

Dave Asprey ([00:00:01](#)):

You are listening to the Human Upgrade with Dave Asprey. Today we're going to talk memory, but not just any memory. We're going to talk psychedelics and memory. Now, if you're about to say, I'm not going to listen to this, a bunch of people talking about psychedelics. There's shamanic and journeying use for personal developments or healing or spiritual things. There's also medical use for fixing things in your brain, and there's also a huge difference in dosing. Small doses of psychedelics have a very different effect, and some of this has directly to do with longevity and with cognitive performance. And if you've been listening for any of the last 10 years, that longevity and cognitive performance are two of the main pillars of biohacking. And biohacking itself is now a 63 billion industry, which is amazing. Starting, I guess this was 13 years ago with a hundred people at a bar in San Francisco at the first biohacking conference when I started it, we're now at 3,200 people. But the entire time, how do you improve yourself? How do you improve cognitive performance? How do you heal stuff that needs healing, including trauma? And how do you live longer than you think you can? Which includes having a brain that's young and flexible. That's what we're going to talk about today and very specifically about your memory. He wants to live a good life if you can't remember it when you're done. Our guest today is Dr. Minaj das. He's a scientist at the University of Texas at Austin Dell Medical School. Man, that's a mouthful.

Manoj Doss ([00:01:39](#)):

I know.

Dave Asprey ([00:01:40](#)):

Could they add some more?

Manoj Doss ([00:01:42](#)):

Yeah. It's a weird thing about med schools sometimes want to have that extra title.

Dave Asprey ([00:01:48](#)):

You're studying how drugs affect thinking emotions and the brain. Now, when I say drugs, is this only psychedelics or do you look at things like metformin and rapamycin and other things?

Manoj Doss ([00:02:00](#)):

Not those in particular, but mostly psychoactive drugs. So this could include THC alcohol or other gabaab sedatives like benzodiazepines and Ambien as well as dissociatives, which I don't always group in with the psychedelics. So ketamine, dextromethorphan, and then also stimulants like amphetamine and methamphetamine.

Dave Asprey ([00:02:20](#)):

Okay, so you're into all the good stuff,

Manoj Doss ([00:02:23](#)):

I suppose. Yeah, A

Dave Asprey ([00:02:25](#)):

Special shout out to Dr. Charan Rag who recommended that I talk with you. Oh,

Manoj Doss ([00:02:31](#)):

Yeah. Yeah. Char and I worked in his lab over 10 years ago, and an odd little fact, I think his grandfather sold furniture to my uncle way back in the day.

Dave Asprey ([00:02:40](#)):

Wow. Yeah, the universe is so connected.

Manoj Doss ([00:02:44](#)):

His grandfather was, I think, one of the first people to do movies in kind and tumble. Wow. Which is like these South Indian languages. Yeah,

Dave Asprey ([00:02:50](#)):

Amazing. And he was on episode 1152 a couple months ago, and we talked about the science beyond memory in general. And since you're studying psychedelics in, I'm like, we got to share this with all the listeners because they're really into this.

Manoj Doss ([00:03:03](#)):

Charin was a huge influence and still is in the way I study memory. And in fact, actually a really funny thing is when I was leaving his lab, he said, don't study drugs in memory. There's no career there. And then later on, I think this was a few years ago, he said, so I guess you're one of the people that I've given bad advice to.

Dave Asprey ([00:03:20](#)):

Sometimes we think we know and then we find we didn't know. And it's a hallmark of someone who's done some emotional healing and has done ego work in order to be able to say, wow, I was wrong. I am improving now.

Manoj Doss ([00:03:32](#)):

And I actually think though, that there was still a piece of advice that he said there that I still think is probably true. He doesn't remember this, but he said to me, you're not going to learn anything about the mind from drugs. And I thought at the time he was being a hater, and now I think he might be more right about that than ever, but I think he might've flipped his opinion.

Dave Asprey ([00:03:52](#)):

It is funny by disabling or ramping up certain aspects of the mind, it feels like as a computer hacker by training, if you're trying to get inside a black box, a system you don't understand, you turn knobs and dials and see what happens. So it feels like there is some learning we can get from psychedelics. Why do you think maybe there isn't as much? I

Manoj Doss ([00:04:11](#)):

Guess? I mean, we've been, this research, the renaissance, so to speak, has been going on since what probably the 2006 publication of mystical experiences, although psychedelic research was happening even before that, both in the US as well as Europe to some degree anyways. And I honestly can't say I've learned too much about the mind from the studies. Maybe it's the way that we're studying them, whereas I can say from just basic kind of psychological paradigms, experimental psychology, or to some

degree even brain imaging, I have learned certain kind of fundamental aspects of how the mind or brain works. If

Dave Asprey ([00:04:45](#)):

You could in four sentences, tell me how the mind works, what would you say?

Manoj Doss ([00:04:53](#)):

I don't think I could do that. I think that some people would, the big kind of overarching model that some people, especially in the psychedelic world are going off of is the predictive processing framework. I don't totally buy it, but yeah, it's hard for me to say. I mean, I think there is some type of hierarchical way in which the mind works and things get more abstracted, and we probably only have access to some of that, but that's not being very specific at all.

Dave Asprey ([00:05:21](#)):

If you're saying predictive processing, what, there's a guy named Jeff Hawkins, who was the guy who invented the first handwriting recognition for the first personal digital assistant would be the great, great, great, great, great grandfather of the iPhone. This was called the Trio back in the day, and he wrote a major book outlining how the brain predicts the Future microseconds from now,

Manoj Doss ([00:05:51](#)):

Jeff Hawkins. Yep. I think, wait a minute, I might've got his book at one point, but I never read it.

Dave Asprey ([00:05:57](#)):

It was one of those books that really changed the way I think about it, because whether it's how things actually work, the reality is that you notice things that aren't as they should be, and he goes in great detail into structures and things like that. And it's something that some of my more advanced students at 40 years is in my neuroscience facility or neuroscience experience. I suggest they read it because it's useful for thinking about this if my brain is only noticing things, what is it not noticing? And that's why, for instance, skeptics die I think six years earlier than non-skeptics. Oh, that

Manoj Doss ([00:06:40](#)):

Sucks for me.

Dave Asprey ([00:06:42](#)):

Well, there's curious people. They're saying, I don't know. And skeptics are the ones who say that can't be, therefore it isn't.

Manoj Doss ([00:06:50](#)):

Yeah. Yeah. I mean, I think I'm always open to new possibilities, but yeah, I think I can certainly sometimes be a little skeptical, especially amongst psychedelic scientists.

Dave Asprey ([00:07:01](#)):

Yeah, there could be some people who maybe sample a little too much. Speaking of that, if I accidentally spilled some ayahuasca in your Danger coffee before we started, would that be a better interview?

Manoj Doss ([00:07:11](#)):

No, I probably would be unable to speak. I think a lot of people forget sometimes that with psychedelics that for some people anyways, for a lot of people, at least at different moments in time, it can kind of cut off your ability to speak very easily or very fluidly. We were doing this task at a Hopkins, this free association task where you're primed with a stimulus and then you're just supposed to chain off words. And the idea is that, oh, you get very free associative, whatever. And people were struggling. I mean, I only watched a handful of participants do it, and maybe the data will look different, but people were definitely struggling. We would tell people, okay, if you can't come up with a word, just say the word you said previously. And then so after finally somebody gets a word, they're like ketchup, and then they're like, ketchup, ketchup, ketchup.

Dave Asprey ([00:08:02](#)):

I'm reminded, I recently was down, I'm at Eter where I got some gene therapy for longevity, and they also did a procedure where they were injecting a kind of Japanese stem cell into my reproductive system. And so they gave me ketamine as the anesthetic, and I said, well, don't give me enough to really knock me out. It's already numb with wider canine. I'm just going to do a video for you. And so I'm doing the video, and afterwards I'm like, and finally they just shoved probably a little propofol, even though I didn't want it just to make me shut up so they could finish the procedure.

Manoj Doss ([00:08:40](#)):

Did you put the video online ever?

Dave Asprey ([00:08:42](#)):

No. I said like a total moron. Right. So at the time, I didn't think I did, but that can happen, right?

Manoj Doss ([00:08:48](#)):

Yeah, that sounds like it would be a fun video, though. I probably shouldn't say who this is, but there was a group that I knew that they were piloting one of their studies, and I think they got approval to do this. So a few of the researchers were testing out doses. One of the researchers seemed to really like it. Another person was like, this is kind of weird. And then another person slightly on the older side who'd probably never tried Ketamine, ends up getting it. And then in the video, this person goes, oh, it feels like I'm moving away to the back of the room. And then all of a sudden it's like, oh God. And then the camera shuts off, and then I heard that they're like, take it out. Take it out. Stop.

Dave Asprey ([00:09:33](#)):

Having witnessed enough people doing psychedelic ceremonial work, I've done shamanic training. I'm not a shaman, but I've done deep healing work, less of the party experiences, although I do go to Burning Man, so I've had those as well. And what's going on inside and what's going on outside? Don't have a lot of correlations. I've seen people have just profound healing of childhood traumas, recover from brain injuries, but they kind of look like they're laying there sweating during the time. So I always just say it's on the inside. That counts, right? Oh yeah, it definitely. Let's talk about memory specifically because you've studied this so extensively, which is exciting. Walk me through the phases of memory. What happens once I want to remember our conversation.

Manoj Doss ([00:10:19](#)):

So especially when you're talking about with manipulating memory with drugs, you always have to consider three phases. A fourth one that maybe we will touch on later, but that will be encoding, consolidation and retrieval. So encoding is when you're forming your memories when you're studying. For example, consolidation is when those memories are stabilizing. In some ways people will refer to this as being offline. So there's still things happening at the synaptic level from one hour ago that will determine whether or not I can remember this experience or remember that experience from an hour ago. And then lastly, there's retrieval. So your ability to access your memories, remembering essentially. And so for example, in the lab, what we can do is we can give people, show people a bunch of stimuli and they can be on the drug during that time period, in which case it'll affect the encoding or the formation of those memories.

[\(00:11:12\)](#):

We can give a drug immediately afterwards, after we show them a bunch of, let's say pictures. And that can retroactively impact those memories in a certain way. There's a really cool effect with alcohol. And then you can also just give people, show people a bunch of stimuli and then let's say a day later, so that way you wait for those memories to stabilize. You can now give them the drug and see how it impacts the way they access those memories. And what you can end up showing is, especially with different drugs, is that they don't inf affect all those stages of memory the same. I think as I was just kind of alluding to with alcohol, everybody knows if you study drunk, you're not going to remember anything the next day for your test. However, if you study and then get drunk immediately afterwards, and in the studies of the lab, we're talking four shots in 10 minutes. Oh,

Dave Asprey [\(00:11:56\)](#):

That's so bad for you. You can be hungover the next day.

Manoj Doss [\(00:11:59\)](#):

And so assuming you can perform on your test with a hangover, you might actually retain more than had you not drank at all. So a very, yeah, it's known as retrograde facilitation. It's a very paradoxical effect. Yeah, you study drunk, you're not going to remember anything. The next day of your test, you study get drunk immediately afterwards, and it'll enhance your memory. And this hasn't been quite tested in a very ecologically valid situation. It's not like they've gotten a bunch of students drunk and done this, but for example, at least showing people words, images, sentences, emotional words or images, and then using pretty much any gaba, a psic modulator. So alcohol, benzodiazepines and Ambien

Dave Asprey [\(00:12:41\)](#):

Or kava

Manoj Doss [\(00:12:42\)](#):

Kava could work too. Exactly. I don't

Dave Asprey [\(00:12:44\)](#):

Know. Shout out to my friends at true kava.

Manoj Doss [\(00:12:47\)](#):

Yeah, I've actually wondered that myself. So kava, it turns out, at least with the propofol, it might actually impair your memory, but it

Dave Asprey ([00:12:54](#)):

All screws up your mitochondria, which are the basis of energy for memory.

Manoj Doss ([00:12:58](#)):

Yeah. It's also a gaba, a agonist. It might even have some GABA B effects. And so there's other things, and it doesn't work with gaba e agonists. Anyway, GHB. Anyways, that's one test to that one, but it does work with the gaba_A STIC modulators. And yeah, people have had different delays between study and tests. It's been shown by numerous groups around the world.

Dave Asprey ([00:13:18](#)):

Have you ever studied or looked at Aniracetam?

Manoj Doss ([00:13:22](#)):

No. But you're like, you're talking about one of the neurotropics, like the Yeah. Yeah.

Dave Asprey ([00:13:27](#)):

So Raam, it's a pharmaceutical. It's in the Raam family, and these have been around since the fifties actually. Sandoz Pharmaceuticals, who also was the manufacturer of pharmaceutical LSD for the studies that Stan Grof did. Stan was on the show years ago. He's the father of transpersonal psychology and infant and breathwork for listeners. Anyhow, you look at Aniracetam, it's the only raam that improves memory in studies, and I've been on it for 22 years, almost every day. And I notice a huge difference on Aniracetam. I just remember all of these things, and I can recall them what I just did there. It's all right there. And if I don't take it for a couple days, I notice there's a slight delay in word recall. It's a very noticeable effect. It's one of those things that no one's going to make money off. It's off patent for God knows how long. But it's one that I wish there was more research on. So I'll give you a bottle.

Manoj Doss ([00:14:28](#)):

Yeah, you think it's better than What's the one that a lot of the one starts? The P? Yeah.

Dave Asprey ([00:14:34](#)):

Paracetam is kind of the one everyone study the most, and there's lots of analogs. So Phenyl, piracetam is more energetic than Piracetam and and some of the others, I've tried all of them. And the one that I stand by for memory is aniracetam. It's also the only raam that is stress or anxiety reducing as well. So it's also the only one that I know of that's fat soluble. So I take that stuff in the morning and I really notice the difference, especially for young people, it helps as well. But it depletes acetylcholine, which is an important neurotransmitter, so you have to take a choline donor when you take it. So for people listening, this is my favorite memory drug, but who knows, maybe we're going to learn some new ones in this interview.

Manoj Doss ([00:15:21](#)):

So I mean, the thing with memory in general a lot of times is that you can enhance one thing at the expense of something else. So there's a general filtering mechanism. There's a limit to what you can remember. Some people think, for example, like oh, emotion, it enhances your memory. Well, it enhances certain elements. There's known as, for example, the weapon focus effect, where you can, for example, if somebody is pointing a gun at you, you might remember the gun and what's around it, and

it's the immediate surrounding, but then everything in the context behind it, you might forget now. And so I would always be curious as to, well, is there ever a, what's the downside? That's what I'm always concerned with when enhancing anything.

Dave Asprey ([00:16:04](#)):

It's funny. Everything we do has an upside in downside, including golf, including lotion and everything in your body. And we don't really study the downside of lots of things. For instance, fragrances have a really serious downside on your hormone system, but people use 'em all the time without even knowing,

Manoj Doss ([00:16:20](#)):

Right? Yeah. I mean, I think this is true sports, right? They're obviously generally pretty good for you training and all that, but then how many downsides to even yoga your joints can potentially get a little messed up.

Dave Asprey ([00:16:34](#)):

It's funny, it's called danger coffee or drinking because who knows what you might do, but all the things we're doing have some element of danger, even if it's just eating breakfast. There's always something. But the things like asking the girl out, getting a degree, starting a company, whatever, whatever's the thing that seems daunting, that's what you want to have the power to do. And oftentimes unlocking trauma is a part of that because the internal resistance is there and psychedelics can help with that. But there's many ways that are psychedelic, like neurofeedback, like breath work, like EMDR, and there's this long list that people know from the show. And when we're looking at being able to remember things better, this is really important for executives, for students. And frankly, as you age, a lot of people start losing their memory, but they don't know it. I'm not going to name any certain politician, for instance, when we talk about that, but if you realize there are ways you can protect or enhance it, and they may include psychedelics, they may not. This is just precious knowledge. There's two kinds of memory that I want to know how to enhance, and one I suck at and one I'm world class at. There's episodic memory and semantic memory. What's the difference?

Manoj Doss ([00:17:44](#)):

Yeah. So episodic memory is more of your event memory. Memory for where and when something happened that yesterday I went to go pick up my partner at the airport at eight o'clock. Whereas semantic memory is more of this kind of general knowledge, you might call it like crystallized knowledge or something along those lines. So knowing that George Washington is the first president of the country, you have the semantic memory for that. You no longer have the episodic memory for where and when you learn that information or even knowing what a pizza is, I know what a pizza looks like, tastes like, smells like, and yet I can't remember the first time I had a pizza. And so a lot of times the way things kind of are thought to work in the brain, there's a very simplistic way of describing this, and churn might get a little mad at me for describing this in a way that people described it 30 years ago, but I'm just, for the sake of simplicity, I'm going to say it.

([00:18:37](#)):

But so one idea is essentially that your hippocampus is, it binds a bunch of disparate elements together to these episodes. So for example, my partner doesn't have anything to do with an airport, not necessarily anyways, but together I can put this into a single episode. And then over time you can kind of extract the statistical regularities across those episodes. So for example, the first time you ate a pizza,

you might be like, oh, this is amazing, blah, blah, blah. And then over time, across eating pizza several times over, you now know what a pizza looks like, tastes like, smells like, and you don't have the episodic memories anymore for what that is. And the idea is that the hippocampus is thought to train the cortex to kind of outer layer of your brain in a way that kind of distributes that information such that if I damage one part of your cortex, you're probably not going to forget what a pizza is. If I take out your hippocampus, you're no longer going to be able to form episodic memories. And so it's a very kind of interesting distributed system. And over time, Alzheimer's is a great example where they get so much damage first to the hippocampus and they can't form episodic memories. But even over time, they start to damage, there starts to be damage to the cortex, and then they can forget their mother's face or these very kind of obvious crystallized memories.

Dave Asprey ([00:19:54](#)):

One of the hallmarks of aging is hippocampal shrinkage. So of course I measure my hippocampus because why not? And I'm 87th percentile, which means whatever biohacking longevity stuff I've done over the last 20 years seems to be working. But there are ways of regenerating hippocampus. How would you go about doing that?

Manoj Doss ([00:20:15](#)):

So yeah, it's one of two regions that can have neurogenesis. The other being olfactory cortex, so an area that represents smell. But yeah, your hippocampus is one of those regions, but there's something to be said about more is not always better. It's kind of like, for example, since when you were five years old, you probably had the most connections your brain has ever had. And then you prune those connections over time. One idea is that it makes things more efficient. You get kind of less bizarre associations that are probably not going to do anything for you for the sake of your survival or whatever. So it does seem to be the case that certain disorders, PTSD depression, they're associated with smaller hippocampi. But for example, there was a really famous study where they had taxi drivers or they had people who were becoming taxi drivers in London, there's known as, I forgot what it's called, it's like the book or something, and they have to learn London really well. And what they showed was from before to after learning going through that procedure that their posterior hippocampus became larger. I think that the interior hippocampus became smaller though.

([00:21:29](#)):

And again, I don't know how well that replicates. I think the actual posterior hippocampus effect probably does replicate. I'm not sure about the interior one, but there's always kind of compensation and more is not always better. I mean, you can look at, for example, people, I don't know if the Hippo Campi are actually bigger, but there are people who were super rememberers and they can remember which episode on what day Joey from friends did whatever. And I say that because I think that's the example someone used, but they tend to sometimes have, I think problems like affective problems. And so I'm not always convinced that having more, although I think you're right, that it does get smaller and that probably is somewhat of a sign of aging and memory getting worse. So I don't know, to make things better though, to make things more, let's say, if you did just want to make them make it larger.

([00:22:21](#)):

I think exercise seems to be one. There's also some, it's unclear if hippocampal neurogenesis even happens in adults, adult humans. There's some people out there who are still that they're saying that it might not happen as much as we think it does, or it might not even happen at all. So I think it's still kind of controversial. And then neurons, those new neurons also haven't integrated necessarily into circuits either. That could be useful. They might be more useful for things that are less important. So if I were

going to tell you anything about how to make your memory better, I think exercise is probably the best one.

Dave Asprey ([00:22:57](#)):

We know that exercise increases blood flow in the brain. I'm on the board of Amen Clinics, and Dan Amen was just on stage at the racking conference and a dear friend whose work really changed my life, looking out to half a million brain scans. You can measure blood flow and we know that exercise does that, but maybe more importantly, exercise raises a compound called BDNF. Can you talk about that and what it does?

Manoj Doss ([00:23:19](#)):

Yeah, so brain derived neurotrophic factor. So first of all, a neurobio person would definitely be the person more to ask about this, but it has become especially talked about a lot with amongst psychedelic researchers. And so it's at least one component involved in different forms of neuroplasticity. So that includes neurogenesis. It also includes, for example, forming dendrites, so connections, the branches between neurons or at least what are the types of branches between neurons. And so some evidence suggests that psychedelics can upregulate BDNF as well as now, there was a study that just came out that suggested that psychedelics actually bind the same receptor track B as B, DNF. Although I also saw some people have now been like, wait a minute, wait a minute. We tested 40,000 compounds and none of them bind to track B. We don't believe that psychedelics bind to it either. And so it's still research to be done, but what ideas that might be responsible for how psychedelics are enhancing at least certain types of plasticity. So specifically that structural plasticity, the dendrites essentially grow the dendrites or what are known as spines, these little buttons on the dendrites. But the neurogenesis stuff, for example, with psychedelics is not as clear as some people, including myself, have made it out to be. I've cited papers and then later on I'm like, Ooh, actually there's a lot of papers that don't find the effect of neurogenesis.

Dave Asprey ([00:24:45](#)):

Interesting. Yeah, if that's why exercise works, one of my major books, this was the one that was on the New York Times Science bestseller list, which as an author was, wow, that's the list that's hard to get on versus the advice list. And it was sandwiched between Homo de and Sapiens, and the book was called Headstrong. And I'm like, two things you can do if you want to have a better brain, which includes memory, it's have enough mitochondrial activity in the brain and have enough BDNF that you have the ability to at least resculpt it. And there are some things that we know work, fasting, exercise, interesting studies of lion's mane around BDNF. And then more recently I invested in Paul State's company. He has something called the statement stack, and Paul's been on the show. He's a friend and he's the mushroom guy. The fungus guy.

Manoj Doss ([00:25:43](#)):

I saw him that he gave a talk before mine at the text Eclipse Festival.

Dave Asprey ([00:25:47](#)):

Perfect. Oh wait, I was at a different eclipse festival here. Yeah, he's just an amazing human. And what he found was mixing psilocybin lion's mane and niacin to increase blood flow in the brain was causing whole brain neurogenesis. This is a pharmaceutical company that he started in order to use this for things like traumatic brain injury or for things like aging, like Alzheimer's. And so it looks like there's

some evidence that we can do this. And that wasn't just hippocampus, that was whole brain. Thoughts on that?

Manoj Doss ([00:26:20](#)):

Yeah, I mean, I would have to see the data and one of my neurobio friends would have to approve of it. I think people have talked about other regions in the brain having neurogenesis, and every time there's something that comes out, there's always somebody who's like, eh, I don't think that's quite the case. Got it. And like I said, even with the hippocampus, there's people out there who are saying, at least in adult humans, I'm not sure how much neurogenesis is actually happening there. The other thing you have to always consider is how those neurons are wiring up. They're not going to wire the same way they did previously. And manipulating that in a way that can be adaptive is probably not easy. You have a brain that's overly linked up. It can potentially lead to interference, information processing, or I mean, I don't know, perhaps, I don't want to say seizures, but there could be things that can happen where there's too much of something going on, especially

Dave Asprey ([00:27:11](#)):

Without any organization. That's why I use neurofeedback with substances, even just regular BDNF promoters so that at least the neurons know where to go. So they're generated and called into action. And the effects have been over the last 11 years, pretty

Manoj Doss ([00:27:28](#)):

Potent. I mean, this actually makes me wonder. So for example, with psychedelic therapy, we just leave people on a couch with eye shades on while they have a massive dose and they listen to white people music. And I always wonder, should we be doing something with them? Should we be perhaps, I don't know, driving certain ideas? This sounds almost like brainwashing or something. I don't mean it like that, but I dunno, telling somebody they're a good person or something after 10 years of thinking that you're a terrible human being, you now have formed a semantic memory for that. George Washington is the first president of the country. I'm a terrible human being. What if they

Dave Asprey ([00:28:06](#)):

Really are now?

Manoj Doss ([00:28:07](#)):

I mean,

Dave Asprey ([00:28:10](#)):

Just kidding. Yeah,

Manoj Doss ([00:28:11](#)):

I think that, I don't know, good and bad is a weird thing. I don't know if there's always good and bad

Dave Asprey ([00:28:17](#)):

People. That was clearly a joke. What we did is we launched our new products called psychedelic assisted neurofeedback, where you are on a substance at 40 years of that. And we're using ketamine for very specific reasons, low dose ketamine not going on a journey, and we're showing your brain what it's

doing, which is different than putting something into the brain. And then we take you through a structured meditation process. Well, you are more, let's say more synaptically plastic. And the idea here is that even if you go into a deeper journey, which you do on one of the days, your brain is getting feedback on what it's doing during the journey. So you kind of have a better automatic or subconscious sense of where you're going. And the results so far have been people are able to do more of the deep forgiveness work this at the core of the program when they're doing it with that. And we measure that by brainwaves. We know what that looks like on a brainwave when someone has a transformative experience, and so we can guide them into that more deeply. But how do

Manoj Doss ([00:29:23](#)):

You know what those brainwaves are reflecting? What's known as a reverse inference problem?

Dave Asprey ([00:29:29](#)):

Well, I mean, after you have 1500 people go through a program, when you see this specific pattern and large numbers of people report this kind of experience, I could tell you what deep, authentic forgiveness really like in the brain, because we have enough data on that.

Manoj Doss ([00:29:44](#)):

Yeah, it's interesting. So right now, neuroimaging, right? So if you're talking about EEG, that's been around for over a hundred years or about a hundred years, and then a MRI's been around now for 30 years, and yet neither of these tools are used in psychiatry. EEG is used in some neurology. It's used in sleep disorders and epilepsy, but it's not used in depression, anxiety.

Dave Asprey ([00:30:10](#)):

I psychiatrists who use

Manoj Doss ([00:30:11](#)):

It, and yet, I don't know, Eddie,

Dave Asprey ([00:30:16](#)):

Let's talk to Daniel. Amen. A psychiatrist, and he's got a half a million spec scans, which is a kissing cousin to fMRI.

Manoj Doss ([00:30:23](#)):

Yeah, and FM MRI is better, I'll say

Dave Asprey ([00:30:26](#)):

Except that one study that showed it was all junk, remember that?

Manoj Doss ([00:30:29](#)):

Well, there's a lot of studies that have been showing, it's funny how FM i, researchers are the biggest haters of FM RI, myself included. And so I think that they're interesting tools for research, but they haven't really cracked anything yet that's really promising for diagnosis or prognosis or anything. And we have tens of thousands of scans and have some of the best people looking at using machine learning to try to pick things out. And yet it hasn't been super useful yet. And so I do this is why wondering, it's like,

okay, well, sometimes you can see certain brain waves, for example, or let's just say brain activity. Let's say the amygdala. The amygdala, everybody thinks, oh, it's emotion center, fear center. You can see the amygdala, you can see amygdala activity when sure when people are probably scared. You can see it when they're looking at somebody scared.

[\(00:31:19\)](#):

You can also see it when people look at a happy face or if they're looking at something salient versus non salient during sex. It's very active, I'm sure, but you can also see it if you compare, let's say like a checkerboard versus a gray screen, my guess is the amygdala activity is going to be up for the checkerboard salience. So this is the idea of reverse inference is we are unable to infer what's going on in the mind based on brain activity. What we can do is the other way around where you can look at certain types of behavior and know that the associated brain activity with it, but usually different brain areas, they respond for multiple different stimuli. And so it gets a little difficult.

Dave Asprey [\(00:32:05\)](#):

Didn't some researchers recently look at high resolution EEG brain scan and be able to infer what a person was looking at just on their brainwaves?

Manoj Doss [\(00:32:15\)](#):

And you can probably even do that, I think. Yeah, you can do it with that from Maria. I as well, especially if the images are quite distinct from each other, like an object versus a scene. This

Dave Asprey [\(00:32:23\)](#):

Was a scene of a road with cars and a tree or something. And I would say what the AI model looking at brainwaves predicted was 90% the same. I mean,

Manoj Doss [\(00:32:37\)](#):

Definitely do some pretty cool that especially. But if you look at, for example, even actual brain activity, if you get patients with electrodes in their heads, usually it's because of something like epilepsy and so they're about to go for a surgery. It's like sometimes the reconstructions of their brain activity for what they're saying, it's like arm, it's not perfect. So I mean, I think it's getting better, but yet, I mean, as I said, it's not a tool that we typically use. We don't scan somebody's brain and say, okay, this is the medication you should go on, or you have this flavor of depression or anxiety or whatever. It would be really useful, right? Because then for example, we wouldn't accidentally give somebody with bipolar disorder when they're depressed, the wrong medication, but yet we don't do that because I don't think it, it's not that useful yet.

Dave Asprey [\(00:33:29\)](#):

Yeah, it's a very early days I'm with, I won't go back to episodic memory versus semantic memory and guys episodic is, I remember something happened on a certain day and semantic is I know how stuff fits together. So I mentioned earlier I'm really good at semantic memory world class. I've just got all that stuff in there. Episodic memory, I don't know what day of the week it is. I don't know. I did yesterday or last week. I literally look at my phone. And to me, anything that happened more than two weeks ago could be six weeks or six months or two years ago, and it's all the same. What's going on in there?

Manoj Doss [\(00:34:05\)](#):

That's interesting. Yeah. Yeah, it's interesting. So semantic memory, as I mentioned, it's kind of this, it usually takes a longer period of time before it gets into semantic memory, but sure after a year that probably if you have something from a year ago, it might be semanticized, so to speak. And so yeah, I don't know if my episodic memory is great either, but at least the things that I know I can tend to get in there. So for example, if you give me a new fact about psychedelics, I'll probably be able to retain it. It's interesting, I think that with certain specialty, with the way, if you have a schema, for example, if you have a way of encoding this information, there might be an easier transfer to let's say semantic memory. But a lot of times, at least when you initially form a memory, let's say, a lot of times for when people are studying for a test, for example, what they'll do is they'll sometimes we're trying to remember the page, the textbook that they saw it.

[\(00:34:59\)](#):

And you can say that even though it's almost like a semantic memory that they're trying to form, and yet they're using episodic memory to recover it because it's not very quick that we can necessarily transfer this information. But yeah, I think a lot of it probably has to do with just specialized knowledge that the things that get transferred the easiest are going to be what we already have schemas kind of built in for. The way that we encode information a lot of times has to do with what's already there. And so what can end up getting in and getting into semantic memory particularly might end up being what it's most related to in the first place. So I don't know. Yeah, you study a lot of biohacking and I'm sure it's easy for you to, then you read a new piece about biohacking and then it gets into there.

[\(00:35:36\)](#):

But if you were studying, I don't know, Mandarin or something, don't tell me Mandarin, but let's say you don't know Mandarin, I even know a little bit. Or maybe it'll get in there easy. In my case it wouldn't. But I think that, for example, I was trying to learn a little French during the pandemic. Luckily it's close enough to Spanish and Portuguese. So even if you took out my hippocampus, so one thing it's worth mentioning is it's not always clear what's a semantic memory, an episodic memory, except these very clear examples of, okay, George Washington first P country, you took out my hippocampus. I would still probably know George Washington as a first president of the country. And that's kind of the way, at least I would define it. I dunno if every memory researcher would agree with that. So that's a semantic memory and it's unclear exactly what is an episodic versus semantic memory sometime. But at least in the case of something, if you were to take out my hippocampus, I'm pretty sure I would still know a little bit of French. And that might give you an idea of what gets into semantic memory and what does it, and actually one of the things I'm proposing, the psychedelics is that it might speed things up to get into semantic memory.

Dave Asprey [\(00:36:41\)](#):

Interesting. But it looks like some psychedelics can reduce episodic

Manoj Doss [\(00:36:45\)](#):

Memory. I think that they generally do. And so I think they essentially bypass the hippocampus in some ways. So yeah, if there's any reliable effect on memory, is that encoding specifically? Not consolidation or retrieval, although there might be some interesting effects there as well. But when it comes to the formation or encoding of memories, if there's any reliable effect with psychedelics or any drug is that hippocampal dependent memory gets worse. But something that at least we found with psilocybin mdm, man, I just had a paper published this past week with psilocybin and two CB, is that it looks like this. You could think of almost like a short term semantic memory that hasn't quite become a permanent fixture in your cortex just yet, that this form of memory notice familiarity does seem to kind

of get enhanced. And essentially familiarity over time can become what can become a semantic memory.

[\(00:37:42\)](#):

It has this sense of knowing. So familiarity can be thought of as you might one day I might see you somewhere out in Austin, and I might say, you look really familiar, but I can't remember where I met you, what I met you, what your name is. I just know I've met you. That's familiarity in the absence of this typical episodic memory recollection. And so over time, after several repetitions, which enhanced familiarity, that's probably what produces something like a semantic permanent crystallized semantic memory. And so I think that by enhancing familiarity, psychedelics might help drive information into the cortex. People sometimes lead these experiences having this sense of knowing even though they can't remember all the steps and recollections, the episodic memories that lead to a sense of knowing. Sometimes it's some bizarre things like, oh, I understand the universe. And it's like, all right, how do you know, understand the universe? It's like, I wouldn't be able to tell you. I just know I do. And then other times it might be more useful like, oh yeah, I'm not a bad person, and they don't know everything. They can't recollect everything that took them to that point, but knowing that they're not a bad person is probably something that could be useful.

Dave Asprey [\(00:38:48\)](#):

I've worked with a good number of people, whether they want to call 'em psychics or readers or whatever, and they somehow seem to have developed this, I'm just going to call it knowingness, where you can give them a name and you think I'm someone, and they tell you all these facts about the person, you're like, how could you possibly know this? And you ask 'em, they say, well, it's just right there. I just know it. Are they crazy?

Manoj Doss [\(00:39:15\)](#):

I'm not a medical professional, so I shouldn't make that diagnosis. But yeah, I wouldn't be the first person to believe them. I believe they believe themselves, but I wouldn't necessarily be one. And I think that that's a type of, so this driving of neuroticism I think is something that psychedelics can do. As I said, I think it can be potentially bizarre at times, but it could also be adaptive. For example, something that's as we discuss is less objective like you being a good or bad person, and we're thinking that the world is dangerous or not. The truth is it's both. It's dangerous, sometimes it's not. And thinking that it's always dangerous is probably not useful, or knowing that it's always dangerous is not useful. But I do wonder, and it's something that we've wanted to test. If somebody gave me a million dollars, one of the first things I would do would be looking at different types of learning under psychedelics and seeing whether or not there's certain things we can enhance that is objective.

[\(00:40:15\)](#):

Like let's say language learning. You can think of languages. I used that example earlier. They might initially start episodic. You might think, oh, how do I conjugate this verb? And they become rather automatic and crystallized. You ask a person whose first language is something that you don't speak, why is it this way? And they'll be like, I don't know. It just is. They just know that it is. And so I think that it would be very interesting to, for example, look at psychedelics and whether it's language learning or certain types of kind of automated crystallized learning to see if they might speed up that process.

Dave Asprey [\(00:40:50\)](#):

This would obviously be dose dependent, and a lot of these things will cause auditory distortions, which aren't going to be helpful with French, which to me sounds like auditory distortion. Anyway. No offense.

My kids speak fluent French, and when I try to hear it, I know my auditory processing is weird and French and Swedish both to me, I just don't hear them. Right.

Manoj Doss ([00:41:11](#)):

French is definitely the weirdest one out of the romance languages. Sorry, French people. Yeah,

Dave Asprey ([00:41:17](#)):

No shade there. I've tried and it doesn't stick, but Spanish is fine for my brain. And so if I could take a psychedelic that let me learn French, that's fantastic. I also dunno that I'd put the effort into that because I'd probably rather learn some more neuroscience than French.

Manoj Doss ([00:41:32](#)):

Yeah. It's interesting you said it distorts audition, and I mean it obviously does, and probably in ways that aren't as true to reality. But if you think about the way sounds phonetics and things work in the first place, they are, we interpret things like your, I'm trying to think of an example. I did not do very well on my auditory neuroscience class, but for example, I think B'S and P's are sort of on a spectrum or N's and N's I think are on a spectrum, and your M might be more like my N, for example. And we end up very quickly picking up on which phony you are trying to say. And so that might be one of the sources of auditory distortions under psychedelics. No one's studied this properly, and in which case that could actually probably help you with certain languages, understanding them.

Dave Asprey ([00:42:29](#)):

So you're saying LSD could help me understand French?

Manoj Doss ([00:42:32](#)):

I don't know, but I would love to test that.

Dave Asprey ([00:42:36](#)):

And again, no shade on French speakers. It's just a challenge for me. I do not know how people hear that language, but I also recognize that we all have a unique auditory processing stuff. It's

Manoj Doss ([00:42:46](#)):

Weird. I have always thought I was like, yeah, an alien came to earth. Let's say they stop in Spain and they're like, okay, this is how humans speak. Then they pop over to Portugal and they're like, okay, they go to Italy, then they get to French, and they're like, that's not how you guys actually sound, right?

Dave Asprey ([00:43:02](#)):

So they're all same with me. And then you get into some of these other languages that are Mandarin, all the little sounds, Westerners just don't have brains to hear that. And that has to do a lot with the sounds you hear when you're very young,

Manoj Doss ([00:43:18](#)):

Right? And so there's this idea that psychedelics, people think that it opens up this critical period and that people report feeling very childlike under it. It'd be very interesting to see if those types of things, so you can do this with babies, two sounds that sound the exact same to us, something in a tonal

language. And then without the tonal bit as much, it would sound the same to us. But then as you said, somebody with who speaks mandarin would be like, oh yeah, no, those are very distinct things. And babies, I think they'll end up fixating more. I'm forgetting what the word is, but essentially they'll fixate more if there's something novel, but then they'll kind of habituate if it's not novel. So if you have two different sounds, they'll be like, huh, versus if you just repeat this out a couple times. And so it would be interesting, for example, I don't know if a human would necessarily notice an adult human, sorry, babies are humans as well. I've heard,

Dave Asprey ([00:44:12](#)):

I

Manoj Doss ([00:44:12](#)):

Don't know if an adult human would necessarily notice the difference, but this would be a useful place for brain evoked potentials, just seeing do they get treated somewhat differently. So yeah, I think that would be, I think super interesting. Yeah.

Dave Asprey ([00:44:27](#)):

And in the context of understanding gu, what is any potential? It's when you hear or you see something, how quickly does your brain get the signal that you heard that? And funny enough, young people have a faster speed, and as you age, you get to about 350 milliseconds or so. So you have a delay on reality. But people who meditate or take care of their brains can maintain the evoked potential of a young person. I have the same response time as an 18-year-old. Last time I measured my evok potential should

Manoj Doss ([00:44:56](#)):

Play video games. I have some friends that are big gamers, Chad James and Sam, Sam Mitchell, and these are guys actually used to skate with way back in the day, and now they're like, they're gamers. But yeah, when I was asking Sam, I was like, well, what makes, who are the best gamers? He's like, oh, it's always people under 30. It's all about reaction times.

Dave Asprey ([00:45:18](#)):

And it seems like that can be trained for sure. I also wonder, we're talking about this will sound dark, so you got to stick with me. We're talking about people in that kind of neuroplastic state when they're coming off as psychedelics. And you can train people with positive reinforcement, but we all know that negative reinforcement's better. So if you took someone and gave them a mild electric shock every time they didn't hear sounds, they'd probably learn the difference between those sounds much more quickly than if they had a positive reinforcement.

Manoj Doss ([00:45:47](#)):

So I mean, this is one of those things that I don't know as well as I should have been. And it's also a little bit on the side of conditioning another memory system. So conditioning, for example, is the automatic response to something. So you hear a sound associated with a shock, and then you might not even remember that you ever did this experiment, but you hear that sound again, you're like, something doesn't feel right. A really, I think, famous case is there was this guy who didn't have a hippocampus or he had some kind of damage to it, couldn't form episodic memories. You would never be able to do this, by the way now. But this was done a hundred years ago or something, not the most ethical. And so he's meeting him and he puts a tack in his hand and essentially pokes the person's hand.

[\(00:46:29\)](#):

The person goes, ow. And then of course, the next day he meets the doctor again. It's like, oh, hey. The doctor reaches his hand out and goes, Hey, what's up? I'm whatever doctor, whatever. And the person is like, I'm not going to shake your hand. It's like, why not? It's dirty. They made up some answer, but there was a conditioned response to that doctor. So when it comes to things like, yeah, there's some evidence, I thought that positive reinforcement works better than punishment in terms of training. And so, yeah, I don't know. I, I think that you can learn very quickly certain things. For example, an animal, if you shock them in an environment, they're going to be afraid or due to a sound or something, they're going to know that that sound, they're going to be forever afraid of that sound in one trial.

Dave Asprey [\(00:47:14\)](#):

And I'm not proposing we do this to humans or animals. I mean, I would a mild electric shock. It doesn't cause serious pain like a rubber band snapping you on the wrist kind of a thing. And then the only time it goes off is when you don't hear the right sound. So then your body isn't going to say one sound is better than another. It's not hearing them both. That is the

Manoj Doss [\(00:47:34\)](#):

Risk. So I think, again, it probably also depends. So it depends on the memory system. I think. So for example, I think for norepinephrine, for example, it might be something that's more related to especially negative emotional events. And there's been some evidence that norepinephrine can keep memories kind of hippocampal dependent. This has been proposed even to potentially underlie PTSD. So they have this traumatic event, and it remains hippocampal dependent. It never integrates into the cortex where it loses details. And people might still know that they fought in the war, but they lost a lot of those specific details that are traumatic. And instead it remains in this kind of episodic state. Is that

Dave Asprey [\(00:48:13\)](#):

Because of high norepinephrine or low

Manoj Doss [\(00:48:15\)](#):

Norepinephrine? That's high norepinephrine. And some people have shown this with yohi being, are you familiar with that one? I took

Dave Asprey [\(00:48:21\)](#):

Some this morning. Oh yeah.

Manoj Doss [\(00:48:22\)](#):

Oh wow. Yeah. I took it one time when I went skating. And so I do rollerblading with tricks and flips and grinds. I'm not doing as much of the flips anymore. But it's one of these things where there's definitely, it gets your heart rate up, you get a little scared. Even now it's like I'm doing something that I've done before and you know that you can get hurt. And I feel like it just amplified my fear. And my heart was just, maybe I took too much of it, but I never took it again. But yeah, they did a study with Jovin bean and they showed that 30 days later, the memory was just as much, if not more dependent on the hippocampus that were formed memories under Johan bean. But then there's, what's been proposed is like dopamine, and I don't want to say dopamine's the pleasure molecule and

Dave Asprey ([00:49:04](#)):

Kind of is,

Manoj Doss ([00:49:06](#)):

I dunno if I would totally buy that. You take l-dopa and you don't feel pleasure, usually you take l-dopa for a long period of time. You might become a sex addict or a gambling addict. You

Dave Asprey ([00:49:14](#)):

Can become dopamine desensitized. Of course.

Manoj Doss ([00:49:17](#)):

Well, I was saying actually, if you take it over a period of time, so if you take L-dopa for one time, you don't really get pleasure from it. You might get nausea. Yeah.

Dave Asprey ([00:49:25](#)):

If you took it and you had sex, it would be better sex.

Manoj Doss ([00:49:28](#)):

I wonder. I don't know. I don't know if they've done that study, but I knew that, I mean, certainly amphetamine people take stimulants and they have some certain interesting experiences, but at least l-dopa alone, I've just heard that. I didn't actually know this until I had a psychiatry friend that was telling me that over time, sometimes people will take l-dopa and then they can develop things like a gambling addiction or sex addiction or whatever. But it certainly doesn't happen overnight and don't know if a single dose, I took L dopa once for a study and I didn't really get anything out of it, but I had a friend who got a lot of nausea from it. Interesting. But, but dopamine, in any case, it is involved in reward. It can also be involved in negative kind of learning as well. But the one idea of dopamine is that it does help drive things into the cortex. It helps consolidate these memories or make them more. And so I do wonder, depending on the type of learning you're doing, should we really be rewarding during certain types of learning to drive that learning into the cortex, make it more permanent kind of semantic memory.

Dave Asprey ([00:50:33](#)):

It's so fascinating. Yeah. Alright. Is cannabis good for memory?

Manoj Doss ([00:50:42](#)):

I mean, I think the short answer is no. Whether you're talking about the encoding of memories, it certainly doesn't seem to help things get in. Whether you're talking about the, I don't know if it does much to the consolidation. So if you study and then smoke weed afterwards, there was one study that did that. And although alcohol enhanced your memory, cannabis didn't really do anything. One thing that we found was that if you try to retrieve memories on THC, it'll actually distort your memory. It'll make you just come up with a bunch of garbage. And so for example, what we did was we showed people a bunch of labels that were followed by pictures, and there was negative, neutral, positive images. So for example, you have a guy sitting on his porch and maybe you get a picture of a guy sitting on his porch, you get happy baby, and you maybe get a picture of a happy baby.

[\(00:51:31\)](#):

You get dying baby. In the ICU, I say that because a real stimulus and you don't get a picture of a dying baby in the ICU, for example. And then later on, two days later, we give you THC, and then we test your memory by showing you all those labels again and asking you, did you see this as a picture? And we could get people to say they saw pictures of a dying baby in the ICU when they never actually did. And they would say it with, we gave them a five point confidence scale. They would say it with high confidence. And so in that sense, we said that, well, it seems like it can distort your memory to the point where it potentially could create a false memory. I don't think most cannabis users are having these massively distorted memories, but the point is, it's not impossible for that to happen, especially maybe if you were under certain suggestible conditions.

[\(00:52:16\)](#):

Yeah. And then I think the long-term effects of cannabis, I think there's some evidence that if you're a daily user, probably all day every day user, maybe even just once a day user that it's not great. A lot of your cognitive faculties do get a little worse, including episodic memory. But I think to some degree they can recover if you quit for a month or so. I dunno how permanent that is. But I think it all depends on how much you're doing it. And like you said, there's positives and negatives to all these things. And I'm not there to tell people not to use cannabis. Yeah,

Dave Asprey [\(00:52:47\)](#):

I'll just say it's unlikely to improve your memory or your cognitive function, especially over time. I think there's enough evidence out there.

Manoj Doss [\(00:52:55\)](#):

Yeah, we did find a really cool effect that it's super complex and so no one's ever going to cite it. But it was this effect on encoding where we essentially showed, so in a previous study we showed that. So there's idea that if you study something, you should take your test in that same place. Context dependent learning. If I study in this room, I'll perform better if I take my test in this room. And so we decided to see if there's ever a case where that could be bad. So if I saw a dog at the beach, and then later on I go back to that beach and I see a similar dog, I'm probably going to think it's the same dog. Or will I be able to, because I'm reinstating the context, have a more accurate memory and be like, wait a minute, no, I remember the original dog because I'm back at the beach and I can reject that this is not the actual dog.

[\(00:53:43\)](#):

Turns out that one didn't work. That's what I thought was going to happen. That if you reinstate the context, you'll have a vertical representation of the original memory and then you can reject this new thing that's sort of similar to what you previously saw. So it turns out if you give cannabis during memory and coding, so THC specifically, you can amplify that effect, but you could also remove that false memory effect too, depending on the semantic congruency between the context and then that item. So dog at the beach semantically congruent, it's going to amplify that effect, that false memory effect. You'd be more likely to think, ah, I must be the same dog cat at the beach. Cats don't usually hang out at beaches. That's actually going to abolish that false memory effect. So in that sense, you can say, well, in that very specific condition, THC during memory and coding actually gave you a more accurate memory.

Dave Asprey [\(00:54:34\)](#):

You mentioned something earlier that's really worth exploring. You talked about the guy with a thumbtack and he didn't want to shake hands the second time, but he didn't know why. So he made up

a story. And what I've learned over time is that I, like all humans, am a master of believing my own bullshit because my body, my hardware will automatically make up a story to match whatever I'm failing. And a lot of meditation, a lot of personal development work is just learning that that is the case and that you should be curious about whether it's real or not. Talk to me about memory fallibility and what we can do about that.

Manoj Doss ([00:55:12](#)):

Yeah, so I mean, I think that I don't always know how much we can do. I think that there's a lot of these processes that are sort of automatic. Sometimes we're kind of associative machines that automatically try to extract regularities, and sometimes it's actually adaptive to have these processes. So a lot of times in the lab we study false memory and we can try to make cases in which this could be bad. But for example, I give you the words bed rest and awake, and later on you remember the word sleep. That's probably adaptive. You're compressing all this bed rest awake information into one word, like, ah, what's the general concept that we talked about sleep? And it's probably more adaptive than not. So I think that the one thing I'll say is that, yeah, you shouldn't always trust your memory that you should be willing to admit that you have a fallible system. I think the Mandela effect is a great example of self-preservation where people can't admit that their memories suck sometimes, and they remember the monopoly guy with the monocle and they wanted to say, oh yeah, people of the future are controlling us instead of taking blame for their own shitty memories. So I think just knowing, I think exactly what you said is

Dave Asprey ([00:56:28](#)):

Are you a monocle guy or a non monocle guy?

Manoj Doss ([00:56:30](#)):

Well, now I know that effect. So I don't know what I would've said not too long ago, but a friend and I were talking about this, and I think it was with the Pikachu. We did think that it had a black tip on the end of its tail, and I don't think Pikachu does.

Dave Asprey ([00:56:44](#)):

Wow. So either the guys at CERN split reality or our memories suck.

Manoj Doss ([00:56:48](#)):

Yeah. And I think the more plausible cases is that the guys at CERN are controlling us. Yeah, no,

Dave Asprey ([00:56:54](#)):

Most definitely.

Manoj Doss ([00:56:56](#)):

Yeah. So I mean, think that's a lot of kind of cognitive illusions, and this is something that I've become kind of interested with things like psychedelics, that what becomes very fluently processed can feel very real. And so this is known as the illusory truth effect. So for example, if I show you a statement multiple times over, you're going to be more likely to believe it. So a lot of politicians probably do this, right? They repeat something over or advertising even, right advertising, they show it to you multiple times over. Finally you're like, you know what? Maybe I should get into that clinical trial or use that medication

or whatever. Politicians do this too. And sometimes some of us are less susceptible. We don't believe that guy, but the people who are already leaning towards believing that person after they say something so many times over, they might say, oh, you know what? That is true even though no new data are coming in. So yeah, I think that there's a lot of different types of cognitive illusions. We all know visual perceptual illusions, but I think even at the higher level cognition that can happen that we should, I mean, just know that you're not perfect. Yeah.

Dave Asprey ([00:58:04](#)):

I've seen some research that says memory retrieval is indexed or organized by emotions and physical senses. Is that accurate?

Manoj Doss ([00:58:17](#)):

I mean, I think it can be, but I think again, it depends upon what type of memory you're talking about. I think that people, again, I don't want to say the amygdala is the only thing that supports emotion. And in fact, some people will say that you still have emotion and a lot of that's actually interpreted through the cortex. But for example, people can not have an amygdala and they can still form memories. They can still retrieve memories of different types, whether it's semantic memory or episodic memory. Even conditioning can be done without fear. Conditioning I think can be done without an amygdala, although it depends on how you do it. But yeah, I think emotion is definitely a huge part. That's episodic memory. Some people say, yeah, episodic memory without emotion is not really all that episodic. It all has somewhat of an emotional component to it. But yeah,

Dave Asprey ([00:59:09](#)):

I've found that by removing emotional triggers that it enhances my ability to remember real things versus my story around things.

Manoj Doss ([00:59:21](#)):

Yeah, I mean, I think that the story around things, while it can distort your memory at times, it can also be useful for kind of creating retrieval cues so that one thing chains off of the next. Again, it's like evolution wasn't perfect, right? And it helps us for certain ways and it also creates a bunch of garbage in other ways. I think it depends on what you're trying to remember. If you think about the memory palace or the method of loci, that's like using this kind of story, this context to remember a bunch of useless things that are very temporary. If you ask any of those memoirists, if you ask any of them a day later, like, oh, hey, what was that deck of cards? They're not going to remember it. It kind of shows you just how quick episodic memories can be forgotten. But yeah, if you're trying to get something into semantic memory, I don't always know. It's like, yeah, try to relate it to a schema that you already have. Repetition, of course, spaced repetition specifically. But yeah,

Dave Asprey ([01:00:22](#)):

It's fascinating. I'm remembering I was studying some of the early alchemists, and these are the people who eventually started the enlightenment and a lot of what became the scientific method, and they're also studying longevity and immortality, which was really the thing behind their quest for the philosopher stone and all kinds of esoteric knowledge. And one of the stories I came across was from one of the famous figures, I don't remember which one, and as a child, he was with his father and they threw a log on the fire and a salamander jumped out of the log. Now they believe that the fire turned into salamanders. They called them fire lizards, and it's actually a symbol of alchemy. Back when I was

running bulletproof, you might've noticed there was a salamander hidden on the packaging for the first few years. That was a little Easter egg for people. And if you notice the logo for upgrade labs, it's an axel lot, which is a form of salamander that also has wolverine's regenerative abilities where you can smash its entire spinal column. It just grows back, it doesn't die. They're crazy. Very powerful, strange of animals. Anyway, I digress. So when the salamander jumped out the log, the guy's father smacked him in the ear and he started crying, says, why'd you do that? He said, because that was unusual, and I want you to remember it.

Manoj Doss ([01:01:43](#)):

Yeah, it's interesting doing something like that. It can produce certain memorable events, creating those types of event boundaries, though there also might be other things that are forgotten, maybe write what happened at that moment. Sure. What happened in the five minutes before that, that might now be more likely to be forgotten later. So yeah, as I said, there's always kind of sacrifices to enhancing certain things. I mentioned, like I said, with psychedelics, it's like, well, it might help get things into the cortex, but you're sacrificing what's going on at the hippocampus, or perhaps even the case with something neuroenteric increases. Well, I mean, there's a really cool thing that's what people think underlies the whole weapon focus effect is that you remember really well what's going on in the center of your vision, but everything at the periphery gets sacrificed.

Dave Asprey ([01:02:34](#)):

I believe that having a calm nervous system improves your ability to remember actual reality versus flavored reality. And so training that, whether it's your heart rate variability or meditation or breathing or anything like that, does at a minimum reduce the amount of electrical noise in the system so those electrons can go to good use. Have you seen anything about advanced meditators having better memory or people who've done their trauma work being able to remember things better?

Manoj Doss ([01:03:03](#)):

No, not necessarily. Although there's something that you brought up the idea of trauma and remembering in this case, are you talking about remembering the trauma itself better or just in general after the trauma?

Dave Asprey ([01:03:18](#)):

Usually people have patterns or triggers from trauma. They have less emotional calmness because it keeps getting triggered unconsciously when they remove the trigger so that they have more, I'll call it more peace, their ability to remember both the trauma and anything else new increases because they're wasting less electricity on old defense mechanisms.

Manoj Doss ([01:03:37](#)):

So definitely somebody with, for example, with PTSD, it's this very paradoxical disorder where they have this very vivid recollection of their trauma or multiple traumas, and yet their everyday memory actually does become kind of poor. There's a really interesting alcohol, cortisol, for example. Not to say this is strictly dependent on cortisol, but cortisol during encoding can impair your memory. Again, there's certain nuances there to what I just said, but if you, for example, stress people out immediately after showing them a bunch of stimuli, you can enhance their memory. In fact, actually Char's colleague S, he had people study, I can't remember, I think it was pictures, a handful of pictures while they're going up

in a plane and then he threw 'em out of the airplane. Then their memory was better for those pictures that they got thrown out of the airplane.

[\(01:04:34\)](#):

So I just digressed a little bit myself. Yeah, I think that there's something to be said about that, but then there's also being calm. I think probably you're right that overall that's going to be better than remembering certain things anyways. But I do wonder, for example, if you're really calm, while somebody's really angry, you might not forget some of the things that they said to you, which is probably a good thing. You probably don't need to hear all the terrible angry things they said, but what if you kind of forget just how angry they were? And it probably might be useful to remember how angry they were to be like, oh, this is an angry person while you're really chill, this person might be dangerous. I don't know. It might be useful sometimes to get that kicked in, but the of remembering trauma, I take a little issue with that because, so essentially the idea of repressing memories, and we're not talking about avoidance, but we're talking about straight up not remembering

Dave Asprey [\(01:05:32\)](#):

That's a problem when people can't remember they're really traumatized.

Manoj Doss [\(01:05:35\)](#):

Well, if they truly can't, they're unlikely to ever be able to. It's the idea of recovering memories is so unfounded by the memory world and the idea of creating false memories is a lot more founded, and I know that I feel, I don't want to negate anybody's experiences, but just to give you an example. For example, the guy that didn't have a hippocampus, he definitely got a little messed up from getting the tack in his hand, but he doesn't have any kind of recollection of it, and he'll never be able to access that. It was never formed in the first place. If his hippocampus was damaged or even as a 2-year-old, if there was some type of abuse in your life as a 2-year-old, it'll almost certainly, at least for a lot of people, mess them up later on in life. They might be more hyper aroused, they might be more just vigilant or anxious or whatever, but they're not going to ever be able to access those memories as why

Dave Asprey [\(01:06:34\)](#):

Not? I mean, regression therapy is a thing.

Manoj Doss [\(01:06:36\)](#):

Freud is very unfounded, so it's actually really unfortunate right now in the psychedelic world, there've been some inklings of the freudians are coming back out from the sixties. Yeah, I'm

Dave Asprey [\(01:06:46\)](#):

Not talking about Freudian stuff as more transpersonal stand. Yeah,

Manoj Doss [\(01:06:49\)](#):

Yeah. It's still, well, not yet.

Dave Asprey [\(01:06:53\)](#):

You're skeptical on

Manoj Doss [\(01:06:54\)](#):

That one. And I know when I say me, I think there's a lot of people out there essentially that kind of, so the issue with something like PTSD is not that you can't remember your trauma, it's that you can't forget it. And so I think what did happen, if you look at, for example, the Satanic panic, that is a great example of manipulating the memories of vulnerable people such that they're claiming that they had all these terrible things happen, for example, that all these babies were being sacrificed. There's only so many babies you can sacrifice, but when somebody finds out somebody has to carry that baby for nine months, if the baby just suddenly disappears, people are going to start asking questions. They never found any babies that were sacrificed in Satanic rituals during the Satanic panic, but they were people who were being manipulated by psychoanalytic type people and saying that, oh, you've got something that you need to remember.

[\(01:07:43\)](#):

And they ended up being some really bizarre cases of Yeah, and I do think that, don't get me wrong, childhood abuse happens, but I mean, just look at the Me Too movement right now. There's never been a case in the Me Too movement where somebody said, oh, I forgot it. And now remembering what they said was that, oh, I didn't come out because I didn't, didn't think anybody was going to believe me, or I thought that people were going to blackball me or something. It's never been the case that somebody forgot their trauma and then decided to come out after they've remembered it.

Dave Asprey [\(01:08:14\)](#):

I know people who have forgotten childhood traumas. This is around seven, 8-year-old kind of things, and then doing breath work or psychedelics, or even neurofeedback or especially MDMA is really good for that. They go, oh my God, I remember it. And then they talk to the person. Yeah, that did happen. How did you remember?

Manoj Doss [\(01:08:36\)](#):

Yeah, so I mean, I don't want to say it's impossible, but I think that the data are pretty slim. And what I would mention about THC causing false memories is something that we've sort of saw actually with MDMA as well. I would love to redo that study and get better statistical power, but look at the supplement, look at our newest review on that. We definitely show evidence towards memory distortions,

Dave Asprey [\(01:09:04\)](#):

Memory distortions and false memories are real in my experience. Sometimes people do remember real things that are verifiable later, and that's when it starts to get really interesting where you're going, oh, maybe it's both. And sorting that out is really difficult,

Manoj Doss [\(01:09:20\)](#):

And I think that there's two things there. One is also, again, to kind of bring this to me too, some people just also didn't want to talk about, it's not just that they were afraid of getting blackballed or that they didn't think anything was going to believe them. It's just nobody wants to have to go through that again. So there's that kind of element to it. There's also, I think the not being able to interpret things. So for example, before you knew what sex was, if somebody had you perform some sexual act, you wouldn't necessarily know how to interpret that, and it might still cause some harm to you late.

Dave Asprey [\(01:09:54\)](#):

It causes all kinds of destabilization,

Manoj Doss ([01:09:56](#)):

And so later on you might then put the two together and be like, oh, shit, that person abused me. Where I think that there's sometimes other types of ways you can link information. So I had a friend who, she's a clinical psychologist, and I was asking her about, oh, have you had any type of situation either recovered memory, false memory, whatever? She was like, no, but she was like, the closest I can think of is there was somebody who went through therapy, kind of linked these two ideas together that they knew both of these ideas separately, but never put them together. Essentially what it was was that this person, it was verified, this person was abused, the person's uncle was whatever in prison got. They knew that that had happened. Also, the victim also knew that her parents used to go out of town through therapy.

([01:10:42](#)):

She linked those two together on weekends, was like, oh my God, this was able to happen because my parents used to go out of town on weekends, and it is one of those connections that it seems very simple, but to her, it was the world and she never linked that together, and that helped her get through her problems, helped her narrative, et cetera. So I think there's those types of things that can happen linking two ideas together in kind of a novel fashion. But I think I would, I'm very cautious, and I think I've heard people talk about this too with psychedelic in some of the clinical trials where people will come up with what might not necessarily be a vertical representation of reality. Maybe their parents hit them, but then it goes kind of even deeper, and especially when you have things like satanic rituals and sacrificing, that's when it's like, okay, that's probably not real.

Dave Asprey ([01:11:34](#)):

This is a thing where let's say that half of those memories are fake and half of them are real, or maybe it's 80 20. It's hard to throw the baby out with the bath water if you can verify them, and it's the times you can verify, say, oh no, this person was here and they did this and they confessed to this, or they did it to the neighbor too. Then you're going, okay, there's something going on there, and I don't think anyone knows how to tell what's a false memory versus what's a real memory other than other witnesses.

Manoj Doss ([01:12:03](#)):

Yeah, yeah, definitely. I mean, think sometimes, and sometimes in many cases it might not even matter. Sometimes it's just like, oh, hey, it could be actually my mother and I didn't have a great relationship, and coming to that conclusion, I mean, that might even strengthen your relationship with your parents later, right? Sure. It's when it goes into deeper details where that's when it can be a little bit more dangerous. But I agree, if something like that happened to me, it would be, I'm sure I would be that person to be like, oh, yeah, it's definitely real when I recovered a, we all are. Yeah, and I think, again, what's something that I think psychedelics can do especially is they enhance the sense of knowing It feels like just undeniably true. And so even if they're provided with evidence that goes against what they're saying, I think it can be very difficult to shake these things. And even in the case of without psychedelics, so what's his name? So remembering Satan is the name of the book, Lawrence Graham,

Dave Asprey ([01:13:02](#)):

I don't remember.

Manoj Doss ([01:13:03](#)):

And so he's the author of Remember saying, I think he actually lives here in Austin, but in that book. So I think by the end of it, they were like, okay, clearly this wasn't a case of sexual abuse, and I think that the family is still completely broken apart, and I think the daughters have changed their identities, but still think that something happened, and it was a pretty crazy situation. The father started admitting to these things and including, there was a situation where this professor from Berkeley at the time came to him and while he's in jail and said, oh, hey, your daughter told me you made her commit incest. And he said, oh, I don't remember. And he's like, go back to your cell and start preying on it. What he would do is he would pray and then he would get these visions and he was like, oh my God, I did abuse my daughter.

([01:13:53](#)):

So in this situation, he didn't, the daughters never said that. They never said anything about incest. He goes back to his cell next day, talks to him and says, oh my God, I can remember it now, and gives you this extremely graphic. The only thing I can think of is where this guy got this graphic story from. That's horrible. His misattributing, his own experience with pornography onto what was happening here. Wow. It was pretty absolutely nuts. Yeah. This guy spent, I don't even know how many years in prison, but I dunno, a decade or something, a while. He spent for something that almost certainly he didn't do, and he was so easily suggestible that this professor from Berkeley barely even knew him, was able to plant a false memory in his head like that.

Dave Asprey ([01:14:34](#)):

How do we make ourselves less suggestible? I don't

Manoj Doss ([01:14:39](#)):

Know. Actually I made you say

Dave Asprey ([01:14:42](#)):

That.

Manoj Doss ([01:14:45](#)):

And sometimes, as you said, I think being skeptical sometimes it can sometimes hurt, not believing there's any magic left in the world. I mean, that kind of sucks. I certainly have had to fight with that. It was kind of like, I dunno if you grew up religious at all, but you have a little bit of that, and then you're kind of like, maybe this isn't the case, but maybe there's still something else. And then it's kind of, especially in science, just all that kind of gets stripped away and it's like, Ooh, all the magic in the world is gone.

Dave Asprey ([01:15:18](#)):

You bring Joe Dispenza to speak at your event, man, there's some serious science going on there, 3000 people, genetic analysis, cytokine analysis, and it seems like there's still some magic left in the world. And I actually grew up as atheist and agnostic and didn't believe any of this PhD engineering grandparents, even my grandmother. So very, very skeptical family, and I'm to the point where world's both magical and not magical simultaneously. It just depends which lens you want to use.

Manoj Doss ([01:15:48](#)):

Yeah, I mean, I think that my thing is studying the brain and just the fact that you can create anything. You can in theory with whatever amount of probably brainwashing in drugs, you torture somebody, you can get them to have whatever crazy experiences and memories and whatever that it's like anybody can be driven psychotic. It's a pretty,

Dave Asprey ([01:16:11](#)):

Are you familiar with Daniel Brown from Harvard? His research on hypnotism?

Manoj Doss ([01:16:16](#)):

I know of him, but I don't know specifically his

Dave Asprey ([01:16:19](#)):

Work. He came on the show and it was one of the most profound episodes ever because this is one of the world's leading experts in hypnosis, and he says there's such a thing as a mentor in Kendi, and he stops and he said, I spent a hundred hours with Sirhan Sirhan, and I will tell you as a leading expert in hypnosis, he was hypnotized who did it where they did it. When I would tap him on the arm twice, he would drop into a crouch and talk about kill points. If anything in my entire career, anyone has been programmed with hypnosis. It was him. And I said, oh my God, they should do a documentary on this. And he looks at me and he goes, they did, and then they deleted my eight minutes in the documentary and audited my taxes for seven years. Oh, wow. He was saying this because he has a neurodegenerative condition and was like, my career is amazing, and this is a very, very credible and knowledgeable guy who in his spare time translates 13th century Sanskrit cave meditation manuscripts, so they aren't lost to the world. I mean, this is just someone who has no agenda, and I'm like, did this just happen on the show? So we know that sometimes people are programmed that way, and I'm interested in making a world where advertisers and politicians in particular cannot program people,

Manoj Doss ([01:17:40](#)):

But I think they bootstrap off of things that are good. So as I mentioned, the illusory truth effect, there's also as the mere exposure effect, same idea, except I present a stimulus to you multiple times, you're more likely to, it essentially goes off of this familiarity, this cortical processing, the ease of processing or fluency is associated, tends to be associated with things that we like more. You could think of. It takes less resources, so we like it more. Perhaps that's one story behind it. And so that can be a good thing as much as it sucks that, oh yeah, now it means I'm going to drink Coca-Cola over Pepsi, it also can mean, Hey, that person that I felt a little uncomfortable around the second time I see them, I feel a little bit warmer and it's more easy to talk to them. I'm less one of these people. I can usually talk to anybody, but some people they're not as easily able to, and it just takes multiple times over that my partner's actually like this, where she's not always warm initially, but then after a few times, even if it's the most mundane conversations, it's like, all right, now she's warmer to people. So I think that it's hard to completely remove those things, and unfortunately, I think we just have to be aware, more aware of them. But

Dave Asprey ([01:18:58](#)):

There's all sorts of different ways that we can be manipulated and Oh, yeah, I think just being more aware, more conscious, having more energy and having less chaos in your system makes it easier to notice. But even then, we all have our vulnerabilities, and that's what happens when you ride around in a human body.

Manoj Doss ([01:19:14](#)):

Yeah. I do wonder with, I wonder if I'd be hypnotizable, for example, I mentioned, I was like, oh yeah, if you give me enough torture or drugs or whatever, but I would be very curious. I know that one time I got scammed by somebody selling clothes on the street when I was 22 or three, and I'm the most skeptical person that as I've mentioned, and yet it did happen to me once and I felt like, I was like, oh my God, it might got a little bit of schizophrenia in my family. And I was like, oh my God, is this about to start?

Dave Asprey ([01:19:46](#)):

And so I guess constant vigilance is the most important thing you do is is this person running an operation on me? And I've done an episode with Robert Cini who wrote the book Influence out of the University of Arizona, and he went undercover with insurance salesmen and used car salesmen to learn the techniques of manipulation and then come up with a manual, actually bought his book for my kids and told 'em I'd give him 50 bucks if they read it, because he's like, here's how to tell when someone's running a playbook to manipulate you outside your conscious awareness. I was like, wow, that's like a firewall for your brain. So there's some techniques, but I'm going to ask you about two drugs in particular. We haven't talked about the dead effect memory. Oh, is that nicotine one milligram of nicotine? You want some? Sure. Don't breathe in while you do it. It's minty. There you go. Interesting. So what does nicotine do for our brand?

Manoj Doss ([01:20:43](#)):

So yeah, it's a nicotine agonist, as you probably know. So that works on the cholinergic system. The cholinergic system is very much involved in episodic memory, hippocampal dependent memory. So people have, for example, scopolamine. That's a drug that massively knocks out your episodic memory. Also, there's actually, there was a study that found if you administer scopolamine after encoding, unlike alcohol, it didn't enhance your memory, but if you administer it along with the Nico Synergic antagonist, then you got the retrograde facilitation.

Dave Asprey ([01:21:18](#)):

Translate that to less science. Yeah,

Manoj Doss ([01:21:21](#)):

Sorry. So if you administer an antagonist of both types of cholinergic receptors, so you have nicotinic and then you also have

([01:21:30](#)):

Muscarinic muscarinic. And so if you administer block both types of receptors, now you can retroactively enhance your memory. And so study something block both those receptors. It can enhance, but just like alcohol, benzos, it's kind of like that effect. So there's a really boring reason for some of these things, whether it's alcohol or whether it's because of this, because of it's a cholinergic antagonist, it's that if you prevent new learning from happening, the old stuff can stabilize better without interference. That's the really boring answer. It turns out, at least with the GABA TIC modular, there might be something more complicated going on there. But as I mentioned though, so if you block these receptors in impairs memory, but a lot of times when you activate them, it can actually enhance memory. So people have shown, for example, with nicotine that if you administer it to people who don't even smoke, there's one city in particular I can think of where I think it was done with a patch, and even people who don't smoke it enhanced memory and coding. And so it certainly has some effects. Like I said, it drives that

cholinergic system, which is highly involved in coding, consolidation and retrieval. So I think that there's something there. I don't want to say people should always use nicotine. I think it can become certainly, obviously it's quite addictive, and a lot of times what people will say is that your baseline goes down a little bit and then it brings you back up. I still think that it's possible that it can still pull you above your baseline.

Dave Asprey ([01:23:04](#)):

There's pretty good studies of nicotine as a cognitive enhancer, and my recommendation is between one in five milligrams, there's 20 milligrams on a cigarette. So this is one to five over the course of a day, and you really don't want to do more than that for longevity. I've had, I call Dr. Nicotine at Andrew Newhouse from Vanderbilt, who's been studying since 1986, publishing papers that say, small doses of pharmaceutical nicotine, smoking's bad for you, tobacco's bad for you, don't do that. Or he says, when you do the pharmaceutical extract, it reverses or inhibits Alzheimer's disease. And we know smokers don't get Parkinson's and Alzheimer's, they get cancer instead. But if you're using pure nicotine at very low doses, it definitely acts as a cognitive enhancer. And if you keep your dose constant, it works every day.

Manoj Doss ([01:23:51](#)):

Yeah. So yeah, actually, one of the things that they'll give to people with Alzheimer's, for example, are cholinesterase inhibitors. So essentially they block the enzyme that would break down acetylcholine. You could sort of think of it as your endogenous nicotine. So it's a slightly different mechanism, but it still evolves the same system. And there have been exactly, if not nicotine, IC agonist studies, drugs that bind to the nicotine receptor that probably have similar effects as nicotine. And I mean, I think the issue is, yeah, they can be quite addictive. But yeah, I think you're right to, I think nicotine, it certainly has some cardiovascular effects that maybe aren't always good, just like caffeine, but at least with something like caffeine, we've all accepted those cardiovascular effects and we all drink it every day, most many of us anyways.

Dave Asprey ([01:24:48](#)):

I think it comes down to microdosing it versus drinking, and they're just so mixed up. People think caffeine, caffeine are the same, they're not. They think tobacco and nicotine are the same and they're not, and it's very dose dependent. So there's something there. But my favorite drug of all time, one, I really popularized at the start of the biohacking movement. I went on A, B, C Nightline for the first time and they're like, this guy is taking the limitless pill. And he used it to get through Warton Business School, and he's using it as an entrepreneur. And is it fair to use such a big cognitive enhancer? Of course that was modafinil. What's your take on Modafinil?

Manoj Doss ([01:25:27](#)):

Yeah, so Modafinil is used. So because I study drugs, people are sometimes more open to talking about their drug use, but it's used a lot more in academia than I think some people realize.

Dave Asprey ([01:25:39](#)):

Oh my god.

Manoj Doss ([01:25:39](#)):

And so especially at conferences, forget even there are people I know who have prescriptions to it. They take it every day and sometimes they'll even take low doses. So 200 milligrams of meils, I think what a lot of times it's prescribed

Dave Asprey ([01:25:52](#)):

Hundreds where it starts and 200 is the big pill. They'll

Manoj Doss ([01:25:54](#)):

Take 50,

Dave Asprey ([01:25:56](#)):

I'll do 50. In fact, that's a normal dose for me.

Manoj Doss ([01:26:00](#)):

But yeah, what I've seen OSI at conferences is one reason I think people it is you're staying out late, networking, networking, drinking. But I will say that some of those networking events that involve alcohol have produced some papers in my life. But then, yeah, you're waking up early for that conference the next day. I dunno why conferences don't start at 11 o'clock, but yeah, so people will take modafinil. And so I have seen that. I think that as far as getting work done for some people, it's certainly works. I knew no names here. I know a professor who does take it, and he even said, he's like, yeah, I take it every day. He's like, forget it. Even if I'm not working, it's fun.

Dave Asprey ([01:26:46](#)):

I've noticed the same effect. It improves my meditation. It improves just a lot of different aspects. And for me, I went off of it for a while just to see what happened. And bottom line is I like my life better on that cognitive enhancer.

Manoj Doss ([01:27:04](#)):

I feel that way about caffeine.

Dave Asprey ([01:27:06](#)):

And I've gone off caffeine for five years before I feel molding coffee was tweaking on me, so I would drink coffee and get all jittery, and so I'd fit in mold free coffee and there you go. But those are the two things that would be the most important in cognitive enhancers for me would be coffee and modafinil and followed very quickly thereafter by nicotine. And then aniracetam, if you could name four in a row your most important cognitive enhancers, what would they be?

Manoj Doss ([01:27:33](#)):

I mean, unfortunately, I think amphetamine is still probably a pretty good one. Adderall,

Dave Asprey ([01:27:37](#)):

Right? It comes to the cost, but

Manoj Doss ([01:27:39](#)):

Yeah. Yeah. Oh yeah. I hate this stuff. I think definitely people will feel tweaky on it, especially closer to the end, or if they take another dose.

Dave Asprey ([01:27:49](#)):

Adderall, summer two.

Manoj Doss ([01:27:51](#)):

Okay, so Adderall, I mean, I think caffeine honestly is probably number one for just because the safest. And there are people who get kind of addicted. They take 500 milligrams a day and that's not good for you. I don't think the FDA has some limit of 300 to 40 milligrams. You

Dave Asprey ([01:28:06](#)):

Might still believe them.

Manoj Doss ([01:28:09](#)):

Yeah, sometimes. I mean, I think it depends. That

Dave Asprey ([01:28:12](#)):

Means they don't believe them. They're skeptical. I'll go with the longevity researchers who say up to five cups a day extends your lifespan. At least it reduces your all cause mortality and reduces some things. That's around 400 milks. So there

Manoj Doss ([01:28:28](#)):

Were there people at Hopkins studying this, and I'm forgetting now what their limit was, but they were saying that there were some cardiovascular problems

Dave Asprey ([01:28:35](#)):

At the upper limits. Yeah. Yeah.

Manoj Doss ([01:28:37](#)):

Around 400, 500 milligrams I think. Yeah,

Dave Asprey ([01:28:39](#)):

Let's do rapid fire. You got Adderall, got caffeine.

Manoj Doss ([01:28:44](#)):

Caffeine. I mean, honestly, forget Adderall. I think methylphenidate is probably better given that I think it's a little less addictive.

Dave Asprey ([01:28:49](#)):

Methylphenidate, caffeine,

Manoj Doss ([01:28:53](#)):

I guess Modafinil seems to work for a lot of people. One

Dave Asprey ([01:28:55](#)):

More. What's

Manoj Doss ([01:28:56](#)):

The fourth? I don't know. I mean, the thing is I don't necessarily take all these things, so it's hard for me to say, but I mean, I don't know. Exercise. Yeah. Fuck that should be. No, I mean it gets certain things going in your system.

Dave Asprey ([01:29:12](#)):

Would you put nicotine on there?

Manoj Doss ([01:29:13](#)):

Oh yeah. Nicotine. Yeah, nicotine, yeah. It

Dave Asprey ([01:29:15](#)):

Raises PG two one alpha the same as exercise. Anyways. Yeah, some

Manoj Doss ([01:29:18](#)):

Of those effects. But again, I think with all of these things, I'm not endorsing them because especially given the addictive properties, UT would have my head I were endorsing any of these

Dave Asprey ([01:29:28](#)):

Things you not endorsing? Just looking at just a scientific question on it.

Manoj Doss ([01:29:31](#)):

Well, I mean, retrograde facilitation with alcohol is a very robust effect that's been replicated by numerous

Dave Asprey ([01:29:36](#)):

Out of the world. It's really bad for you,

Manoj Doss ([01:29:38](#)):

Right? Drinking alcohol. Yeah. I mean, but again, it depends on how much you're doing it. I think that having, again, this has not been tested in a lab, but let's pretend it actually does work. Such, sorry, it hasn't tested in a lab. It hasn't been tested in people taking tests. Let's pretend alcohol retroactively can enhance what you studied the hour before. And you did this, let's say once a month. How bad would that be for you? People drink so much more than that. That's very, yeah.

Dave Asprey ([01:30:04](#)):

Awesome. Minaj, this has been a fascinating conversation. And you're lum these depths of the brain that a lot of people don't think about. And there's a spiritual side to this. There's a hard science side and understanding what's a memory, what's not a memory? How do we make it better? I think it's one of the frontiers of human consciousness and understanding how to drive our bodies better. And it's a

major part of the biohacking movement. So thanks for the work you're doing and thanks for making the drive over to be live in the human upgrade studio.

Manoj Doss ([01:30:34](#)):

Oh yeah. No, thanks for having me here. And yeah, happy to talk anytime,

Dave Asprey ([01:30:39](#)):

Guys. If you like today's episode, do you know what to do? Drink some coffee, have a spray of nicotine, take a modafinil. That's what Minaj recommended. I did not say

Manoj Doss ([01:30:48](#)):

That.

Dave Asprey ([01:30:51](#)):

Just kidding you. To do hit subscribe, follow all that kind of stuff. And if you like the episode, share it with someone who needs to remember. Have a great day.