

You're at the University of Miami and you have dedicated a lot of your life to the study of attention.

That's right. And, in fact, you have an entire research lab at the university of Miami, right? I forgot to actually mention that my daughter goes to the University of Miami. She's a student there now.

Oh, she's a sophomore. That's terrific. What did she major in?

She's not sure, but she's thinking about public health, but she's also leaning towards psychology. I'm trying not to influence her actually.

Tell me about, will you tell us a little bit about your lab there, because I'm completely interested in how the lab is set up and the kind of things that you research.

Yeah. So in my lab my career has been devoted to studying the brain basis of attention and, going back to grad school and then postdoc. And then I was a professor at the university of Pennsylvania for a decade, and then have been down here in Miami for the last decade. And throughout that time, the primary interest still comes from this sort of cognitive neuroscience perspective.

How is it that cognitive functions are instantiated within the hardware and software of the brain, if you will. And we've learned a great deal about this. And in my lab, we use functional MRI, which is actually our scanners down the hall from the lab. And we use brainwave recordings, EEG, to really study the fundamental architecture of how attention works.

But I would say the lab has pivoted away from that being our sole focus over the last 15 years or so. Where we have become more and more interested. I have really become more and more interested in two things. One is okay. It's great that we understand how it typically works, but what makes it fail?

Because we all know I have not met one person where if I say, would you like to pay attention better? They say no, I'm good. I'm all good. It's typically, yes. I need to pay better attention. My attention feels like it's in crisis. And we were starting to see that in a lot of our studies. So about, yeah, like I said, about 15 years ago, I started really becoming interested, not just in how it works, but how it becomes vulnerable to things like stress and threat, and by threat.

I don't just mean for our physical safety, but our reputation, our sense of justice et cetera. And then in a negative mood. We saw that those tended to be kryptonite conditions, we are pursuing understanding the effects of those types of influences on degrading attention. And then really it culminated in the sense that if we get, we're getting a sense of how attention works and we know that it doesn't work all that well under certain conditions, what can we do about it?

How can we actually protect against this? And that became a whole new line of work, where we tried a whole bunch of things and really what we've come to is understanding that mindfulness training is one of the best ways, most reliable ways where we can relieve stress, protective attention. So essentially a form of sort of mental armor for attention looks like it involves mindfulness training.

And then really, so if you come to the lab, you'll see there's people conducting experiments, they might take you to the scanner. They may hook you up to the EEG recording. We may give you tasks where we're induced in the labs, stress, threat, poor mood, but really the bulk of what we do that's not in the lab that requires us to take the lab on the road is working with populations that will experience those extreme circumstances because of the nature of their profession. Whether it's first responders, military service members, medical and nursing professionals, they're going to encounter a lot of demand for their attention and it's consequential that they still perform well.

So then what we do is evaluate, partner with these kinds of groups, evaluate how attention functions and offer mindfulness training and track the effects of the training over time.

So you track the effects of their performance, of how well they are able to function in their job or in their

roles?.

Yeah. We track the laboratory metrics of attention.

Tasks of how attention to sustain, what makes it vulnerable working memory, executive control, various systems of attention. So those are the kind of core metrics that researchers use to understand the way that attention works. We track those. We also look at psychological health. So we'll ask questions about their mood and wellbeing and various symptom prevalence in their mind.

And, often these are people that identify as psychologically healthy. So we may or may not see anything there. And then we look at the impact of participating in a multi-week mindfulness training program on those same metrics. So we have pre measures, meaning prior to the training, then they go through the training and then post measures.

And then we compare to see if there are changes as a function of getting the training or not getting the training under extremely demanding circumstances. Pre-deployment training or deployment itself for military service members, medical school and medical training for medical students.

For example, those types of questions.

That's really interesting. So you're able to tell through the engagement out there in the world that going through a set of mindfulness and really learning how to train your mind to focus really makes an extensive difference. You can see the actual difference.

It's not just talk, right? We learn about, I think someone right now we think of mindfulness as the elixir to everything, right? Learn mindfulness, and it's going to be an amazing shift, but your research actually takes it down to brass tacks about what is. Why is mindfulness such a big impact?

Can you talk a little bit about that? Yeah. Yeah. And in

in particular I would say yes. I think it's a funny thing and a really cool thing that mindfulness has become so prevalent in our popular culture. Never thought in a million years that this would happen because frankly, when I started my work in this area and it was really like a slight pivot when I was at Penn, I was studying the core bases, neural basis of attention.

And I was like, I want to pivot just slightly to see training attention. And I want to use this thing called mindfulness. And mostly we knew nothing about it. It was not common. Most people did not know about it. And a lot of my colleagues, dear colleagues were like, this is probably not the best idea to go in this direction.

Nobody's going to care about it. It's like studying something that nobody cares about. And here we are all these years later, it's yeah, people care, but it's almost got the other problem which has become this panacea for every whoa people have ever experienced and the understanding of what it is, I think has become challenged.

And so people get confused about what they're supposed to be learning, what it actually does, but my interest in my lens, as it relates to mindfulness, has been with regard to attention. So if we look at these practices what we realize is that actually it's brain training for attention, and essentially the multiple types of attention that exists, not just, you mentioned focus, which is the most prominent one, the ability to select certain information and block out other information, but there's other aspects of attention as well.

And yes, we're interested in seeing really more we're testing the hypothesis that mindfulness training may be able to strengthen attention. And then what we're doing is saying, if it can do this, when we give people enough training, like

a mindfulness based stress reduction course, which is Essentially designed and manualized by my dear colleague and mentor John Kabat-Zinn, a very helpful training modality.

Many people have participated in these programs and found beneficial effects. So we start there and say, okay, people may not have enough time. They may not have enough opportunity. They might not have access to MBSR. They may not care about the kind of stress and symptom reduction that's the framing for something like that training.

Can we modify and manipulate the way in which we deliver training? Almost with this vision of a minimum effective dose. What's the least amount of time and investment they may need to give in order to see the benefits and still continue seeing the same metrics, show beneficial effects. So I hope that makes sense.

It's no, it does. You're trying like it's well, I guess in, in everyday speak, maybe that's it's a cost benefit analysis and it sounds like you're saying that y'all have really been studying how much training, how much time, how much to really learn how to implement it in the best way possible and not so that somebody can go, this is really doable.

Exactly. So the first question was just, does it benefit attention? And it looked like yes, repeatedly, we're seeing it. And then it was, how can we have, continue to help have it benefit attention with the minimum amount of time demands, especially for these time pressured high-stress groups.

Can we back up for just a second?

Like when you say, does it benefit attention? Can we talk about what attention is for a minute? Like you said, is it focus? And I know when I'm trying to write and my mind wanders, I'm like, okay, I'm going to sit down. I'm ready. I'm going to, I'm going to focus on, I'm really motivated. And yet I get three sentences in and I realize I'm thirsty.

And then I come back down and I sit down and I, then I remember that email I didn't send. So is that my attention on the thing that I sat down to do? Sometimes it's a real challenge. So can we just talk about attention? What captures our attention? What is it about?

Yeah. Yeah. It's and it's it's, I would say it is a fuel for every single thing we do.

That's the first, this foundational capacity of the mind and at the broadest level, attention just means the brain's capacity to prioritize some information over others. That's it. And then we can start digging into how you prioritize based on what you prioritize? And one way we prioritize some information over other information is based on the information itself.

So for example, right now, the information that I want to be attending to is your lovely face and your voice in our conversation, not what's happening outside the door, or what's buzzing in my phone, right? That's not the content that I should be focusing on. So my priority is this content and not other content.

That's what we pretty much mean when we say focus and that we can talk about. I like to use this analogy of that aspect of brain function sometimes called the orienting system of the brain as a flashlight. So wherever we direct that flashlight, we get privileged access to that information.

Everything else is darkened away, irrelevant and not really available to us. So as I'm focusing on you, what's going on. And my phone is not going to be available to me. I'm privileging you over the phone. That flashlight metaphor is really handy because like I said, just like an actual flashlight, wherever we direct it, better information, but the flashlight can get yanked.

So now let's say, my phone buzzes, once I turn off the notification, like a silence, it stops distracting me. Now, if somebody likes overpowers, my phone keeps calling me five times in a row, let's say my, I forgot to pick up my daughter and she's trying to get ahold of me. Take my flashlight and it'll get pulled, but this very salient stimulus, or if the fire alarm goes off in my house, I'm going to get up and leave.

I'm not going to just say no. My goal right now is to focus on Anne's voice. So the flashlight is capable of being directed, but it can also be pulled. So that's an important thing to keep in mind also that it's not just able to be directed and pulled by external content. We can direct the flashlight internally.

In fact, we might think of thinking as the flashlight being directed to thought and linking one thought to the next, what we call thinking is actually focusing in on certain content and darkening away, or really blocking out other content and internally as well, the internal flashlight can get yanked.

So if I have a very alarming thought I'm sitting here oh my gosh, I didn't turn off the stove in my house. It would pull me away from whatever else I was thinking about. And I'd probably go take action, but it was just the thought that triggered the entire shift in what I'm going to orient to as nothing external happened.

It was just the thought arising that did that. So just to say that flashlight metaphor is a very helpful way to think about what focus is and why attention is so beneficial, but it's not the only way that we can prioritize information again, with this notion that attention is prioritizing some information over other information.

Another way we can prioritize is based on not what it is, but when it's occurring. So now the present moment is what may be the most important, and this is a brain system called the alerting system. And it's essentially keeping our mind almost the exact opposite of a flashlight instead of narrow and focused. It's broad and receptive.

And what is most receptive to is what's unfolding in this. Not saving it up for later. So if you're driving down the road and you see a flashing yellow light, you're alert to what's going on around you, maybe something strange, traffic patterns, construction, whatever it is. It's not about some distant idea or in the past or something that might occur.

It's literally right now, how do I become completely attuned to everything in my environment? Because I don't know what is relevant yet though. Sometimes I'll refer to this as like the floodlight broad, receptive, not privileged. And again, we have an external flood layer. We have an internal flood. Like we can direct that flood light to everything going on in terms of the emotions, bodily sensations, thoughts, memories rising within us as well as what's happening in our environment.

Just to link it back, we can think of attention as privileged, based on content based on time. And then the third way, most broadly speaking about attention. Prioritizing what's important versus not based on our goals. So what is the goal of this moment and is my behavior aligned with that goal?

That's something we call executive control, which, as a clinician, you know, a lot about people that have problems with executive and the metaphor I like to use for this one, it's like a juggler. So the jugglers job, just like an executive of the company is not to only handle one ball at a time, in some sense, it's to oversee everything that's occurring, but ensure that whatever's going on right now that the goals of the organization and the behavior of the organization align and when they are mismanaged to course correct.

So executives that don't do that are not very good leaders, we know that. Don't drop the ball is what we would say. Keep all the balls in the air, but you're not actually doing each individual task. You're overseeing it. So that's the, in the broadest sense, what attention is. And I think that the reason I like these metaphors is because we can get a handle on them.

We know from our experience that they are different ways that we pay attention beyond focusing. And there are ways in which we engage with our extra environment and our own minds that relate to those. So going back to what you were saying about sitting down, having the goal, I'm going to write this email, I'm going to write this report and then the mind flighting away to whatever, like whatever thirst, important or idea that might pull you away and other important things.

So things will disrupt and interfere with attention. Regardless of the system that's in play. And in some sense, this happens so often. Now, we're at the point where we understand it's the nature of mind to be distracted in some

sense. And the number that often comes up is that 50% of our waking moments, our attention is not in the task at hand.

But not to fear that, but to be aware of it. So that when we find ourselves distracted away from what we're doing, we can acknowledge, okay, this is the nature of mine. It's not helping me right now that I'm distracted away, but no need to add a punitive layer on top of that, like my mind should not wander.

It's like it will wander. And the reason for that whole thing, I'll just write one last sentence. And then I want to have more of a conversation, not a lecture for you. The reason that it is so important to me to understand attention and mind wandering, this distractibility of the mind is that while most of us experience about 50% of our waking moments for high stress, high demand groups, that number goes up.

And when their attention lapses, whether it's a service member or a first responder or a medical professional, truly the consequences could be life or death. So we really do need to figure out how to help protect those individuals from the vulnerabilities of all of our minds, but for them it's quite consequential.

And it seems like there's a lot of information processing that has to be happening for us at all times to make this decision. Am I going to do a flashlight? Do I have the room to attain, pay attention to the floodlight? If you will. And so what you're saying, the executive part is part of making that decision.

Where am I going to direct my, my, my light? Can I relax and focus with my floodlight? Or my flashlight, if my floodlight feels safe or it doesn't feel safe, I imagine. And if I'm out in a military zone or something like that, I can't actually turn off my flood. I can't be out of the moment and just put my flashlight on something because that could be life or death. That sounds exhausting. It sounds like it really exhausts the system to be taking in so many different types are being called on to have so much attention in so many ways.

I'm in, but I think that part probably isn't all that exhausting we're built for that we're built to direct when we want to be receptive when we need to.

And sure executive control drives the whole thing, but oftentimes we're just responding to what's happening to us. When we see that flashing yellow light, we also, we don't really decide, oh, I should pay attention to what's happening right now. You just will. It'll just shift. If you're in the middle of a very deep conversation with somebody and there's difficulty in the traffic pattern, you'll just stop talking and now broadly be receptive to what's going on.

So we're actually very skilled with this. I think the part that can become overwhelming and taxing is when the demands are high and protracted and really engaging behaviors that actually make things so much worse, which I think we should, we can talk about multitasking or attempting to multitask ruminating, catastrophizing.

These are ways in which we're actually spending out our attentional fuel much more than we need to. And it ends up that unfortunately, just saying, oh, don't do that. Maybe you can say don't do that, but for rumination and catastrophizing, I'm going to get, I'm talking to a clinician. So I know, this inside and out simply saying, don't do it is not enough.

In fact, it'll probably backfire if you say that, Because now you have what you were saying earlier, that kind of self criticalness oh, I'm doing that, I'm doing that thing. Don't do that. Don't do that. Which adds to all the distractibility I imagined of being able to do what it is you want, and to be present and focused.

And oftentimes you'll say don't do that and you'll end up doing it again anyway, like you don't really, you're not, if you're not constantly monitoring what you're doing, you're going to default to certain mind tendencies, like you might say, stop ruminating and distract yourself with something. A few minutes later, it might be back to ruminating without knowing it landing in it without your knowledge.

So that's why mindfulness training can be so helpful because instead of commanding ourselves to do things a certain way, we're training our mind to shift the sort of default way attention operates so that we can lean on it much more readily.

When you mentioned the default way, we're talking about those that have high demands, the military first responders. And I think about, on our podcast, we talk a lot about attachment and interpersonal neurobiology and how the way we were raised impacts the way we receive information and whether we can rule it out or not. And. And for some of us that were raised in such a way that we might have more of a preoccupied way of living in the world where we've been trained, that we have to keep a vigilance and watch for everything.

Because our environment hasn't been safe enough or consistent enough. I imagine then those are the individuals that often have that kind of rumination and the thoughts clearing, et cetera, that it takes. It's a similar kind. Obviously it's not the same as being out there in the military, in your life at threat, but some of us walk around with a lot more vigilance.

I imagine paying attention to one part of our attention system rather than the other. And What are your thoughts on that?

I think that, yeah, I think absolutely. One of the reasons I wrote my book Peak Mind was because I said after seeing all these types of groups and the costs of high stress, high demand intervals on them, I quickly realized like essentially all of us are high demand, time pressure groups.

And this was before COVID. When COVID happened, it was like, we're truly all in a global high stress interval together that is described by what these service members often call VUCA situations. V volatile, U uncertain C complex, A ambiguous. That is the world. Oh my God. And so I know that's not what you're getting at.

You're really talking about the personal history that may lead to that. But I think it's quite prevalent and frankly, for our own wellbeing it doesn't matter that we're not fire, if we're not, if we don't have to be firefighters. Or medical professionals. Our attention does matter for our lives.

It matters for the things, all the things on which attention is needed. So we need our attention to think. We need our attention to regulate our emotions. We need our attention to connect socially. And now when those systems, all three of them or any one of them, are disrupted or dysregulated. Things can really fall out of whack.

And so what you were saying regarding personal histories that may lead people to a tendency toward hypervigilance, essentially that flashlight sorry, that floodlight is broad and receptive, but everything feels like a caution sign in your world. You're on high alert. And we know that that leads to things like anxiety disorders and it's very common within PTSD.

But most of the time, people don't think of that as an attentional challenge. And I'm saying it actually is, and it may be the case that changing how we pay attention may soften the costs of a hypervigilant mind that we experience.

Yeah, I really love the way you're saying that it is intentional and I think it, and if you don't think of it as an attentional thing, you're much more likely to be critical of yourself.

Like why can't I keep my mind focused and to be able to go wait, this is really attention. They, I can't turn my floodlight off because if I put my flashlight on something, something on my flank is going to take a hold of me and I that Anne and I, one of the things I hear you saying, and we talk a lot about mindfulness being important, and one reason I wanted to have you on the show.

And before we end, I really want to talk more specifically about what mindfulness is. But to be able to slow the system down enough, to be able to attend at any level, really shifts the biology. Doesn't it shift the way that our mind, our mind and our body shows up? And so to be able to hone something that, and to be able to tune out and be able to bring your attention in, could really make a substantial difference.

And that's what I hear you talking about with mindfulness. Yeah, absolutely. We talked about the floodlight potentially being on overdrive for hypervigilance. It could be the flashlights hyper fixated or depression, or we just keep shining the light on depressed agentic thought. It could be that with something like adding the jugglers, constantly dropping the ball, like the goals are not being maintained or the behavior is not being corrected to be aligned with the goals.

So when we start thinking about psychological challenges and psychological disorders from this attentional point of view, the urgency to try to do something with attention, more directly becomes more key. And I'm not a clinician, I'm a neuroscientist. So I knew that my tools were going to have to be different from a clinician's tools.

And I happen to know a lot about the brain system and the tension. So what I was interested in finding out is how we might train attention so that people have more agency with regards to the flashlight, knowing where it is, knowing where it's not where it is when we want to move it back and having the capacity to move it in that way.

How do we dial down an overly active floodlight? How do we get the juggler online? So the jugglers are not dropping the balls. These are all ways to think about training, different aspects of attention, to improve our functioning, which have these consequences for psychological health as well. And so where does mindfulness fit into all of this?

In some sense, I kept thinking what are the things that pull us away? What are the things that drive up psychological challenge? For example, distractibility, and as you've already mentioned, I think the biggest culprit which I put into the broader category of mental time travel. The same part of the brain, that's a keynote for all of these systems of attention.

The frontal lobes are also capable of creating alternate realities that are displaced in place in time. So this capacity to be not in this moment, but somewhere else is actually a real gift of human evolution. We inherited this capacity, but mental time travel also has a dark side, if you will. So what I mean by mental time travel, just to make it more plain and it connects back to your question regarding mindfulness.

Not being in the present moment. And I was thinking of this kind of metaphor of an MP3 player. So we can rewind the mind, which means that we can very easily, without much effort, reflect on the past events that have already happened. We can replay those and with as much granularity as possible sometimes where replaying them often whether we're savoring past memories or trying to recall some details about an event that occurred for students, it might be learning information and then trying to really hold it in mind for a test or we're, fast-forwarding where we are planning.

The next thing that might occur again, exquisite precision, and these are really important things to be able to do, mental time travel is a really useful thing to do. But like I said, under certain circumstances, especially those that involve stress, threat and negative mood. We now engage in mental time, travel more often and.

More dysfunctionally. So now we're rewinding the mind and we are ruminating on something that's occurred and it's not serving us or we're fast-forwarding and we're catastrophizing. So when we do that, when we're in the past or the future functionally or dysfunctionally, our attention is also in the past or the future, and it's not available for this moment.

So, that mental time travel, we might call mind wandering having an off task thought during an ongoing task or activity. And when that happens, we know more errors happen. You're not going to get a lot of good learning going on because you're out of it. You're not present to what's going on right now.

You're going to make mistakes and it ends up driving you down. In fact, one of the very first papers on my wandering said a wandering mind is an unhappy mind. Because there was this relationship between not being in the present moment, being on fast forward and reverse. And the subsequent moment is a little bit dysphoria or a negative mood.

So why mindfulness? If attention is not functioning properly, whether it's a flood light flashlight, juggler causes problems for us. And if attention is prone to getting hijacked when it is not in this moment, but in fast-forward over

reverse, what if we could train the mind to be present centered more often and watch for where it is so that we can bring it back to being present centered when we need to.

So in some sense, I started seeing that was going to be key to helping attention. It wasn't going to be positive thinking, it probably wasn't going to be some kind of technological solution, but it was training the mind to become a more present center. And I was very fortunate that through a series of coincidences in some sense, I learned that there is this thing that's been around for thousands of years called mindfulness meditation.

And we can actually give people exercises to cultivate a present centered mode. So in some sense, to me, mindfulness, the way I would define it or describe it is paying attention. It's a mental mode. It's like a way of making the mind that is paying attention to the present moment experience without what I call conceptual elaboration, having a concept and then hyperlinking to related concepts or without really judgmental thinking, if you want to put it that way and without emotional reactivity.

So it keeps you thinking of those MP3 metaphors, keeping that button on play to experience the raw data of the moment to moment unfolding of our lives. And when we do that, a couple of things happen, we're not lost in this fast-forward rewind. We're able to get what's going on right now. And we can orient our experience with much better precision and without an overlay of some story or editorializing or re regarding what's occurring.

So that's why the mission is to actually cultivate mindfulness to see if it would protect attention based on these ideas.

So why do you think it is so hard for us to do that? What is our tendency to go into rumination or the prediction of the future? Because you said 50% of the time for most of us, which I think it really helps normalize it, doesn't it that it's really hard to be in this moment.

Partly, I guess the power of association, you see something, you smell something, it brings you to the past, triggers the future. Why do you think it's so hard for us in general?

Yeah, I don't think it's I don't know was one way to put it like, meaning I don't know why the brain was designed this way. I wasn't around to see human evolution. But what I know is that this is happening, not by accident or not by flaw, but by design. The human brain has a lot. It's so metabolically costly to run the brain. It's the most metabolically costly organ we've got. And if half of our time we're doing this thing called my wondering, it must serve a purpose and we can take some guesses, that our evolutionary ancestors probably wouldn't have survived if they were hyper-focused or overly vigilant or so present centered that they had predict what was going to happen in the future or they couldn't reflect on what they learned in the past. So being able to mentally time travel again, it's advantaged us.

Because it could allow us to displace ourselves in place in time, which gave us a leg above. A lot of other organisms that don't have that power, probably serve other functions as well. Some of the kind of cutting edge ideas is that mind wandering may help the formation of memories.

In some ways, if you experienced something like, we're having this conversation now you're going for a walk. Maybe you're walking your dog. I know it might happen to me later today. And something about this conversation will just pop into my head. I'm not thinking, what did I do today?

It just pops into my head. I remember when Ann said that, why did that occur? In some sense, Pulled into that without my volition. One idea is that the perseverance of events that are displaced in time and place help create memories. It's like a replay function that may help consolidate memories.

The broadest way to answer your question is, I don't know exactly why, but I do know that. It's often, it's reliably happening. And in some sense, I would love for people to get a normalized sense of its occurrence instead of getting angry at their poor brains for mind wandering. And then I'd say let's take advantage of ourselves by using the training tools that are available so that we can be our best selves in the presence of this tendency of mind.

So that we're, and what we can do is the mind may wander, but we can cultivate through mindfulness training awareness of where our mind is, and we can cultivate the capacity of controlling our mind's focus so we can return it where we want it to be. And we can cultivate it to hold the goals of the moment more crisply and clearly, so it's if this is the way the mind functions, there is a way to train it, not to dissolve mind, wandering, it may be the way it happens, but at least I'm adding these extra tools so that I'm better I'm functioning in the face of mind, wandering happening 50% of my waking hours. What is, it sounds like it's also, we're bringing our awareness, I guess the mindful awareness of what our mind is. Is what I hear you saying. So if I'm walking and I'm thinking, oh, this was so interesting, but we were just talking about an eye and I noticed that my mind is bringing me back to the conversation I had earlier in the day, and I'm aware of it.

And it's now I'm on my walk and I really have time when I'm away from my kids. I'm away from. So I'm going to let that information come in. I hear you saying a little bit of a decision, if you will, to an awareness of what my mind is doing that helps me be present with it. Is that accurate?

Absolutely. And that's the bigger thing. It's not so much the mind wanders. It's that typically when it wanders by default. We lack awareness of its wandering. You might have to get to the bottom of the page before you realize I have no idea what I've read.

Oh my gosh, I've done that so many times and I've read every single word exactly.

Your eyes moved, but you didn't know the idea. So how do we train ourselves to be more aware moment by moment monitoring what our attention is doing so that we can course correct if needed. And that's what we're adding with this present centered orientation, because it's not a w when we say bring attention to our present moment, experience the present moment experience, maybe I'm completely stuck in the past.

That is what's happening right now, but I'm aware of that. And then I can make a decision of whether I want to stay in the past, or actually want to do something to potentially not have that be what my mental content is filled with. But if I have no awareness of what's going on in most moments, the chances of me course correcting are basically zero.

that

makes a lot of sense. And one of the things you're saying is that one of the things that impacts our ability to be in the moment, and if we think of attention just in this moment of being present, I know we were talking about attention in a lot of ways, but if we're talking about being more aware of harnessing our attention, I want to be here with you.

I don't want to be distracted by my next question, or thinking about what I should have asked you a few minutes ago and moments I missed, I want to be really present. And I'm thinking about that level of attunement. That there's a way that it centers me then. So in bringing something to this moment, you're saying that the awareness that my mind wanders and gently bringing it back is something that I have some agency over.

But if I am not aware, then you're going to end up stopping the conversation and I'm going to have another thought and be distracted and come back. And that happens a lot for us, if we're not aware then we really have traveled, and then something has to tap us back in that we've missed out on quite a bit of presence, the presence of being in our lives.

Absolutely. That's the thing it's like, if we lack in the term would be meta awareness of the moment to moment thoughts, feelings, processes that are occurring in our mind. Essentially it's as if they didn't happen. I think as our awareness is the entry point for acknowledging our experience of creating memories about the experience, integrating information about what's occurring, all of that requires.

An awareness of what's going on. So it's like bringing ourselves back into this moment with that meta awareness enhances everything. That's what I mean, when I say peak mind, it's not that it's you're some successors and yeah, I didn't, I'm just awesome at everything it's that you're fully in, whatever you're in, you're not lost, you're there for it.

And that moment could be actually grief stricken or feeling a lot of sadness or very excited and elated and joyful. Any of those kinds of experiences that are part of the human repertoire. If we are distracted away or not aware, we miss out on the full spectrum of the human experience. And the thing is that happens often and we can do something to return ourselves. You use the term centering. It's like we can bring ourselves back to that by training the mind in this way.

I think about it. So we're going to bat to jump into training. There's a mind, cause I'm really fascinated with what the things your research has found. That is, it sounds like you've been able to find ways to condense the kind of training, but to make it very doable, right?

Cause I think for those out there whose minds wander a lot, right? Or who's constantly having the rumination of negative thoughts, that how painful that is, it's a really painful thing and they don't want to do it. It's really painful and it's frustrating and they could say stop focusing here, but it's really hard to do it.

But the reason I think about the centering, I think of again, bringing it back to my language of attachment. When we try to talk about individuals finding a more secure center, finding their secure self, it's talking about the integration of the mind and the body, right. Like if we're in our mind and we're going back and forth and makes us not very aware of our own body, like our sensations in our body and our heart rates and the lack of presence in that really can pull you out of a relationship out of a moment with somebody else as well.

Absolutely. And I think that this is a brilliant cutting edge topic within both attention research and mindfulness research. In fact, it's one of the topics of one of the grants I'm running right now, which is, if you think about the flashlight or the floodlight let's just think of those two. What is the, one of the most powerful utilities of the flashlight directed toward other people? To the capacity to actually direct it toward another person or even the floodlight being situationally aware that situation could be the situation within our bodies or the situation that's surrounding us or the situation as it involves other people.

So these are functions that we don't want to just hold for personal use, but in the interaction, in the relational context. So this is where I think the interpersonal is very exciting. And some of the projects that we're doing now, including this new grant, is looking at team-based mindfulness or collective mindfulness. This notion that we each have a mental model of what's going on in this moment, how do we better share that mental model?

How do we course correct when we're not on the same page and how do I willfully show up for you in a way that makes you experience the impact of your presence on me? It's going to be through being attacked.

And that's not always easy, isn't it? I was thinking particularly about relationships, because one of the things you said earlier really impacts our ability to focus his attention and mood.

And I think of getting in conflict with somebody and how dysregulated we get, which really pulls us out of our ability to attend to somebody else. Doesn't it, we're maybe over attending to our own brains and our own beliefs and the past of what's happened or the catastrophe of the future and being in the present moment with somebody is almost impossible at that

time.

Oh, absolutely. And we're operating with a story or a narrative that's in our own thoughts, but may not be shared by the other person. Absolutely. This is one of the biggest challenges, but it's also the. Points of power of attention. If we can understand how we've been pulled away and that we've been pulled away, we may be able to bring ourselves back.

So this is where the practice piece is important. It's not just about noticing what's going on. It's about having that control over the flashlight to bring it back willfully yes. How do I orient toward the fact that I had this very conflictual conversation with somebody? And now I'm going to have this conversation with you.

How do I pivot my mind to focus on you? I have to acknowledge that. Yes, that was a very difficult moment. I had 10 minutes ago, not true. I'm fine and nothing happened 10 minutes ago for me. But if it had, it was like acknowledging that, but then still taking the flashlight and being here for what we're doing now.

And it ends up that mindfulness practices can exercise all of those things with something like mindfulness of the breath. You know what I called the "find your flashlight practice" in my book is essentially an opportunity to focus on breath related sensations. So we have a target for that flashlight toward the breath.

We're doing this watchful floodlight for anywhere that our mind may go, noticing where the mind is, moment by moment. So we're exercising the floodlight and then we're using executive control to say is my flashlight where I want it to be if I notice that it's off track. So it's strengthening all of those aspects of attention.

And through that, we're cultivating this kind of better I don't know, befriending of our own mind so that we it's, we can trust that when I have a difficult conversation, I can feel that in my body, in my mind, I'm there for it. I didn't go away. I didn't dissociate from it. I felt it. And in this moment I can bring my attention right here for what's performing.

And how do you hold all of that? It takes practice. And that's the benefits of having an exercise regime for the mind, like mindfulness.

Let's talk about that for a minute, because if we wait for the moment and say, oh, I'm supposed to know I'm in the midst of this moment. And now I'm supposed to be mindful, especially when we're dysregulated, that's not our, or in a high stress situation or if I'm thinking about students and they're overwhelmed with the test that they have the next day, and we say, oh, just be mindful in the moment. That's going to be a lot harder to achieve. And so one of the things you're talking about is that just like our exercise, that mindfulness is about something that we can actually work on and practice and develop that skill and that we need ongoing practice to be able to improve it in the moment. Is

that right?

Absolutely. Like from a brain training perspective, each of those systems we talked about attention is supported by a distinct neural network. And mind wandering is also supported by a network. I'm in something called the default mode network that is involved in a lot of that internal meandering that we do.

And these networks tend to be not only separate from each other, but like mutually inhibitory. So if I'm very much lost in thought the chances of me appropriately focusing on the external environment, they're going to be less. And you can, you know this from your own experience. If you're really the flashlight is really honed in on something you're reading or focusing on somebody walks into the room, you're probably not going to, it's going to take a minute to be like, what'd you say?

Because the floodlight is a little bit dampened down. So in, by their nature in the brain, these brain networks are known and they're coordinated and they're inhibiting and fighting with each other. And so when I think about what mindfulness is, it's training the coordination of these networks. It's training.

Improved helpfulness and the individual functioning and the kind of passing the Baton between who gets prominence in my moment to moment experience comes from training them as well. So yeah it's truly is exercise for the mind and in the same way, just like you were describing with the students, nobody would ever say, if you want to be physically fit way to the moment that you need to use your muscles and then just drop to the ground and start doing reps, that's no, of course, you've got to embody physical excellence for there to be the capacity for you to benefit from it. We have to think of the mind the same way. And my broadest sort of passion is to really promote that cultural shift, that the mind, the brain, just like the body needs to be trained for daily, physical health, sorry, daily, psychological wellness in the same way, the body needs exercise to stay physically healthy.

But we just don't think of the mind in the same way. And I think we should.

So I

I completely agree. And that makes a lot of sense. So what are the things that you would recommend if we were going to develop a daily practice, just like we did a workout practice, what are the things that you're saying that would be a daily practice that could really build the muscle of the mind to be able to attend, to be able to mindfully be in ourselves in the moment? What would you recommend?

So the good news for me is that I didn't have to start from scratch. I could lean on people that have been doing this forever. And like I said, millennia old practices. So my interest was not so much in inventing things that have never been discovered or appreciated before, but how we can tailor them for these unusual contexts where people aren't going to a clinic for chronic pain or experiencing depression.

So they want to get some kind of therapy. I'm talking about people that are functioning in their jobs, right? See themselves as not needing anything. Like I rise to the challenge. I deal with stressful circumstances all the time. I'm fine. How do we appeal to them? And, these are the kinds of populations that we work with, but at some levels, all of us, we all want to perform at our best and be successful.

And we don't want to see ourselves as in need of constant repair though. Frankly, all of us are in constant need of repair cells every day. But How do we do that was the big question I was asking. And especially because there's not a lot of time. So what I mean by that, I can lean on people that have been doing this for awhile is, as we were talking about earlier, mindfulness-based stress reduction was a manualized eight week program that has been around for 30 years.

And so the starting point that was used in some of our early work, was that kind of a model, an eight week model, about 24 plus hours of daily training, 45 minutes of home practice. And what we quickly discovered is that nobody is doing 45 minutes of home practice, they just don't have the time. And frankly, the 24 hours was a lot to fit into a very busy schedule.

Part of my personal interest was we know what metrics are sensitive to mindfulness training, being beneficial, as it relates to attention and mood, et cetera, let's hold the metrics the same, let's evaluate the same things, but let's change it up with the training program is let's see if we can figure out what the most important aspects are that the training program must have.

And since we have to cut time to make it more appropriate for time pressure, let's just look at the components of what most of these programs have.

And they typically have practice, the workout. You could say, discussion around the damaging effects of stress and the beneficial effects of mindfulness training, and then some discussion around the practice itself.

So some of the initial studies were just to say, okay, let's have, let's take these 24 hour programs, break them apart. Let's have first of all, let's just have less talk, fine. We got rid of eight hours. So now we are down to 16 hours. If we look at what's left in the 16 hours, it's still practice related discussion and the practice itself.

So I wanted to parse the two and have a practice focused eight hour training and a what I call didactic or merely conversation focused training and see if it's like physical exercise. None of us would want to pay for a personal trainer to go to a gym and then tell us how great exercises are.

I don't know, just do the reps, show me how to do them and do them with me or guide me to do them. And essentially that's what we found out that the practice focused program is much better than discussing all the benefits about the practice or even discussing the practice itself. So that gave us a clue.

Like we might be able to go all the way down to eight hours and then it was just a matter of figuring out what are the key practices within this that people should be doing? How much of the eight hours should we spend practicing? And at some point what we realized just to really foreshadow, I'm describing eight years of research in a couple sentences, but that just says it makes sense. And really following the lessons learned from physical exercise makes

sense. You want to do the exercises, you want to focus on the exercises, make sure they're done well. And then the exercises themselves are part of this sort of Canon of mindfulness practices. Things like focused attention practices, like breath related, focused attention, and then open monitoring practices where we're practicing, allowing whatever occurs in the mind to appear without holding onto it.

But one of the things I wanted to just mention. As we've found ourselves to be successful in these variety of settings, a big problem emerged, which is that more people want the training, but we don't have a lot of trainers because very few people know what it's like to be a firefighter and a mindfulness expert, or even a medical practicing physician and a mindfulness expert or in a business context, a sales rep and a mindful.

So what we're learning is that expertise with regard to the context really helps fast track the learning. Cause I don't need to train somebody on what the challenges they are experiencing in their particular professional setting. The trainer already knows, but very few people that have that context, knowledge have mindfulness expertise.

So one of the things we've done over the last several years is build a program from the ground up, something called mindfulness-based attention training. And really it just came through a series of projects we were doing for the DOD to say, let's try to get the most sort of lean and straightforward training programs so that people that have context expertise in a variety of settings, school, teachers, nurses, medical school, faculty, military service members, military spouses, we just did a project with them.

Let's have a program. We can train them to get the mindfulness familiarity in as little as 10 to 12 weeks. Oh wow. So they learned the practices for themselves. The program is mindfulness for themselves, then they take another six to eight weeks and learn how to deliver it. And then let's test out in those same attentional metrics to see if they're changing.

And I'm very happy to see that we're seeing the same kind of benefits. So now trained trainers can deliver mindfulness training in these very contextualized settings. And we see benefits.

And what kind of benefits are you seeing? What is the actual outcome variable?

Yeah, the outcome of various variables would be how much mind wandering there is during an experimental task of sustained attention ,performance on the sustained attention task, mood, depression, anxiety, stress levels, positive and negative mood and social functioning.

What's the quality of your relationships? Do you feel like there's more team cohesion and actual performance? What I mean by that is, for example, we just did a project with military service members where their weapons qualifications, like where they have to actually, shoot when they shouldn't or not shoot when they shouldn't, those scores were improved.

So there's more precision of how they're functioning. Same thing that's known for academic achievement can be benefited by mindfulness training. So it's almost like the major domains of the field of mindfulness research benefits for the body, the mind, relationships and performance we're looking into now with this train the trainer approach to see if a minimum effective dose can actually provide these benefits.

Oh, that's wonderful. And do you see those benefits lasting over a period of time? So they go through the training and then they show improved performance, improve attention, improve mood, but down the road, What do you find out?

Excellent question. Cause that's the thing, right?

It's great that while we were with you and you were doing the practices you benefited, that's awesome. What happens when you, when we're not with you anymore? So unfortunately what I can tell you is that when we no longer are guiding or proctoring practice, daily practice, which we haven't talked about yet, but I should just mention that when we disengage from them and they no longer practice the effects go away.

But if they no longer practice daily meditation, mindfulness. Okay.

Correct. If they no longer practice daily, the effects go away. Those that actually are supported to practice and practice daily. They maintain the benefits. The longest we've tracked is probably about four weeks out, sometimes eight weeks out.

But when they don't practice and it ends on an individual level, they don't maintain the benefits, which at some level it's like that makes sense. If the way that we're thinking about the brain being trained is like the body, you could be a olympic level athlete, but if you're a couch potato for a couple of years, you're not going to be able to just get back out there and, nail it on, I'm running a marathon or whatever you're doing.

So that I think is the next kind of frontier. It's like, how do we best support people after the formal training is over? And we're developing . We have an app that we've developed. It's just supportive ways to get people to continue practicing beyond our touch point or footprint with the groups that we're working with.

But the other thing, just to say, because we haven't really talked about practice, we did a lot of trying to get the formal program condensed, as you remember me saying, mindfulness based stress reduction, it requires 45 minutes of practice a day. Nobody was doing that. So we started taking sort of a data emergent approach, like what are they actually doing when they actually benefit?

And the number that we were triangulating on was about 12 to 15 minutes a day. And so now our studies don't even ask people to do more. I do it every day, guided practice, 12 minutes a day. And sometimes we'll push it to 15, but so we're asking them to practice three to five times a week, about 12 to 15 minutes a day.

And when they do that, you see these beneficial effects now just like physical activity, the more they do, the more they benefit. I see this as like an entry ramp, almost like a couch to 5k to get yourself in that mode of learning about mindfulness and practicing, and then go as far as you like after that, because it will continue to benefit.

I wonder if it's just like exercise too. Once you actually get off the couch and you do the 12 minutes, then doing the next one, you start to see the benefits, right? Oh my gosh, this feels so good. And I imagine it's the same for this. You start to see the benefits after 12 and to be able to start for 12 or 15 minutes.

That's doable, thinking of the students out there or the teachers under intense stress right now, being able to do that.

It's the main thing. It's like mindfulness to be the most beneficial thing. But if the bar is too high for people to begin with and it's a waste of effort, that was a serious question I wanted to undertake.

Not because I think that things should always be the minimum effective dose, but because I wanted people to feel welcomed and capable from the beginning, and I didn't want to offer them so little that it wasn't going to be effective. So I wanted to know from a rigorous scientific point of view, let me see what is the number of minutes that actually it takes to be a minimum effective dose and don't do less than that because probably it won't benefit.

You also take the longest rounds that you need to get to that minimum dose. Because if you start out by saying, I'm going to do 12 minutes a day, you may give up the next day. So start out with three minutes a day, start with a minute a day, ramp yourself up to 12 minutes, maintain there, and then go beyond that if you choose to.

So it really is to make it much more practical and accessible. As long as our data supported it, it was worth it.

What I love about that is it makes it so doable for those of us out there. Also, for those of us out there, thinking about even trying to get their attention in a relationship or in the listening aspects and things like that, that people are complaining about because you can't show up with your presence and this is a real doable, this is like this.

Let's change your personality. Let's go back into your childhood and see if we can alter it. So you show up better in your relationships. This is instead something that you can do 12 minutes a day, build the exercise that you will really intensely increase your presence inside yourself, but also in your ability to focus in your relationships or at work or at your studies, it's a real doable well-researched outcome that you can start seeing the benefits right away.

Yeah, that's the subtitle of my book is find your focus, own your attention, invest 12 minutes a day. And it really was like, that's the reason we're doing this. We're doing this because we want to have more agency over our mind. And most of us could say, okay, I'll give it a shot for that amount of time. It wasn't done a minute a day because we were finding that wasn't sufficient.

It was the threshold that we saw in our research over and over again is a range for seeing beneficial effects. So yeah, it's absolutely an invitation for people to try it out.

So your book is a, and of course we will have the book in the show notes, so you can find it, but your book is peak mind. And in the book you walk through the how- tos, right?

We can't talk to you for a whole another hour easily. But your book really does show how to do mindfulness practice in a way that is going to bring an outcome to you.

And definitely, yeah, not just one, but a suite. So really following the same suite of practices that we've given all these groups, whether it's football players, military spouses, HR professionals, students, undergraduates it's the suite that we offer over and over again, that we've practiced about 12 to 15 minutes a day.

People find beneficial effects. So the book is actually my journey into explaining why these things, just like conversation we had now, but understanding the nature of why the mind is this way, what it's like, and then what we can do to actually work with our own mind and exercise that using this mindfulness practice, this sweet, very helpful.

I'm excited to read the book and to plan that sort of try to start my own process of shooting for 15 minutes. I am. I'm one of those. If I had to start with 45, I would actually do some meditation. Let me ask you that one question. Do you equate meditation and mindfulness as one of the same people often say meditation mindfulness?

Yeah. Yeah. So mindfulness is a sub type of meditation. I would say. It's funny that with the Olympics going on, so mindfulness, sorry. Meditation is like the term sports. It's a broad umbrella term. And to me, my meditation is engaging in specific mental practices to cultivate specific mental qualities.

It's like doing some stuff. Daily regularly, repeatedly to get a particular outcome. Now that's the most, I don't know, it feels a little sterilized to say that, but we know that meditation is part of the world's wisdom traditions. Literally every cultural, spiritual, religious tradition has an aspect of doing these things to get this outcome for the betterment of your mind, for your peace, for the wellness of the community, et cetera.

So it is a broader category and the key is the details. So just like sports as a category, meditation is a kind of activity you do, but being an Olympic level gymnast is very different from being an Olympic level sprinter or, whatever a swimmer and what you do matters. So mindfulness meditation, there's many forms, contemplative practices.

So there could be compassion meditation, transcendental meditation, mindfulness meditation is this specific set of practices that are aiming to cultivate presence centered, nonjudgmental attention. So it's a mental mode. It's a way of making the minds and intrinsic capacity we have. If we were never trained on mindfulness, we still have the capability of being in that mode, but to hold it there, to cultivate it, to have it be there on demand and on command requires meditation practice.

That makes a lot of sense. That's really helpful. Even as you were saying it, as to hold it there and hold it there, I was realizing how much it does take time to build that muscle. Doesn't it, as you, even as you were saying those words and like to hold your attention in the present for 12 minutes and to keep gently bringing it back it's a challenge, but you really highlight it's a worthwhile one.

Absolutely. Thank you so much for being on the show. I really appreciate it. I think our listeners are going to gain so much from it and for you to take your time and come on. I appreciate it.

I'll absolutely. It was a lot of fun.

Alright, thank you so much. And for those of you that have joined us today and you find this useful as I did, please think about rating and view and send it on to somebody who might until then I'll see you around the van.

Thank you so much. I know we kept you. I just was starting to get anxious cause I really didn't want another meeting. I know I'm going to let you off real quick. Thank you so much. Hopefully we hit all the marks.

Yes we did. Thank you. And seriously, put me in contact with your daughter if she ever wants to take psych classes, or if she's looking for research opportunities center my way.

Oh, that's so sweet. And when you're in town, for parent's weekend, come see us in the lab. That'd be fun.

Oh, I would love to see the lab. I really would. I'm very intrigued by it. So let's just stay in touch. Okay. Thank you. Take care. You too.