#24 – Microdosing Psychedelics: Evidence Updates, the Placebo Response, and the Neuroscience Behi... Transcript

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Introduction to Microdosing

[music] Welcome to the trip lab kitchen table conversations about integrative medicine and psychedelics. [music] I'm your host and attending physician Dr. Mariela Wood.

Welcome back to the trip lab. So, we are finally doing a full episode on micro doing psychedelics. This episode is definitely been coming for a long time.

And if you've listened to my other podcast about psychedelics, you know that a lot of the neuroscience we've talked about up to this point has focused on what I'll call the quote unquote big trips. So fulldo psychedelic experiences, psychedelic assisted therapy, and the kinds of brain network changes that happen when people undergo those more immersive states. So if you're interested in those side of things, I definitely recommend going back and listening to some of the earlier episodes where we really break down what's happening in the brain during those type of experiences. But micro doing is a totally different conversation and it's one that's been circulating for a long time now. I would say that for a lot of people micro doing feels more accessible. It feels less intense, less scary, and more compatible with daily life. You don't have to step out of your routine. You don't have to enter an altered state. And there's this idea that you might get some of the benefits of psychedelics without the full intensity of a full trip. So people are really interested in micro doing. And for a long time, the data just wasn't that satisfying. Much of what the data did show came from personal experience, observational reports, and a lot of enthusiasm, but not a lot of highquality data. But now that is finally starting to change. In the last few years, we've seen more controlled studies come out. So, better design trials, more thoughtful analysis, and a clearer look at what micro doing might be doing, what it might not be doing, and why the placebo response turns out to be a pretty big part of this story. So, I thought this would be a perfect time to do a full episode focused specifically on micro doing. So, what it is, how it's different from a full psychedelic experience, what the current science actually shows, and how the neuroscience helps explain why micro dosing may or may not work the way that people hope it does. So, of course, let's start at the beginning. What is micro doing? When people talk about micro doing psychedelics, they're usually referring to taking a very small amount of these substances, most commonly psilocybin or LSD. And the dose is intended to be so low that you might not even be aware that you've taken a psychedelic at all.

What Microdosing Is and How It Differs from a Full Trip

There are no visual changes, no altered perception, no sense of quote unquote dripping. And ideally, you're supposed to be able to go about your day as usual. to go to work, take care of responsibilities, have conversations, function normally without any obvious interruption to your consciousness. So this is obviously very different from a full psychedelic trip.

With a full dose experience, you're intentionally entering an altered state. There can be significant changes in perception, emotional processing, and sense of self. Sometimes with visual changes, and also what people describe as ego death or ego dissolution. From a neuroscience perspective, those larger doses reliably disrupt dominant brain networks, especially the default mode network, and temporarily increase global connectivity across the brain. That network level disruption is part of why full dose psychedelic therapy has been associated with profound shifts in perspective, insight, and in many cases lasting improvements in mental health outcomes. So again, I talk about all of this a lot in my previous podcast if you want to dive into those ones. Micro doing does not appear to do all that. So the theory is that it might gently nudge certain neurobiological systems. So perhaps influencing mood, focus, creativity, or emotional flexibility without inducing that full altered state. So essentially allowing those new neuronal connections to form gradually over time may be similar to what a long-term meditation practice can do for you. And we do know that even with micro doses, they do act on those serotonin receptors still. So possibly creating those same shifts but just on a much smaller scale. But the data is significantly different as far as outcomes compared to a full psychedelic trip. So we'll definitely dive into those studies. But first I want to jump

into the current micro doing landscape and why it has gotten so much hype.

Culturally micro doing really started gaining traction in the early 2010s. So not through medicine specifically but through personal experimentation. It circulated first through creative communities, tech culture, and people interested in self-optimization. And I definitely do see the appeal. You get subtle benefits without the intensity, time commitment, or psychological risk of a full psychedelic experience. I think one of the more prominent shifts happened when James Fatiman, a psychologist, published the psychedelic explorers guide in 2011. In this book, he presented this exploratory practice, and he actually included micro doing protocols. I will say largely made by anecdotal reports and self-experimentation rather than true literature. But many people still adopt their micro doing protocols from that book today. So after that book came out, micro doing really took on a life of its own. People began sharing personal stories with improved mood, better focus, increased creativity and more emotional release. And those stories spread fast. I'll say much faster than the science did at that time. So over time micro doing became embedded in wellness culture, productivity culture and eventually even clinical adjacent spaces as well. And today content around micro doing is very widely available. We now have dozens of online micro doing protocols, coaching programs and certifications, highly specific schedules, stacks and dose claims, and a growing sense that micro doing is a legitimate therapeutic intervention. But let's make a very important note here.

Many of the claims being made are primarily observational, not necessarily grounded in hard scientific evidence. Now, I don't think that this discounts micro doing at all, but I do want to note that before we get into the theories behind how micro doing work.

Why Microdosing Became Popular

So, let's get into that fun part, a little exploration into how micro dosing might actually work, even though this has not fully been proven yet in the literature. So, we often talk about full trips as a brain reset. So with that we can think about micro doing as a sort of very light tap on the system. So instead of disrupting dominant networks it may subtly shift how certain circuits communicate almost like turning a dial rather than flipping a switch completely. And at the receptor level psychedelics primarily act on the serotonin receptors especially the serotonin 2a receptor. Fulldo psychedelics strongly activate these receptors and trigger widespread changes in cortical signaling. With micro doing the activation is much more modest, but that doesn't necessarily mean it's meaningless. Even small changes in serotonin signaling can influence things like mood regulation, cognitive flexibility, emotional salience, and how we allocate attention. So, sort of, but not completely like how our anti-depressant SSRIs might work. SSRIs are definitely different from micro doing. They inhibit the reuptake of serotonin instead of adding something new to the system, but there is some overlap. Another way to think of micro doing is in terms of neural gain. So that's the idea that the brain can amplify or dampen signals depending on context.

Micro doing might increase the gain just enough that internal experiences feel a bit more vivid or accessible without tipping into a full altered state. This also taps into the idea of plasticity priming. So full do psychedelics appear to open windows of heightened plasticity. So periods where the brain is more malleable and responsive to experience with micro doing this effect if it exists may be far subtler. So instead of opening a big window it might crack the door just slightly. So this could mean that what really matters isn't just the dose itself but what you're doing while the system is in that slightly more receptive state. So your environment, your mindset, your habits and your intentions. And that also brings us to another possibility micro doing as a salance modulator. So rather than changing the content of thought, micro doing may change what feels worth paying attention to. So people do often describe noticing small things more. So their emotions, their reactions, their surroundings. Those findings, it appears, doesn't require a full hallucination or trip or a full network collapse. It just requires a subtle shift in how the brain assigns meaning. So in that sense, micro dosing may be less about adding something new to the brain and more about loosening the grip of the autopilot. Just enough to notice what's already there.

How Microdosing Might Work in the Brain

And of course, all of this sits on top of context, expectation, intention, ritual, and narrative likely interact with these neurobiological effects in very powerful ways. If the brain is even slightly more plastic or receptive, then belief and attention can do a lot of work. So when people say micro doing helped them feel more creative, more connected or more motivated, it may not be that the molecule is doing something dramatic on its own, but that it's creating a

stage where meaning, attention, and behavior are more easily shaped. This is also why micro doing might feel transformative for some people, but overwhelming for others. If the effect is subtle, then the context really matters. In fact, I would say it becomes everything. And with that, that sets us up perfectly for the next part of the story. Because if expectation and meaning play such a large role here, then we have to talk about the placebo response. So not as a flaw in the science, but as in my opinion one of the most powerful neurobiological phenomena we have. So as this relates to micro doing, a lot of the micro doing literature so far has shown that micro doing performs about as well as placebo. And we'll get into those studies in more detail in a moment here. But before we do, I want to pause here and take a little detour into the placebo response itself. Because if we're being completely honest here, the placebo response may be the closest thing modern medicine has to a scientific description of magic. For a long time, placebo was treated like a nuisance variable. So something to control for, something to subtract out so that we could get the quote unquote real effect of a drug. But over the past few decades, it's become very clear that the placebo isn't nothing. It's not something to be controlled for. It's very real and we might be able to look at it as a therapeutic mechanism rather than something to just control for in a study. And this is because we have seen actual changes in the mind and the body under what we call the placebo response. So we've seen reductions in pain, indogenous opioid system activation, changes in stress hormones, and changes in immune signaling. We've also seen actual motor changes in people, particularly in patients with Parkinson's disease, when they believe they're receiving a specific treatment, even if they're not. So, let's look at that pain example. Functional MRI studies show that when patients are given a placebo, but told that it is a pain med, we actually see decreased activity in pain processing regions of the brain like the anterior singulate cortex, the insula, and other brain networks. These are the same regions that quiet down when someone actually receives a pain med. So this tells us that this is not just a perception of decreased pain. The body is actually processing pain less. So that's fascinating. But I think the next part is even more fascinating. So the next part of that study is that when researchers actually gave an opioid blocker medication, so a medication that actually prevents the opioids from reaching the receptors, so thus not allowing them to give pain control, something very interesting happened again to the people who were given a placebo, not an actual pain medication.

So this is essentially what happened. Researchers gave the patients a fake pill, told them it was a pain med. Patients reported the pain went away and we saw the brain's indogenous or internal opioid production activate.

Then the researchers gave them an opioid blocker without telling them. That part is the key. And patients reported that their pain returned. So this tells us that actual opioids were released from the body when a placebo was given. If that alone doesn't blow your mind, then I don't know what to tell you next. But let's move on. I also want to look at Parkinson's disease as an example as well because Parkinson's disease is characterized in large part by dopamine deficiency. So I think this makes it a really useful condition to study the placebo effect because we can actually measure dopamine release directly. So in several well-designed studies, patients with Parkinson's disease were given a placebo and told it was an active Parkinson's medication.

The Placebo Response and Mind-Body Effects

When researchers looked at what happened in the brain using PET imaging, they saw increased dopamine release in the strriatum, the same region targeted by Parkinson's medications. And the patients actually had decreased tremors and improvement with movement without a drug. So I think what's remarkable here isn't that the placebo didn't just change the subjective experience, which it did. It actually triggered the release of the exact neurotransmitter that the disease is defined by. So the brain responded to expectation by producing more of what it was missing. So I think this is one of the clearest demonstrations we have that belief in expectation can engage very specific neurochemical systems. So not just very vague feel-good pathways but actual specific biology. And this also helps us describe why mindbody medicine makes real mechanistic sense. So from a mindbody medicine perspective, the brain is constantly integrating information about the body, the environment, and what it expects to happen next. So symptoms like pain, fatigue, mood, and even motor function aren't generated in isolation. They're shaped by prediction, interpretation, and context. So when the brain even anticipates that relief is coming in general or because a person was given a placebo and told it was real, the brain actually changes signaling that influences autonomic tone, neuroindocrine signaling, immune activity, and neurotransmitter release.

So if we really want to talk about the placebo as a therapeutic mechanism, we're talking about the brain's capacity to influence bodily systems through top- down control. So, we're essentially inducing a mindbody medicine

connection with an actual or fake pill. And this is why placebo matters so much in the micro doing conversation. If micro doing is producing subtle or inconsistent pharmological effects, but it's embedded in a context of strong expectation, intention, and narrative, then the placebo response may account for a significant portion of the benefit people report. So with that little dip into understanding the placebo response, let's jump back into the latest micro doing studies. So early studies were mostly observational, meaning people micro dosed on their own and then reported what happened. People reported a lot of things from increased creativity in increased productivity, more meaning, less depression, less anxiety, a whole lot of things. So clearly we see why there was some interest in studying micro doing more.

Researchers then tried to build a placeboc controlled trial into this real world micro doing culture and I think the most well-known or famous study was published in EIFE in 2011. So participants were asked to prepare capsules at home and some had a micro dose and summer placebo and then they used a system so that they wouldn't know which weeks they were taking what until the end. Researchers then tracked mood and psychological outcomes over about a month and found that mood and well-being improved during the micro doing weeks and the placebo weeks. So, some people did view this study as essentially quote unquote debunking micro doing as an effective tool. But now we're actually seeing this as something more. Whatever micro doing is or is not doing, it is hugely impacted by expectancy, context, and the participation itself. A 2024 review that pulled together controlled micro doing studies made a key distinction that I think is the most honest way to interpret the field. So acute effects versus repeated dosing outcomes in controlled settings. Low doses of LSD, so about 10 to 20 micrograms, can produce perceptual acute effects in some people. So this might include subtle shifts in mood, social processing, or physiology. But when researchers looked at what happened with repeated dosing over time, the results do not reliably show sustained improvements in mood or cognition compared to placebo. Then finally 2025, we got something the field really needed. So a proper clinical population trial. So a randomized double blind placeboc controlled phase 2a trial was published in JAMAMA psychiatry and they tested repeated lowd dose LSD in adults with ADHD. So 20 micrograms twice a week for 6 weeks. And here's what happened.

ADHD symptoms improved again in both groups. The placebo group improved and the LSD group improved and there was no meaningful difference between the two groups. The study did show that repeated lowd dose LSD was generally well tolerated in the outpatient setting which is important but it failed their key test. It was not more effective than placebo for ADHD symptoms specifically.

I think that trial is important because it's probably the cleanest, most clinically relevant example of what we keep seeing. Micro doing has shown to be safe in controlled settings and people do feel better over time, but it's difficult to say that the molecule itself is outperforming just regular expectation in context.

What the Latest Studies Show

On the psilocybin side of things, we're finally seeing more rigorous placeboc controlled longitudinal work, too. In 2025, a report was published from the results of two double blind placeboc controlled longitudinal trials looking at cognitive and subjective effects of psilocybin micro doing. And their bottom line conclusion again was essentially the same. No reliable enhancement of cognitive or emotional functioning beyond placebo. And zooming out a little bit further, in 2025, a pre-registered meta analysis looked across micro doing studies on cognitive outcomes. So they looked at 14 studies with over 1,600 participants and again found no overall cognitive enhancement compared to the placebo. Interestingly they also did find evidence of an actual decrease in cognitive control. So meaning that micro doing may not be the productivity upgrade it's often marketed as. So overall you see why I prefaced these studies with an explanation of the placebo response. Because right now studies show that micro doing is not more effective than the placebo. But does that make micro dosing useless? I certainly don't think so. I think these studies have done a couple things. One, they have further proved the therapeutic potential of the placebo response. And two, I think the theory behind micro doing beyond the placebo response is still very interesting and warrants more studies because what these studies largely tested was whether micro doing works, not how it might work. And most of the trials so far have not been designed to rigorously interrogate the underlying neurobiology. They're mainly focused on self-report outcomes over relatively short time frames, I will add, not on neural signaling, plasticity markers, or network level changes that might be subtle, cumulative, or context dependent. So, I think it's still possible that micro doing exert a small biological effect that is just difficult to detect using our current tools or that those effects really matter in certain contexts, populations, or when paired with specific behaviors or environments.

And I think it's also important to note that from a neuroscience perspective, the hypothesis has never really been that micro doing recreates the effects of a full psychedelic experience. It's that very low doses might slightly modulate serotoninergurgic signaling, neural gain or salience in ways that could prime the system, making attention, learning or habit change a little easier over time.

And those are things that are hard to measure, and we just don't have the kind of rigorous mechanistic studies we needed to confirm or refute them yet.

So, at this point, I think the most accurate conclusion is not that micro doing work, but that we don't yet have evidence that it works beyond placebo.

and we don't yet have the data to fully test the theories of how it might work. So, this brings us to the question that a lot of you are probably asking by now.

Should you micro dose? Before I answer that, I'm going to preface that this podcast is not medical advice. This is not me as a physician giving you personal medical advice. This is for education purposes only and you should always consult with your personal physician before making any health decisions. But going back to the question, should people micro dose?

based on the studies. Maybe, maybe not. It might work, it might not. Many people do report meaningful benefits. Again, observational reports, not medical data.

But others also feel nothing. And based on the best evidence we have right now, micro dosing does not consistently outperform placebo on outcomes like mood, cognition, or clinical symptoms. That doesn't mean that people aren't experiencing real changes. But it does mean that we can't confidently attribute those changes to the pharmarmacology alone. Also important to be clear here about boundaries. Psychedelics and micro doing psychedelics is not FDA approved.

These substances are not regulated, not standardized, and not legally prescribable in most settings. That means that there are concerns around safety, dosing variability, purity, drug interactions, and legal risk, especially if you're doing micro doing outside of a research setting. So keep all of that in mind when you're pondering that question. But if you still are pondering micro doing, I think it's worth asking a deeper question first.

Should You Microdose? Risks, Limits, and Alternatives

What are you actually hoping it will change? Is it mood, focus, creativity, emotional flexibility, or a sense of openness? Because when we look closely at the science, many of the reported benefits of micro doing overlap with mechanisms we already know how to engage with without substances through mindbody practices. From what we understand about the placebo response, expectation and top- down regulation, practices that involve intention, ritual, and attention can meaningfully change physiology. So things like mindfulness, meditation, breath work, journaling, psychotherapy of course, movement practices like yoga or chiong, time spent in nature, and even structured habit change all engage the systems that placebo responses rely on. So prediction, meaning and nervous system regulation. So to conclude, I think the most honest place to land in this whole landscape is this. Micro doing remains an open scientific question. The current hype has certainly outpaced the data for now, but we are certainly on a journey to understand these molecules and all of their implications, whether that be large therapeutic trips or micro doing self experiments.

And I think the most fascinating part, these molecules are asking us to understand the mind and consciousness on more levels than neuroscience currently grasps. Thanks for listening to the trip lab. If you liked this episode, please subscribe and share so we can get the conversation started about integrative medicine and psychedelics to destigmatize it and fully explore what this could mean in the world. [music]