

The Neuroscience of Attention

An Interview with Amishi Jha and Ryan Stagg

[0:00:08.6] Ryan: Welcome back to the Science of Meditation Summit, today's topic is attention and balancing focus and relaxation. I'm really excited today to be able to have a conversation with Doctor Amishi Jha, who is an associate professor at the University of Miami where her main area of study is attention and she's also involved, really closely, with mindfulness based attention training. So Amishi thank you for taking the time to be with us today.

[0:00:37.7] Amishi: Happy to be here.

[0:00:39.6] Ryan: So I thought we could start with talking about the critical role of attention, so maybe as someone who's really committed a large part of your life to the study of attention and towards helping people train in attention, you could say what attention is and why it might be so crucial.

[0:00:57.6] Amishi: Sure, so in my lab as you mentioned, the University of Miami, I'm a neuroscientist and we study the brain's attention system. We study how it's put together, how different brain networks are involved in allowing us to do this thing called attention as well as what compromises it, what depletes and degrades it. And on the upside of course is how am I able to train attention to protect against its vulnerabilities. And it is, it's a very big system, it's a very powerful system, but doesn't actually fully develop till we're in early adulthood, about the age of twenty five or so. So when we use the word attention we kind of all have a sense of what it means, right, it allows us to connect with the world and it kind of came about through our evolutionary history, to solve a bigger problem that the brain had, which is that there's much more information out there in the real environment, in the real world than we can fully process at any one time. So we know, sort of again, all from our own experience that attention is necessary for everything we do, from the ability to focus or to learn or listen or communicate, as well as our ability to regulate our own emotions. And because there's so many different things that attention does we can start, at least in the study of it, think about parsing it into different systems and subsystems and sub processes, to understand how it all connects to orchestrate these complex functions. So a little bit about what these different subcomponents are. So one way to think about attention is something we call the orienting system and I like to think of it as the brain's flashlight, so if you're in a darkened room and you point a flashlight somewhere you know that your ability to process information, illuminated by that flashlight is going to be better than everything else that isn't and that's what orienting does, it allows us to direct attention wilfully and have privileged processing of the information that we pay attention to, so that can be sights, sounds, or things in the environment, or we can actually take that flashlight and direct it internally to our own ideas, emotions, concepts, so it's a pretty versatile system, but it's main thing is some things are privileged over others. So I think this flashlight analogy may be a good one to kind of hang our hat on with regard to what it is. We can contrast that to another brain system of attention called the alerting system and I like to think about the metaphor for this system as sort of like a flashing yellow traffic light, right, so you're driving along and you might see a flashing yellow light, what does that typically mean? It's saying to you, okay, be cautious, be aware of what's happening, but it's not directing you to what it is that you should focus on. So in some sense it's allowing our attention to stay in this readied state, so we can direct it anywhere we want when we need to, but we don't exactly know what that's going to be yet. And then a third way to think about attention, kind of the third main system is something called the, kind of the juggler of the brain, something called the executive control. And executive control, that term executive really is kind of like the way we think about it in our common everyday use, in the context of a company for example, right, so what does an executive do? That person is

involved in assuring that the plans and the execution align, and that's what the executive system of attention does, it's like a juggler in the sense that it's making sure that all these different components that need to be accomplished without any of them failing and the balls dropping so to speak, so it allows us to plan, to maintain our long term goals, our short term goals and make sure that our behaviour aligns with those. So I think that gives you a sense that it's a pretty big system right, so orienting, alerting, executive control, are cut all related under this broad topic but they're different from each other.

[0:05:03.1] Ryan: Interesting. So maybe we could just do a little... get a general sense of where our attention is in general right now? Are we generally paying attention to what's going on, are we getting maybe more caught up in that kind of alert attention or is there any research going on about where is our attention on a day to day basis as a general population?

[0:05:25.7] Amishi: I think most of us would say it feels pretty fractionated and fractured and distracted right, and our experience in many cases feels like we don't have a lot of control over this precious brain resource of attention and all three of those systems, orienting, alerting and executive control can be problematic, so for example when we have a particular preoccupation or something that's bothering us we can think of that orienting system, that flashlight kind of getting stuck on certain kinds of mental content, whether it's negative thoughts and feelings or a bad experience that's happened, or worry, for example. So that would be, actually that system becomes quite compromised in disorders like depression where it's almost like we can't yank it away, something that people refer to as attentional rubbernecking, where the topic, the content is kind of dragging your attention and making it so it's stuck. We can also think about, like you said the alerting system, so everything in our lives may feel like a flashing yellow light, like you're kind of always on high vigilance, where you don't really know what's going to come next, but you have to be ready for it, and that exhausts us frankly, and a lot of that has to do with things that may not happen, just our considerations of what might occur, what might come our way. And that's, you know so that's very common in things like anxiety where the alerting system has sort of gone awry. And then of course, with the executive system we can think about many instances where our plans and our behaviour don't align, and the way I liked to describe it is more like an overly rambunctious juggler, right, like really excited about all the different possibilities or frantically trying to achieve all the possibilities but not always making sure that the plans are being held and guided fully, and we see problems with executive control in disorders like ADHD. So all of these systems can have problems, they're related to clinical disorders, and with your question with regards to how often we're actually paying attention, some recent research has been trying to qualify that and what they've done in many of these studies is actually have people participating in the study by agreeing to have an app downloaded on their phone, which will allow the researchers to text them sort of any time of day or night, during normal kind of waking hours and ask them a couple of questions. So the questions are; where is your attention right now? Is it on the thing you're doing or not? And actually what are you doing? You know, from various categories of things you could be doing, and what's your mood? How do you feel right now? Negative or positive, sort of like a sliding scale of what you might... how you might respond. And what those studies report is that about half the time people are not having their attention on the thing they're trying to focus on in the moment. And unfortunately that is so common that a lot of interest has come up in understanding what the kind of psychological or wellness consequences might be of being in this fractured, distracted state where your mind and attention aren't where you're wanting to place them. And those studies have really tried to link this relationship between where you say your attention is, meaning if it's on task or off task in kind of a binary way to think about it, a wandering mind is an unhappy mind, this notion that there are costs on wellbeing, of being in this sort of attentionally high jacked state of our attention not being where we want it to be.

[0:08:55.3] Ryan: So it seems to me like meditation might be a good way to get a sort of sense of what your attention is, like the sort of quality of your attention. I know the first time that I ever tried to meditate I sat down and I very quickly had this experience of rushing thoughts, of for a moment maybe remembering to try to focus on my object, which was the breath and then immediately having a thought about remembering that I you know was going to move my attention back to the breath and there was this really torrential sort of down pouring of thoughts going on, and so like it's sort of a way to check in and it seems like maybe that's related more with the orienting of like am I actually able to orient towards the object and then also maybe starting to work with executive control of being able to actually hold that thing with that sort of attention, does that sound right?

[0:09:45.9] Amishi: Yeah, I love the way you're connecting the dots and I think that kind of a typical mindfulness breathing practice really does give us a snapshot into all three of these systems, right so let's just describe what that is, kind of like what you said. So if the instruction is just have, for the period of time we're going to perform the practice, your goal, your task is that you're going to sit for a few moments, let's say ten minutes and for that period of time you're going to devote your attention to focusing on the sensations of breathing. So you're very specific about that it's not like whatever comes up I'll focus on, it's breathing and you might even be getting more specific, the coolness of air in and out of your nostrils or your belly moving up or down you might choose when in time is going to be the inhalation, the exhalation, so you get very precise about where the focus is going to be emphasised, which is like you said the orienting system. But the instructions also kind of notice where your mind is, are you maintaining your goal to have that be the focus, or is your mind off wandering away. So the noticing is really much more tied to alerting, it's like have your attention kind of in this watchful mode of what's happening, and then of course the instruction would be that if you notice your mind has wandered away, which undoubtedly for all of us happens, then simply return it back. So that third bit about controlling mind wandering is actually more tied to the executive control in some sense because you know what the goal is, you're seeing if your behaviour aligns with that goal and you're course correcting if it doesn't. So I think that one way that we've been thinking about how mindfulness training and some of these core foundational mindfulness practices may entrain or boost our attention is because it's exercising these three systems kind of over and over again during the formal periods of practice.

[0:11:33.0] Ryan: So one of the instructions I hear a lot in meditation instruction is to like really set a clear intention right at the beginning that my intention for this period of sitting will be to follow my breath and to notice the temperature at the tip of my nostrils, something like that, so from what you just said to me it sounds like intention is probably the orienting system of attention. Is that accurate? Maybe can you speak a little about how important intention is?

[0:12:00.7] Amishi: I think that in one's practice intention is absolutely key, right, I mean whether it's the intention to follow all of the instructions we're going to have with the broader intention of whatever we're doing will be to the benefit of those behind us right, so I think intention is absolutely important, whether I would say it's tied to one particular system is a little bit tricky, I think it kind of cuts across a lot of these different aspects of what intention is, it's distinct from kind of the goal of just checking whether you're on task or not, intention is under the broader umbrella of why you may sit down in the first place to do a practice. And that's what, I always think about this term <inaudible 0:12:43.4> for mindfulness, right the <inaudible 0:12:45.4> as this sort of remember and in some sense remember is sort of like why you're even sitting down to practice, the broader intention behind your efforts, but you can also think of remember as remember the goals in this moment of what you're trying to do which is hold your attention steady on the dedicated object. So I do think that these are very much related,

unfortunately we have to try to make sure we're holding intention and attention both when we're practicing to get good results and benefit from the time we spend trying to do that.

[0:13:19.2] Ryan: So maybe we could go a little bit deeper into mind wandering and why mind wandering might be problematic and why this whole endeavour of training our attention might be worthwhile.

[0:13:30.5] Amishi: So as we talked about, it happens quite often, about 50% of our waking moments some have estimated, maybe between thirty and sixty in some range of studies that have been done. So that's a lot of time where our mind isn't where we want it to be, and I want to just make clear, when I use that term mind wandering, I am constraining the definition to having a task that you want to engage in and not having your attention on that task, or other terms for mind wandering have been off-task thinking, or a spontaneous thought that might interrupt what you're trying to achieve. And sure, we know when this happens during our practice, our formal mindfulness or meditation practice, but this happens to us all the time, like think of the last time you took a long drive somewhere and you have no idea how you got there, right, or you open a page of a book and you're like I've been on this page for five minutes, I have no idea what these letters are that are appearing before my eyes. So we do this often where we're kind of pulled away from our immediate sensory experience, and that is unfortunately one of the costs of mind wandering, so when we have these off task episodes, the idea is that our attention has been hijacked away from our current perceptual milieu and is now focused instead on internal preoccupations or internal thoughts, feelings, sensations. Now in many cases where we have this kind of free flow of self-directed or internal thought, it can be very productive right, so think of the last time you've decided you're just going to spend the morning kind of, I don't know if you've ever had a, many of us don't have a chance to do this that often, but I'm going to just take ten minutes and just go for a walk and let my mind do whatever it wants, so you know whether it's in the shower in the morning or just having a leisurely walk through the park. In this case you can fully allow your mind to wander, let it go wherever it wants, let the free flow of consciousness happen, you may or may not at moments be attending to your external environment, but there's no problem, because the dedicated task for that time period is to let your mind do that, wandering and that's what we would call in psychology-speak not mind wandering, which technically is this kind of off-task thinking, but we refer to it as conscious internal reflection, which is really when the task itself is not to do something else, but to do this and allow yourself to do that and when we, when people do this it's quite beneficial, when people have conscious internal reflection or daydreaming, in more colloquial terms it can help creativity, it can help mood, it can help positive visioning of outcomes, problem solvings, it's quite good to do that and quite beneficial. But on the flipside, when you do have a task that you're trying to accomplish and your attention has been hijacked away from that, there are problems, so performance gets worse on the task you're trying to accomplish, something called perceptual decoupling happens in which, as I said before, your attention which processes input from the environment is now no longer doing that as well, it's almost as if sights, sounds, and stimuli from the environment are kind of subdued or not processed as fully. We could think of it back to that kind of analogy that I gave of the flashlight, right, so if your job is to manoeuvre through the environment, but the flashlight is pointing inside, you're going to have a very hard time doing that successfully, you will make errors, you will bump into things, so to speak.

[0:16:54.1] Ryan: A sort of related topic I guess is rest and relaxation, and I've heard you speak a little bit, and I thought it was very interesting that what we think we're doing when we're maybe resting and relaxing sometimes might not actually be that relaxing, maybe you could explain that a bit.

[0:17:09.7] Amishi: Yeah, so this is, this we kind of have to go into like the history of brain imaging research to think about this a little bit, how we came to understand this. So early on in brain imaging studies, when people would go into a functional MRI scanner for example, we were just trying to figure out the lay of the land. So what we knew from studies in brain damaged patients and stroke patients is that there are brain systems and brain regions that are involved in paying attention, directed attention, so for example the frontal lobe, the parietal lobe may orchestrate a network that allows us to fully pay attention. So we bring people into the scanner and we have them do tasks that really require them to focus and pay attention, and we do them for constrained periods of time like 5 minutes of intensive attentionary task, something like a videogame that they're seeing on a screen while they're lying in the scanner, and then we contrast that with 5 minutes where we just say just rest, and we would be pretty unconstrained in what we're saying to do, just rest, and contrast that with this demanding thing they just did for the last five minutes. And we have let's say over thirty minutes, five minutes of attention, five minutes of rest, and so on, kind of cycling back and forth. And then we look to see what the activity profiles look like, contrasting periods of attention and periods of rest. So when we look at the brain areas that were active during the attentionally demanding tasks, we kind of just subtract away all the areas of the brain that were active during rest and what we find is that the brain imaging tools were working, that regions of the frontal lobe and parietal cortex were more active during this period of attentionally demanding task than rest. That was interesting, it was like ok cool, we got confirmation that this methodology is tracking what we know from other neurological studies of the brain. But what was interesting is that when you do the opposite comparison, are there brain regions that are more active during rest than during attentionally demanding tasks, you find that there's this identifiable network, something that's now kind of being called the default mode network. And so we have this series of regions is activated, and they're more active during rest than attentionally demanding tasks and they're actually anti-correlated. So when you're paying attention this whole network that's active it is suppressed, and when you're in rest, the attentional network, some set of it, is also suppressed and this anti-correlation is kind of a common feature of how the brain operates with regard to its network of processes, so then people started getting very curious at what is this set of regions that keeps showing up during rest, what is it involved in doing? And this is kind of where a lot of interest and attention in research is happening now, we've now managed to understand that this default mode network, this thing that the brain activates kind of by default at rest, is further divided into even more sub-networks, but the basic story is that the brain regions that are active during rest are regions that have to do with conceptualisation, mentalising, memory, self, you know the kinds of things that you can imagine you're doing if you're just in a scanner with nothing else to do, it's like oh, I'll think about my day, or wasn't that funny that that happened, or I don't like that I'm in this scanner. All that kind of chatter that happens to us whether at rest in a scanner or maybe even during our mindfulness practice is sort of the default of how we operate and what we're learning is that it's not a quiet, peaceful time when there's not a lot of mental activity happening, it's quite the opposite, it's quite a robust period of mental activity, which kind of hinges on self-related preoccupation to some extent.

[0:20:55.4] Ryan: So do we know how that affects our mental energy? Like is spending a lot of time in the default mode network, is that... are we actually rejuvenating or might it be more rejuvenating to sit down and focus on a task like a colouring book, which are so popular right now, is there any research around this?

[0:21:14.3] Amishi: Well, I'll tell you this right now, what we know is that the default mode, the nodes in the default mode that are active typically, in typically healthy people don't look quite so normally functioning in different kinds of disorders, so the relationship between the brain regions that are involved in attention and default mode with this kind of anti-correlation, is not

normal in people suffering from things like depression or anxiety or attention deficit disorder, so there's something about the way that that default mode functions and its relationship to these other regions that is very important. But I also think there's a reason its activated by default, I think it's probably absolutely key in the way we learn and process information that we're experiencing as well as kind of addressing our normal preoccupations, right, I mean whether that's something that was positive, or typically that adds up as something that's not so positive, that may be kind of out of the mind, is showing up in the way that the default mode may be functioning. So I would say yes, rest isn't as restful as we thought, and it's definitely not occurred at a time when our mental engagement is offline. But I hope people are starting to get an understanding that the brain is never really offline unless we're dead. There's always going to be activity in the ten percent, the myth that we only use ten percent of our brain is a myth, we use all of our brain and our brain's always active, whether we're awake or asleep, and it's organising these networks that talk to each other and have sort of antagonistic relationships with each other to kind of allow us to have predominant conscious experience and function kind of normally.

[0:23:06.7] Ryan: So maybe now we can turn towards the trainability of attention and is there good evidence that attention is in fact trainable and what sort of methods are we looking at to make that happen?

[0:23:20.9] Amishi: Yeah, I think that's the hopeful part of this whole thing, so if we mind wander a lot, if unfortunately mind wandering results in our performance failures and our negative mood and it's happening more often than we like and we're not aware of it, that's sort of the down side and one of the things that we've learned in my own lab is that mind wandering may just be part of the human experience, but it can become very problematic when we're under high stress. So if we're individuals that have high stress professions for example, when we work with lots of groups like that from students to first responders to military service members, when people are undergoing high stress, that normal variability in paying attention and wandering and paying attention and wandering can really shift it's weighting so that you have more times where you're mind wandering, and more stress corresponds with more mind wandering. So one of the things we're very interested in is to see if we can kind of correct that so it's not so off kilter even if people are experiencing high stress. And many people have tried to, over the kind of decades of research on attention, once we figured out how powerful it is and how it's necessary for everything we do, and also understand how fragile it is, figuring out ways to train it is so key and people have tried to do this through psychotherapy, through medications, through more recently brain training apps, computer games that help us potentially grow our capacity to pay attention and part of what we're trying to add to this mix is this possibility that mindfulness meditation may be a helpful tool to train attention, and it's based on the same thing I said earlier, even in a foundational practice of mindfulness of the breath, you can see how orienting, alerting and our executive control are all being exercised over and over again, you may think that doing this repeatedly may strengthen attention and if people in high stress professions are more vulnerable in their attention kind of degrading so they're mind wandering more, giving them the opportunity to practice these exercises before they get into the really high stakes situations, or even while they're in them, may bolster their attention, so you asked about the evidence and I think that this is a very big area of research, broadly speaking is how we can improve people's attention. What we've found in my lab and now I would say many other studies are starting to find is that yes, it seems that when people engage in mindfulness training, there are improvements in performance measures of attention, so whether that be reductions in how often their mind wander, how well they perform on a task and even kind of related concepts like working memory which I haven't really talked about yet, but I'd like to say a little bit about it because it really holds hands with the attention system, it's

sort of a cousin of attention or a close neighbour of attention, and working memory is the ability to maintain and manipulate information over very short periods of time. So I think of it as sort of the mental scratchboard or the whiteboard of the mind, where I'm using a computer analogy maybe the RAM of the mind, where you've got, you kind of throw things up there for short term use, you don't want to remember them forever, right, so think of the last time you were, I don't know, had to deal with a cashier or somebody at a counter at the airport, somebody you have to deal with, you want to know their face right now, but do you need to know it forever? Maybe not, but you'd better know who it is that you're dealing with right now, especially if they're all wearing the same outfits and look basically the same, who is it specifically, so that's where your working memory could be useful, to get a real snapshot and hold that face in your mind. Or things like calculating a tip at a restaurant, doing simple math, or more profound things like problem solving, we use our working memory and working memory and attention are very much related because as you can imagine attention is the input into working memory. You want to know what it is that you want to maintain and manipulate over short intervals and if attention is a problem you can't hold information in your working memory well, because you'll be off. So there's also evidence that suggest that mindfulness training can help working memory and strengthen working memory, even over high stress intervals.

[0:27:46.7] Ryan: It makes me reflect on my meditation practice, how that working memory might come into play, just that you're continuously familiarising yourself with the object of meditation and just to have that moment to moment, it's sort of, there's like some reflective process, it's hold it when you really start to sustain attention over a continuum, that there is a little bit of continuum like remembering happening at some level.

[0:28:09.0] Amishi: Absolutely, yeah, absolutely. I think that that, even in the instruction to select... initially to select what's important for your practice and then maintain it there, I think that that's what you're kind of talking about so it's maintaining what the object should be, but it's also more broadly maintaining the intention for why you're there in the first place, right, so I think it connects to many aspects of practice.

[0:28:34.3] Ryan: Yeah, so just a little earlier you started to mention high stress environments, so another one of your areas of study is resilience, so maybe you could just explain what do you mean by resilience and why is that so important?

[0:28:47.7] Amishi: Yeah, I think you could think of resilience as this ability to maintain or regain those capacities that are really at risk for compromise over high stress, we could think of it as bouncing back. So the capacities that I'm particularly interested in are cognitive capacities like attention and working memory, we know that high stress and high demand can deplete these resources. If you put people, you know whether they're an <inaudible 0:29:19.6> this semester or soldiers going through deployment, the amount of attention and working memory that people have at the start of that period of high stress is more than a bit, so we know that attention is vulnerable and when I think of resilience I'm really considering how you might allow for attention not to degrade or be depleted but actually maintained over that time, because unfortunately even though it's so vulnerable to stress and overload it's the thing you need to deal with the stress and overload of the situation. So it's almost a double whammy, where you need it the most, that's where you may have the least of it. So that's what we're interested in with regards to resilience, is offering people opportunities to receive mindfulness training as they're about to approach a high-stress period or actually even when they're in it to see if we can hold those capacities and protect them against decline.

[0:30:15.2] Ryan: So another way that we sometimes I think try to deal with high stress situations, I think of when I was a college student, is by multi-tasking. Because there would be

all this pressure to get all these things done and our attention ends up sort of being divided between different tasks all at once, because there's the pressure to do them all at one time, so maybe it's like what the viability of multi-tasking is as a solution to high stress environments.

[0:30:41.0] Amishi: Right, so I'm going to thank you for mentioning multi-tasking, because even the term is wrong, we don't multitask, multitasking is a myth. The thing the brain is actually doing is task-switching, so remember back to this flashlight analogy, what we do when we feel like we're multitasking is we're not doing ten things at once, we're actually engaging in one task, orienting to one task and disengaging in that task and moving over to another task, which is what I mean when I use the term task-switching. And it ends up that that repeated engagement, disengagement, engagement, disengagement is very fatiguing for our overall resources. So not only is it fatiguing and we know that because we feel kind of spent at the end of the day, but it can actually lead to a lot of errors and what other studies are showing is that when people have the desire to multitask, their comprehension of information is very different than when they instead decide to focus. It ends up being a much more superficial level of understanding than really deeper conceptual understanding of what's being presented to them. So that's a problem when you think of students for example trying to multitask or anybody that wants to learn and fully do well on the task that they're trying to do. So if you can find a way to minimise your own, first of all it's not... you know be clear, like, it's not a good idea to multitask, even though it's not really multitasking, it's task switching, so try to minimise it. Try to figure out a way to set up your environment so that you're not forcing yourself to have the email button open, and your cell phone binging and also trying to read something on your computer screen or write, you're basically setting yourself up to be more depleted at the end of that period of time than if you just basically restrict everything to one thing, so that maybe you're only going to do email for ten minutes, you're only going to do the writing project for ten minutes without having the requirement of always being available for other things, because it does kind of not only exhaust this orienting system, but it taxes this alerting system because you'll get pulled by things, you'll be forced to disengage even if you don't want to disengage because you've made your environment such that you're allowing yourself to be pulled away.

[0:33:00.0] Ryan: Yeah, so it sounds like the advice there is that it's really important to try to organise your sort of to-do list into chunks or like sections where I'm just going to focus on this thing for this time, I'm not going to get pulled away into checking email or answering other questions or taking phone calls, and you know I really resonate with this because right now we're putting this summit on and there's so many different aspects of it, in the course of the day I feel like I'm switching my attention between so many different areas, and I start to notice that it seems to be that rapid fire switching between things that leaves me at the end of the day almost cross-eyed, sort of.

[0:33:34.2] Amishi: Right, and unfortunately you know some periods of life when we can't help it, we have to put ourselves in that situation, but just to notice when it might be possible to restrict our willing engagement in that, our willing participation and definitely to start changing our kind of cultural notion that this is the right way to be. A lot of times I get people that will ask me "My fifteen year old has no problem, he'll have like the TV on and he'll have a podcast on and his computer screen and he'll be doing homework and he'll be doing this" and I'm like "It may seem to you that this is ok and they're managing it well, but it is changing the way in which they're processing the information." So it has its costs and sometimes when you're in the situation you're in you can't do much about it but when there are opportunities to change this mode, I would strongly encourage you to do it.

[0:34:29.8] Ryan: Yeah, that seems like very helpful and practical advice, and you know I thought for this last bit we could talk a little bit about another practical application which is mindfulness based attention training. Maybe you could just say what that program is about and how it's currently being implemented?

[0:34:46.8] Amishi: Right, so mindfulness based attention training or something we call M-BAT, is a program that we developed as part of a series of grants I've received from the Department of Defence, and the intention here is to figure out a way to offer mindfulness training, kind of riding on the shoulders of programs that are very well established and a lot of empirical support like mindfulness based stress reduction, which are offered in a secular fashion to you know lay audiences in many different contexts, and to use the lessons learned and the structure of MBSR to come up with application in applied settings in which people may not have the forty hours or eight weeks to spend learning mindfulness training, and to determine, if you're going to cut the time, to determine the answers to questions like if you're going to cut the time, what is it that you should have people do. And so some of the questions that we've been asking are around should you emphasise if you've not got forty hours, but let's say eight hours, which is how long that program is, what should you emphasise? Should you talk to people and discuss with them the downsides of stress and the benefits of mindfulness training? Or should you instead spend the bulk of the time together in the formal class periods, doing exercises together? Right, so that's what we're trying to do, is trying to figure out what the right amount of practice would be on a daily basis that you assign people, how you should train people in the class setting and also who should be the trainers? So one of the questions that we're asking within that project is can we train people that don't have a lot of experience with mindfulness, but have a lot of kind of context familiarity with these groups that we're working with, as I mentioned, whether they're military spouses or military service members or fire fighters or police officers, should we have people who know those communities and the life of what it means to be a member of that community, the challenges those communities face, and train them in mindfulness training. Or should we instead get people that are very well familiar, that have lifelong experience knowing mindfulness themselves as mindfulness practitioners or trainers in the late context. So one of the projects that we've done is we've compared offering mindfulness based attention training to soldiers with this MBAT program contextualised for that community, 8 hours over four weeks, they get four two hour sessions, we've compared when people that are military... not community members themselves but they're sport psychologists who work regularly with soldiers to help them with performance enhancement. We'll be comparing training them to deliver this MBAT program versus people that offer MBSR, certified MBSR trainers who really know the ins and outs of mindfulness who were also taught to deliver this, but really don't have much familiarity or understanding of the military context and kind of compare head to head which trainer is going to have a better effect and the relatability ability to deliver the training. And I think those are ways we can get into answering questions about scaling and delivering this and offering this to many different kinds of communities, so that we are contextualising the program itself but also the delivery of that program so it's most accessible to the people that want to learn about it.

[0:38:07.8] Ryan: So the prospect to me of mindfulness being delivered really broadly across our society in these different service industries is a really exciting notion, but there's also like I've seen critiques of mindfulness moving into the military, it's sort of been one of these points that these critics are using. And I wonder if maybe you could just offer us why, like another vision, why might this be an exciting thing, why might this be such a positive thing?

[0:38:34.9] Amishi: Well and I think that broadly speaking we want an opportunity to offer people that are being of service to us the ability to protect their own well-being. And you know,

I'll get to the military service members in a moment but I think the broader notion is that there are so many professions in which people have to endure very long periods of time in which the demands don't let up, whether you're a trauma surgeon, whether you're a relief worker, whether you're a first responder, that's sort of the nature of what the professional requirements are. And what do you do about that? Given what we know about mindfulness training's benefits, right, so we know that mindfulness training in the broad, kind of clinical sense is beneficial for people's wellbeing, we know that it can protect against, moderate levels of benefit, but it can help people protect against anxiety, depression, chronic pain, substance use and there's so many contexts in which we know it's a viable tool. So if we know this and we know there are communities that are suffering because of the nature of their profession, which is to be of service in many respects, why not offer them the opportunity to learn it? And I guess from my broadest, kind of ethical stance is I don't think that these practices should be privilege to only a subset of people, I think that they are available for all of us and that what you do shouldn't mean that you are no longer going to have access to something that can help your own wellbeing, so that's sort of the broader picture. With regards to military service members themselves, when I started out working in this context with military service members, I mean we'd already been in active conflict as a nation, in active wars for several years and now we're talking about twelve to fifteen year where our military has been non-stop in a multi-tour, highly deployed, recurring deployment context, and we all know what the consequences have been, we know that suicide rates are higher than they've ever been, the psychological wellness of our service members is highly compromised and we also know actually that this contagion, this effect is having a contagion into military families. So military spouses also have the same sort of psychological challenges as service members and children, so I think this is a broader issue that we know that military service members and families are really feeling the effects of this context. And you know whether my personal feelings about whether we should be in conflict, whether there should be wars is set aside, I think that I have to accept as all of us do, that we live in a society, in the US, in which we have an army and our policy holders, our country has decided that we're going to be in many aspects in active engagement, so that's just the nature of where we're at. So with that the way it is, and knowing what the psychological costs are for many service members, I think it's pretty straight forward that you should want to help. So that's on one side, that's sort of the clinical side of things where you want to help people that are compromised because of the nature of their job that they have volunteered, willingly, as their job, but they've decided to take this on as a profession in the same way that police officers or trauma surgeons or anybody that's in high-demand professions involves. So that's one side of it, but the other side of it is actually much more around what happens on the ins and outs of the job that they're going to do. So from that side we're not talking about having PTSD or depression or being suicidal, we're talking about people that actually are well enough to go back and continue serving and in military context that means they're already probably been on four or five tours, but they're well enough and they're committed to going back and doing their job again. Now even if they're not at the point where they've been clinically categorised as having a disorder we know that there are consequences to their attention, to their wellbeing, and what the consequences of that? I think that people are going to be less discerning, I think they're going to be less able to hold their ethical code, I think they're going to have a lot harder time when they return to make sure that they're turning off those instincts that they had to keep on high alert and be able to return to their family life, able to watch their daughter's soccer match for example or drive in normal traffic. So how do you do that? How do you help people learn skills so that they're more discerning, better able to regulate their emotions, better able to observe? You offer them this training as a tool in their toolkit, that they can practice on their own, on a regular basis, they don't need any special equipment, they can take it with them when they're deployed, they can use it upon return, and it can be helpful. That's the kind of broader question and the broader

intention. And some of the research that we're doing is to just try to figure out what are the best practices to offer to them so that it helps them.

[0:43:42.8] Ryan: Yeah, well thank you so much for providing that service and for making it available to a very real need. So from me, thank you very much and thank you so much for this entire interview and for sharing all of your wisdom and knowledge, and to everyone in the audience, you can learn more about Doctor Amishi Jha just by scrolling down the page, she has some links down there, clearly more about her work, and thank you again for taking the time to be with us today.

[0:44:10.2] Amishi: Absolutely.