feeling of vulnerability, that feeling of losing control, that feeling of losing hope or losing safety. And what happens is

that we forget that we actually are the single most important...the single most important source of safety in our lives comes from within us. You know, we are taught often to believe that it comes from outside of us. And that the source of wellbeing and that our source of healing and health and all of these things comes from outside of us. But that's actually not true. And that the single biggest source of our health comes from within us and our happiness comes from within us.

And so, when we learn as you have to, and you described it so well, to generate that safety from yourself, that by changing your habits, by changing what you spend your attention and your time on, I mean that is literally life-changing. It's literally what people are banging on the doors for to get access to psychedelic medicine because psychedelic medicine, in a lot of ways, it's like a catalyst to rapidly accelerate that process. That is a process that we're all capable of achieving on our own. As you said, it just takes a lot of time and a lot of work. And without the proper guidance or the proper teaching or the mentorship or the therapist or, you know, whoever it is that we need us to help, you know, at least get us on the right path to recognize this as possible, then we forget.

You know, it doesn't mean we can't do it. It just means we've forgotten that that ability we have is there. And so, that's why it's always such a pleasure and a privilege to be able to have these conversations with you because we really...I mean, we just get down to the raw nitty-gritty of it. I think that when you listen to...when people listen to something like this, they have the opportunity to hear about what actually is possible for all of us, that we do have the capacity, all of us who are listening to this, all of us who hear these kinds of conversations have the capacity to remember that we can heal ourselves and then to take some of these lessons back into their lives so that by the time all of this is...we're moved on to the next phase of all of this in our lives, in the world, we can emerge so much stronger, so much healthier and so much happier and ready to take on whatever comes next. Not in a weakened, vulnerable state.

Katie: Exactly. And I'm so glad that you brought up psychedelic-assisted therapy. I know we talked about this a little bit in our first episode, which I'll make sure is linked in the show notes at wellnessmama.fm. But as I would suspect, there's going to be probably a lot of people who have resurgence of maybe trauma or addiction issues or all kinds of things following this crisis. I'd love to hear an update on what we're seeing in like right now in medical research with psychedelic-assisted research and therapy, and what you expect to see in the coming months and years, because I think that can be really profound for so many people.

Dr. Rabin: Yeah, it's a huge topic of interest right now. I think that, unfortunately, as a lot of the studies of MDMA and psilocybin require a lot of in-person visits. Many of those studies are on pause at this time. But the results are incredible for...particularly with psilocybin, which is the active psychedelic ingredient in mushrooms. And then MDMA, which originally comes from sassafras but is derived chemically, and then slightly modified to provide a very powerful empathy and self-acceptance, you know, non-judgmental experience that is radically healing for people with trauma, which is most of us. And so, I think that, you know, these medicines are absolutely coming up.

They will be available. It looks like, you know, sometime between like 2021 and 2023, clients, patients will be able to go in and actually find a physician or a psychotherapist who works with a physician to provide these treatments. And it's already starting. You know, there's already a study...right now it's mostly through studies, but you can actually sign up for a study at Hopkins, MAPS, the Multidisciplinary Association of Psychedelic Studies runs studies on these medicines. And so, it's possible to get involved. It's just difficult right now for most people. And the medicines are expensive and it just requires a lot of effort and dedication to the cause, to the protocol. I think what's really interesting that's on the horizon right now is ketamine-assisted psychotherapy because ketamine is a molecule that was discovered in the early mid-20th century.

It was used as an anesthetic and a horse tranquilizer because it's a very, very gentle anesthetic. But it was found later to actually induce very powerful psychedelic states. And when I say psychedelic, you know, I don't mean a crazy '70s dance party, but more a mind-manifesting state. So, the root of the word psychedelic means mind-manifesting. And what this really means is creating an altered state of consciousness, which you can also create with meditation or with breathwork or with, you know, yoga or a lot of other different techniques. But with medicine, it's like ketamine or like MDMA or psilocybin. It's a chemical induction of that state. And what ketamine does is it induces that state for about half an hour to an hour in a very safe way. And it allows people to be able to access that state for a very brief amount of time, but it's enough time to be able to start to do some really interesting work on ourselves.

And so, one of the pioneers of this treatment was Dr. Phil Wilson, who still has a practice in San Anselmo and the San Francisco Bay Area. And he is pioneering this treatment for lots of different approaches, but its main focus is post-traumatic stress disorder and predominantly treatment-resistant depression. And I think what's so interesting about ketamine above all the other psychedelics is that, is it particularly interesting? It's interesting, but it's not that much more interesting than the others. I think what makes it interesting right now is that it's legal in basically...it's legal in every state and in almost every country worldwide. And this is incredible because there isn't any other psychedelic medicine that is legal in every state and every country or almost every country worldwide. So, that creates an enormous opportunity when we already have this technique that can be delivered in person.

Ketamine is also interesting. It can be delivered over the phone or over like a video conference. And people have been doing that for some time very successfully and very safely with some training. And we actually provide this treatment now which is very exciting. And so, there are all these opportunities coming up with medicines like ketamine where people who have very severe symptoms are people who are really struggling with trauma or depression I think is the main two. And there are other things that can help as well, but those two, in particular, can have dramatic benefit from use of this medicine. You know, and they don't need it...you don't take it every day. You take it, you know, once every week, once every couple of weeks with a therapist and then you have frequent communication with your therapist before and after, which helps set what we call the set and setting or the intention of the experience and what you hope to get out of it to make it as powerful and meaningful of a healing experience as possible.

So, while we wait for things like silicide and mushrooms and, and MDMA and some of these other very powerful medicines to get through the trials, ketamine thankfully is actually available right now and I think this

is going to be a total game-changer for the way that we provide mental health via telemedicine, via remote, you know, remote mental health care and remote therapy over the next several months, especially while we're under quarantine right now.

Katie: Yeah, I think you're right. And I'll make sure the links to find out more about that are in the show notes for anyone who really wants to look into that and to try it more. I know a couple of people I know personally have done ketamine assisted therapy for depression and for other things and had profound results from it. Can you go a little deeper on explaining how...because I think obviously there's still some stigma surrounding anything in the psychedelic world with certain people. Can you explain how these enables such drastic results even for people who have treatment-resistant forms of these or like, I know people who don't respond well to talk therapy have seen incredible results from psychedelic-assisted talk therapy. Can you just kind of explain what's happening that allows that to be so much more effective?

Dr. Rabin: Sure. Again, so going back to what we were talking about earlier, safety is the most critical factor of all of this. Safety is what allows our nervous system that's responsible for healing to really engage in full force. And this goes back millions of years, hundreds of millions of years actually. And Eric Kandel, who won the Nobel prize in 2002 for discovering the origins of learning and memory, found that we actually learn in our complex brains, you know, a hundred billion neurons or so, our brains learn in fundamentally the same way that 300 million year old sea snail brains learn and they only have 3 neurons in their brains. And the way that they learn is that they increase connections when they're exposed to intense, meaningful, threatening or safe experiences, they increase the amount of and the strength of those neural connections over time, and we do exactly the same thing.

So, as we practice, and I think the main thing to take home about this is that what our moms always said or what our dads always said, practice makes perfect. This is actually real. It is literally reflected all the way down in our neurobiology to the way that our neurons talk to each other and possibly all the way down to our DNA and the way that our genes are expressed epigenetically in terms of stress and reward response genes. But going back to the way that these medicines work ultimately, that if you think about it, when we are stressed out all the time, when we're constantly in a fear or threatened state or we just...it doesn't have to be actual threat, doesn't have to be actual survival threat. It could just be that we perceive something to be threatening us, like our coworker looking at us funny across the table, or traffic on the road, or our kids or family or friends screaming in the house, or whatever it might be.

You know, all of these things set...our body doesn't know the difference between that and a survival threat. So, the body responds in the same way. It jacks up heart rate. It jacks up blood pressure, jacks up respiratory rate. It increases blood flow to the muscles, to the fear center of the brain, and to the parts of our brain that are responsible for just getting us out of that situation or fighting that situation or freezing in that so you're playing dead. And this is what all the animals do, right? This is what we've been taught for a long time, evolutionarily. What I think we forget oftentimes is that when that survival system gets all of the diverted to it, because we perceive threat, it gets stronger and tighter and the connections get tighter between certain things in our environment and that threat response and the nerve connections actually get stronger, the neuronal connections get stronger.

And so, what happens is that every time you're exposed to threat, it's more likely you're going to have a survival like response. And it's less likely that you're going to calm down quickly and recognize, "Hey, wait a minute, maybe this email is not threatening. Maybe this traffic is not actually out to get me. It's just the way it is today because I left work too late, you know. And that's how it is." So, ultimately the problem with that is that on a neurological level, when we train our brains and our bodies to be in a threatened state all the time, what happens is that's diverting resources away from our parasympathetic nervous system that is literally responsible for all of our rest and recovery. All of our digestion, all of our immunity, literally managing our immune response so that our immune system is working at its peak level.

Managing our creativity and diverting resources to that, our decision making, all of those things that we care about, being empathic, and caring with our loved ones. Being present with our children and our loved ones, all of these things require the recovery system to turn on, which requires safety. And so, as we retrain our brains with safety techniques, whether that's gratitude or whether it's soothing touch from ourselves or a loved one, or whether it's any number of meditation, deep breathing, the other things we've talked about, as we retrain our brains down that path, those networks get stronger. And then we actually become better at recovering and better performing rather than just performing under stress, which means that we're not recovering enough on a regular basis. So, the reason why psychedelic medicines can be so useful and things like Apollo, which also work in a very similar way, is that when psychedelic medicines are introduced in the proper way with a very safe therapeutic context, what happens is that the safety gets amplified dramatically.

That safety reminds us that we don't have to be afraid or threatened right now and that we don't actually have an immediate survival threat around us right now. And so, it's reminding us that we can start to divert resources like blood, oxygen, energy in general to our recovery response system and allow some of the healing parts to turn on. It serves as a catalyst or an accelerant to speed up that process, which is a process that we activate and train in psychotherapy. That's sort of the main idea of psychotherapy. Oftentimes, unfortunately, psychotherapy isn't performed properly for the person who's receiving it or there's a, you know, a so-so between the person receiving the psychotherapy and the therapist, usually a lack of trust. And that trust is absolutely essential for us to feel safe. And if we don't have it, then we, again, don't allow our healing response to turn on. So, psychedelic medicines kind of provide that little chemical boost that stimulates the brain in a way that amplifies the safety of the therapeutic experience when we have a good therapeutic experience, which is the foundation of a good psychedelic healing experience. And then that literally fast tracks the retraining of those neural networks along a pathway of safety and recovery and away from unwanted stress response. Does that make sense?

Katie: Yeah, it absolutely does. And it puts in perspective why that can be so effective compared to just having talked through something. And I've definitely seen that in my own life. I've tried various forms with psychedelics as well, and those were really helpful to me in working through my own trauma. So, I can speak first hand to that.

This podcast is sponsored by BLUblox. That's B-L-U-B-L-O-X, which is an advanced light-filtering eyewear company. You've probably seen pictures of me on social media wearing orange glasses of various types at night. And here's why. In nature, we aren't exposed to certain types of light after dark, specifically, blue light, because that type of light signals the body that it's daytime. That in turn suppresses melatonin and can interfere with sleep. This is the reason that a really dramatic study found that camping for seven days straight with no artificial light at all could actually completely reset and heal circadian rhythm and help a lot of light-related problems, like seasonal affective disorder. This is also the reason that I wear orange glasses after dark to block these types of light and protect my sleep, which I am adamant about protecting. I also wear certain types of yellow glasses and anti-fatigue glasses during the day if I want a computer to reduce eye fatigue. BLUblox has orange glasses and yellow glasses. Their orange glasses for nighttime wear are designed to block 100% of the wavelengths between 400 nanometers and 550 nanometers, which are the ones that are studied to interfere with sleep and melatonin production, and circadian rhythm. My kids also wear these kinds of glasses at night. And I noticed a difference in their sleep as well, which is a huge win for a mom. This is especially important when we're watching a family movie at night or looking at any kind of screen as the artificial light, there is a source of blue light and can interfere with sleep. You can learn more, they have a ton of educational content and check out all of their innovative protective glasses by going to blublox.com/wellnessmama and using the code `wellnessmama` to save 15%.

This podcast is brought to you by Wellnesse, a new company I co-founded to bring the best personal care products from my family to yours. Our whitening toothpaste is based on my DIY formula that I have been making and perfecting for over a decade. Now, after almost 100 rounds of tweaking the formula and thousands of positive reviews, I could not be more proud to share this with your family. Have you ever read a tube of normal toothpaste? I did when my older kids were little, and I found a warning that said, "Warning, keep away from children. Do not swallow. If ingested contact Poison Control or seek medical attention immediately." That seemed a little extreme for something that I was putting in my mouth and my children's mouth multiple times a day. And I didn't want my kids using something that often that I would need to call a poison control center if they accidentally swallowed. I set out to create a truly safe and effective alternative. And the Wellnesse Whitening toothpaste is just that. It's designed to support the oral microbiome and the natural process of saliva and teeth so that teeth can stay white and strong. This dentist approved formula is safe for the whole family and will leave your teeth shiny and your breath fresh. You can check out our toothpaste and our completely natural hair food hair care products at wellnesse.com. An insider tip, if you grab an essentials bundle or try autoship, you will lock in a discount so that you can try everything at a great price.

Another area that I know you've done a lot of research on it and that specifically we can talk about Apollo in is the area of ADD and ADHD. And I think this is especially important right now as well because a lot of moms and a lot of listeners found themselves overnight becoming homeschool teachers and home with their kids much more. And so, I've heard from a lot of moms who are now navigating, "How do I actually be both the parent and the teacher for a child with ADD or ADHD? And how do I adapt a home learning environment to these specific needs?" And I know that you've done a lot of research and study in those areas, so we'd love to hear what's happening right now. I know you've been doing trials with the Apollo in this specifically, so, what are you finding right now that's helpful?

Dr. Rabin: So, this is a great, great segue, I think. So, for those who don't know what Apollo is, you can check it out on apolloneuro.com, apolloneuro.com or apolloneuroscience.com. And this is a wearable technology that was developed based on all the research that we're talking about now today. It was developed by myself and colleagues at the University of Pittsburgh. And it is a wearable that delivers very gentle frequencies of vibration to the skin that you can wear on your ankle or your wrist. But it works basically anywhere on the body and these specific vibration patterns that are very gentle, that kind of feel like an ocean wave or like a hug or somebody holding your hand are specifically developed and from our research in the lab to activate the safety response in the body and to activate the recovery nervous system instead of the stress response system.

And when you activate that recovery response system by sending safety signals to the body or basically vibrations that are interpreted by our brains as safe, just like someone you love holding your hand on a bad day, it helps remind us that we are actually not under threat in that moment and that we are actually in control of our decisions in that moment. We have the opportunity, that tunnel vision starts to fade and you have the opportunity to make maybe a different choice than you've made the last 1,000 or 10,000 times you've been in this situation. And so what's really interesting about ADD and ADHD, in particular, is that this is a huge problem in our society. Why? There's lots of reasons, I think, but one of which in particular is that a lot of us don't remember what it's like to be children, right? We forget that as a child, you know, it's a bit confusing at times in the adult world, you know, there's all this chaos and all this stuff going on around us.

And, you know, many of us feel completely out of control, particularly as we start to get into the adolescent years in high school, middle school. And we just start to feel completely out of control. And what happens is that when we feel as kids out of control, then our attention wanders, we get distracted and we literally will seek anything, anything that will help us feel calm in that moment. And usually, it's something that's distracting. So, the most common things that we see in kids with ADD or ADHD is they can't focus on things that bore them or things that they're not interested in for more than a minute or two at most. But as soon as you put them in front of a video game that they like, or something that's constantly changing or an athletic activity or something like that, they're incredible at it.

Sometimes they're like the best at it. And so what's really interesting is that that attention is not dysfunctional the way that we talk about it with the diagnosis of ADHD, it's actually just different and it requires a little more training than the average bear. And it's really at the source, the source of that distractibility, that's the source of the attention deficit as we describe it in psychiatry, really seems to be more of feelings of out of control, feelings of lack of control, lack of being in control of our lives, lack of control of what we eat, you know, lack of being control of what we learn, what we do during the day, our schedule. As a kid, we don't really have control over most of that. And so, what's really interesting is that with Apollo, we thought when we made it that it would improve, that there would be certain frequencies that were vibration that reliably improved focus. And we tested this originally in a double-blind randomized placebo-controlled crossover study in healthy folks, adults, at the University of Pittsburgh. And the results were resoundingly good for focus.

We improved focusing cognitive performance on very stressful tasks by quite a bit. And that performance on those tasks increased directly proportionate to the amount that our recovery system turned on. So, the more that our recovery nervous system turned on as measured by clinically validated lab-grade technology like EKG machines and brainwave scans and all of these other things that we did, the more that that recovery system turned on, the more that focus and cognitive performance went up. And then we thought, "Okay, we have adult friends who have ADD and ADHD. What if we just gave them our prototype to try out? You know, it has no side effects, can't hurt you. It's just sound waves. So, let's give it to them, try it out." And I personally was one of those kids who was very bored and distractible as a child, and I think I would have been diagnosed with ADHD if anybody had put me in front of a psychiatrist at a young age.

And I use it all the time for focus. So, we started giving it out to our friends in the early prototype and they all loved it. It was resoundingly, everyone was like, "I don't use my Adderall anymore. I don't use my Ritalin anymore because I can use this." And that blew me away. So, we started to work with a population of children at a clinic called the Children's Integrated Center for Success in Allentown, PA, which is run by an incredible nurse practitioner, Amy Edgar, and she's been working on basically helping to try to treat mental illnesses in particular in children without medicine or in the least invasive way, least risky way possible for many, many years. And our clinic is an incredibly well-run place that really focuses on kids' safety first. But even with all of their incredible techniques, they still struggle with many kids, not...I mean, I think they have better results in a lot of other places, but they still have children that struggle and adolescents that struggle with symptoms of ADD and ADHD.

So, when I showed her Apollo for the first time, she loved it. She tried it herself, she tried it on her daughter, she loved it. And then she said, "I think that given how safe this is, clearly, I would like to try this in a pilot trial with our patients at the clinic who are treatment-resistant. These are kids who I've tried everything I can with them. And the only outcome that we have is that we had to go to medicine because we didn't have any other luck with anything else." And she started putting on these kids just in the clinic, in therapy, in front of the parents, in front of the therapist and they put it on, and within minutes they would see a change. The kind of change where the kids would sit up, they would start making eye contact instead of running around the room.

They would start smiling and they would say...they would start talking by themselves. They would start talking about their feelings, talking about their day, talking about things that they've had on their mind in ways that they have not spoken about to the therapist in years. Somebody as a therapist would work for hours and hours and hours just trying to get the child or the client to tell them anything. And, you know, a lot of kids are very closed off in these kinds of settings and they don't want to talk and that's understandable. And they don't understand what's going on a lot of the time. And again, it's like, you know, it feels like they're out of control. And they put this on and they just settle down and they realize they're in a safe environment and they say, "This feels like a hug. And I want to talk about myself."

And that was so incredible for us to, you know, to see those kinds of results in these kids. And ultimately, after the first 15 kids went through the original pilot, Amy put together an IRB approved clinical protocol, that is a standard protocol for, you know, rigorous scientific clinical trials that can be published. And now she's running this trial in a much more rigorous fashion that will be published with, I think it's 40 children and the first 15

have been run through it and they are seeing the same results consistently in these kids. And so, I think this is incredibly promising for us to be able to have alternatives for people where not only...I mean, it's not only that we have a technology like Apollo that you can buy over the counter that can help, you know, improve something like this that we thought we required medicine for, but also for the kids to understand and for parents understand that there's hope, that this is based on a theory of neuroscience, right? And neuroscience is psychology of learning and attention.

So, if Apollo was built on that theory and Apollo works this well, then that means that if we work with our children and we work with ourselves to train our own attention better, you know, to work with these techniques and to really learn these strategies, then, you know, we all have the ability to achieve this higher level of functioning that we want and that we all talk about we want, that we all often rely on medicine that we want because we feel we need to. We don't need the medicine, the medicine is teaching us how to do it. Apollo is a tool teaching us how to do it. But again, going back to the point we were talking about earlier, all of this is pointing to the fact that we can do this on our own.

Katie: Wow, that's so encouraging to hear. And I think you're right that...had they tested for this when we were younger, I actually did testing as an adult, separate of just specifically testing for ADD and ADHD and found out I would clinically be diagnosed with ADHD, or I was technically by this test. But I thought it was really funny and I'm really grateful that they didn't test me as a kid because I probably potentially could have been put on medication. I don't know if they did that back then. But I think long-term it actually ended up being superpower of sorts. Because my parents gave me an opportunity to exist in a world where I was homeschooled for part of my adolescents and I had the opportunity to move around a lot to express creativity.

So, I didn't face some of the same challenges that some kids, I'm sure, do in a school environment. But I'm really glad that get kind of managed out when I was young because I think learning from that has been an asset as an adult. So, I think it's really important how you explain that, kind of reframing that to begin with. And then also using these non-invasive low-risk or no-risk tools that can help kids to focus and to like move through this without having to like to be medicated or to take some more of these extreme measures. That's really encouraging to hear.

Dr. Rabin: And I think that's, you know, that's really what it comes down to is that, you know, had you or I been told when we were children that we had a disorder that required medication, then I'm not sure that you and I would have put in the effort to overcome that when we were given medicine and being told that if you take this medicine, all your problems will go away basically. You know, that is not consistent with healing. That's like putting a band aid on a broken leg, you know, and the broken leg's still broken. You might not feel pain as much, you know, but it's still broken. It's the same thing with mental and attention and emotional issues that all of us have dealt with at some time. I think as we look at them as challenges that we can overcome and grow from, then we start to learn how to use our own superpowers, as you said.

I think it's the greatest way to put it. We're learning or teaching ourselves by overcoming these challenges, how to activate our own superpowers to really become our fullest versions of ourselves. And I also, I think it's

important as a caveat to remind people that this is information for you but I am not your doctor. As much as I am a board-certified physician, I am not your doctor or your child's doctor, so please don't just discontinue medicine right away without speaking to your healthcare provider or your physician. That said, it is really important if you're going to take home anything from this, I think please take home the idea that there absolutely without a doubt is scientific evidence for hope that we can all heal from these things. And that 99% of the people who have ADHD or ADD, 99% of people with these kinds of diagnoses, even things like depression and anxiety are not chronic illnesses that never get better.

On the contrary, they are chronic illnesses that can absolutely get better. And the single biggest factor in whether they get better or not is whether or not we believe that we can do anything about it. Once we start to believe that we can do something about it, then we start to put attention and energy into building those skill sets and figuring out how to overcome those challenges on our own and to learn as much as we can from those experiences so that we work in the...you know, we grow in the direction that we are hoping to.

Katie: Such a great point. And I'll say also from my personal experience, I'm a big fan of the Apollo and I use it all the time and it really does help with focus. But also for me, there's one called social and openness setting and I've had a little bit of social anxiety when I was younger. It's gotten better as I've gotten older, but I notice a big difference with that setting when I have to be at conferences or like very extroverted forward-facing places. It makes a huge difference. And then also I use the sleep and relaxation settings quite often to fall asleep at night. So, just wanted to give a plug for that, and I'll, of course, make sure it's linked in the show notes as well if you guys want to find it and try it out because it really has been helpful for me and for my kids.

But, Dr. Dave, I want to respect your time. I know that you're incredibly busy, but I love all the research you're doing. And I appreciate you coming back for a second check-in with updates on where the research is, and especially that exciting news about ADD and ADHD that I think offers a lot of hope for parents.

Dr. Rabin: Yeah, I really appreciate you for having me and it's always exciting to be able to come back and share positive news, and I think that, you know, we're on the right track. Things are moving in the right direction, and so, I thank you again for having this conversation. This is great.

Katie: Thank you. And thanks as always to all of you for listening and sharing your time with us. We're so grateful that you did, and I hope that you will join me again on the next episode of the "Wellness Mama" podcast.

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