THE MODEL HEALTH SHOW

EPISODE 665

How Ultra-Processed Foods Are Hijacking The Human Brain

With Guest Dr. Amy Shah

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SHAWN STEVENSON: Welcome to The Model Health Show. This is fitness and nutrition expert Shawn Stevenson, and I'm so grateful for you tuning in with me today. We reached a really strange turning point as a species. For thousands of years, the threat of starvation has guided the actions of our ancestors, and the lack of food has been a major cause of dysfunction and death within our society. But today, we're experiencing a phenomenon where this whole paradigm has been turned on its head. Today, more people are dying from over consumption than from starvation. All the way back in 2012, researchers at Harvard published a study titled The Hunger-Obesity Paradox, obesity and the Homeless. The study revealed that although historically homeless populations living in extreme poverty are stereotypically thought of as underweight, the startling realities that obesity has skyrocketed even in homeless populations. Their analysis found that approximately one third of homeless individuals in the United States are clinically obese. Over 32% of the homeless population was shown to be obese, while only a little more than 1% of homeless individuals were actually found to be underweight. The researchers found that the obesity rate in the homeless was identical to the rest of the general population. Obesity amongst the homeless was 32.3%, while obesity among the general population was 33.7%.

Now, keep in mind that this was over a decade ago. The obesity rate here in the United States in the general population is now up over 40%. And of course, obesity in the homeless has risen right along with it. Today, over 70% of United States citizens are either overweight or obese. Even without a lot of money or resources, our society has now made it easy to be overweight. Our society has made it easy to be obese. Our society has made it easy to have a chronic lifestyle-related disease. According to the CDC, six out of 10 Americans now have at least one chronic disease, and over 40% of our citizens have two or more chronic diseases. And this is according to the Journal of the American Medical Association, JAMA. These researchers found that poor diet is the leading contributor to our epidemics of obesity and chronic lifestyle-related diseases. Now, again, this is a paradox that we're living in. We often have these visions of people in abject poverty who are struggling to find food to eat, and this has historically been true. But today, that whole paradigm has been shifted. Now, even without a lot of money, even without resources, we can still find a way through the consumption of readily available ultra-processed foods and their related obesogens to find our way into obesity and disease and dysfunction.

We've normalized these things and now on this episode, we're going to really deconstruct what's going on with our food that is creating such a ravenous hunger in our species, that's creating so much over consumption in particular of these highly refined ultra-processed foods. And I think this episode is absolutely going to blow your mind. And most importantly, it's going

to enlighten you as to what's going on biochemically within our own bodies so we can take back control and be empowered in this very strange society. Because right now, if you are healthy, you're weird, right? The norm is to be unhealthy. And so, I want you to be in that guild and be in that number of growing populations of people who are taking control of their health and shifting these ratios. We've seen skyrocketing rates of chronic disease long enough, and we can turn this around. Now, being that food is a huge contributor to the obesity epidemic, obviously food is a solution as well. But it's shifting over from, according to the BMJ right now, about 60% of the average American's diet is ultra-processed foods. So, shifting that ratio where we're including more whole, real, nutrient-dense foods that our genes as a human species have been interacting with for countless aeons.

We evolved eating real foods. And so, making a shift in those things, and in fact, we can actually alter, as we're going to talk much more about today, alter what's happening with our biochemistry, with very specific phytonutrients that have a huge role to play when we're talking about our hunger and cravings. As a matter of fact, there's one specific nutrient that's been found to help us to shift our desire away from these ultra-processed foods. A study published in the peer review journal, Appetite, found that chlorophyll, that's right, chlorophyll, the green blood of plants. Alright, that green pigment that gives certain plants their color. These researchers found that, again, this was published in the journal Appetite, that chlorophyll can assist in weight loss and reduce the urge to eat ultra-processed foods, reduce the urge to eat hyperpalatable foods that actually trick our palate and drive us to eat more and more and more of these foods. Now, chlorophyll, obviously, we can go and make a shift in including more green leafy vegetables in our nutrition protocol. But for years, my family and I, one of the things that we do is we eat foods that are super concentrated in chlorophyll and under the umbrella of these well-noted super foods. And I don't use that word lightly. That word gets tossed around in our society today.

But truly, for thousands of years, foods like spirulina has been a major protein source of ancient cultures of human, really, to help them to survive and not just survive, but to thrive as a species. So, like the ancient Aztecs, and even in Africa, in the country of Chad, the list goes on and on. But now today, NASA literal rocket scientists have been studying spirulina for use with their astronauts because it's so nutrient-dense. In addition to that, spirulina's cousin Chlorella, it even gets its name from its chlorophyll content. Chlorella actually contains nutrients like lutein and zeaxanthin. These are two keratinoid that are proven to protect your eyes and lower the risk of macular degeneration. And eye health is a huge concern today because of these screens we're constantly staring at, this fixed medium and we're seeing this increase, obvious increase in lifestyle-related vision issues. And so, this is another protective factor that you can add into your family's protocol. In addition to that, heart disease obviously is the number one killer in the United States and has been for many years. A double-blind, placebo-controlled study

published in clinical experimental hypertension found that chlorella has been able to normalize blood pressure in test subjects with clinically diagnosed hypertension.

We get chlorella, spirulina, ashwagandha altogether and many other super foods in the Organifi Green Juice formula. Go to organifi.com/model. It's O-R-G-A-N-I-F-I.com/model. You get 20% off their incredible green juice formula, it's a low temperature processed, all organic in all good. All right, this is a big part of our family's protocol and I highly recommend you check them out. Organifi's Green Juice and the Red Juice formula is amazing as well. Check 'em out. Go to organifi.com/model and now's let's get to the Apple Podcast review of the week.

ITUNES REVIEW: Another five-star review titled "She Got Them Yams" by Tiffany Bond. "Movement is medicine. I'm a vinyasa flow and buddha yoga instructor and sweating and moving is life. However, when you're not recovering and fueling properly, especially passing that 40 plus mark, injuries and anxiety will occur. I'm so grateful for Shawn, his books, and his podcast. This episode especially helped confirm some of the errors I've been allowing and taught me ways to correct them. If you ain't listening to Shawn, you ain't doing it right. Keep up the love and knowledge, you are changing lives."

SHAWN STEVENSON: Thank you so much for leaving that review over on Apple Podcast. It truly means the world. And this is referring to the episode that we did with superstar personal trainer Don Saladino. Actually, Don just shared, he just posted, he's working out with his client, Ryan Reynolds, getting him in shape for Deadpool 3. So, Don definitely knows a thing or 20 about fitness, but on that episode, we talked about them yams. All right, we talked about glute building, we talked about all manner of fitness, but really just how to do stuff the right way with efficacy and intelligence. And that's really what we provide here on The Model Health Show with these world-class guests. And I'm telling you today, this episode is no exception. We've got one of my favorite people in the health and wellness space, Dr. Amy Shah. Amy Shah, MD, is a double board-certified medical doctor and nutrition expert with training from Cornell, Columbia, and Harvard universities.

Drawing from her background in internal medicine and immunology, as well as her own personal wellness journey, she's dedicated her practice to helping her patients feel better and live healthier through her integrative and holistic approach to wellness. She's a bestselling author and has been featured on a wide variety of major news networks and television shows, and now she's back here on The Model Health Show. Let's dive into this conversation with the one and only Dr. Amy Shah. We got my friend Dr. Amy Shah back in the studio with us.

DR. AMY SHAH: So, honored. Thank you for having me.

SHAWN STEVENSON: It's good to see you. Thank you for coming by. I absolutely love your new book. And this is a topic that we both collectively are passionate about.

DR. AMY SHAH: Yes.

SHAWN STEVENSON: Because in truth, our genes as a species have not changed much in the last few hundred years, but our hunger and our consumption of food definitely has. Let's start by talking about why our appetite and our rates of hunger have increased so much in recent years.

DR. AMY SHAH: Surprisingly, you'll be surprised at the answer, and I think you won't be, but some people will be. The same reasons that we are getting hungrier is the same reasons we're getting sadder and we're getting fatter and we're getting sicker, and they're all connected. Because I think what we're doing is we're missing this big picture and we're concentrating on these individual factors. We're saying like, "Oh, how do we create a pill or solution for obesity? How do we create a pill solution for depression?" But what about looking at it as the big picture? And I say big because it's brain, immune system, gut, like big picture. If we looked at it through that lens, we would understand that food creates mood, food creates cravings, food creates inflammation, and we could start to change how we kind of view these disorders. It's almost linked as one.

SHAWN STEVENSON: Yeah, wow. Again, we don't usually think about that. We just get hungry, and we go eat some stuff.

DR. AMY SHAH: Yeah, exactly. Exactly.

SHAWN STEVENSON: But it's so much deeper than that. And actually, in your book, you shared a study, and this was cited in the journal, cell metabolism, demonstrating how, for example, ultra-processed foods trigger us to crave them more and to specifically overeat.

DR. AMY SHAH: This is a landmark study. We always think that we should go with our intuition. We should just eat what we're craving or hungry for, right? That's the new anti-diet trend. But if you think about it, in this study, what they said is no, if you eat what you want and you're eating a standard American, ultra-processed diet, you will eat 500 calories more than the unprocessed group, and you will gain two pounds in two weeks with nothing else different except that you're eating ultra-processed food. They found that there's this hormone called neuropeptide yy, it makes you feel satiated and full. And in the ultra-processed food group, that hormone was lower and ghrelin, our hunger hormone was higher. So even though you're eating food that's matched in calories, matched in fat, in protein, in fiber, and in sugar, you are hungrier and you're less satisfied.

SHAWN STEVENSON: That's bananas. Again, so they were essentially given the same array of caloric options, same ratios of macronutrients, but they were consistently eating about 500 more calories a day when they put them on the ultra-processed food diet versus the Whole Foods diet.

DR. AMY SHAH: Yeah, imagine this is the perfect study. So, diet studies are so hard to do. They brought people into the NIH, and they actually had them stay there so they could monitor all their food for a two-week period. And they basically had them do both ways. So, they had them do an ultra-processed two weeks and then a regular unprocessed two weeks to even say, "Hey, is there something different about the people themselves?" they had them eat the same exact number of calories, fat, protein, fiber, sugar. And in the two groups they were allowed to eat... So, they call it free snacks. So, if you at any point in the day you could ask for an extra snack if you'd like, but it has to be... If you're in the unprocessed group, it would... Grapes or some nuts. And if you were in the ultra-processed group, it would be Cheez-It or something similar like that, a packaged snack. And in two weeks... That's very little time. Two weeks of monitoring two different groups of people, they saw that the ultra-processed group was eating more consistently per day per meal. They were asking for more snacks; they were less full. And shockingly to me, Shawn, the blood sugar, and the insulin and all the things that we would think would be really different weren't. And I thought that was shocking because it's basically saying that the gut bacteria, the neuropeptide yy, the Ghrelin, that's driving the difference between these two groups.

So, when they looked at the conclusions, they said, "Okay, what is the difference between the ultra-processed food and the real unprocessed food?" Because the sugar level stayed the same, the insulin... They checked all these other parameters, but it was the gut hormones that changed. And that to me is just more, it just puts so much more weight on the fact that our gut bacteria are running the show when it comes to hunger and cravings.

SHAWN STEVENSON: Put more weight.

DR. AMY SHAH: Yes.

SHAWN STEVENSON: I heard that. I like that. I like that. So, you talk about it in the book, Hunger Hijackers.

DR. AMY SHAH: Yeah.

SHAWN STEVENSON: So, let's talk about some of those.

DR. AMY SHAH: We are a very different world than we were even 70 years ago, right? You can blame it on internet, you can blame it on Uber Eats if you want, or DoorDash, you can blame it on packaging of foods, you can blame it... But a lot has changed over the last 70 years. And what's happening is we are noticing that people have more hunger, people are less satisfied, that people have more cravings. So, hunger and cravings are two different things, but both of them have gone up. And so, we're seeing that you're eating more food, you're undernourished and you're getting more depressed, but you're getting fatter. It's like obesity is on the rise, but you're undernourished and you're feeling sad. And if you think about it, when you think about it from the gut brain lens, it makes sense because those gut bacteria, they make dopamine, they make serotonin, they make peptides that make you hungry or full. And so, if you start to damage these by all the things that we're doing, but mostly food, you're going to see a change in how we feel.

SHAWN STEVENSON: Yeah. And you talked about specifically, you called some of them out, even talked about, for example, emulsifiers.

DR. AMY SHAH: Yeah.

SHAWN STEVENSON: Causing this disruption.

DR. AMY SHAH: So, if you think about how some of these food products, they increase their shelf life, they make it easy for us to ship something from California to Florida. You can't ship real food from California to Florida without it spoiling. So, you have to put things in it that increase the shelf stability. You have to put things in it, so it doesn't separate. So, emulsifiers, if you don't put emulsifiers in food, it will separate.

SHAWN STEVENSON: Like a salad dressing?

DR. AMY SHAH: Yeah. When you look at a natural salad dressing, it'll separate the water and the oil. Or for example, I make this chai tea just for... With coconut milk. And what happens is people will say, "Hey, it doesn't mix that easy in water. You have to really mix it." And I said, because we don't use emulsifiers, if you use these products, it makes it palatable, makes it easy, makes it convenient. So, what's happened is in the search for the tastiest most shelf-stable, most convenient, and inexpensive foods, we have created hunger hijackers. And we didn't know. It depends on if you believe in the conspiracy theory or not. And I'm not going to... I'm not going to say that I fully believe in that because I am on the medical side of things. And I don't think that there's doctors who are getting together and willingly wanting to keep people sick. And so, I don't think the food manufacturers, per se, are trying to keep us hungry, but they're keeping us hungry because that helps their bottom line. It is helpful to have foods

that are tasty because you'll come back for more. When it creates a dopamine explosion in your brain, you are going to come back for more.

A real food is like a dopamine spray, a water gun spray. An ultra-processed food is a dopamine explosion. And so, what we end up doing is we're teaching our kids that, hey, you can get a dopamine explosion from these, and they unknowingly start to have more of them. And now 75% of adolescents eat ultra-processed food as part of their main diet. So, you look at a child adolescent's diet, and only 25% is real food. Everything else is ultra-processed.

SHAWN STEVENSON: It's insane.

DR. AMY SHAH: It's insane. But if you think about it, you can't blame these guys. Why wouldn't you want a dopamine explosion? Who wants to eat a salad and maybe get a spray of dopamine?

SHAWN STEVENSON: Flimsy little.

DR. AMY SHAH: Yeah. It's like nothing. Going for a sunny walk, that's nothing compared to drinking alcohol or taking... Eating one of these ultra-processed snacks. So that's what we're up against.

SHAWN STEVENSON: Yeah. Wow, wow. It is kind of structured in a way that our biology is at war with our environment, in a sense.

DR. AMY SHAH: It's hijacking our biology, because we don't really understand our biology, and so part of the reason I wrote this book is that if we even understood how this all worked, then we could make changes. If we knew that the people who eat the most ultra-processed diets have 80% more mental health days, then maybe we'll make a change and start to get dopamine and start to get satisfaction and start to do things that are going to move us in the right direction.

SHAWN STEVENSON: Yeah, yeah. And just to pinpoint, you gave a great analogy when you talked about emulsifiers. And by the way, we're talking about synthetic...

DR. AMY SHAH: Yes.

SHAWN STEVENSON: Versions of emulsifiers. There are some naturally occurring emulsifiers, but in general, if we're making these ultra-processed foods, generally, it's helping to keep the oils intact in the foods, and also preventing things like separation. You gave an analogy of emulsifiers used in our laundry detergents, for example, and it lifting off certain things that

are not a part of the fabric. And the question is, and what you dive into, is, what does that do to your gut lining?

DR. AMY SHAH: Yes. That's the thing, is nobody is really researching and understanding how these food products or fabric softeners, these products that we use on a daily basis, how they're affecting us on the macro level. How is that affecting our mood? How is that affecting our hunger levels? And what we're finding out is the same ultra-processed foods, the same emulsifiers that are causing us to be hungry are also causing us to be sad, are also causing us to have heart disease and cancer and diabetes. It's all connected.

SHAWN STEVENSON: Absolutely, absolutely. And now, I'm going to have to deconstruct your position because you know... I know you know when you talked about, we don't know if it's on purpose, you talk about the bliss point in the book. And these scientists are literally manufacturing, constructing these ultra-processed foods to affect our brains in a certain way. Let's talk about that.

DR. AMY SHAH: That is real. That happens in food labs all over the country. I've seen it with my own eyes at Cornell. So, I was a nutrition major, undergrad before I went to medical school, and there's a lab that has electrodes. And they sit and they look at people eating foods. And they're engineering foods that create brain impulses that light up all different parts of our brain, especially the dopamine centers, because a dopamine is the craving pathway, and we can get into that in a little bit. But they're able to make foods that are so, so good at lighting up all these pathways, no natural food could ever match that. And so, if we think about that, seems innocent, right? Oh yeah, they're just trying to make foods that are more palatable, they want to make more money. But when I realized 80% more mental health days with the people who eat these foods. I mean more depression, more anxiety, more feeling down when you're eating more of these foods. Shouldn't we look at what we're doing here?

SHAWN STEVENSON: Wow. This is nuts. What's really remarkable about this bliss point phenomenon is the fact that, like you just said, it's these kind of intense flavors and combinations that incite these reward pathways. But our biology is also very intelligent, but they found a way to hijack that, because our biology, with anything intense like that, it's going to shut down desire and craving to eat more. So, they found this specific point where it takes you there, right to the deck, but you don't go past it, and so you just keep staying in that kind of bliss point zone and eat more and more and more.

DR. AMY SHAH: So, our biology is so smart. They want us to pursue things over and over and over again. They want us to work hard to build houses, to provide for our community, to have relationships. All these things are through our reward pathway. So, for example, when you forage for food thousands of years ago, you find a beautiful tree full of fruit, you get a reward,

a dopamine reward. But there's a little bit of discomfort at the end. It's like you're rewarded, but then you have this feeling you got to do it again. And it's so smart, it keeps us going. The next day, you're going to forage for more food, for better food, for... And it's how we keep evolving, how we keep going and providing for our families. And it's super smart. But then you take it to modern times, and there's an Oreo, or let's take any kind of processed version, and it is creating that kind of dopamine release, and now we're creating more. Now we want more of that. And that's gambling, that's porn, that's alcohol, that's Instagram, that's video games. They all have figured out this pathway that we have never been told about.

Before I read the research on how these pathways... How they're really working, I thought, why doesn't everyone know this, so that we can be better advocates for ourselves, so we can save ourselves from these addictions, from these terrible cravings? If we really understood how it worked, then we'd say, oh, that's what's happening. That's why when I crave something so bad, it's like I get it, and then I feel really good, but then it's kind of uncomfortable. That's the dopamine pathway working.

SHAWN STEVENSON: Yeah. I love this because a big part of what we do is shining a light inward, so we actually know what's happening with our minds and bodies. It's very empowering. Obviously, the first step is awareness. So, you mentioned Oreos just now. You talk about Oreos in the book, a specific study of mice given opportunity to have Oreos or cocaine, and they were going for the cookies.

DR. AMY SHAH: Yeah, it was very sensationalized in the media. I don't know if you remember when... I remember when it was such... People were like, Oreos are more addictive than cocaine. And I think what people didn't understand and they still don't understand is that there are opiate receptors in our brain that get activated with food that, what I didn't know before I got into this research, is that there are gut bacteria that can produce this opiate-like substances to help you eat certain foods. They steer you towards certain foods, they make you eat more of what they love, so they can help you in this process of kind of saving yourself from these addictions. So, if we knew that, we would do a better job of saving that gut bacteria 'cause they're actually creating opiate-like receptors. They're creating dopamine that is 10-100 times stronger than our own dopamine. Serotonin, GABA, these guys are literally producing happiness chemicals for our brain. They're telling our brain what to eat, what not to eat. So, the way you're feeling right now, the things you want, your mental state right now, is actually coming from there, not from here.

SHAWN STEVENSON: Yeah. And I think we're looking at this, the average person is looking at this through the lens of logic. And they're like, Well, cocaine versus cookies, nobody... These little mice aren't trying to do sexual favors to get some Oreos. They're not out here selling their bodies to get Oreos. Humans wouldn't do the same thing. But culturally, if we're talking about

cocaine versus Oreos, Oreos are massively socially acceptable, very easily accessible as well. So acceptable, accessible, and it's... If we're talking about stigma as well around something like cocaine, and all of these things start to create this mental template about what we would go for. And we're talking about... We're kind of leaning into a subject of food addiction, which isn't necessarily the topic we're trying to deconstruct. But if we are in a state where we're eating, as you mentioned, 75% ultra-processed foods, if we're talking about children, and adults are somewhere in that ballpark, 60...

DR. AMY SHAH: 60... Yeah.

SHAWN STEVENSON: 60%-75% as well, are we not addicted?

DR. AMY SHAH: Yeah, we are. It's like functioning alcoholics. So, the way I think about food these days is how cigarettes used to be. We kind of knew they were a little bit bad for us, but it was socially accepted, and everywhere you go, people were smoking. It was the socially accepted addiction. And I think what's happening right now is we're realizing, Woah, the body of evidence is telling us that ultra-processed foods are going to kill us earlier. I mean, there's proof that it shortens your length of life, it's going to give you diabetes, cancer, or heart disease. And I don't mean to say it's equal to cigarettes, but it's the same concept to like, we need to move to a place where there's labels on foods and urge companies to say, well, if you're going to use ultra-processed ingredients and you're going to make this... There's going to be a big label and a warning sign so that kids, families, when they're at the supermarket, they see a big sign that says, don't choose that one. And that...

SHAWN STEVENSON: Yeah. These foods contain obesogens.

DR. AMY SHAH: Yes. And so, then they'll say, oh, well, maybe we should make that version without the ultra-processed ingredients. And what I teach in the book is that it's not about just avoiding the ultra-processed foods. Also re-populating your gut bacteria with foods that will give you the right signals of happiness of when you're full, of when you should stop eating, when you should be motivated, all of that can happen with just switching out the ultra-processed with a real food.

SHAWN STEVENSON: Yeah. Wouldn't that be enlightening if we did have those labels on foods, on a box of Lucky Charms that says, this product contains an obesogens, obesity-causing agents, and creating that honesty. And the same evolution happened with cigarette smoking. People are still going to smoke, but there's going to be a shift in public consciousness and awareness, again, potentially, and it's just the right thing to do, it's an ethical thing to do to be able to provide that insight. You mentioned earlier that there's a difference between hunger, cravings, and appetite. Let's talk about the difference.

DR. AMY SHAH: Okay. So, when you're hungry, you get a jolt of Ghrelin, which is a hunger hormone. It's cyclical. So, when... A lot of us, when we brush our teeth in the morning, it's like a signal assigned to your brain. It's almost like Pavlov's dog. You start to get this little Ghrelin boost. And if you get busy, you might just miss it. And it goes back down, then comes back up. So, the whole... We think the whole point of Ghrelin is to remind us to eat, because we can go weeks, if not months without food. We just need water. But our bodies don't want us to do that because it's very stressful. So, it reminds us every day to go and get food. So that's hunger. And then when we eat, we have stretch receptors in our stomach, and there's Neuropeptide YY, there's leptin, there's Cholecystokinin. There's like 5-7 hormones that we know, hunger hormones, including insulin and all the ones that we've heard of, that tell us we're full. And that's beautiful. Then cravings come in.

So, this is the analogy I give. January 1st, everybody woke up and they had a list. And one of the things on their list was like, Eating healthy. And it's all... You can will yourself, say, Yeah, I'm going to be so 100% healthy this year. And then all of a sudden, January 4th, 5th, maybe 7th, the cravings hit. We have the best intentions. We know, we're willpower-ing it through. But those cravings override all of that. And so, we have to learn that cravings are completely separate from hunger. It's not... I mean, there's overlap, like for example, if you diet for a long time, your hunger centers will call the craving centers and say like, hey, we need your help now, we... This person needs to eat. So that's why your cravings and appetite are really high when you've dieted on purpose. That's why they don't work for long-term, because then your hunger hormones are just working extra hard, as well as your craving hormones, to get you to eat.

Cravings is this dopamine pathway. It's a survival mechanism to keep us going for the food that gives us reward. It can happen when you're completely full. Have you ever eaten dinner, Thanksgiving, I give example... Super full. You have no hunger anywhere in your body or brain. But someone brings out the cheesecake, and there you go. It's like the craving centers, you start to get... You start to remember last Thanksgiving or when you were... Thanksgiving when you were five years old, and how it was so... It was such a great feeling, and your family's all around. And so, cravings uses a whole separate pathway. They're actually different places in the brain, the craving centers and the hunger centers. The craving centers are all the same for food, for alcohol, for gaming, gambling, all of that stuff. So that is a pathway that is completely separate from hunger.

Appetite is kind of the thing where you lose your appetite. When you're sick, you kind of lose all of it, and it's almost like an override. We often have lowered appetites when we're inflamed. Some people have higher appetites when we're inflamed. But if you look at dog... I will say, when you look at animals, they're very obvious. When they're sick, their appetite is way down, their energy levels are way down. So, it's all separate kind of pathways, and we use 'em all

interchangeably in our world. My biggest thing was, oh my god, these neurological pathways of cravings are completely separate from hunger. And we can do things to actually change them, because our brain has neuroplasticity. We can change pathways even if they were formed as a child.

SHAWN STEVENSON: Yeah. Yeah. And of course, that's the thing too, again, is being aware that this is happening. Thank you for deconstructing those things. You just mentioned, these are in different parts of the brain that are responsible for these things. And when you said cheesecake, I looked over at my son here in the studio, and I see this phenomenon even last night, we had just finished eating dinner, but there's this little mini culture between my wife and my youngest son. Alright? And so, after dinner, even though my son is not hungry anymore, that craving kicks on, a different part of the brain says, Time for some sweet. Alright? Not something sweet. Some sweet. And so, we have "healthier" snacks and desserts and things like that. But these two have ganged up together and they have that kind of some sweet thing after dinner, even though we're not hungry. And of course, again, we could do this stuff and find joy and all the things and do it in a way that is helpful and fulfilling, but we have to be mindful of this too, because we can just get stuck on this mental loop. Our brain is driving us to do this behavior. We might not even be aware that we're doing it.

DR. AMY SHAH: Okay. I have a game that you can play with him. Do you want to help him switch his habit, his craving loop?

SHAWN STEVENSON: I don't know if I'll be allowed to do that.

DR. AMY SHAH: Okay. So let me just tell you a quick game. One of...

SHAWN STEVENSON: 'Cause then my wife would have to play, Amy.

DR. AMY SHAH: Yeah. Well, no, it can be for an individual or for everyone.

SHAWN STEVENSON: She doesn't want to be alone in her, Some sweet.

DR. AMY SHAH: Yeah. Well, I'll tell you. Okay. So, I'll tell you how to play, and you tell me if she'd do it. This happened because one of my... One of the people I coach, I had them read the book in advance because there are some techniques in there that I wanted to use. And she said, "I have a different version of your three, two, one technique that's in the book," that people who are watching this should try. So, she said she's going to put pieces of paper in a jar. So, the way dopamine works the best is when you're surprised. When you get a surprise win on the gambling table, that's the biggest burst of dopamine, and it forms that neurological pathway that you keep wanting to come back for. So, when you want to reprogram that to healthy

things, make a jar, in some of them to say, congrats, you're doing great, or some affirmation. Have a great day, you're... And then some random ones are your treat. You pick it out and you say, Today, you get your healthy treat. And he's going to be like, yes, the sweet. I'm so excited. Today is the day. It's going to be random; he's not going to know which day it is. And he gets to enjoy this sweet of his choice that's healthy, a better version of the old stuff. Okay? So, it might be a beautiful gourmet piece of dark chocolate, or it may be.

A homemade, not ultra-processed cake. So that is re-training your brain to want rewards that are healthy. So now, a couple years from now, he's going to remember that, oh, remember that game we played and I use to get this reward? And it's changed. You just changed his neural pathways.

SHAWN STEVENSON: Yeah. I love that. And my thing is making sure that it's a conscious...

DR. AMY SHAH: Yes.

SHAWN STEVENSON: It's an awareness that he has, that this is the behavior. And also with her, but my wife is very rebellious when it comes to this stuff. And so...

DR. AMY SHAH: She's lovely and rebellious.

SHAWN STEVENSON: Absolutely. She's perfect. Okay? Capital, everything. But it's just, again, being empowered with these techniques. And for example... However, if you are in a state where there's a food addiction, though, and you pull the note out of that jar that says, have a good day, you might flip that f*cking table over. Alright?

DR. AMY SHAH: Yes. Yes.

SHAWN STEVENSON: So, this is also leaning into the importance of eating foods that make you feel fulfilled in the first place, before we can get to that place, which we'll talk about, and also, even when we have our sweet treats and things like that, upgrading the quality, because actually, what he had yesterday was a four-ingredient ice cream...

DR. AMY SHAH: Love it.

SHAWN STEVENSON: That he had. And just making those things available, of course, but if... For example, if processed foods are an issue, it's probably going to be a good idea to not have them around in the household. And as you mentioned, you started off the episode of talking about, we got DoorDash now, we've got Uber Eats, all these things, it's... We don't even have to go out and get 'em. We're just kind of surrounded with accessibility.

DR. AMY SHAH: One thing that I found was so shocking is that 70 years ago, the rates of depression, for example, and same goes for diabetes, by the way, and high blood pressure, the rates of depression was like one in 20. Okay? So, one in 20 people. That shot up to one in 10 people. Okay? Then recently, after the pandemic, they did another survey. It looks like four in 10. Especially in the young adults. Young... Four in 10 adolescents. The same rise is expected by 2050. By 2050, it's going to be 6-7, maybe even more per 10 people.

SHAWN STEVENSON: This is insane.

DR. AMY SHAH: And that's heart disease. That's... We are the most advanced country in the world, and we're going to have 6-7 out of 10 people with all of these diseases, and we're not trying to look at what's going on with this big picture, what's going on with the gut, the brain, what can we be doing differently? I think the answers are right here.

SHAWN STEVENSON: Yeah. You just said it, though. That's the illusion, though, that we're the most advanced because we... On the surface, we look very evolved and intelligent, but we're still operating like very primitive creatures. And to say that statement, again, this picture of sophistication and innovation, but at the same time, being in the greatest amount of debt in history. What are... Like 40 million... 40 trillion. Sorry, T, respect $40 trillion in debt. And people don't realize one of the, if not the biggest contributing factor to our debt is our poor state of health. And the question, by the way, let's just throw this out there for people to just mull over, who are we in debt to, by the way? Just think about that for a second.

DR. AMY SHAH: I know.

SHAWN STEVENSON: But this goes back to what you're doing is helping us to get well from the inside out, because clearly, what we've been doing is not working. And there are structures set up, again, intentional, or not, there are structures in place that have us habitually going for things that are making us sick. And so, getting back in this conversation of hunger and awareness about our hunger, earlier you said something is one of the coolest things about how we're wired up, but also, we want to be aware that this is happening, you mentioned that hunger is cyclical. So, let's talk about that cyclical nature of our hunger, and also get into this topic of chrononutrition.

DR. AMY SHAH: Yeah. We are wired to be creatures that are cyclical. We have circadian rhythms, which are 24 hours, we have infradian rhythms, which are monthly, we have ultradian rhythm, which are short, like heartbeats and ghrelin going up and down. So, we're creatures of rhythms because our body needs to know when it should do what to optimize it. We need to focus on growth and repair overnight, we need to focus on metabolism and activity during

the day. And so, our... All of our ultradian, circadian, infradian rhythms are geared for that. So even if you work night shift, even if you're night out, even if you're 20 and you stay up all night, you cannot switch those rhythms. Your heartbeat will always be on a very similar pattern. There's obviously variance between people, but it's very cyclical. And breath is very cyclical. These are all rhythms that, no matter what you do, that stay stable.

So, ghrelin is one of those things. It's cyclical. It's a reminder that we should be eating. And it's a reminder to keep us safe because it doesn't want us to, in a time of war or you're busy, like in modern times, you're doing podcasts all day, Shawn's like, Shoot, I forgot to eat. It's been like 12 hours. Your body wants to remind you that it's time to get nourishment. That's what ghrelin is created for. And there's things that affect it like sleep, stress, trauma, emotions, all of that stuff, and time. So, if you want to switch your ghrelin release, first few days, it's going to be really, really hard to not eat after dinner, because that ghrelin is going at 10 o'clock. It's like, oh, I want that dessert, I want that wine, I want that popcorn with my Netflix. But over time, you can train it, so that's why people always say, it's so hard to not eat after dinner. They say, this whole thing you're talking about, Dr. Shah, this whole chrononutrition, don't eat late at night, but I can't not eat, I'm so hungry. I'm like, just try it. Do it for a week or two and watch. Those ghrelin levels will start to change according to your lifestyle.

SHAWN STEVENSON: Yeah. And I love this because you unpack how to, essentially, reset these hunger and satiety cues. And you just mentioned sleep, for example. We often... We don't cognitively connect the fact that our sleep is impacting our cravings...

DR. AMY SHAH: Yes.

SHAWN STEVENSON: Or the food choices that we're making. But you also, of course, I'm so happy you did, but you talk about this in the book as well, because one night of poor sleep cannot just cause issues with ghrelin, that kind of hunger hormone, but also suppress the function of leptin.

DR. AMY SHAH: Yeah. Leptin is our appetite satiation. When you feel full, that's because the leptin has released in your brain. So, one of the things that I think is really interesting is that sleep is something that really alters your leptin release. And there's multiple other things. People, sometimes when they're stressed, have altered leptin release. Also, obesity. So, what we've realized is that it's not okay... Lots of doctors will say to their obese patients, Alright, just don't eat as much, and you'll lose weight. And that's what we got. That was as easy as that. Not taking into account that when you look at the studies, there's altered leptin and ghrelin activity. They will try to willpower their way. But that leptin is not going to keep them satisfied.

SHAWN STEVENSON: It's ironic when you look at the data on this because leptin has to do with our fat cells. Our fat cells are essentially releasing leptin. And if you get into the state of obesity, you've got more fat cell velocity happening. So, you would think that leptin would just be screaming out and getting produced. It is, but there's... Another part of the equation is leptin sensitivity.

DR. AMY SHAH: Right. So just like insulin resistance, which I think most people are familiar with, you... In the beginning, you pump out insulin and your cells will take that glucose in. Insulin is like the key to let the glucose into the cell, and... But then when the cell is really over-full, they're going to close the doors and they're not going to even open it when leptin... And we know when insulin is knocking on the door, it's going to say, We're full. So that's what's happening with leptin. The fat cells are releasing so much leptin that they're... The cells are overwhelmed and they're like, we don't need anymore. Just wait. So, we get something called leptin resistance. And that's something that adds a layer to all the different layers that we have working against us in this path to a healthy life.

The thing I want to say, Shawn, I think, that really struck me to write this book is that I think a lot of people feel like, YOLO, which for people who don't know, is like, You only live once. Eat the cookies. Have the shake. Go to Starbucks every day. It's YOLO. What I... Really struck me when I was reading the research is that it's not just about, you're going to die a year earlier, it's how you're feeling today, how motivated you are, how happy you feel in your relationships. It's about the energy you feel to do the things that you want to do. If you don't have that, what else is there? Don't do it... If you don't want to do it for living an extra few years, fine, but think about your mood, think about your cravings, think about your energy levels. Don't you want those to be optimized?

SHAWN STEVENSON: Mm-hmm. Yeah. Got a quick break coming up. We'll be right back. Neuroplasticity, the ability of the human brain to grow and adapt and evolve, and really, to unlock our superhuman capacity, is driven by our experiences, our practices, our activities, but also our nutrition. Fascinating new research published in the journal Neuron found that magnesium, this key electrolyte, is able to restore critical brain plasticity and improve overall cognitive function. Again, neuroplasticity is the ability of our brain to change and adapt. Now, this is one key electrolyte, but it works in tandem with other electrolytes, like sodium. Sodium is critical for maintaining proper hydration of the human brain. If you didn't know this, the human brain is primarily made of water. We're talking somewhere in the ballpark of 75, upwards of 80% water. It's so important because just a small decrease in our body's optimal hydration level, which noted in the data, just a 2% decrease in our baseline hydration level can lead to dramatic cognitive decline. Helping to sustain and maintain proper hydration levels in the brain, sodium is critical in that.

And also, researchers at McGill University found that sodium functions as a "off-on switch" for specific neurotransmitters that support our cognitive function and protect our brains from numerous degenerative diseases. Right now, the number one electrolyte company in the world is delivering a gift for new and returning customers. With each purchase of LMNT, that's L-M-N-T, the number-one electrolyte in the market, no binders, no fillers, no artificial ingredients, no crazies, sugar, and sweeteners. My friend's son was just over at our house, and my son, my oldest son, Jordan, was training them, taking his teammates through some workouts, and we opened the freezer and there's a bottle of Gatorade. There's a bottle of Gatorade in our freezer. And my wife was like, "Who's is this?" 'Cause we know we don't roll like that. We don't mess with the Gators. Alright? We don't mess with the Gatorades. And we knew who it was, was one of his friends. And he came in, he was like, "Well, at least this is the no-sugar kind." And then I go through some of the ingredients with him and I find those curve balls of like, "Here's where they're sneaking in these artificial ingredients and things that the human body has no association with." But it's... He's taking a step in the right direction by being in our environment. So, you know what I did? I put the LMNT in his hand. Alright? Make sure that he's got the good stuff, the very best stuff.

And also, this is backed by peer-reviewed data and a huge body of evidence. And we're talking about the folks at LMNT. That's L-M-N-T. Go to drinklmnt.com/model, and you're going to get a special gift pack with every purchase, whether you're a new or previous customer for LMNT. So, again, this is a brand-new opportunity, free gift pack with every purchase over at LMNT. Go to drinklmnt.com/model. And now, back to the show.

Tying all this together, you really feature this science around psychobiotics. And this is, obviously, fascinating, but this is really getting to the heart of how a lot of this stuff is working.

DR. AMY SHAH: If people understood the concept even around psychobiotics, it would change how you live, and it would change the things you eat, because what we found out is that your entire mental state can be located in your gut. It's so wild, but I'll tell you this. You can transplant the gut bacteria, just the gut, nothing about the brain or the chemicals or whatever, from one animal to another, and completely change their mental state from depressed to non-depressed. You can transplant gut bacteria from a depressed person into a non-depressed animal, and the animal becomes depressed. They did that with schizophrenia. Schizophrenia has an effect on the microbiome, like depression, like anxiety, like autism, where if you just transplant the gut bacteria, you actually change the entire mental state. You take that gut bacteria of... From the schizophrenic patient and you put it into an animal, a germ-free animal, meaning that they don't have a microbiome of their own, and that animal starts to develop traits of schizophrenia. The fact of... This is going to blow the mental health industry and the way we think about mental health open, because psychobiotics is basically saying, there's a

group of bacteria that work with your own bacteria to completely change how you feel and think on a daily basis. That, to me, is mind-blowing.

SHAWN STEVENSON: Yeah, yeah. You just said it, there's so much data on this now. And even fecal transplants with humans changing the person's kind of mental state or their perception of things, not just their state of health and kind of fixing things they didn't even know were wrong or trying to fix, but also just changing their disposition by changing what's happening with their gut bacteria.

DR. AMY SHAH: What I find fascinating is that in a landmark study in Nature, they found that it takes just three days to start to markedly change your microbiome. So, say we don't want to get a fecal transplant right now. It's illegal in the US. It's not FDA-approved, even... It's just for a very small, tiny subset of patients who have Clostridium difficile. If you say, well, what's another way to change my microbiome? I'll tell you. It's rapidly changing your diet. Three days is all it takes to actually change the entire environment. These microbes, their half-life is very, very short. And so, you can really start to see changes right away.

SHAWN STEVENSON: So, what are psychobiotics specifically?

DR. AMY SHAH: They're bacteria. They're bacteria that change your mental state not through your brain, not through a pill, but they go into your gut, and they work with your microbes in our gut, and they send the signals to the brain. And so, what we are trying to figure out is, Woah, okay, this is happening, but what bacteria, which ones, who should we use this on? This whole world is exploding. Of course, the pharmaceutical industry wants to get in on this. They want to create the right cocktail to make you happier, to... Obviously, good things, cure depression, dementia, Alzheimer's. We know that there's... In the models, you can cure all of that. So, there is potential there.

So, so far, what they found is when they supplement psychobiotics with medications, they work in conjunction. So, if you're taking an SSRI, so a common Citalopram, Celexa or a medication for depression, and you take a cocktail of psychobiotics, your medication will work better. What they're trying to figure out is, what is the concoction of bacteria that we don't even need the medication anymore? And we are still trying to figure out, Is it the same for everyone? Does it depend on your baseline microbiome? Probably it depends on how healthy your microbiome is in general, because we know that the better diversity you have in your microbiome, the more dopamine and serotonin and good feeling chemicals you get. So, it depends on your baseline too. So maybe we just build up these people's... Anyone who wants to change their mental state, maybe you start by just building up that diversity and that level of bacteria in your gut and see what happens.

SHAWN STEVENSON: Yeah, a lot of folks have heard this statement, especially if they've been in the health space and investing in this education, that the majority of our serotonin is located in our gut, right?

DR. AMY SHAH: Yeah.

SHAWN STEVENSON: But going back to... It's been almost 10 years ago when I created the first iteration in my first book, Sleep Smarter, and I talked about some research from Caltech. And the researchers were denoting that there were certain bacteria in the gut, they're communicating with the cells that are making serotonin and other sleep-related hormones, because serotonin is a precursor for melatonin. And I was just trying to deconstruct that thought process. And at the time, these bacteria didn't have a label necessarily. So, psycho... These are psychobiotics...

DR. AMY SHAH: Yeah. They're psychobiotics.

SHAWN STEVENSON: In their truest form. And again, if we're not taking care and creating an environment where these bacteria are able to be there in the first place, to be prevalent and to be able to do their jobs, it's no wonder we're going to have issues with serotonin production, sleep problems and the like. And so, this really boils down, a big part of your mission is helping folks to get their gut healthy.

DR. AMY SHAH: Yeah. If you think about... This is the macro level transgenerational epigenetics. This means that, say, you grew up in industrialized way with Uber Eats and with packaged foods and with maybe you had a C-section, maybe there's multiple things that happened in early life that changed your microbiome. It can be... Until adulthood, they can tell the difference between your childhood and someone who had a more, we can talk about farm-like natural childhood. Then it's passed down to your children and then to generations, and then some of those bacteria are lost forever. And so, you look for generations down and they don't even have the same bacteria. We don't have the same bacteria that our forefathers like three, four generations do. We're 40% less diverse than our generations before us. And so, what I keep feeling in my mind is like, it's not just about us. We're going down this path if we don't take action now, and it's easy action like simple things like build up your gut, we're literally headed for depression and disease.

SHAWN STEVENSON: Yeah. So is this part of the equation of how our food choices are contagious, our cravings are contagious.

DR. AMY SHAH: Our food choices, our cravings are contagious. I think you probably know the... And when I was in nutrition school, we talked about how obesity can... Is considered a familial

household or contagious phenomenon. You're 57% more likely to be obese when your family is obese. People used to blame the kids like, "Oh, just... You need to change how you eat or whatever." And you look at their family structure, and the mom, the dad, the sister, the grandparents are all obese. And so, what we're realizing now that we didn't know what the reason was. Is it just the healthy practices? Obviously, some of it is access to food, some of it is cultural. Now we realize that a lot of it is because of bacterial microbiome.

SHAWN STEVENSON: One of the great issues of our time is instead of understanding what's happening biochemically and culturally, the big villainization really of our genes has taken place in recent history and blaming our genes, pointing at the genes, and even the search for genes. We're searching, we finally found these fat genes, the FTO gene, this is the issue. But then seeing plenty of folks who have this particular gene and it's not being read in a particular way; it's not being activated. And this speaks to where we are today, which is a science of epigenetics and how our choices, our environment, even our thoughts affect our genetic expression. And so, because we have certain genes that are associated with things, by the way, if we actually map this out and we see very clearly that there are very few genes that are positive of anything. They're associated with stuff, but to have a true genetic defect, we're talking about less than 1%, upwards of 5% of the population. That's it. But really, some of the best data is less than 1%. And so, looking at where we have power and also the influence and support with our children, but also our greater community, unfortunately, today what we're doing is you're sharing this wonderful information about how to reset and optimize our hunger and satiety hormones, take back control of our biology, and yet pharmaceutical companies and now the medical paradigm is championing more drugs to try to target these hormones.

And we know how this is going to play out. Right now, you have Mounjaro, we have Ozempic are all the talk of the town. These "miracle cures for obesity" they're being framed like that. And in truth, as soon as I looked at them, I'm like, "Oh, these are GLP-1, glucagon-like peptide-1 targets. This is a satiety hormone slowing down digestion, making you feel fuller. And then I went immediately looked at a reference... The chlorophyll does the same thing without the potential side effects. Let's talk about this because we've seen different stuff come and go, and now we've got this new miracle drug to try to target when you're trying to fix in people from an ethical place, a spot treat or in a way using a blunt instrument to try to change people's metabolism.

DR. AMY SHAH: Yeah, I love this topic because it's so nuanced. Okay. Let's take obesity medicine. There are people who have struggled for their entire life and have tried everything. And these medications actually really help them because their blood sugar is better controlled, they're feeling more satisfied. Okay, so that's one group. Then we had a group of normal weight non-diabetic patients who are taking it for, I would call it casual weight loss, it's not medical weight loss, it's not...

SHAWN STEVENSON: Cosmetic.

DR. AMY SHAH: Cosmetic, yeah. And the problem with that is exactly how... The concept is, is that we have been taught in Western medicine that there is something that will save you from the work. Now there's a pill, there's a solution, there's a savior, it's like that old analogy of someone coming on a white horse and saving you from your distress. That's the medical model, like antibiotics, the solution, we'll get rid of your problem. It just feeds into that story of, hey, I have something that's going to take away the work. The hard work for you. And that's what I don't like about it, because it's a great solution for a big population and a terrible solution for another group. And it's... Like you said, GLP-1 agonists are naturally occurring in foods. There are foods that are GLP-1 agonists. If we ate the food that makes us feel full, and I talk about a very wide variety of foods that can help you with these satiety hormones, we would not have the side effects. We would not have to pay hundreds of dollars a month, we would not have a solution that causes all kinds of side effects. Any medication that does something has a multitude of side effects, but we'll find out a few years from now. And instead, if you... Our biology is so smart that food has the same effects without the negative side effects.

SHAWN STEVENSON: Why eat those foods when we can eat Intimins and take Ozempic? You know what I mean? That's the thing.

DR. AMY SHAH: Right. Right. Right.

SHAWN STEVENSON: And again, if we're being honest about this, when you said right now here in the United States, approximately 70%-75% of our population is overweight or obese. It's a big struggle that we're dealing with as a society, but this is not normal, this has only happened in the last few decades. The solution is not something to spot treat because this is the problem. Again, we're trying to target one thing. We have this brilliant cascade of hunger and satiety mechanisms within our bodies. This blunt instrument, again, it might work for a little while. And you said this earlier, when we had... Obviously, we want these things to be available in moments when it's truly dangerous and we can save lives that whole thing.

DR. AMY SHAH: Right.

SHAWN STEVENSON: Absolutely. But when we say people have tried everything, they probably haven't tried your program.

DR. AMY SHAH: Right. Exactly.

SHAWN STEVENSON: Right. So, we got to be careful with that, because the truth is, we have a culture that is breeding sickness. And the reality is we want to do things that are truly holistic and stacking conditions in your favor, doing things to support all your hunger and satiety hormones, all of your psychobiotics. These things are being ignored when we come in with this blunt instrument, and again, like you said, in the next few years, probably just based on our historical use of these types of things, we're going to see a fall out. A biomechanical fall out. Your body is so intelligent, it's going to find a way. If you're doing the thing that caused the obesity, it's going to find a way to get back to that set point that it's been cultivated for.

DR. AMY SHAH: That's the thing. If you want to be fuller and fitter and happier, then you have to go this route, you have to change your gut bacteria, change how your exercise, get sunlight, a few very simple tools, but really change your gut microbiome. If you go the other route, you will stay addicted, you'll stay sad, you will stay sick, but you'll just be like a thinner version of yourself. And so, I think...

SHAWN STEVENSON: For at least a while.

DR. AMY SHAH: For a short period of time. And so, I think we need to move away from this model in medicine and diet, diet culture, which is, take this and it will save you from the work. And because every time in life whether in diet or otherwise, whenever you take that option, it always makes it longer, harder, and more difficult to get your goal in the end.

SHAWN STEVENSON: This is a good place to talk about enjoyment, because another thing that's really tied to our struggles is the belief that it is joyless, that it is a struggle, that this is something that's even not reserved for somebody like me. I don't have the willpower, all these things, can this process of eating well and feeling good can this be joyous as well?

DR. AMY SHAH: Yeah. I talk about this all in the book. I said it's not about willpower, because if you rely on willpower, your January first goals would all be met by now. It's not about willpower. Our biology overrides even our strongest willpower. We can will ourselves to do things, but it's a very, very difficult. And so, we have to create an environment that makes it easy for us to get this way. I just think that it's not about a diet, it's not about willing yourself, it's about changing the environment inside of you so that you're happier, you're more satisfied, you can be less inflamed, so you think clear, you live longer. It's possible, but it's going to have to come from the inside.

SHAWN STEVENSON: Yeah. And leaning into the joy part a little bit more, what about can we find joy in real food?

DR. AMY SHAH: Yeah. Sunshine. Okay. Going for a sunny walk, eating certain foods that boost your dopamine and serotonin. And so, I talk about in the book that there are foods that are actually precursors to dopamine and are feel good, motivational hormone and serotonin are feel good. Hormone that we can eat that actually bring us joy.

SHAWN STEVENSON: Let's talk about some of those.

DR. AMY SHAH: Yeah, some of them are obvious. Dark chocolate cacao brings us joy, tea, coffee boost our dopamine receptors in our brain, things like berries and cherries in particular are dopamine boosters. Interestingly high protein foods are dopamine boosters.

SHAWN STEVENSON: Makes sense, because dopamine at its core, if we're talking about hormones, they're made from proteins.

DR. AMY SHAH: Yes. Tyrosine is a precursor to dopamine. And just like you said, serotonin has precursor also and can turn into melatonin. So, what I tell people is, eat the joyous dopamine foods in the morning to get joy, clarity and motivation focus, and then eat the serotonin foods in the evening so that you can get some relaxation and help you sleep at night. If you wanted to compare dopamine and serotonin for those who don't know, think of dopamine as the motivation, morning, active, almost like an adrenaline-like hormone. Whereas serotonin is your blissed-out, chill, relaxed. If you were really trying to optimize this and you want a joy at the right times, then you would eat the high protein breakfast, maybe you sprinkle some berries and nuts on it, maybe you have your coffee and some dark chocolate at some point in the morning. And then in the evening, you have some foods that have serotonin and there's... The classic foods that have serotonin are those rich in tryptophan. Heavy on the tryptophan. We think about turkey, but there's many things like any kind of high protein meat, tofu beans, but you mix that with a complex carbohydrate to let it help cross the blood brain barrier, and that helps you really relax for the evening. And so, what I found is that if you have the dopamine-rich foods in the morning, the serotonin-rich foods in the evening, you feel happier.

It's healthier. It's actually enjoyable. I don't know about you, but I think that there is a misnomer that unless you're going to Starbucks and a processed drive-through that your life sucks and that's just not true. If you look at the biology, the foods that actually make you happy are not the foods that you think are going to make you happy.

SHAWN STEVENSON: Yeah, this reminds me of some of the work from Dr. Robert Lustig, and he talks about the difference with pleasure and happiness.

DR. AMY SHAH: Yeah. Yes.

SHAWN STEVENSON: And that's the kind of mental distinction and you... Throughout the book, you're really structuring things in such a way to help us to create that. And so, we've got some nutrition advice here you just shared, which obviously there's much more in the book. We've got several times you've noted the importance of getting high quality sleep. Is there anything else that folks should know about so that they can take advantage of the title of the book to not be so effing hungry?

DR. AMY SHAH: I think one of the easiest non-food things you can do, because we talk about replacing your diet with six different food categories. We talk about how you can have these little hacks in between to help you through. For example, walnuts. Walnuts have been shown to actually increase your satiety hormones. And so, we have little hacks in there to say, "Hey, I know it's hard work, but here are little things that you can do. One thing you can do that is non-food is getting sunlight." And we know about circadian rhythms, it helps you become less tired, it helps your sleep the next night, but it also helps your satiety. And we used to wonder why when you go on vacation, have you ever noticed you're just not craving as much? You're not hungry for the same bad foods? You're feeling a little happier?

SHAWN STEVENSON: Depends on what vacation you're going on.

DR. AMY SHAH: Yeah, well yes. Exactly. But usually, sunlight has... People intuitively know that it makes them feel better not as fiending for cravings.

SHAWN STEVENSON: You crave different things, or you have hunger for different things.

DR. AMY SHAH: Right. Sunlight releases a hormone in your brain called, alpha-MSH. Which is shown to actually help in satiation. And so, getting some... Especially in the morning, getting some morning sunlight could be an easy way for you to start stacking these habits to improve the things you crave, to improve your... Then your sleep and your mood and your energy levels all in one action.

SHAWN STEVENSON: And it just makes sense biologically. Just looking at human evolution, that sun... Sunlight is a cue, right?

DR. AMY SHAH: Yeah.

SHAWN STEVENSON: Versus hiding out from the sun. We might be in a place... Our biology is telling us we might be under threat, we might be in times where there isn't access to sunlight, so we're... Maybe it's habitual winter, a long winter, we need to stockpile the calories on our bodies. All of these things again, it's getting us to realize that we are part of this. We're part of nature, and I'm so grateful for you because you talk about circadian rhythms and circadian

nutrition and really getting us to think about being more in alignment with the world around us. And so, if you could, can you share where people can pick up your amazing new book, and also where they can hang out with you online.

DR. AMY SHAH: First of all, thank you so much for having me. I'm so grateful. I love your show as you bring so much awareness to the real topics that we need to be aware of today. The book is called, I'm So Effing Hungry. Its available everywhere books are sold. I have a website at amymdwellness.com and if you do amymdwellness.com/book, you can get all the links to the book, to the bonuses. We have a chapter that's never been published, that we're giving people so that they can get started right away, even while they're waiting for their book to arrive or want some extra things to do right away, action steps. And the action steps are really cool, some of the things in the book that I think feed into our need for immediate gratification, like I don't know if you saw this part, but there's a part about sniffing the scent of mint, okay, natural mint not the menthol, not the toothpaste mint but the actual. Is a way that you can immediately start to get some of the benefits of the satiation hormones. People who sniff the essential oil, peppermint oil, felt more satisfied, less cravings, less hunger.

And so, I want to just empower people with, it's not about diet per se, it's not about Ozempic. We don't want... There's no point in just losing that last 5 pounds. The point is, live a life where you are metabolically healthy, where you are happy, where you are satisfied, and not just having food in your thoughts all the time. And a place where we're moving in that right direction instead of the abysmal direction we're moving right now.

SHAWN STEVENSON: You're one of my favorite people in this space, so thank you so much for coming and hang out with us and sharing your wisdom. It is so important. And again, everybody run out and get a copy of So Effing Hungry. Let's make this a huge bestseller. It's such an important conversation. And again, I appreciate you.

DR. AMY SHAH: Thank you. Thanks so much for having me.

SHAWN STEVENSON: Of course. My pleasure. Dr. Amy Shah, everybody. Thank you so much for tuning in to the show today. I hope you got a lot of value out of this episode. A new term has been pushed into popular wellness culture, psychobiotics and really understanding how much our gut health and our microbiome is affecting our emotional wellness, our mental health, and so much more. Everything is truly interconnected and we're just scratching the surface on understanding how all this stuff works. This is why it's so important to stay up to date with this information. Make sure that you're subscribed to The Model Health Show. Pop over to YouTube and subscribe there as well. I'm going to be sharing exclusive content for you over on YouTube. And of course, you can hang out in the studio with us, hang out with Dr. Amy Shah. And as always sharing is caring, so make sure you share this out with the people that you care about,

you could share this on social media. Take a screenshot of the episode. You could tag me, I'm @shawnmodel. Tag Dr. Amy Shah, she's @fastingmd and share the love that way, or of course, you could send this directly from the podcast app that you were listening on.

I appreciate you so much for tuning in to this show. We got some epic shows coming your very, very soon so make sure to stay tuned. Take care. Have an amazing day. I'll talk with you soon. And for more after the show, make sure to head over to themodelhealthshow.com. That's where you can find all of the show notes, you could find transcriptions, videos for each episode. And if you got a comment, you can leave a comment there as well. And please make sure to head over to iTunes and leave us a rating to let everybody know that this show is awesome, and I appreciate that so much. And take care. I promise to keep giving you more powerful, empowering, great content to help you transform your life. Thanks for tuning in.