

Dr. David Spiegel: Using Hypnosis to Enhance Health & Performance | Huberman Lab Podcast #60

My guest is Dr. David Spiegel MD, Associate Chair of Psychiatry & Behavioral Sciences, Director of the Center on Stress and Health and Director of the Center for Integrative Medicine at Stanford University School of Medicine. Dr. Spiegel has more than 40 years of clinical and research experience with hypnosis, stress physiology, and psychotherapy. In this episode, we examine the role of clinical hypnosis for the treatment of trauma, chronic pain, anxiety and more. Dr. Spiegel explains how to determine your level of 'hypnotizability' and provides case studies of incredible successes with hypnosis to treat a variety of ailments. We also discuss how breathing, vision and directed mental focus can modulate internal states and enhance performance. Additionally, we discuss how the adoption of self-hypnosis techniques can reduce stress and enhance sleep in anyone. Dr. Spiegel teaches us how hypnosis works at the neural circuit level to enhance cognitive flexibility. Throughout the episode, Dr. Spiegel summarizes key clinical trials and peer-reviewed findings and resources to work with a trained clinical professional or to do guided self-hypnosis.

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Timestamps:

00:00:00 Dr. David Spiegel MD, Hypnosis

00:04:16 AG1 (Athletic Greens), Thesis, ROKA

00:09:09 Clinical Hypnosis

00:16:45 Stage Hypnosis

00:20:25 Neurobiology of Hypnosis
00:26:04 ADHD
00:28:22 Hypnosis for Stress & Sleep
00:32:12 Hypnosis to Strengthen Neural Connections
00:37:19 Restructuring Trauma Narratives
00:45:14 Ketamine Therapy
00:50:07 Self-directed Hypnosis, Reverti
00:56:53 Eliminating Obsessive Thoughts, Superstitions
01:01:50 'Hypnotizability', the Spiegel Eye-roll Test
01:15:36 EMDR (Eye Movement Desensitization Reprocessing)
01:21:43 Confronting Stress & Trauma
01:27:56 The Mind-Body Connection
01:31:35 Dealing with Grief
01:35:45 Hypnosis in Children & Groups
01:40:06 Drug Therapies & Hypnosis
01:42:39 Breathing Patterns, Peak Performance
01:50:00 Zero-Cost Support, YouTube, Spotify & Apple Reviews, Sponsors, Patreon, Thorne, Instagram, Twitter

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- Welcome to the Huberman Lab Podcast, where we discuss science, and science based tools for everyday life. I'm Andrew Huberman, and I'm a professor of neurobiology and ophthalmology, at Stanford School of Medicine. Today, my guest is Dr. David Spiegel. Dr. Spiegel is the associate chair of psychiatry, and behavioral neurosciences, at Stanford University School of Medicine. He is also the director, of the Stanford Center on Stress and Health. Dr. Spiegel is both a researcher and a clinician, meaning he runs

a laboratory that studies the brain, and the body. And neural mechanisms of how the brain and body interact. And he sees patients as a psychiatrist at Stanford. His work is incredibly unique, in that it bridges mind and body, but it also has a particular focus on the clinical applications of hypnosis. As you'll learn today, hypnosis is a unique brain state, in which neuroplasticity, the brain's ability to change in response to experience, may be heightened and indeed the use of clinical hypnosis, by Dr. Spiegel and colleagues has been shown to improve symptoms of stress, chronic anxiety, chronic pain and various other illnesses, including many psychiatric illnesses and even outcomes in cancer. Today, we discuss hypnosis in the context of what's called, self-hypnosis to distinguish it from stage hypnosis. Many of you are probably familiar with stage hypnosis, which is really about a hypnotist getting a person to do things they would not otherwise do, in contrast, clinical hypnosis, and the use of hypnosis for the treatment of various ailments of mind and body is vastly different. It involves getting people to change their brain state and to use that brain state as a portal to make adjustments in their brain and body, and other aspects of their biology and psychology that benefit them. And it's been shown over and over again, in studies by Dr. Spiegel and colleagues that those changes can occur extremely quickly. Now, not everybody can be hypnotized as readily as the next. And so today we also discuss a simple test, developed by Dr. Spiegel. The it can help you determine, whether or not you have a high, medium or low degree, of what we call hypnotizability. Dr. Spiegel is truly an expert in this area. He has published over 480 journal articles, 170 book chapters on hypnosis, and on things like psychosocial oncology, which is the interaction of mind and body in the treatment of cancer and cancer outcomes, on stress physiology, trauma and other aspects of psychotherapy. He's published 13 books. So, he's truly the world expert in hypnosis and clinical applications of hypnosis for mind and body. I'm certain that in listening to today's episode, you're going to learn a tremendous amount about how the brain and body interact, about various treatments for all sorts of common ailments of mind and body. And you are going to get access to tools, in particular, a tool that was developed by Dr. Spiegel, which is the Reveri app, R-E-V-E-R-I, the Reveri app is currently only available for Apple, but will soon also be available for Android. It does carry a nominal cost, but there is a seven day free trial. If you'd like to try it, we're providing a link in the show notes. The Reveri app is special, in that it is based on clinical studies and research done in the Spiegel lab at Stanford. So, unlike a lot of hypnosis apps out there and resources for hypnosis, it was developed with clinical treatments in

mind. Today, we also discuss the use of breathwork and I'm very fortunate that my research lab at Stanford, has been collaborating very closely with Dr. Spiegel in testing and developing specific breathwork protocols to adjust mind and body for things like anxiety, improving mood and improving sleep. Based on his incredible and unique expertise, and the clarity with which, Dr. Spiegel communicates information. I anticipate that you will really enjoy today's episode and that you'll come away from it, with a lot of actionable tools. Some of you might be curious, what a clinical hypnosis session looks like. And for that reason, we had Dr. Spiegel hypnotize me. A clip of that hypnosis session, is going to be posted to the Huberman Lab Clips channel, which is available on YouTube. Before we begin, I'd like to emphasize that this podcast is separate from my teaching and research roles at Stanford. It is however, part of my desire and effort

00:04:16 AG1 (Athletic Greens), Thesis, ROKA

to bring zero cost to consumer information about science and science related tools to the general public, in keeping with that theme, I'd like to thank the sponsors of today's podcast. Our first sponsor is Athletic Greens. Athletic Greens is an all-in-one, vitamin, mineral, probiotic drink. I've been taking Athletic Greens since 2012. So, I'm delighted that they're sponsoring the podcast. The reason I started taking Athletic Greens and the reason I still take Athletic Greens, once or twice a day, is that it covers all of my foundational, vitamin, mineral, probiotic needs. There is now ample evidence that probiotics can be very helpful for supporting what is called the gut microbiome. The gut microbiome is an aspect of our biology in which, little gut microbiota live all along our digestive pathway and help support various aspects of our biology, including our immune system, our metabolic system, our hormone or endocrine system, as well as what's called the gut brain access, which is literally communication between the gut and the brain to support things like mood, motivation and various other aspects of brain health. With Athletic Greens, I get the probiotics that I need to support a healthy gut microbiome and the vitamins and minerals tap off, any deficiencies I might have, based on lack of certain foods and lack of certain nutrients in my diet. If you'd like to try Athletic Greens, you can go to athleticgreens.com/huberman to claim a special offer. They give you five free travel packs, plus a year supply of vitamin D3 K2. There's a lot of evidence now that vitamin D3 is critically important for various aspects of immediate and long term health. And while many people get enough vitamin D3, many people do not. So, the year supply

of vitamin D3, ought to be very useful for many people, and K2 has been shown to be important for, calcium regulation, various aspects of metabolic health and so forth. So again, if you'd like to try Athletic Greens and get that special offer of the five free travel packs and a year supply of vitamin D3 K2, go to athleticgreens.com/huberman Today's episode is also brought to us by Thesis. Thesis makes custom nootropics, a nootropic is a smart drug. And personally, I'm not a big fan of the concept of a smart drug. At least not the way that most people talk about, smart drugs or nootropics, for the following reason, being smart involves various things. There is creativity, there's focus, there's task switching and so on. And each one of those involves different operations in the brain, different neural circuits, different neurochemicals have to be deployed, in order for us to, for instance, be very focused or for us to be very creative or for us to be able to switch tasks easily. Thesis understands this and for that reason, they've developed custom nootropics, that are aimed at getting your brain and body into particular states for particular types of work or physical activity. In order to accomplish that, they created unique blends of high quality ingredients. And each of those blends is designed to get your brain and body into a particular mode, such as focus, clarity or motivation. I've been using Thesis nootropics for over six months now. And I have to say it's been a total game changer and very unique from the experience of using, sort of what I call, catchall nootropics. So with Thesis, it's really directed toward particular brain-body states. I should also mention that they tailor those custom blends to you. So, by taking a quiz on their site, they will tailor the blend to you and your specific needs and the things you don't want. So, if you want to try your own, personalized nootropics starter kit, you can go online to takethesis.com/huberman you'll take a three minute quiz and thesis will send you four different formulas to try in your first month. And then based on the outcomes with those, they can update your formulations for you. That's takethesis.com/huberman and use the code Huberman at checkout, to get 10% off your first box. Today's episode is also brought to us by ROKA. ROKA makes eyeglasses and sunglasses that I believe are of the utmost quality. The company was found by, two All-American Swimmers from Stanford and everything about the design of ROKA eyeglasses and sunglasses, was created with performance in mind. There are a number of things about, ROKA sunglasses and eyeglasses that I particularly like, first of all, they're extremely lightweight. You basically forget that you're wearing them. Second of all, you can wear them for work, for going out to dinner, et cetera. They have great aesthetics, so you can wear them anywhere, but also for exercise. You can wear them

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00:09:09 Clinical Hypnosis

and enter the code "huberman" at checkout. And now, for my discussion with Dr. David Spiegel, David, thank you so much for being here. - Andrew, my pleasure. - Can you tell us, what is hypnosis? - Hypnosis is a state of highly focused attention. It's something like looking through the telephoto lens of a camera in consciousness, what you see, you see with great detail, but devoid of context. If you've had the experience of getting so caught up in a good movie, that you forget you're watching a movie and enter the imaginary world. You're part of the movie, not part of the audience, you're experiencing it, you're not evaluating it. That's a hypnotic like experience that many people have in their everyday lives. - So, is any experience that really draws us in, hypnotic in that sense? Or let me give a different example. If I'm watching a sports game and I'm really wrapped up in the game, but I'm also in touch with how it makes me feel in my body kind of registering the excitement or the anticipation. Is that a state of hypnosis also, because you mentioned there's kind of, a narrowing of context. - Right. - But a kind of losing of the self, or is it, do I have that right? - Yes, it is true that you're- [indistinct] to the extent that you're somatic, your body experience is a part of the sport event that you're engaged with. I'd say that is a self altering hypnotic experience. If your physical reactions are distracting you or make you think about something else, that's when it's less hypnotic like, and more, just one of a series of experiences. - Okay. So I have to ask, how did you get into this business of hypnosis? Because, I think for most people, when they hear

hypnosis or they think about hypnosis, they think of stage hypnosis. - Right. - They think of somebody with a pendant going back and forth or people up on a stage, behaving abnormally for the entertainment of others. - Yeah. - How did you get into hypnosis as an interest, as a practice? And if you would, could you contrast the sort of hypnosis that you do in the clinical setting with a sort of hypnosis that a stage hypnotist does? - Sure. Well, it is something of a genetic illness in my family. Both of my parents were psychiatrists and psychoanalysts and they told me I was free to be any kind of psychiatrist I wanted to be. So, here I am. My father was training to be a psychoanalyst in 1943. And, he ran into a Vietnamese refugee, who couldn't serve in the army, but who had studied hypnosis. And actually it would interest you, doing your ophthalmological research. He had a smallpox scar right in the middle of his forehead, and he did forensic examinations. And he noticed that some of the prisoners, would focus on that spot on his forehead and then close their eyes and seem to go to sleep. But they were in some altered state. So he got interested in hypnosis. He used it forensically and his name was Gustav von Aschaffenburg. And he offered to teach young psychiatrists, how to use hypnosis when they went off into the war. And so he trained my father and my got off the analytic couch and asked, the analyst mentioned it to him. That's how he found out about it. And my father said, did I say something wrong in analysis? Why is he talking to me [laughs] now? And he found it very useful in helping soldiers who had acute pain when they were wounded and helping people with conversion in post-traumatic stress disorders. And when he came back, he went back to his training, but he still was sort of interested in it. And he had his, one of his supervisors was Frieda Fromm-Reichmann, who was a very famous psychoanalyst. And he said that he had been told to stop doing hypnosis because it would ruin his reputation as an analyst. And she said to him, what are you so worried of about your reputation for? You're going to give a course at the institute in hypnosis, and I know you're going to do it because I'm going to take it. So he was teaching Frieda Fromm-Reichmann hypnosis, and he just kept doing it. And after a while, he discovered that he was getting better results with a few sessions of hypnosis than he was with daily psychoanalysis with his patients. And so he switched his practice. And so the dinner table conversations, were pretty interesting. And occasionally when he was making a movie of a patient, I would get to watch that. And so, when I went to medical school, I figured I'll take a course. [mumbles] Tom Hackett, who was a chair of psychiatry of mass general was teaching and it was a very interesting course. And the day that converted me was, I was doing my rotation at Children's Hospital in Boston. And

the nurse is telling me, Spiegel, your next patient is an asthmatic in room 437 or something. And I'm just following, the sound of the wheezes down the hall. I go in the room, there's a 16 year old girl, knuckles white, bolt upright in bed, struggling for breath. You can hear the wheezing. She twice had subcutaneous epinephrine, didn't work. They were thinking about general anesthesia and starting her on steroids. And her mother's there crying. And I said, I don't know what else to do. So I said, you want to learn a breathing exercise? And she nods. And I got her hypnotized. And then I realized we hadn't gotten to asthma in the course yet. So, I made up something very complex. I said, each breath you take will be a little deeper and a little easier. And within five minutes, she's lying back in bed. Her knuckles aren't white, she's not wheezing. Her mother stopped crying. The nurse ran out of the room, and the intern, my intern comes to find me and I figured he is going to pat me on the back and say, nice job, Spiegel. He said, the nurse has filed a complaint with a nursing supervisor that you violated a Massachusetts law by hypnotizing, a minor without parental consent. And I thought, oh, that's nice. I doubt there is a law like this. So, the intern says, you're going to have to stop doing this with her. And I said, why? He said, it's dangerous. I said, you're going to give her general anesthesia and put her on steroids, and talking to her is dangerous? He said, well, you'll have to do it. And I said, I'll tell you what, take me off the case if you want, but I'm not going to tell a patient of mine, anything I know is not true. So, there was a battle over the weekend about what to do, and the intern, the chief resident, the attending, were all arguing about it. And on Monday they came back with a radical idea. They said, let's ask the patient. I don't think this has ever been done at children's [chuckles] hospital before. And she said, oh, I like this. She'd been hospitalized every month for three months in status asthmaticus, she did a one subsequent hospitalization but after that, went on to study to be a respiratory therapist. And I thought that anything, that can help a patient that much, violate a nonexistent Massachusetts law, frustrate the nursing supervisor, had to be worth looking into. So, I just kept doing it. I discovered that there were, all of my classmates in medical school, had just read the new issue of the New England Journal and had some new medication to suggest. And I would, you know, surgeons would say, look, if you can help this guy with his pain or his anxiety, anything above the neck, that's yours, do it, Spiegel. So, I was having fun and being able to learn how to help people in a way that just otherwise was not being done. And so, it got me thinking about the fact that, we're born with this brain but we don't have a user's manual for it. And we don't use it nearly as well as we can. And that's something your research

is all about too. And so, I thought,

00:16:45 Stage Hypnosis

I want to understand this better. And I want to see what we can do. Stage hypnotists drive me nuts. They make fools out of people. There was one. This is a case my father was involved. He got a call from, he was at Columbia, he got a call, Spiegel, you got to come see this woman, she's in the ER. And she's in some kind of weird upset state that happened. And it turned out she'd been on the show with a stage hypnotist who, and what they do by the way is, they cycle around, you know, The beginning of the show, they don't just grab somebody and say, we're doing this. They get a bunch of people up. They do what [indistinct] testing, to see if people- and they get the ones who are the most hypnotizable. So she was the one. And he said, there's now a little bird in your hand, and you're going to play with the bird. And she starts to cry and scream. And he just gets her off the stage, 'cause it's very upsetting. And she's wandering around New York City in the middle of the night dissociated and brought to Columbia. And that's where my father saw her. She was still in a kind of uncomfortable trance like state. And it turned out, that she was the trophy wife of a very wealthy guy. And she felt like a bird in a gilded cage. And so to her, that image just triggered all of this sense of, dissatisfaction and discomfort, fear about her life. And he was able to get her reoriented and talk with her about what she was going to of her life. But I don't like stage hypnosis. You're making fools out of people and you're using the fact, and that's what scares people about hypnosis. They think you're losing control. You're gaining control. Self-hypnosis is a way of enhancing your control, over your mind and your body. It can work very well, but because it gives you a kind of cognitive flexibility, you're able to shift sets very easily. To give up judging and evaluating the way you usually do and see something from a different point of view. That's a great therapeutic opportunity, but if misused, it could be a danger too, and that's what scares people about it. It is that very ability to suspend critical judgment and just have an experience and see what happens. That can be a great therapeutic opportunity, but if somebody's misusing it, it can be a way to harm people. And there are plenty of examples of people, having fantasies imposed on them, that they come to think are realities. It's not unusual these days. So, it's an ability that, if people learn to recognize and understand it, can be a tremendous therapeutic tool. - I've been stage hypnotized and I've been clinically hypnotized many times through a self-

hypnosis app. We'll talk about later. And then I know we have plans for you to hypnotize me today. You've done it once before. - Mm-hm. - [Andrew] And I'm very hypnotizable as we both know. - Right. - We'll talk about, how one can gauge their hypnotizability. - Sure. - But the stage hypnosis, was interesting. This was in college, they brought someone out to the dormitory and, I recall being one of the people that was selected. - Mm-hm. - And engaging in very bizarre behavior, right? It wasn't thoroughly embarrassing, but it was pretty embarrassing. And then being sent off the stage, and as I was exiting, suddenly screaming something out because he had planted a suggestion of some sort. - Ah, mm-hm. - And then I was told to look in my pocket and there was, like a, I think, a torn up dollar bill. There were a bunch of things that I have vague recollection of.

00:20:25 Neurobiology of Hypnosis

- Mm-hm. But it raises set of questions that really boil down to, as a biologist, I always think that, there's no events in the brain, there are processes. And so hypnosis, we know has an induction. Then one is hypnotized, I imagine. And then it sounds like this woman and this example of the bird and being distraught in New York City, is a failure to exit the hypnotic state. Do we know what sorts of brain areas are active during the induction, let's call it the deep hypnosis and then what's shutting off or changing as people exit hypnosis. - Yes, we do, we've studied that. We've been very interested in that. And so, we did a study where we selected highly and non-hypnotizable people so we could do the comparison. And then hypnotize them in the functional MRI scanner. And we found three things characterized the entry into the hypnotic state. The first is turning down activity in the dorsal anterior cingulate cortex. So the DACC is in the central front-middle part of the brain as you well know. And it's part of what we call the salience network. It's a conflict detector. So if you're engaged in work and you hear a loud noise that you think might be a gunshot, that's your anterior cingulate cortex saying, hey, wait a minute, there's some potential danger over there. You better pay attention to it. So, it compares what you're doing with what else is going on and helps you decide what to do. And as you can imagine, turning down activity in that region, make it less likely that you'll be distracted and pulled out of whatever you're in. And in another study, we found that highly hypnotizable people, even without being hypnotized, have more functional connectivity between the DACC, the anterior cingulate cortex and the left dorsolateral prefrontal cortex. So, which is part of a key region in the executive control network. So,

when you're engaging in tasks, you're enacting a plan, you're writing a paper, you're doing whatever you're doing. That's the prefrontal cortex who's doing that. And so, if that is coordinated, we found more functional connectivity. So, when one is up, the other's up and one is down, the other's down. That coordination implies that the brain is saying, okay, go ahead, I know what you're doing. Carry out that plan. And don't worry about other possibilities. So, two other things happen when people are hypnotized. One is that that DLPFC has higher functional connectivity with the insula. Another part of the salience network. It's a part of the mind-body control system, sensitive to what's happening in the body. It's part of the pain network as well, but it's also a region of the brain where, you can control things in your body that you wouldn't have think you could. For example, we did a study years ago, where we took people who were highly hypnotizable, hypnotized them and told them, we went on a imaginary culinary tour. So, they would eat their favorite foods and we found that, they increased their gastric acid secretion, like by 87%. So, their stomach was acting as though it was about to get, I mean, there was one woman, it was so vivid for her that halfway through, she said, let's stop, I'm full, [laughs] eating these imaginary- - Having never eaten- - Having never eaten anything- - Actual food? - No. - Incredible. - And then we got them to relax and think of anything but food or drink. And we got like a 40% decrease in gastric acid secretions. And that was DLPFC through the insula, telling the stomach you're getting food or you're not getting food. And even, we injected them with Pentagastrin, which triggers gastric acid release. And even then in the hypnosis condition, they had a 19% reduction in gastric acid. So, the brain has this amazing ability to control what's going on in the body in ways that we don't think we have ability to control. That's just one example. So, that's the DLPFC insula connection. The third thing that happens, and this relates to what you did on the stage, is you have inverse functional connectivity between the DLPFC and the posterior cingulate cortex. The posterior cingulate is part of the default mode network. It's in the back of the brain. And it's an area whose activity goes down for example, in meditators. And in meditation, you're supposed to be selfless. You're supposed to, [indistinct] self is an illusion, you're supposed to let it dissolve and just experience things. And when you're doing that, the posterior cingulate is decreasing in activity, the inverse connection is, I'm doing something but I'm not thinking about what it means for me. I may not even remember much of it. if I do, I don't care that much about it. And so, that is part of the dissociation that I occur with hypnosis. So, it's how you put things outside of conscious awareness, and don't worry about what it means. It

also adds to cognitive flexibility. If you're thinking, well, people like me don't usually do this. That may inhibit you from, enacting a new form of psychotherapy for example, that you've never done before. But if you're having this decreased activity in the part of your brain that reflects on what it means, you're more likely to be cognitively flexible and willing to give it a try. And that's one of the therapeutic advantages of hypnosis as well. - Fascinating, and it's really, I'm going to embarrass you here a little bit. [David laughing] In the positive sense, your laboratory is really the one that's pioneered brain imaging of hypnotic states. And, it sounds like it, that's my understanding, is that correct? - Yeah, I mean, there are other people, who've done excellent research too. - Sure. Pierre Rainville in Montreal and several other people,

00:26:04 ADHD

but we're one of the leading labs in neuroimaging of hypnosis. - I have to ask about, attention deficit hyperactivity disorder. I get a lot of questions about this. And I think a lot of people just struggle with holding attention nowadays, because of interference with phones and devices. And of course, there is a lot of, clinically legitimate ADHD out there, but the way that you describe, - Sure. - the dorsal anterior cingulate and the salience network and this a conflict detector of, am I focusing on something or am I splitting my attention? How distractable am I? Seems to relate to some extent to activity in the anterior cingulate cortex. Do people with ADHD, display disruptions in elements of these networks and has hypnosis ever been used to, or self-hypnosis, I should be, to distinguish from stage hypnosis, clinical and self-hypnosis been used to enhance people's ability to focus and hold attention? Because that's such a built in component of the hypnotic state. - It's a great question. There's sort of two ways to think about it, in terms of enhancing focus, yes. It has been very helpful in teaching people to just prepare your mind to narrow in and focus on something. And when you're really engaged in reading something, or you're writing a pa- I mean, I'll have that, sometimes I'm thinking, oh God, I have to do this for another hour. Other times an hour will go by and I'll think, hey, great, because when you're in that, it feels game-like to you, you're just assembling the parts of the puzzle and putting 'em together. It's fun, you just get absorbed, that for me, that's a hypnotic like experience, when I'm having trouble, when I'm struggling, sometimes doing things like self-hypnosis can help. I'm not an expert on ADHD. My impression is that you're right, that these are people who are constantly distracted and

rather rigid. The other part of it is they're easily distractable. They're very upset when they get distracted and they're rather rigid in what they want to attend to and what they can. I think, as a way of controlling this, distractibility, frankly. My guess is that many people with ADHD, would not be that hypnotizable, but I haven't studied it. So, it's possible that for some people with that disorder,

00:28:22 Hypnosis for Stress & Sleep

training in self-hypnosis might help, but we'd have to see how hypnotizable they were and take it from there. - I want to return to some of the underlying neural networks and the clinical applications but, what sorts of things aside from the asthma, have you used hypnosis successfully for or have others used clinical hypnosis for? And are there any particular areas of, psychiatric challenges or illnesses, I guess they're called, that are particularly amenable to hypnotic treatment. - Yes, there are. Hypnosis is very good as a problem focused treatment. It's the oldest western conception of a psychotherapy, and it can be used for specific problems in a way that's very helpful. We found it very helpful for stress reduction. For helping people deal, we're all dealing with stress these days. And it's helpful, that mind-body connection is very helpful because part of the problem with stress is your perception. You mentioned earlier in a sort of good sense, you're at a football game or something, and you feel the physical reaction. That can be a reinforcing thing. Wow, this is exciting, let's do it. It can also be very distracting. So, you're worried about getting COVID or you're worried about, some other physical problem you have. And you notice it in your body, your body tenses up, you start to sweat. The sympathetic nervous system goes, your heart rate goes up. And when you notice that you think, oh God, this is really bad. And then you feel worse. So, it's like a snowball rolling downhill. And then you feel worse and then your body gets worse. Hypnosis can be very helpful in dissociating somatic reaction from psychological reactions. So, we teach people to imagine their body floating somewhere safe and comfortable like a bath, a lake, a hot tub or floating in space, and then picture the problem that's stressing them on an imaginary screen, with the rule, no matter what you see on the screen, you keep your body comfortable. So, at this point, you still can't control the stress, but you can control your physical reaction to it. And that starts you feeling more in control. At least there's one thing I can manage. And then you can use it to think through or visualize through one thing you might do about that stressor. So, hypnosis is very helpful in controlling mind-

body interaction in relation to stress. It's very helpful for people to get to sleep. We're having a lot of fun with that. I'm getting emails from people who said, I haven't slept right in 15 years, and now for the first time, I'm listening to your app and I can sleep at night. So it's very helpful and again, if you wake up in the middle of the night, I tell people, don't look at the clock. That's an arousal cue. You'll wake up more, but picture whatever you're thinking about or worrying about on that imaginary screen while your body is floating. So, watch your own movie, but keep your body floating. And many people can use that to get back to sleep. - I've been using self-hypnosis for sleep for a long time. And now the Reveri app, and we'll talk about our relationship to the Reveri app and its uses. I find it incredibly useful for falling back asleep in the middle of the night. And it raises a question, I've found and I think I understand this correctly, that one can do self-hypnosis during the daytime. And then if there's an issue that comes up later, like, so for instance, do self-hypnosis for stress reduction, away from the stressful event to prepare one to deal with stress better. - Right. - Or do hypnosis for improving the return to sleep. And that can be done when you actually want to go to sleep. But it's kind of a training up of these networks,

00:32:12 Hypnosis to Strengthen Neural Connections

right? - That's right. - So, is there evidence that, these brain networks actually form stronger connections, when people do self-hypnosis over time? - Well, there's a rule in neurobiology as you know, that neurons that fire together wire together. - Our friend, Carla Shatz. - Yes, Carla- - Not Donald Hebb, by the way. [David laughing] I keep trying to, there's a widespread myth in the world that is unfortunately, all over the internet, which is that, fire together wire together was said by, this psychologist, Donald Hebb Donald Hebb did many important things, but it is the neurobiologist Carla Shatz- - That's exactly right. - Who, Yes, is at Stanford but was also at Berkeley and Harvard. So, also decent schools. - That's exactly right. - But is at Stanford, who said, fire together wire together. And so she deserves, - Right. - the credit for that statement. Yeah, so with repeated use of self-hypnosis, one could imagine that these networks are getting stronger. - I would think so. We don't have evidence of that yet, but long term potentiation provides a pathway and you've described them on your program, a number of times that allow for repeated activation of a network to actually build new connections that work. And at the least, even from a learning and memory point of view, memory is

all a network of associations. That's how we remember things. And the example I'd like to give is, you go back to your grade school and you see these little tiny lockers and the size is all wrong. And you suddenly have a flood of memories that were obviously stored there, but you just didn't think of. So, context and association is what memory's about. If you start to acquire memories about a problem. So, one thing we use hypnosis for is treating phobias, for example. And the problem with people who have phobias, like airplane phobias or crossing a bridge or being up high, is that the more they avoid it the more, the only source of associations and memories is their fear. They don't have any good experiences with it 'cause they avoid it. It's like get back on the horse after you fall off kind of thing. And with hypnosis, if you can start people able to manage their anxiety enough that they can have more, a wider array of experiences, they start to have a network of associations that isn't so negative and may even be positive. - So it's almost like a, sorry to interrupt, but I have to ask. - Sure - It's almost like a, exposure therapy done in the mind. - Yes. - It's always in the mind. I mean, even that exposure to, if I have a snake phobia, which I don't, I don't like snakes, but I don't think it qualifies as a full blown phobia. I think I have a healthy fear of snakes. - Yeah. - But if, let's say I had a snake phobia, the typical approach in, would be, cognitive behavioral approaches, right, would be to show a picture of a snake, then a rubber snake, then a real snake. Eventually the person is, - Yeah. - holding a boa constrictor or something like that. - [David] Right. - That's all in the mind because it's all translate into nervous system signals. But with hypnosis, sounds like you can give a number of positive experiences without having to use any props, without having bring any animals into the room. - Right, I - Drive someone across the bridge, is that right? - Yes, I had a woman, who was a very successful business woman, high level in a corporation. I had a terrible dog phobia. And so I had her imagine that somebody brought in the dog to the room and I said, "what are you doing?" And you could see her getting tense. And she said, "Well, I'm waiting to see what the dog does." And I said, "If somebody who works for you, comes into your office, would you freeze and wait to see what they did?" And she said, "Of course not, I tell 'em what to do." [laughs] And I said, "Well, so you're immobilizing yourself, the power isn't with the dog it's with you, so, imagine what you might do to engage the dog and help control the situation." And she said, "Thanks." And this reminds me of, one of my favorite stories about hypnosis that, my father was seeing a woman who lived in Midtown Manhattan and had a horrible dog phobia. She'd dropped things, she'd spill coffee if she saw a dog. She would time her trips to the store, when she thought it was

least likely that people would be walking dogs. - Now that wouldn't be possible, everyone in- - [laughs] Everyone in New York has a dog - It's like a fleet of French Bulldogs, - Right, exactly. - taking over New York City. - So, he taught her to think of dog as a friend, have a neighbor who had a dog, bring the dog over but hold the dog by the collar and make sure, and gradually she was able to stroke the dog and say, dog friend and distinguish between wild and tame animals. There are animals, you should be afraid of [murmurs]. So, she seemed to be doing better. He called back about three months later and asked for her. "Well, who's calling?" the son said. And he said, "Dr. Spiegel." And the boy said, "That's weird." And my father said, "What's weird?" He said, "Spiegel's in heat." She had bought a dog, - I love it. - and named it, Spiegel. - I love it. - Talk about transference. - I love it. [David laughing]

00:37:19 Restructuring Trauma Narratives

But it really speaks to the power of this. And it brings me back to this issue. So, what is different about, what your father did in that case with this woman, in terms of what happened in hypnosis that allowed her to go from being completely terrified of dogs to owning a dog and naming it after your father? Which I find amusing. - Yeah. - But that's different than just the two of them sitting down and talking about it, right? You know, in therapy, narrative is a huge component. - Right. - And in hypnosis narrative is a huge component. - Right. - So it must be that, the brain state is what is really different. Because we'll talk about trauma in a few minutes. But I think people who have trauma or phobias, certainly could have a conversation about it. Some of them might freeze up. Some of them might lose their articulation and so forth. But what is different about that state that combines with narrative, you think to allow these underlying neural networks to engage her to change? 'Cause I find this so fascinating because we're a- Every attempt at dealing with stress or phobia in the clinical setting involves some discussion about what it is. - Yes. - But, here we're not talking about any medication being introduced, at least not in these particular circumstances. - Right. - So, I realize it's kind of an obvious question like, it has to be some difference in brain activity, but I find that to be incredible. The control variable there is the brain state. It's not, what's spoken. - You're raising a couple of very important issues, Andrew. We talked earlier about with systematic desensitization, where you sort of lay out a hierarchy of things and do it one at a time. I think of this as unsystematic desensitization, because you're changing mental states.

And I think there's more and more evidence that mental state change itself has therapeutic potential. We're seeing that with ketamine treating depression, the dissociogenic drug. We know it every morning when we wake up, that problem, when you know, you made the mistake of reading a nasty email at 11:00 PM. You didn't know what to do. You wake up in the morning thinking, oh, that idiot, yeah, here's what I'm going to do. So, just changing mental state, itself has therapeutic potential. And I think we underestimate our ability to regulate and change responses to be cognitively, emotionally and somatically flexible. And so, we do things, you're right, that follow similar principles of facing a problem, seeing it from a different point of view. And you've done a really, a nice podcast on trauma and stress and how you have to expose yourself to it, not avoid it, as we talked about before. And then find some way to reconnect to it, to substitute something that can make you feel good, rather than bad, so that you activate other centers of the brain like mesolimbic reward system. And so, I that with hypnosis and you can do it much faster. People don't think they can but they can. If you are having, right now that physical experience, I'm thinking about this but I'm not feeling as bad as I used to. That can be a powerful thing and you can do it with hypnosis. So, a woman came to see me, who had suffered an attempted rape. It was getting dark, she was coming back from the grocery store and this guy grabs her and wants to get her up into her apartment. It's outside her apartment. And she starts fighting with him and she winds up with a basilar skull fracture. He runs away. The cops come, since she hadn't been raped, they left, they weren't interested. And she wanted to use hypnosis to get a better image of what this guy looked like, which is a painful, upsetting thing. So, she was quite hypnotizable. I got her floating. I say, you're safe and comfortable, now, nothing can happen that will harm your body. But on the left side of the screen, I want you to picture this guy and his approaching and what's happening. And she said, I really, the light, it was getting dark. I really can't see much of his facial features, but I do recognize something, I hadn't allowed myself to remember. If he gets me upstairs, he doesn't just want to rape me, he's going to kill me. And so, in some ways, what she was seeing was even worse. So, you're thinking, good, Spiegel, you made her even more frightened than she was before. But as you had pointed out in your PTSD stress lecture, you've got to confront the trauma, to restructure your understanding of it. So, on the other side of the screen, I had her picture, what are you doing to protect yourself? And everybody in a trauma situation engages in some strategy of self protection. That's the salience network kicking in. And she said, "You know what?" He's surprised that I'm fighting that hard. He

didn't think I would. And so, she realized on the one hand that it was even worse than she thought it was. But on the other hand that she actually probably saved her life. And so, it was a way of, helping her restructure her experience of the trauma and make it more tolerable. So that helped with her- She didn't recog- She couldn't identify the guy, but it helped her restructure and understand her experience. And that's something that you can do in just talking, straight out psychotherapy. But sometimes you can do it a hell of a lot faster and more efficiently using hypnosis. And there is one randomized trial out of Israel that shows that adding hypnosis to PTSD treatment, actually improves outcome. So it's a way of accomplishing things that we understand in the broader psychotherapy world, but much more quickly and sometimes effectively. - Yeah, it sounds like going somewhat into the state that one is trying to deal with, but then dissociating from that state is key. And I could imagine, and I've been open about this on various podcasts. I've done a lot of an analysis over the years. I've experienced myself that in those sessions, depending on how I show up to them, I might just get kind of a laundry list of what happened as opposed to actually feeling anything, around what happened. - Right. - And I think people probably vary in the extent to which they can drop into feeling states and it can depend on the day. It can depend on how well you slept the night before and so on. - There's one thing I might add, Andrew, - Yes. - And that is, there's a notion to late Gordon Bower, we just had a memorial for Gordon at Stanford. He died about a year ago. Brilliant cognitive psychologist, one of the founders of cognitive psychology at Stanford and a great pitcher. He almost became a Major League pitcher but he decided to go to grad school instead, and I'm glad he did. But Gordon helped establish the concept of state dependent memory that when you're in a certain mental state, you enhance your ability to remember things about it. And sort of the bad example of that is the drunk who hides the bottle and can't remember where he put it until he gets drunk again and he's in that same mental state. People go into dissociative states when they're traumatized. So in a way, hypnosis is helping them remember and deal with the memories better because they're more in the mental state that is more like what happened. And most rape victims will tell you, I was floating above my body, feeling sorry for the woman being assaulted below. People in traumatic episodes, they just say, you know, I blank out, I don't know what's happening, I'm on autopilot and that's a kind of self hypnotic state. So, when you use hypnosis to help them deal with a traumatic memory, you're making the state they're in, right there in your office with you, more congruent to the state they were likely in, when the trauma happened.

And I think that is part of what helps facilitate treatment of trauma related disorders. - I see.

00:45:14 Ketamine Therapy

So that makes me have to ask, every question I have to ask, 'cause I really feel it as a almost like compulsion, then if dissociation during a traumatic episode is, it's a part of the adaptive strategy. - Right. - But it creates certain issues, it creates problems, right? Why would something like ketamine, which creates a dissociative state, be useful for the treatment of trauma? This is what I'm confused about these days because our colleague, Karl Deisseroth, who's also been on this podcast and his coworkers have figured out, okay, there's these layer one networks in the neocortex, and those are involved in dissociative state. And so we're starting to gain some understanding of how ketamine works at a neural level. - Right. - It does seem, as if for certain populations it can be a useful treatment. I don't know, I've never tried it. I don't know what the current status of that is, but it is legal. It is allowed at least in, it's FDA approved and it's in use. Why would dissociative states be useful if some element of dissociation is what gave rise to the trauma memory in the first place? - Well, yeah, and Karl had a brilliant paper in nature where he, it was from rats to humans in one paper. And he showed that there's this rhythmic discharge in the retrosplenial region, that is triggered by ketamine. And the rats actually showed dissociative like behavior, in that they would a hot pad that they ordinarily wouldn't and they didn't seem to have much pain in their paw. And he then had a male subject who had implanted electrodes- - Human, yeah. - A human subject, yeah. And the electrodes had picked up this rhythmic activity. And when they did, he would report being in a dissociative state. And his description was, it's like being a pilot of an airplane. And then I felt myself walking out of the cockpit and the plane was still flying and- - It sounds terrifying to me. [David laughing] It sounds terrify terrifying. - That's the thing- - I want to be in my body, [David laughing] most of the time, you know. - That's right but, the point is, in a way the principal, Andrew, is like, the principle you said, that you need to re-confront a traumatic situation before you can modulate your associations to it. So, you have to accept it, accept the arousal, put some boundaries around it and then figure out how you can approach that problem or how you did approach that problem from a different point of view. So, it does not surprise- In fact, we've studied, people who disassociated during the Loma Prieta earthquake and the Oakland-Berkeley

firestorm. - I remember both those well. - Yeah. - Earthquakes follow me. Then I move south and then the Northridge quake- - I'm going to keep away from So, there'll be one later, this afternoon. [David laughing] - I'm starting to dissociating. So, dissociation does compartmentalize experience, but that means from the point of view of treating trauma, it's an inhibition. You don't engage it. It's like it happened over there. And I think what happens is that people, are sometimes too good at being able to separate themselves from their recollection. So it's in there somewhere. It's out of sight but it's not out of mind. It's having effects on you, but you can't deal with it. You can't reprocess it. So I do think one reason ketamine might work is that in fact, it allows you to keep, to re-approach the dissociative experience in a way that you can then start to think about and do something about it. And just the fact you can turn it on and off. And that's also where self-hypnosis is so helpful. It's not something that just comes over you and happens to you. It's something you can make happen. You can control it, you can do something with it. So, you feel less helpless and out of control. The essence of trauma is helplessness. It's not fear, it's not pain. It's helplessness. You become an object. You become just your body. You don't control what's going on. And we're not used to that. You and I have discussed this breathing paper on anticipation of breathing. And it's not whether you breathe, inhale or exhale or hold your breath, it's that if you think you can inhale and you can't, that is really upsetting, understandably. And so, the issue is control and hypnosis, which has this terrible reputation of taking away control is actually a superb way of enhancing your control over mind and body. - I love that and it reminds me that naming is so important. You almost wonder if self-hypnosis and clinical hypnosis had been called something else, that it would've been separated out from stage hypnosis in a way that would make it less scary, weird, complicated for people to embrace. But, - Yeah. - part of the reason for having this discussion is, I've had great experiences with hypnosis, that I've seen the data, we're talking about a lot of clinical examples. It's incredibly powerful and it boils right down to neural brain states. - Right. - And,

00:50:07 Self-directed Hypnosis, Reveri

I think in the years to come, it's going to become more widespread along those lines. How quickly, you've described some examples of people getting relief very quickly. - Right. - How permanent, are those changes? Is there a need for follow up and related to that, I'm sure a number of people are listening to this and thinking, wonderful, I'd love to

get hypnotized for any number of different things by Dr. Spiegel or somebody else expert in clinical hypnosis, but they might not have access to you or somebody with similar training. So what is the power? So, how quickly does it work? How long lasting are those changes? And then, is it necessary to work with a clinical hypnotist? And is it better to do that than self-hypnosis and so on and so forth? Maybe you could just give us a contour of the landscape of directed and self-directed treatment. - Well, typically, most people start by coming to see a clinician like me. It's better to see someone who has licensing and training in their professional discipline, medicine, psychology, dentistry, whatever. - 'Cause there are a lot of hypnotists out there, who are just hypnotist. - Right. Just hypnotists. - Oh, okay. - And the key issue is, somebody who can really assess what your problem is and make sure that you're not, talking someone into reducing their chest pain, rather than getting their coronary artery problem- - 'Cause they could have a real issue there. - They could, right. - That hypnosis might adjust but wouldn't deal with the deeper underlying issue. - That's right. On the other hand. And typically when I use it with people, I often only see them once or twice or periodically, but not every week. And certainly not every day, if they have a pain problem and hypnosis is very helpful for pain. And so, what I'm doing is, identifying how hypnotizable they are. I give them a standard brief test of their ability to experience hypnosis, and then going through a self-hypnosis exercise with them to deal with the problem, seeing how they respond to it, and then teaching them how to do it for themselves. And in the old days, I used to have them use their iPhone and record that part of the session. So they could play back the hypnosis experience. Now we've developed an app, "Reveri," that can teach people and step them through, dealing with pain, stress, focus, insomnia and help people eat better and stop smoking. But we have elements that take about 15 minutes and elements that just take one or two minutes that people can refresh and reinforce. - Two minute hypnosis, [indistinct] one minute. - Yes. - Yeah. - And it's one to two, we're one to two minutes now, and we're finding that two thirds of the people find that even just the one minute refresher, helps them feel better. They're reporting, they feel better. So, the nice thing is, you know right away, whether it's likely to help you or not. And we've found, we've done studies, looking at hypnosis for pain relief in acute medical procedures. We did a randomized trial that we published in The Lancet, three conditions, people getting arterial cutdowns to chemoembolized tumors in the liver or visualize renal artery stenosis. You don't use general anesthesia for this. It's very uncomfortable and people are anxious and we had three conditions. One was standard care, they could push a

button and get opioids, IV. - This is during the surgery? - During the surgery. The second is, they could do that, plus they had a friendly nurse, comforting them. So, we controlled for pleasant attention and support. And the third was, we taught them self-hypnosis for pain control. So, you're feeling, you can change the temperature, you're your body is cool, tingling, and numb, you're floating in ice water and feeling comfortable. Or go somewhere else, leave your body here and go to a desert island and enjoy yourself. And we found that, it's about two and a half hour procedure, that by an hour and a half, the hypnosis group had reduced their pain by 80%, compared to the standard, - Wow. care group, using half the amount of opioids, they had fewer complications and the procedure took 17 minutes less time on average to get done. Because not only was the patient more relaxed. So was the treatment staff. They weren't dealing with someone who's struggling and uncomfortable. We measured their anxiety and same thing. They hypnosis group, I was worried they were all dead. They had no anxiety after an hour and a half, they were saying, I'm fine, you know, and they were fine. And the standard care group, had 5 out of 10 anxiety scores at that point. So, we published that in The Lancet, big randomized trial. If we had a drug that did that, every hospital in the country would be using it now, but there's no industry to push it. So, that's part of what helped us decide that we needed to help people, do this with Reveri and teach them how to do it and provide interactive support for them to do it. And does it, the question, although is, does it work long term? 'Cause what we can do acutely doesn't necessarily carry on. So, we did around randomized trial of women with metastatic breast cancer. They had advancing disease. We met with them in a support group once a week and taught them self-hypnosis, for stress and anxiety and pain control at the end. And by the end of a year, the treatment group had half the pain the control group did, on the same, in very low amounts of medication. So, it lasts. And they would say, when I felt that pain in my chest and thought it was a metastasis, I just did the exercise. I got myself in a warm bath and I felt fine. So, it works because it becomes a skill that people acquire, but they can tell right away, whether it's likely to help them, working with a clinician or now using the app or other ways of helping them learn to use it as a skill. So, the nice thing is you will know very quickly, whether it's likely to help you or not. And if it is, you can learn to do it for yourself. - That's great and we will, again, there'll be a link to Reveri in the caption, it's available for Apple and Android. And I think even though there's a nominal cost there, I think that, as you mentioned, medications and other approaches to dealing with these problems are quite expensive, and have all the potential for side effects and things. Not

that some of those aren't also useful. - Could I, before you get to that, - Please. - just one thing. We've worked very hard on the app. We have an iOS app for Apple. We decided to table for a moment, redoing the Android app. So, it was available, when we were working through the Alexa platform. It's not at the moment but it will be soon. So, I just don't want people to be disappointed if they're looking for it for Android, it's on our agenda but we don't have it at the moment.

00:56:53 Eliminating Obsessive Thoughts, Superstitions

- Great, thanks for that clarification. So hopefully, in time for both, I get asked a lot about obsessive thoughts or intrusive thoughts. I also get asked a lot about OCD. Is there any evidence that hypnosis or self-hypnosis can be used for, dealing with obsessive thoughts? - Sometimes, there are some very obsessional people, who just turn out not to be that hypnotizable for, yeah, and it's not random. They tend to be so over controlling of thought, they're all busy evaluating rather than experiencing, so- - I know a few people like that. [David laughing] It sounds like an adaptive mindset for a lot of professions. - That's right. - And then we get trained up in that, - Yeah. - during school, how to obsess over the exam, obsess over the, - Yeah. - our social interactions. I mean, it's part of becoming a functional human being. And yet, it can take us down a different- - We sometimes overdo it. I mean, I'll tell you one example from extreme situations, that, you know, you're judging, evaluating, you're not letting yourself experience, including emotionally. I know somebody, who listens to the tapes from airplanes that go down. So, they get the black box and they listen to it. And he said to me, you know- - That's his profession or he does this recreational- - No, it's his profession. - Okay. - That's what he did. 'Cause they're trying to do accident prevention and how to handle things. And he said that you worry about people panicking, right? And here these guys know that they've got 30 seconds or some 45 seconds and they're just going through their checklist. He said, they don't panic enough. They're taught that this is what you do. And there is reason, there's good reason for it. But sometimes they overdo it. And it's painful to listen to this 'cause you know what's going to happen. So, it's kind of a balance we have to hit. And sometimes we get too emotional and too absorbed and you're not with that enough to sort of see other possibilities. That can be a problem. But on the other hand, sometimes you're too rigid and controlled and you don't let your emotions guide you to what you need to do to protect yourself or protect others. So, I would say in

general that people with OCD are, on the less hypnotizable side of the spectrum, they're less likely to allow themselves to engage in any, and the typical example is the checking with OCD for example, they don't remember, whether they locked the door or turned off the gas in the oven and they keep going back and they keep checking. So, there the evaluative component of the brain, kind of overrides the experiential one and sometimes people can get some benefit, but they're not a group that I would select for being the most likely to respond to self hypnotic approaches. - Are superstitions similar? - Superstitions, I think that's more, there are people who are very hypnotizable, who keep getting caught up in things like superstitions and there, the imagination supplants the reality. And we've seen a lot of that happening recently. And so I think there, it's by possible that they could be helped by learning to sort of see it but put it in context, see it from a different point of view. - I developed a pretty vicious superstition, when I was in college and it was hard to break, actually. I always feel, when I talk to clinicians, I have to reveal certain things about my own pathology. - Please do. - And so- - You'll get my bill later. - Thank you, yes, it's part of the reason I arranged this. [David laughing] No, I'm just kidding. But yeah, I did. I had a habit of knocking on wood for things and I noticed it started to, I would sneak knocking on wood every once in a while 'cause I didn't want people to think I was doing too often. And then I started to realize that, it was becoming a little bit of a reflex. And then I saw this incredible video from Bence Olveczky's lab at Harvard. He studies motor patterns. And he has these rats that press different sequences of levers and turn dials in order to get a pellet of food. But as they do that, they'll start to introduce these behaviors that have nothing to do with the actual lever pressing, like they'll start scratching their hind quarters and things like that. And their hat, their heads, excuse me, they don't wear hats and flipping their ears. And this is just like a pitcher before throwing a baseball. That we do this, - Oh, yeah. - we start to incorporate motor behaviors that are unrelated to the outcome, but our mind somehow starts to think that they're necessary for the outcome. And so then you incorporate it. So, I decided to break it by simply forcing myself to not do it for about a week. - Mm-hm. And then it just seemed like a ridiculous, - [Both] thing to do. Yeah, well- - Knock on wood. - We call that response prevention and it works. What you do is, you set up a new context in your brain, where you get the outcome you want, devoid of the extraneous behavior. - Yeah, and I knew it was nuts, right. I knew it was illogical. - Right.

01:01:50 'Hypnotizability', the Spiegel Eye-roll Test

- But somehow these things take on meaning. - [David] Right. - So, we talked about, the utility of hypnosis for stress reduction, phobias, pain, possibly, we don't know but for, things like ADHD and OCD, it just will depend on hypnotizability. - Right. - You talked about this beautiful study on the, metastatic breast cancer outcome or patients. Hypnotizability is clearly a key variable. - Yes. - So could you please tell us, what hypnotizability is, how it's evaluated and what The Spiegel Eye-Roll Test is? - Okay, sure. So, hypnotizability is just a capacity to have hypnotic experiences. And we have a test called the hypnotic conduction profile. Where we give a highly structured hypnotic experience. And the old tradition in clinical hypnosis was, that you try a bunch of different things, talking, walking upstairs and downstairs and other images and time what you say to the breathing of the subject and all that. And the more you change what you do as a clinician, the less you can make of variation and outcome. And it could take a long time, you know, 20 minutes, 30 minutes. And I just view that as a kind of complex, not very effective way of assessing the person's hypnotic capacity. We know that the peak period of hypnotizability in the human life, is the latency years in childhood. So, every eight year old is in a trance all the time. You call all 'em in for dinner, they don't hear ya, they're doing their thing. And that's why childhood is such a wonderful experience. Work and play are all the same thing. And we try to make them into little adults, which I think is a terrible mistake. Everything is fun for them. They enjoy learning, they enjoy everything. - So what age are they in this- - This is like 6 to 10, 6 to 11. And they're playful, they enjoy everything. Everything is sort of a game and fun and we try to make it miserable for them, but they've got it. And then when, what Piaget called, a more adult cognitive framework, where we learn abstract concepts, we learn that even if one bottle looks bigger than the other, they can have equal volume. And so, we at imposing logic, we're growing our DLPFC at that point and imposing cognitive structure on experience. Some people start to lose that hypnotic ability. By the time you're in your early 20s, your hypnotizability becomes extremely fixed. And there was a study done at Stanford, Ernest Hillard, Phil Zimbardo did this, looking at, they've tracked down students who were in psych one, had their hypnotizability measured and retested them blindly 25 years later. And the test, retest correlation was, you want to guess what it was? - I'm guessing it's, I don't know, 0.6 something. - Yeah, very close. It was 0.7, IQ would be 0.6, on the 25 year interval. - Wow. - So, it's more stable than IQ over a 25 year interval. So, once you're at that point, that's where you are. What are the factors

that lead to that? Well, and so what it means is that, about a third of that adults are just not hypnotizable. Two thirds are, about 15% are extremely hypnotizable and we can measure that and give it a number from 0 to 10. And that's very useful. For some of my patients when I do it, I say, look, I'm sorry, you're not hypnotizable but we're going to do something else. Medication, systematic desensitization, mindfulness, other things or if they're very hypnotizable, I just go for it. I don't do a lot of explaining. People who are low to moderate hypnotizable, like explanations about what you're doing, but then they can still get the benefits. So, it helps me guide the nature of my treatment with these people. Now, the eye roll is, my father used to use an eye fixation induction, he used to say, look up at the ceiling and now close your eyes while you're looking up. You're very, yes, you're very- - Yeah [indistinct] [laughs]. - He noticed he had two patients back to back. And one was a woman who I'd seen him work with, who had hysterical seizures. She would just suddenly start shaking. And- - Real epileptic seizures? - No, pseudo epileptic seizures. - I see, so hysteria. - Hysteria, and although some people have both, that is the, for some people, real epilepsy becomes a framework that gets elaborated on, for when you're stressed, you have seizures. She just had pseudo epilepsy, no EEG abnormalities. And she was really something to watch. Her husband had to move his work bench near the door, so that if she started to have a seizure, he could run home and try and help her with it. It was that bad. And he noticed that when she did what you did, when she looked up, when she would have one of her seizure events, all you see is sclera, you don't see Iris anymore. And she would start to seize. So he did a great thing with her. He taught her to have seizures. Everybody else was telling her to stop. He made her have one. So he hypnotized her, [indistinct] let's go back to the last time you had one and sure enough, she'd start to shake. And gradually he'd make them smaller and smaller. So, she was learning she could control, she'd have access, it's like with PTSD, you confront, you don't avoid it, you don't suppress it. You confront it and figure out how to deal with it. The next patient he had was a rigid obsessional businessman who wanted to stop being so controlling and all this [chuckles], it reminded me, there was a New Yorker cartoon of a driver, who comes to a yield sign and he yells, "Never!" It's always [indistinct]. - That sounds about right, you're a New Yorker. - Yeah, I'm a New Yorker. And so, this guy, when he tried to look up, he couldn't keep his eyes up while he closed them. And so, my father started testing people. And it seemed that there is a rough correlation between the capacity to keep your eyes up, while you closed them and measured hypnotizability. - So that people who are listening [stutters], and watching on

video. So, the Spiegel Eye-Roll Test, involves looking up at the ceiling. So, it's tilting the head back, I'm tilting my chin back and looking up at the ceiling now. But I'm also directing my eyes upward and my eyes are open. And then the eye roll test involves then, closing the eyelids while the eyes are open. - Are open. - And whether or not, the eyes roll back and as you said it, then you see sclera, the white part. - You see sclera, the white part. - That means you're, very hypnotizable or moderately hypnotizable. - Right. - Whereas if the eyes move down and you see iris, the colored part of the eye as the eyes close, less hypnotizable. - Right. - So you can look this up online there, you just put Spiegel Eye-Roll Test and you'll find it. And we are also going to do an actual example of hypnosis on video later. - Right. So, you're asking the brain to do something difficult, to keep the eyes up while closing the eyelids. And so that's contradictory signals for the third, fourth and sixth cranial nerve nuclei that control eye movement. - You said the third- - Fourth and six, - Yup. - cranial nerve nuclei. And so you're suspending one activity, while asking them to do another and eye movements have a lot to do with levels of consciousness. The periaqueductal gray, surrounds these cranial nerve nuclei. And when we close our eyes when we sleep, we have rapid eye movement when we dream. Most drugs, that affect level of consciousness, can affect eyes and eye movements, either the dilation or contraction of the pupils, depending on whether it's a stimulant or an opioid. - Stimulants, make the pupils big. - Big, right? - Yeah. Like cocaine, amphetamine. - Right, exactly. - Things that sort. - And opioids, you get constricted pupils. - This is what the parents looking at their kids coming in the door late at night, they're looking for substance abuse. - That's right. - Yeah. - So, there's something about the eyes that has a lot to do with level of consciousness. I mean, obviously, you close your eyes when you go to sleep, you have rapid eye movement when you're dreaming. So, it's not surprising. And there's an old Zen practice called, looking at the third eye. And I think part of the reason that this happens is, where you're looking up inside it's like there's a third eye between the other two in your forehead. And I think it's because we are visual creatures, we're pretty pathetic from a physical point of view. Many animals can outrun us, or outsmell us or eagles could read the newsprint at a hundred yards and we can't. So, our major defensive sensory input is vision. And that's why animals, predator animals have eyes in the front of their head, so that they have very good, detailed vision of prey. Whereas prey animals like deer, have eyes on the side of their head. So, they don't see things that well, but they have a much bigger range of potential to see threat. And we mainly use, and in fact, it's interesting, there have been social

anthropologists that say, why do we gather where we do, on coastlines and at the edge of a forest or something, it's because you've got protection in the back. Something can attack you from one side and you have a big vision of what might threaten you. And we tend to be attracted to those kinds of physical situations, so- - Yeah, we love vistas. - We love vistas, that's right. - Vistas are very calming. They take us into that panoramic vision. - That's right. - I didn't know this, but it turns out that most of the scenic spots at any location in national parks and where people naturally aggregated it was- which makes sense. - Sure. - But, that those signs and locations were built up around, people's tendency and animals tendencies. - Oh, really [indistinct]? - To aggregate there. Yeah, there's a interesting book on the history of the national parks that says, that they didn't give a research study to support it, but there was no Google Maps, obviously. - That's very interesting. - Yeah, panorama and visual boundaries are really interesting. I think, so the eyes, as we both know, are two pieces of the central nervous system of the brain, outside the- - Right. I used to say that the eyes are outside the skull and a neuro-ophthalmologist wrote to me and vehemently pointed out that they are outside the cranial vault, so, you know. They're outside the cranial vault but they are two pieces of brain they're out there. And so, you mentioned cranial nerves, three, four and six. This isn't a neuroanatomy course but maybe we could go a little deeper there. So, you said there's contradictory activity, looking up is controlled by the one set of cranial nerves. And then the closing of the eyelids, is controlled by another cranial nerve. - No, it's the same one. I think it's six that when you close your eyes, you activate, no, it's the facial, I guess it's the facial nerve. It's 7, yeah. - 7, yeah. - But you're looking up, you're activating the muscles that force your eyes to look up. And closing your eyelids normally relaxes those, it relaxes that upper movement, because your eyes are closed and you don't need to do it. So you're breaking a usual customary pattern. - It's like the rubbing the, - Right. - hey, I can't even do it, see it's like the, - Right. [Andrew and David laughing] - That's exactly right. - Rubbing your tummy and patting your head. There's a bit of a conflict there, - Right. - But clinically, it's been a good probe for you, - It has. - and for your father. So, was it Spiegel senior or Spiegel junior? - That's Spiegel senior. - That developed The Spiegel Eye-Roll Test. - But the key issue is this, that normally when we close our eyes also, we're going to sleep. You're not worried about what's going on in the world anymore. Here, you're maintaining resting alertness. So, you're focusing but you're turning inward. That's an unusual state. Normally we close our eyes periodically, we have to, but when you close your eyes for some period of time, it's normally to go to

sleep and you're not worried about detecting risk or threat. So, it's an interesting state because you're turning inward, basically, you're looking up, you're shutting your eyes and you're allowing whatever happens outside you to happen and focusing on what's going on inward. So, I think it's a signal to your brain to turn inward. - Very interesting. And meditation of course, could be done with eyes open but almost always is done with eyes closed. - Yes, that's right. - Very interesting. So, you can very quickly determine whether or not someone is highly hypnotizable. - Right. - not at all hypnotizable. You said about two thirds of people can be hypnotized. - Right. - Obviously a third cannot. But within the two thirds that can, there's a range, and you said 15% of people fall into this, highly hypnotizable category. - Right, that's correct. - That I seem to be a member of. - Yeah. - And, does repeated use of self-hypnosis or clinical hypnosis, increase or change hypnotizability, for those that can access it in the first place? - I would say in general, it may increase a little bit, but not a hell of a lot, and it's not worth the effort to increase your hypnotizability at that point. It's worth trying to deal with the problem, you're dealing with. So, you can get better at using it at the level that you have. There was a study done in which they tried to train people to be more hypnotizable and obviously, there're subjective and behavioral components to the test, you can learn to do a little better on them. But what we found was when we reanalyze this data, that we could account for three times the final score, based on the initial hypnotizability measurement, rather than whether or not they had been trained to do better. So, you can improve it a little

01:15:36 EMDR (Eye Movement Desensitization Reprocessing)

but it's not worth the trouble. - Got it. Along the lines of eyes and eye movements, a lot of interest out there about EMDR, Eye Movement Desensitization Reprocessing. - Yeah. - Shapiro herself was working, she wasn't at Stanford directly, but was the local to Stanford. - Yeah. - I think in Palo Alto. - MRI, yeah. - So what are your thoughts on EMDR? Where is it useful, where do you think it's less useful? Are there things that EMDR could be combined with to make it more useful? The listeners of this podcast come to, I think, come to the podcast with a range of backgrounds and interests. To me, it makes sense why EMDR, lateralized eye movements might work, given the newer data that it can suppress amygdala activity in some animals and animal models and in humans as well. But it really hasn't been explored much, neurally. I've heard things like,

it coordinates the two sides of the brain, which it, to me is just a throwaway. I don't think there's any evidence that, coordinating the two sides of the brain is better than not coordinating. I wouldn't be speaking right now if the two sides of my brain, were well correlated. - Yeah. - Because language is lateralized so, - Right, exactly. - I heard that it mimics, rapid eye movements during sleep, but actually it doesn't. So, - Right. - But I have heard people talk about their positive experiences with EMDR. What are your thoughts about EMDR? - Yeah, you had a good comment on that in one of your recent podcasts. And I'll tell you, one way I sort of think about it from a bemused point of view, is the old, you mentioned it earlier, the oldest sort of idea of a hypnotic induction, was a dangling watch, right? And [indistinct] watch. And, in fact, there was enough concern about it that when automobiles were invented, there was a movement to prevent installing windshield wipers because people were afraid that they would be hypnotized, if they watched the windshield wipers go back and forth on a car. Now, it turns out fortunately that, you tend not to look at the windshield wipers. You keep looking through the windshield. And so, we have windshield wipers today. But that movement is, what exactly used to be a hypnotic induction. I think there is a lot of hypnosis in EMDR. - Ah. - And I think, it's a combination of that with exposure based treatments, where you use EMDR to think about it. You tend not to process the experience as much and just do the physical part of it, which I personally think is a drawback. And, every study I've seen that was a dismantling study. There's no question that people who go through EMDR, many of them get better with trauma related problems and the VA has a big program using it and so on. But every program that has dismantled, going through the treatment with having the lateral eye movement, has shown that the lateral eye movement, doesn't add anything to it. And toward the end of her career, Francine was doing [indistinct] contralateral touching or something, it wasn't eye movements anymore. It was other things. So, I tend to think that, EMDR is another form of exposure based therapy for trauma, but as you've implied with the exception of this possible new data, it certainly doesn't have to do with, rapid eye movement sleep. And I don't think moving the eyes is the issue. I think it's a way of sitting down and confronting trauma. And I would rather, that the trauma itself be processed a bit more than often happens in EMDR. So, a lot of people have gotten therapy. Some of them have been helped. Francine used to originally claim that just one session would desensitize people and do it. And that's clearly not true. I see a lot of people who said, yeah, it helped for a while but I need more. So, I think it became a kind of a, overly simplistic approach to understanding brain

physiology and that part is wrong. And the interesting thing, you mentioned suppressing amygdala activity. It's very interesting that, my late friend Allen Hobson, who was a brilliant sleep researcher, you know Alan- - Sleep researcher. Well, I don't know him, but I read his book when I was in college about the chemistry of sleep. - Right. And the similarities between dream states and hallucinations. - Yes. - And it's one of the reasons I got into this business. - Yes, well, I worked with him in a MacArthur mind-body network for many years. - Wow. - He was a brilliant guy, points out that we need to get into, primarily a parasympathetic state to go to sleep, that we have to shut off the sympathetic nervous system. And that's why a loud noise wakes you up, when your heart rate goes up and all this. So, he was brilliant at documenting what happens in the brain at sleep. He pointed out something also very interesting about dreams, which is that the stories in dreams, and even the images in dreams can change all over the place in crazy ways. But usually the affect is constant, he said, usually if it's a frustration dream, whatever happens, you end up frustrated. And if it's a enjoyment dream, you enjoy whatever's going on. So, there's an odd consistency and affect in dreams that you don't have in other states. And the idea of lateral eye movement, suppressing amygdala activity would kind of fit with that, that you don't allow intrusions of fear and anger and upset in dreams. It may be there all the time, but it may not be there when you think it should be. So, why is it that you can be falling off a building and somehow not that scared, you're just having this experience of flying in a dream. So, I think there may be something going on about regulating affect, but there are, we have elaborated better ways to regulate affect. - Great, so EMDR, might incorporate some elements of hypnosis, so the lateralized eye movements, perhaps by way of suppressing the amygdala, this fear associated center, might bring people into a more parasympathetic calm state. So, it might be pseudo hypnosis, and then an exposure therapy through the discussion about the issue. - Right. - Okay. More research needed on EMDR out there.

01:21:43 Confronting Stress & Trauma

And obviously, something that's come up a lot in this discussion and in our discussions that, have the great fortune of talking to you every week is, and working together is, this idea of getting close to the phobia, getting close to the trauma, re-experiencing it as a portal to then adjusting the response to it and rewiring something. So, the troubling thing or the horrible thing is no longer as horrible to us. but the repeating theme is we can't

expect to get over something without getting really close to it. Maybe even experiencing it somatically. Nowadays, we hear a lot about, triggers and trigger warnings. And certainly, one can understand why those exist, but it seems like in the general population, there's this idea that we want to move away from anything that upsets us and yet, - Right. - I think it's fair to say, even though I haven't gathered the statistics that, on the whole, that human beings are becoming more and more anxious and more and more stressed, perhaps because of but certainly in parallel, with the fact that we're trying to move away from troubling things. So, I've heard you say before, that in terms of therapeutic approaches, it's not just about the state you get into, but whether or not you brought yourself there voluntarily. - That's exactly right. - So, this element of deliberate self exposure, deciding I'm going to confront the trauma, I'm going to confront the pain. I'm going to confront the insomnia. I'm going to confront the, you know, and fill in the blank. And then readjusting one's emotional response, right up next to that troubling thing. That seems to be the hallmark of this treatment. And, if I'm thinking about it correctly, of pretty much all treatments for getting over stuff. If people don't have access to a really good clinician, like yourself, how should they carry these thoughts and these ideas? I mean, I think almost everybody of any reasonable age, has memories or things that upset them, but we learn to suppress them. What does one do? Obviously, the Reveri app has approaches to dealing with some of this, inside of the app, but how does one start to think about, actually dealing with something like this and avoiding the hazards of just kind of reactivating a lot of painful experiences? Because a lot of being a functional human being is also going to work each day, interacting with people and not bringing one's trauma, and dumping it out all on the table or being able to just function is so crucial. So, how do you think about this as a clinician? - Well, the image it comes to mind is the Greek myth of Pandora's Box. That it opened and the Furies got out and you couldn't put 'em back in. And we have this kind of fantasy that once you get into these memories, they'll take you over and you'll never get them back in the box. And I think that's wrong. People who use hypnosis say that, there are ways to present things to people that will be helpful and ways that won't. And one real mistake is to tell someone, don't think about purple elephants. What are you thinking about? - Purple elephants. - It doesn't work. So, you want to find a way to feel in control of the access and to define what happened on your own terms. And so, I'm not a big fan of trigger warnings. I think we're going crazy over, this could be upsetting, that could be upsetting. Yeah, there are lots of things that are upsetting. The average kid has watched 20,000 murders, by the

time he's 20 years old, watching television and movies these days. So, we see terrible things and it's not a matter of, are you exposed to something that's upsetting, but how do you handle it? What do you make of it and are you feeling in control? It's not like, what Putin is doing to his rival in Russia, forcing him to watch propaganda movies 10 hours a day, while he is in prison. It's a matter of thinking about a problem, in a way that leaves you feeling, you understand better. You're in more control, you can turn it off when you want, you can turn it on when you want. And so we have to, in life, deal with stressful things, there are studies, Karen Parker at Stanford has done some wonderful studies with primates about stress inoculation. That if you separate a baby monkey from his mother for two hours a day and then reunite them, and then you stress that baby monkey later, they actually handle stress better. There's less cortisol arousal in the face of distress, stress inoculation, that's been called. So, mere exposure to trauma or stress. It's a part of living anyway. We can't avoid it, even if we'd like to, and, it's not pleasant, it's not great but it's sometimes things you need to learn about life. And if you can find an algorithm for facing it, putting it into perspective, dealing with it, you become a stronger person not a weaker person. So, this idea that, college students are such fragile flowers, that if you talk about a sexual assault or something, you're doing something terrible to them, it's just wrong. And I think we need to build our ability to recognize and manage stress. And you can't do that without doing it. You can't ride a bicycle without taking the risk of falling off it. And so, I think that's the way, I think of dealing with stress. - Yeah, I really appreciate you saying that. You and I were both at a gathering, let's say where this issue was being discussed, and around an issue of a publicized sexual trauma. And you made an excellent case for why this stuff can't be pushed under the rug. And that actually, in my observation, led to a lot of healing for the people that and the families of people that suffered from this. I do think people are resilient. But we don't really teach how to think about feelings. We're told that we need to feel our feelings, but then again, we are also told that feelings don't hold all the information. And so, I think that as you mentioned, there's no operating or users manual for this nervous system thing.

01:27:56 The Mind-Body Connection

Brings me to another issue, which is the mind-body connection. Something that we're very interested in and you've done extensive work on. We all like to think that, getting more in touch with our body, would be a great thing, learning to interocept, paying

attention to our internal landscape, would be a great thing. But as we often discuss, when we're feeling lousy, then being really in touch with that lousy feeling, may or may not be a good thing, right? So, how should we think about mind-body? I can see examples in hypnosis, from your descriptions of hypnosis, where you want to unify the mind-body connection. Feel what you're thinking, think what you're feeling, et cetera. But I could also point to elements within the hypnotic process in which you are actively trying to uncouple those. - That's. - So, it sounds to me like, this whole mind-body thing is a bit more like a car. You can't say that 40 miles per hour is the optimal speed. It kind of depends on the road you're on and the turn you may or may not be taking. - Right. - How should we think about mind-body in terms of, navigating daily life? What do you think is the adaptive way, to conceptualize the mind-body? It's a big question. - It is. It's a very interesting one. I guess, I think that it's a matter or not of, absolute control but more control, that we need to think of our brain as a tool and our body's signals as tools as well, to help us understand what's going on in the world, what we need, what matters, what's important, what isn't, but also something that can be managed, not simply absorbed. And so, hypnosis I think is a kind of limiting case, where you can push it about as far as we can push it in terms of regulating pain. Pain is a good example of that. Obviously, you need to pay attention. If you just broke your ankle, you better pay attention to it and get help or you're having crushing substernal chest pain. You better do something about it. But our brain, is sort of programmed to treat all pain signals as if they were novel pain signals. If it's a sudden new problem that needs to be attended to. I teach people to think of the pain and categorize it, does the pain mean that if you put weight on this, you're going to re-injure your ankle for example, or does it simply mean that your body is healing and the pain is a sign that, gradually things are getting back to normal and so, you can modify the way you process pain, based on what your brain tells you the pain means. And that's true for emotional pain as well. And particularly where I think a strategy that really helps, is if you think of an interpersonal problem or a threat of something coming as an opportunity to do something to ameliorate the situation. So, it's not just it's happening to you, but something that you can influence and do something about. So, it's blending the receptive with the active response, that I think can make a difference. So, you try and process it in a way that gives you a deeper understanding of what's happening. You face it but you also say, this is an opportunity for me to do something about it. And the minute you realistically enha- and this doesn't mean, imagine away a heart attack. It means figure out how to rehabilitate from a heart attack

or a broken leg or something like that in a way that you get as much control

01:31:35 Dealing with Grief

into the situation as you can. - I love it. Grief. Grief is one of those states that is very hard to remove oneself from. And a lot of people asked me, how do I deal with grief? And I'm not a clinician so I'm deferring to you. - Mm-hm. - On the one hand, actually someone at Stanford recently came to me and said, my mother passed away and I had a sibling that passed away and they were the only people that I had. And I'm also living alone and I'm challenged with a number of things. And, they looked like they were holding it together, - Mm-hm. - very well, in fact, given what they were describing. And on the one hand, well, I certainly pointed out that I'm not a clinician, but I said on the one hand, you could imagine that it would be necessary and useful to go into the grief's state, if you want to transition through it. - Right. - On the other hand there, I've heard before that the cathartic model of just really diving into an emotion, can also be potentially hazardous. If you don't have any anchors to grab onto. What is your view of psychiatry or your view of grief and how to deal with grief? Because I think grief is, one of those all encompassing emotions for many people. - Yeah, it is. And it's a very important, natural, necessary stage of life. And the reason we have all these grief rituals from burials and memorials and headstones and sitting shiva and other things that people do. It's a way of making it real, that an incomprehensible loss has to be comprehended. You have to realize that you're now going to have to live life without your loved one, your parent, your sibling, whoever. And we've all gone through this at one time or another, I certainly have. And it's very hard to just come to terms with, but one principle is to sort of say, it's never all or none, it's more or less. So yes, it's all or none that you've lost a loved one, but I ask people as part of their grieving to say to themselves, and I do this in hypnosis sometimes too. You've lost them but what have they left you with? What have they bequeathed to you even though they're gone? And I'll sometimes ask them to say, if your mother could be here right now, what would she say to you? How would she feel about your life now? What would she advise you to do? So, in our support groups for women with advanced breast cancer, we lost people. And I got to tell you that we were warned by oncologists, that we demoralized people that, I mean, they were wonderful oncologists, but there are some that were very afraid that we would harm them in some way, because the mortality rate is fairly high with metastatic breast cancer. They're going to watch people die of the

same disease and you'll demoralize them. So, we actually measured their emotion and the content of speech every five minutes throughout a bunch of groups to make sure that wasn't happening. What we found was, that they talked about more serious issues, but the mood didn't actually get worse. And we found in general that expressing negative emotion on the long run helps people be less anxious and depressed over time. And we've shown this in randomized clinical trials. So, it's not just my clinical impression. And what we try to get them to do, is to face a loss, live with the emotion that comes with it but also see that the reason it hurts so much, is how much that person gave you. So, we would do a self-hypnosis exercise at the [indistinct] say, I want you to get your body floating, safe and comfortable. Now, picture Mary and sit with the feeling of sadness that she's no longer with us. And we do that for a few minutes. And then we'd say on the other side, picture one thing she left with you that you still have, that you carry on in your heart, her tradition of what she gave to you. And so just seeing it, not as a complete loss, but as a real loss, a painful loss but one that helps you to reflect on, what you gained from her and knowing her, I think can be very helpful in the grieving process.

01:35:45 Hypnosis in Children & Groups

- That's very helpful way to conceptualize it. Couple quick questions. Can children be safely hypnotized or do self-hypnosis? - It's sometimes harder for them to do self-hypnosis, they need more structure to do it. You've got to share your dorsolateral prefrontal cortex with 'em a little bit, but yes, absolutely, children can be very hypnotizable. And I know pediatricians, who use it wonderfully all the time. They get them to focus on something else. So, they're going to have to give them a shot or draw blood or something. And they'll say, I'm going to press your happy button and he presses their belly button. And they start to giggle the way kids do. And meanwhile, the nurse is drawing the blood and they don't even notice it. Dentists, good dentists can use it to help kids with fear and pain. So yes, it can be very effective for children. We did a randomized trial. I have a publication in pediatrics, my late sister, who was a pediatrician, and who always used to joke that, she was the only one in our family who was a real doctor. I said, I gotcha. I got a paper in pediatrics [Andrew laughing] and the paper was children having to undergo, a voiding cystourethrogram. So, the anatomy of the kidney, if you'll forgive me, is sort of interesting in that, the ureter that goes into the bladder, normally goes into the bladder at an angle. And so that means, that when the

bladder contracts to expel urine, it automatically closes off the ureter because it's sideways to the bladder. Some kids are born with it perpendicular, and then you'll get reflux into the kidney. And some children outgrow it, some need pretty complicated surgery to fix that. And so, you image them every year or so to see whether they're getting kidney damage or not. And it's a pretty miserable experience. You're a nine year old girl. You have to go and lie on a hard cold table, have strangers pull your legs apart and stick a catheter into your urethra and hold in the bladder and then expel urine. And so, you get into these struggling fights. And of course the more they struggle, the more they constrict and it makes it harder to do it. So, I was asked if we could test this. So, we did a randomized trial at children's hospital. They either got training in self-hypnosis. I would meet with them and the mother the week before, we find out from the kids where they like to be. And I'd say, you're going to play a trick on your doctors. Your body's there, you're somewhere else, go visit your friend, go to Disneyland, do something else. And the mother would work on this with me at the head of the table. And we found that these children were much easier to image. One got so relaxed that, so your guy [indistinct] he's said, normally it takes us 10 minutes to get them to pee after they're doing this. She was so relaxed, she started peeing before I could even get the bed pan under her [laughs]. And I had to clean up the table. And they also, 17 minutes shorter procedures. And that's a long 17 minutes for a little kid. So, it can be very effective with children. They're less anxious, they have less pain and get through these difficult procedures very well. - That's great. Has hypnosis ever been done for couples, like couples therapy? I'm thinking of pretty much every clinical setting here. Both people have to be hypnotizable, of course. - Mm-hm, yes. - But the reason I ask about this, is next, I'm going to ask about psychedelics and there's a lot of interest in, coordinating states through the use, of drugs of different kinds. - Mm-hm. - We actually do this when we treat depression, right? You have a depressed person with family members who are not depressed, and you say, well, let's make them all not depressed [chuckles], [David laughing] right, I mean, but and I'm only half kidding there, because that is kind of the underlying logic in some sense. But are you aware of any of any coordinated hypnosis? - That's interesting, I mean, I've done plenty of it in groups not with couples. - You can hypnotize large groups, at once? - Oh yeah. - Are we hypnotized right now? - Yeah, you are. And I hope you've been enjoying it. [Andrew laughing] But the metastatic breast cancer, there was a group of like 10 women, who would meet once a week and we would all go into hypnosis together. - I didn't realize that, you were hypnotizing them

collectively. - Yes, right. - Fascinating. - And that, if anything, I think it brings out the best in people's abilities because it's a shared social experience and they would talk about it afterwards.

01:40:06 Drug Therapies & Hypnosis

And so, yes, that's absolutely doable, yeah. - And I don't want to focus on psychedelics specifically. Maybe that's a topic for a future episode. But is there any basis for combining hypnosis with drug therapies inside of the hypnotic episode? So, I realize that some patients of yours, might be prescribed an antidepressant or a medication for some purpose, maybe same or different than the hypnosis is being directed toward. But is there any evidence that, if people are relaxed through the use of a propranolol or one of these many things in the psychiatrist's kit, that hypnosis can be more effective? - Well, interestingly, one study that I haven't mentioned is, we did spectroscopy on people who were hypnotized. And we found that, there was a correlation between hypnotizability and GABA activity in the anterior cingulate cortex, which fits with turning down activity. To the extent that we can self-medicate and GABA receptors basically are doing what benzodiazepines do to the brain, that can happen when people are hypnotized. - So you're saying inside of the hypnosis, you have neural evidence that, there's a kind of a sedative effect of hypnosis at the chemical level. - Yeah, right. - Amazing. - The people who are more hypnotizable, have more of those GABA receptors and it's related to the degree of their hypnotizability. - Fascinating. - In terms of, there have been studies, where they give people medications as well. And the interesting thing with benzodiazepines, which activate inhibitory activity in the brain. If you are very anxious, it might improve your hypnotic response a bit. If you're just so anxious and [indistinct] you can't do it. If you're not very anxious, it actually inhibits hypnotic activity because you get sort of sedated and just out of it. And you can't focus your attention, as well. So, by and large, we don't use drugs as an adjuvant to hypnotic experience. Most of the time you don't need to. And sometimes it can make it worse rather than better. There's some evidence that, mild stimulants might enhance hypnotic responsiveness, a little reliably, but too much, Well, [indistinct] scatter attention and you'll have less control over it. So, they might be adjuvants, but I frankly think hypnosis is more of a replacement than a need of supplementation. - Your laboratory and my laboratory have, well, have sort of snuck into your lab

01:42:39 Breathing Patterns, Peak Performance

and then trying to emerge the two, it's been a lot of fun, - It sure has, been learning a lot about, the power of respiration of breathing to shift brain states, not just during breathing protocols, but at all times. And we will do an entire episode about those protocols. I think we, - Cool. - after those are published and so on. But breathing itself is, you've described as a bridge between conscious and unconscious states. - Right. - So, I have to ask, how important is the patient's breathing pattern? How closely are you monitoring their breathing pattern? How closely do you monitor your own breathing pattern as you're inducing hypnosis? Put simply, what is the role of respiration in shifting the brain's state, during a hypnotic protocol? - Yeah, that's very interesting. You had a great show with Jack- - Yeah, Jack Feldman - Feldman. [Andrew indistinct] And he is. And the issue, I watch it, I try [stutters]. The work that we're enjoying doing together shows that there are breathing patterns that may increase sympathetic arousal or may decrease. It may [indistinct] cyclic sighing seems to, actually, where you have more time spent exhaling than inhaling. And there's reason to believe that it induces parasympathetic activity, 'cause you're increasing pressure in the chest and therefore allowing the heart to slow down because blood is being returned to the atrium more easily. I do use it. I ask people to take a deep breath as part of the induction and then slowly exhale. And partly as a result of our research together, I'm emphasizing this slow exhale more, as part of [stutters], to enhance the idea in the induction that this is a period of relaxation, 'cause I think they are inducing that and perhaps perceiving it as well. So, there there's no, you're absolutely right that breathing is very interesting 'cause it's right at the edge of conscious and Jack talked about that too, of conscious and unconscious control, that it will go on automatically but we can control it. And so, it's a kind of way for us to demonstrate to ourselves, greater ways of modulating our internal state. So, you can either do it, thinking about it, the way we do with pain control in hypnosis or you can do it to some extent, by taking charge of your breathing and doing things that will produce a change that you want to see happen in your body. So, I like it because it's right at that margin, where you can enhance, for me, I like that as a way of augmenting hypnosis, more than medication, I think this is a powerful way of doing that. - Great, I'm really excited to see where all of this goes. - Yes. - Breathing, vision, bodily states are clearly the- and directed mental focus, seem to be the key elements of hypnosis. Am I missing any other

ingredients? - Yeah, I think that's right. - It's- - Breathing, vision, - Breathing, vision, how you change your vision and you don't, you know, typically you're in a physically relaxed state, but frankly there are people at the peak of performance, including physical athletic performance or musical performance when they're in hypnotic states too. I've talked to classical pianists who say, I'm not thinking, if I start thinking about what my fingers are doing now, I screw up. I'm floating above the piano, thinking about the tone that I want to feel exuding from the instrument. So that's a hypnotic like state too. And many athletes who are in peak performance, are just flowing with it. They're not thinking step by step, what am I doing? And that's when you're doing your best or when we're working or giving a talk and doing it well, we're in a hypnotic like states. So, it usually requires, but doesn't necessarily require physical comfort or quietness. It can sometimes be intense activity. - Incredible. Well, this has been an amazing discussion. I've learned so much as I always do from you. Where can people learn more about, how they can get hypnotized? We mentioned Reveri, we'll put a link to it, R-E-V-E-R-I.com is the way to access that. - Or it's the Reveri app from the app store, is the other way. reveri.com is the website, you can get to it through that or download the Reveri app from the app store. - Great. So, currently on apple, hopefully soon, also on Android, but in the meantime, what if people are interested in exploring clinical hypnosis, working with you or somebody similar? Is there a centralized resource that people can go to to find, really well-trained hypnotists? - There are two good professional organizations that will help you with that. One is the society for clinical and experimental hypnosis. And I think that's sceh.us is their- - Okay, we'll look it up and provide a link. - And the American society for clinical hypnosis, and they both provide referral services for professionals. You can look it up. I would just say in general, look for someone who is licensed and trained in their primary professional discipline, psychiatry, psychology, medicine, dentistry and who has training and interest in using hypnosis, is a way to do it. - Great and then one more question and then a comment. The question is, will you be my psychiatrist? - [laughs] I'm honored. - It's a tall task. I might be that the most stubborn patient. - I think the hardest work's already been done, Andrew. - Thank you. - You're fine, now. - I appreciate that. [David laughing] Well, and the final thing is a comment. First of all, thank you so much for being here today, for sharing your knowledge. - You're welcome. - I hope we can do it again and again. - I hope so. - I love working with your laboratory and with you. - Likewise [indistinct]. - Because when you speak, I learn and I know others do as well. - Thank you. - We will put resources to get to you but I also just want to say, thank you for

doing the work that you do. - Well, thank you. - It's an incredible thing that in this world where we are discovering so much about how the body works, the mind is still rather mysterious and people are struggling with a lot of things, but also I think people are really excited about, applying tools like hypnosis to perform better, feel better mentally and physically. And so you've pointed us to a tremendous amount of resources and how these tools work and where they've already been demonstrated to work. So just, thank you. I know this is your professional commitment in life and we all benefit. So, thank you so. - Well, thank you, but it's been a real joy for me to be collaborating with you and for you to be using your precision and knowledge about neuroanatomy, neurobiology to address problems that often people who are that disciplined in the primary neurobiological end, aren't as interested in as you are. And so, it's really been a pleasure to try and bring together what we both know from these different perspectives to build something that neither of us could do alone. And so, it's been a real joy for me to do it. - Thank you, I'm honored.

01:50:00 Zero-Cost Support, YouTube, Spotify & Apple Reviews, Sponsors, Patreon, Thorne, Instagram, Twitter

- Thank you. - Thank you very much, David. - You're welcome. - Thank you for joining me today for my discussion with Dr. David Spiegel. I hope you found it as fascinating as I did. And if you'd like to see the video of Dr. Spiegel hypnotizing me, in what constitutes a abbreviated clinical hypnosis session, you can go to the Huberman Lab Clips channel on YouTube. Also, if you'd like to check out the Reveri app for self-hypnosis designed by Dr. Spiegel and colleagues, you can go to Reveri that's R-E-V-E-R-I.com to see the Reveri app, there's also other information there about the scientific studies that support the Reveri app. If you're enjoying and or learning from this podcast, please subscribe to our YouTube channel. That's a terrific zero cost way to support us. In addition, please subscribe to the podcast on Apple and or Spotify. And on Apple, you have the opportunity to leave us up to a five star review. Please also leave us comments and feedback, as well as suggestions for guests that you'd like us to host on the Huberman Lab Podcast, in the comment section on our YouTube channel, please also check out the sponsors, mentioned at the beginning of today's episode, that's the best way to support this podcast. We also have a Patreon that's patreon.com/andrewhuberman and there you can support the podcast at any level that you like. On many previous episodes

of the Huberman Lab Podcast, we discuss supplements, while supplements aren't necessary for everybody, many people derive tremendous benefit from them, for things like enhancing sleep and focus and various other aspects of brain and body, health and performance. One issue with supplements however, is that many of the supplements out there, simply do not contain what's listed on the bottle and or the quality of the ingredients is not very high. That's why we partnered with Thorne Supplements. Thorne Supplements are used by all the major sports teams and they've partnered with the Mayo Clinic. The reason they have so many high level partners, is that Thorne Supplements, are of the very highest quality ingredients. They also are extremely precise in terms of what's listed on the bottle, is always what it's in the bottle. If you'd like to see the Thorne Supplements that I take, you can go to Thorne, that's thorne.com/u/huberman and there, you can see the Thorne supplements that I take and get 20% off any of those supplements. Also, if you navigate deeper into the Thorne site through that portal, thorne.com/u/huberman you can also get 20% off any of the other supplements that Thorne makes. If you're not already following us on Instagram and Twitter, please do so, it's [hubermanlab](#) on both Instagram and Twitter. And at those channels, I cover science and science related tools. Some of which overlap with the content of this podcast, other of which does not and is unique content. So, once again, thank you for joining me for my discussion with Dr. David Spiegel and last but certainly not least, thank you for your interest in science.