MINDFUL
IN MAY

Dr Elise Bialylew, founder of Mindful in May (mindfulinmay.org) and The Mind Life Project (www.mindlifeproject.com) and author of The Happiness Plan, interviews Bruce Perry

Over the last thirty years, Dr Perry has been an active teacher, clinician and researcher in children's mental health and the neurosciences holding a variety of academic positions. His work on the impact of abuse, neglect and trauma on the developing brain has impacted clinical practice, programs and policy across the world. Dr Perry is the author, with Maia Szalavitz, of The Boy Who Was Raised As A Dog, a bestselling book based on his work with maltreated children and Born For Love: Why Empathy is Essential and Endangered. Dr Perry's most recent book, What Happened to You? Conversations on Trauma, Resilience, and Healing, co-authored with Oprah Winfrey, is a #1 New York Times Bestseller. He is the Principal of the Neurosequential Network, Senior Fellow of The ChildTrauma Academy and a Professor in the Departments of Psychiatry and Behavioural Sciences at the Feinberg School of Medicine at Northwestern University in Chicago and the School of Allied Health, College of Science, Health and Engineering, La Trobe University, Melbourne, Victoria Australia

Elise: Bruce, welcome to the programme. It is an absolute honour to have you here and a real privilege. So, thank you so much.

Bruce Perry: Well, thank you very much for having me. I'm looking forward to our conversation.

Elise: So, for those people who are not aware of your work, you've spent your entire life studying the brain and trauma, and particularly childhood trauma and the effects of that in our lives around our physical wellbeing and our mental health. You've written a number of books. The most recent one you co-authored with your friend and colleague, Oprah Winfrey. That book is called *What Happened to You?* I want to actually begin with the title of that book. I'd love you to share the significance. What does it mean? Why this question, "What happened to you?"

Bruce Perry: Well, it's interesting that the story behind that is actually a long story, but I think it's relevant and interesting. First of all, that phrase was originally used in the context of working with trauma by some colleagues of mine, namely Sandra Bloom, who is just a pioneer in this field. She and her working group in Philadelphia had been doing traditional mental health work. But over time, they began to realise that a lot of the people they were working with had these traumatic backgrounds. They would come in, and we would sit there, and we'd look at what symptoms they had. But the key was not necessarily what was going on right now, but really, what was the trajectory to the present? What was it that caused them to have the present problem? So, during one of their group staff conferences, one of the members of the group said, "You know, it's almost as if the major question of our workgroup has shifted from, 'What's wrong with you,' which is the traditional mental health perspective – What's wrong with you? What symptoms do you have? – to, 'What happened to you?" That, in many ways, captured, I think, in a very positive way, the reframing of interacting with, working with, and trying to understand people who have been impacted by trauma.

For me, it was interesting because I came into the field as a neuroscientist and had been studying developmental issues and the development of the stress response system. So, I had always really had that frame of reference from the start. Even prior to that, I was very interested in history. I was always of the mindset that what's going on in the present is part of a continuum, and there are threads of experiences that have led to this moment. For me, it wasn't a very big shift. Now, the interesting and funny part about this was that the reason it's the title of the book is that Oprah wanted it to be the title of the book, which is okay. She wanted it to be the title of the book because I'd been talking with her for 30 years about this stuff. We'd been having conversations about various aspects of all of this. I thought I'd make a little headway here and a little headway there. But I knew that she didn't quite understand the profound impact of developmental experience.

She was doing a special piece for *60 Minutes*, which is a news documentary show in the US, and she asked me to be part of it. We were having lunch afterwards, and she was talking and wondering why some of these children who hadn't been traumatised now for five, six, seven years, and they've been in nice homes, and people were giving them things, and they've got every opportunity. What's wrong with them?" I said, "Well, the question really shouldn't be what's wrong with them now? It should be what happened to them that they can't take advantage of what they're being offered right now?" It just was like a light bulb went off. All of a sudden, all of the conversations we'd had just lined up for her, and she got it. It was at that point that she actually said that this was the most important story she'd ever done in her career. It helped her see many things in her life, and in the world, and in foreign policy, and all kinds of things through a different lens.

The other thing, for me, was that it made me realise - I'm a really crappy teacher. Man, it's taken me 30 years. That was a little sobering. "So, now you get it? Okay." So, that's why the book is titled that.

Elise: I think what you're saying about the way that trauma leaves this imprint and can be pervasive across a lifetime is something that is so

important for people to understand. Before we go into that, a very bread and butter question for you, which is, can you describe what you mean by trauma? Are we talking about parents dying, murders, assaults? What's the least amount that could be qualified as trauma?

Bruce Perry: Elise, that question, and adequately defining to everybody's satisfaction, that term has been troublesome for the field. In fact, that's the reason that trauma-related diagnoses were left out of the most recent DSM, because the people on the panel were asking for, "Well, define for us what trauma is." Different people gave different definitions. So, they're like, "Wow. You guys, come back after you figure it out."

The term, as you know, and everybody who's listening knows is used by everybody. For somebody who's studying the biology of stress, it has a specific meaning. For me, trauma is when either an experience or a pattern of experiences results in changes in the biology of the person, such that it increases the risk for a host of problems. That's vague, but when we talk a little bit more about the stress response system, maybe it will make a little bit more sense. With that definition, a pattern of stress activation can occur that makes your stress response system less functional, it makes it overactive, overly reactive, and that leads to a cascade of problems and a cascade of risk for physical health problems, mental health problems and so forth.

Now, the challenge is these stress response systems that we have in our body, it's good to activate them. Stress is actually good for you. You get stronger by stressing your muscles but in a specific way. You get better at meditating by stressing yourself to do this style of cognition and focus. It's hard work. It's not like you just do it. You get better, and better, and better. These systems in our body that have to do with respiration, neuromuscular functioning, attention and focus, and motor skills, all improve when they're challenged, but they have to be challenged in the right way. Moderate, predictable, controllable challenges lead to resilience, lead to strength, lead to growth, whereas unpredictable activations, even little ones, can lead to …

Elise: How little? What are we talking about?

Bruce Perry: Well, the ones that you talked about, the big disasters, I think everybody can go, "Wow, that stress response system is going to be activated in a person, and it's probably going to stay activated for a long time." When an experience has that quality, that will change the responsivity of these systems, and that is trauma.

The traumas that we don't pay enough attention to frequently are patterns of uncontrollable or chaotic activations that are not extreme. One of the most insidious ones has to do with this incredible power – it's one of our gifts – it's that we're social creatures. Human beings are neurobiologically and physiologically wired to be connected to others. We want to belong. We want our people, our clan. Our brain is continually monitoring the world for signals that you're accepted, that you belong, that you're one of us. When we get signals from other people that you're different, or you don't belong, or you're the wrong colour, you're the wrong body type, you're the wrong religion, your accent is weird, whatever it is, we can get these tiny little, sometimes they're microaggressions, but sometimes they're just micro-dismissals. "You don't matter," or, "You're not one of us." Those things, if they're chronic enough, can lead to the same physiology, same change in the stress response, that will happen if you have a big capital T trauma. I think one of the more important emerging areas in our field is a recognition that being an out-group in an in-group culture can result in trauma.

This can happen if you happen to be the only Jewish family in Bismarck, North Dakota, or it could happen if you are the only Cree child in a Caucasian classroom, or it could happen if you're an Aboriginal child who's going to a prep school in Sydney. It's not always this overt thing. It's the subtle little things. When you answer a question, they look at you like, "How the hell would somebody like you know that answer?" Now, they may not say that, but you can feel that they're sending that signal. When that happens again, and again, and again, and again, your stress response system becomes sensitised. It's a traumatic impact.

Elise: That is quite unbelievable. It's kind of intuitive, but at the same time, you don't realise that's actually having an effect on a biological level of the stress response and then all of the problems that come with that. Would you speak about the stress response? Because this is your area of expertise. Explain to the listeners how that gets set. The influence and impact of early life, and the repercussions of then what happens to this stress response, and the flow-on of that?

Bruce Perry: I wish I was more articulate because I usually have to rely upon images when I talk about this. Physicians are notorious for needing slides and pictures. I'm going to ask the listeners to envision an upside-down triangle. The base, at the top, is the cortex. That's the part of your brain that's involved in thinking and language. It's really the most uniquely human part of our body. Now, the lower parts. Most people probably have heard of the brainstem. Down in the brain stem and in the areas right next to it, we have a whole set of really important neurotransmitter networks that collectively reach every part of your brain and every part of your body, either directly or indirectly, through hormones or the autonomic nervous system. Really, these networks in the lower part of your brain are Grand Central Station for monitoring the external world and monitoring your internal world and then activating what you need and turning off what you don't need to keep you in balance, to keep you in equilibrium.

If you run up a bunch of stairs, and you're not in very good shape, pretty soon, you're getting the signal that you don't have enough oxygen. So, you take deeper breaths, and you take more frequent breaths, and you start to perspire because your body's overheating. That level of distress reaches your cortex, and you go, "Man, I've got to go on a diet," or, " I've got to get back in shape," or, "I need to stop right now and rest." You have a whole range of responses to that stressor. That happens every day with everything. How much you drink, how much you eat, whether it's cold outside, hot outside, your body is continually monitoring everything and responding in ways that keep you healthy and regulated. Now, these systems, once you're mature, like you and I, which is sort of mature. play this important role in communication and

in neurotransmission. But when you're born, those systems are just emerging, and they are going to play a really important role in telling the undeveloped higher parts of the brain how to organise. So, at the beginning of life, in the first couple of months of life, when you start to get hungry and your stress response activates, you don't have the ability to go to the refrigerator and make yourself a sandwich. You have to rely upon your external stress responder – mom, dad, auntie, whoever the caregiver is – and you communicate with them. You're distressed. You fuss around, and you maybe cry a little bit. Because they're present, attentive, and attuned, they'll come and meet your fundamental needs. They'll warm you up, and they'll feed you, and they'll rock you and comfort you. Your stress response system, which was beginning to get moderately activated, gets quieted.

Now, you may not recall this, but when I was talking about building resilience or strength in the stress response system, I mentioned predictable, controllable, moderate activation makes those systems healthier. When you have an attentive, attuned caregiver or caregiving environment where whenever you get hungry, thirsty, cold, and you express that and communicate that, somebody comes and meets your needs, you're having this wonderful pattern of stress activation that's resilience building. In the first couple of months of life, those core regulatory networks are organised. How they organise during that time will determine how they send signals to the higher parts of the brain that are organising for the next four or five years. What that means is, if you are lucky enough to have high-quality caregiving, and your caregivers are lucky enough to have economic stability, predictability, and good things in their lives, if we take care of young families, they can then take care of the infants, which can then result in the healthy development of these core regulatory networks, which then leads to a multi-year process of healthier development.

The policies that we have that are targeting early childhood, particularly young caregiving environments, where we give them economic stability and housing stability, home visiting if they need it, all the things that help somebody take care of a little one, that's actually really, really

sensible policy, because their children will do better in school, they'll consume fewer tax dollars in special education, or in mental health, or all the other services that we've created to help people who have challenges with these capabilities.

The flip side of that is if the beginning of life for you is chaotic, and your mom is in a domestic violence relationship where she's depressed, or overwhelmed, and unable to be as consistent or predictable as we're talking about, then your stress response networks, these core regulatory networks, develop in ways where they send disorganising and abnormal signals to the organising parts of the brain. So, you end up with a child who's got greater risk for intentional problems, mood problems, learning problems, and so forth.

Elise: Can you just try and define what you mean by disorganised? What would that look like on the outside? You're saying if this stress response is not forming in the appropriate or normal, most skilful way, then, later on, you get disorganised. What does that mean for the listeners? Is it emotional reactivity?

Bruce Perry: At that age, it leads to global over-reactivity. These kids have a harder time settling down. They're harder to soothe when you try to rock them and comfort them. Some of them develop sensory tactile defensiveness. Instead of being comforted and snuggling into you, they initially have a startled response. A lot of these kids will have abnormalities in the way they eat, even. They'll gobble, gobble, gobble, and then they'll regurgitate. Every function that they have is not really smooth. They can't settle down and quiet themselves and suck their thumb and go to sleep. They need additional and extra external regulation. Of course, that's more exhausting for a parent. So, you start to get this negative feedback cycle. The child that's harder to soothe with the overwhelmed caregiver, and then the caregiver gets more frustrated. Pretty soon, instead of being a regulating interaction, the caregiver can sometimes add to the disorganisation of the child.

Elise: What's your perspective on actual pre-birth? Because your book is very broad in scope. I think you wrote, starting in the womb, the developing brain begins to store parts of our life experience. Even I often wonder, and I've read lots of different things around birth trauma. It's an interesting topic. I feel like sometimes people think it's very 'ooh-aah'. It's funny how people think that there's a foetus and they're inside. Then they go through this weird process of full-on physical assault in the birth canal in a way. Then they come out, and it's like, "Okay. They're a baby. Now they're a baby." But, they were a baby doing that whole thing. I wonder about that. Is there anything that is known?

Bruce Perry: Well, there is a lot known, actually. I've been talking about these core regulatory networks. They actually begin developing in utero, and a lot of the intrauterine signals and things that are happening in utero are really important in how they organise. Disruptions during the prenatal period are, predictably, going to cause a cascade of problems and risks. The earlier those systems are disrupted, the more prolonged and pervasive the problems will be. Intrauterine alcohol, intrauterine stress to the mother, intrauterine malnutrition. There are other things that will cause these systems to be abnormally functioning.

As you say, everybody will say, "Everything was perfect. I don't know why Billy is struggling." Then you find out if you take a little bit of history you find-"Mom had three different places that she lived. She broke up with her partner. There was a lot of chaos and fighting. There was a couple-of-day-period when she was so overwhelmed that she drank a little bit, but then she didn't drink anymore." You learn all of these things, and you go, "Well, that wasn't a perfect intrauterine experience." The intrauterine time is extremely important in understanding development.

As you point out, the process of the foetus preparing for and then going through the birth process– and I use this term – it is the biggest stressor that you will probably ever experience until you die. You have a

sensory transition that's almost hard to comprehend. You go from a constant temperature out to a temperature that's very different from what you're used to. You've never seen anything. All of a sudden, the major sensory tool you have, vision, comes online. All the systems are like, "What the hell is this?" Every single stress response apparatus you have is maxed out during birth.

You have periods, as you say, where you have hypoxia. So, the signals from the body are like, "I'm dying. I'm dying. Help me." The signals from the outside world are, "I'm new. I'm new. I'm new." The brain just goes, "Holy shit." You are releasing tonnes of opioids. Your classic fight or flight response biology is activated in extreme. Now, that's not necessarily bad. In part because your lungs in your heart are making this really major transition in how they work. You are breathing liquid prior to being born. That's a huge transition, and it really is helped by this extreme stress activation. It's not a pathological activation, but there's no doubt about it that you are having a set of experiences that will shift your stress response system. The longer that goes on, the more the shift is going to increase long term risk. The shorter and easier it is, the more you're going to have that jump-start that you need without having any of the other sequelae.

Now, interestingly enough, we go back and look at our data set, and we have data from about 90,000 individuals, which is a lot of people. They've been very systematically evaluated. The one thing that we find that is most consistently associated with significant mental health problems as people get older is difficulty with birth. So, there's something there.

Elise: I always used to find it fascinating in psychiatry, as I said, I studied psychiatry. I feel like, one day, there'll be some way to mark it or track it. It just seems so strange that that's just not really taken into account, particularly in situations where the birth is very difficult.

Bruce Perry: Exactly.

Elise: There's so much to cover. I feel like I could spend hours talking about that. Could you speak about just after birth, those first two months? I was really astounded about the research that you had around those first two months and some of what you discovered around that. Could you share that?

Bruce Perry: I have to say, having worked on the development of the stress response system, we knew that early experiences were really important in shaping how these systems unfolded, and then that would have, in turn, this cascade of effects. But I was pretty surprised by it. Part of me was like, "Wow, that's crazy," because we think in a way that x amount of stuff should outweigh another x amount of stuff. We're not taught as much about the powerful dynamics of development. So, the truth is that these earliest experiences, because they're so foundational and because they jump-start these important processes, that when that goes poorly, you have this unravelling of the whole apparatus, and that leads to higher risk.

Basically, the finding is this. We have this large population of people on who we have done assessments on. Part of what we assess is the timing and the nature of developmental risk. That developmental risk is determined by looking at adversity and looking at connectedness. There are a lot of factors that go into it. But basically, connectedness is related to resilience, and adversity is related to risk. If you have somebody who has a lot of adversity and no protective relational factors, they have a high developmental risk. Then if you have somebody who has a little adversity, but they've got pretty good relational connectivity, that's a lower developmental risk.

So, we went, and we looked at kids. In the first two months of life, they had high developmental risk. Then they were taken out of that environment.

Elise: Can you define developmental risks for the listeners? External stresses?

Bruce Perry: The adversities that we looked at were exposed to violence, trauma. A whole variety of things. Neglect, physical abuse, sexual abuse. Then the relational connectedness stuff was the health and stability of your relationship with your primary caregivers, and connection to your community, and your culture and things like that. Those factors, when we lump them all together, we come up with something that we call developmental risk.

What that means is that if there's no developmental risk, that means that the normal developmental process should be able to unfold and proceed in an environment where there are adequate opportunities for social, emotional, cognitive enrichment and so forth. When there starts to be a developmental risk, what that means is that that environment for that child does not have, in some way, the necessary elements that would be required for healthy development. So, they're not hearing enough words, they're not getting enough touch, there's too much chaos, there's too much threat, or however, you add that up.

So, what we found was that if you have these bad things in the first two months of life, and then you end up in a household or in a home where you're no longer being maltreated, and you have at least acceptable relational connection, and you grow up the whole rest of that time until you're 13, 14 years old, that your outcomes are actually worse than if in the first two months of life, you had stability, consistency, loving, care, but then the wheels fell off your life, and you ended up in chaos, and threat, and trauma for 13 years, which is a very sobering finding.

Elise: It's so sobering.

Bruce Perry: But being somebody who's worked in psychiatry and have seen many people, I'm sure, they may have been adopted in the first month of life, or they may have been adopted at birth, and they're in a decent, caring home. The probability that they're struggling is higher than a lot of other individuals who haven't had that. This is not an unfamiliar narrative for people that do a lot of work with kids that have experienced maltreatment.

The thing that is most hopeful for me is that when we're looking at policies and practices where we can put our money to help young families and kids, it really speaks to the power of early childhood, that if we can take care of young parents and give them what they need to be as good as they can as a parent, that will really have a big payoff down the road.

Elise: With what we've been talking about, the importance of that really early care, and if that's not there, how that just becomes this pervasive difficulty. Is there a way to fix that? Can you talk a bit about that for the people that might be listing that feel like it's very confronting to hear this? Particularly for people that reflect on their own lives, and they might go, "Wow, that was me. Is that just how it is now?"

Bruce Perry: None of that is irreversible. The good news is that people who have these developmental adversities, given the right opportunities, can get better. Actually, not only can get better but can thrive. The problem is that most of the public systems that are supposed to be helping people who've had these experiences don't understand them. So, they'll take a child who's struggling with fear, fear-related attention problems, and they'll label them ADHD and put them on medication. If that doesn't work, they'll add a medication. If that doesn't work, they'll add a diagnosis. If that doesn't work, they'll kick them out of class.

Elise: Then that person gets pathologised. "This is all within me," fundamentally.

Bruce Perry: Exactly. That's heartbreaking to see. So, we actually have a subgroup of kids that didn't go into the regular systems but went into programmes that we have been working with for many years. Now, the numbers are not as great, but it's several hundred kids that we've been tracking. Their outcomes are very, very promising. In fact, their outcomes approximate children who had no adversity at all, ever. So, that's the good news. Really, what that means is we have to do a better job teaching our schools, our early childhood environments, our

paediatricians, our psychiatrists about trauma because they're using this lens, this mental health lens, that pathologises these kids.

Elise: I just reflect back. I don't know why this was, but it's astounding that when I went through training in psychiatry, no exaggeration, there was no teaching on trauma until right at the end, when it was kind of more self-direction. It was just like, "How's that even possible?"

Bruce Perry: You know, Elise, same with me. It was so bad that when I used to talk about this stuff, I would get publicly berated by my peers. They'd make fun of me at meetings. I was actually one of the first people to do biological research with adults that had PTSD. The diagnosis of PTSD had just been added to the DSM. There's a very famous psychiatrist who wanted me to work with him because I was a basic scientist and he wanted to do some stuff with me. I said, "No, I'm going to go work at the VA and work on post-traumatic stress disorder." He said, "You're going to waste your life." He said, "There's no such thing as PTSD. That's a bunch of people that are just drug users that are trying to get money from the government."

Elise: Oh, my goodness.

Bruce Perry: He was a very influential, very powerful psychiatrist. Once the VA put millions of dollars into PTSD research, all of a sudden, it existed. He ended up being one of the heads of the National Centre for PTSD. But that shows you how political our world is.

Elise: I don't know if this is maybe off-topic, and it wasn't really in your book, but I can't help but ask if it's maybe the same situation going on today. The whole area of trauma and psychedelics is really emerging, it seems. Could you say anything about that?

Bruce Perry: Sure. It's interesting. A lot of the work that we've stumbled onto, and really seems to be very consistent and resonant

with healing from a neurobiological perspective, emerges from Indigenous practices. If you look at many Indigenous healing practices, they use psychedelics as part of the process to get people out of depression, to help people become recentered in community and in nature. So, it's not an unknown process. In fact, I think many of the people that are using psychedelics are recruiting shamans to be involved in the process.

So, I do think that it's interesting that innovation is always inhibited by power. So, the people that are at the top of the power differential in medicine and in psychiatry have a certain way of viewing things. I think they always have a hard time with new ideas like this. There's this process that happens. In the beginning, they ignore innovation like it doesn't matter. They did it with meditation. They've done it with all kinds of things. They just act like it doesn't exist. Then the second thing they do is they attack it. Then after they attack, and that doesn't work, and the research and or other things start to fill in the gaps, then they co-opt it, and they act like it's theirs. Then they forget all the people that were out there saying that stuff. They'll write articles, and they'll never cite the real pioneers. It's just the nature of power. That's going to happen with psychedelics.

Elise: Hopefully, Stanislav Grof will still be here for the day that that happens, that it finally becomes mainstream. Anyway, I wanted to ask you about this idea of regulation and dysregulation. For the listeners, if you could bring that down to a layperson explanation. I loved, in the book, this approach to regulate, relate, and reason, and the importance of what you call the sequence of engagement when we communicate with people that are dysregulated or if we're dysregulated. Can you talk about that?

Bruce Perry: If you go back and you think about these core regulatory networks that I was talking about, I gave the example of running upstairs and getting short of breath. All of these systems in our body are always monitoring what's going on inside and what's going on outside. They're trying to keep us in this narrow, what people refer to

as homeostasis. So, you don't want to have too much fluid, and you don't want to have too little fluid. You want to have just the right amount of fluid. It's the Goldilocks phenomenon. So, these systems are always trying to keep you in balance, and that's regulated. When you are out of balance, then you start to get dysregulated.

Now, we could talk about that when it comes to the dysregulation of hunger, the dysregulation of hydration, or the dysregulation of body temperature. But in our field, we tend to talk about it in terms of the dysregulation of the systems that are involved in attention, arousal, engagement. So, everybody, at any given point in the day, has a certain level of capacity to focus, capacity to listen, capacity to monitor their relational environment, and respond appropriately.

When we feel safe – in other words, when we feel regulated – when we're getting signals from people around us that we're included and we belong, that makes us feel safe, it makes those systems that have a stress response component quieter, and we're regulated. But if we find people looking at us, scowling at us, and even saying things like, "You don't belong here. Get out of here," and call us a name, we start to feel stressed and dysregulated.

Elise: Are we talking about someone speaking to you in the wrong tone or giving you a facial expression? That can dysregulate? It's that subtle?

Bruce Perry: It's literally millisecond to millisecond. People that study maternal-infant interactions, do these beautiful split-screen analyses of, literally, the microsecond-by-microsecond interaction. So, the infant can feel dysregulated just when the mum gazes away. Then they want attention, and mom gazes back, and the baby feels regulated. We have these micro-regulatory things that happen all the time: rupture and then repair; rupture and repair.

One of the most dysregulating things is to be with somebody who doesn't see you. It's like you're invisible. You'll be with a group of three

or four people, and you'll make a comment; you'll try to jump into the conversation. They look at you, and then they just keep talking with the other person. That, "You don't belong," dismissive thing that makes you feel terrible. That's a dysregulating experience.

It can happen on these little levels, and then it can happen on big levels. You can get called in front of your supervisor, and they can go, "We got a call from the parents, and you did this. How could you do that? Blah, blah, blah."

Elise: Even in family life between parents and kids.

Bruce Perry: Absolutely.

Elise: Partners. Day-to-day stress.

Bruce Perry: Absolutely.

Elise: Pandemic home-schooling.

Bruce Perry: That's exactly right. Most people are more often out of sync with others and a little dysregulated than in sync and regulated. I think that there's this hunger. When you finally have somebody who's present with you, and you feel heard, and they've slowed themselves down enough to truly be present, that's a wonderful feeling. We don't do enough of that. I think that our world is so busy, and people get pulled out of that capacity so easily. I think that that's one of the biggest parts of our current modern world environment. We don't spend enough time in nature. We don't do enough of the physical hygiene stuff. We're sleep-deprived. We're over-scheduled. We're over-screened. We have too many external sensory queues. So, when the moments come with a person, a lot of the time, we're not able to really be present. We're like, "Yeah, that was great. Keep it up. Good work." Being on the other end of that, you know how that feels. That feels dismissive, and it feels crap. So, I think there's far too much of that in our world.

Elise: We've talked about dysregulation and regulation. Then we're obviously living in a dysregulated world. But I love this regulate, relate, reason, and sequence of engagement. I just think that is such a powerful, useful tool for people to know about. The way it relates to the brain. Understanding how the brain operates so that we can communicate more effectively.

Bruce Perry: I have to say of all of the little heuristics that I've developed over the years, I think that one has been the one that people have snatched up and really connected with really quickly because I think it captures things that we all feel and see. I was teaching judges right before this. For them, again, it made a lot of sense. So, let me just describe this.

Again, upside-down triangle brain. The top part is the rational part of our brain, the part of our brain that allows us to do abstract cognition. It's the part of your brain that can tell time, the part of your brain that can reflect on the past and anticipate the future. I mean, it really is an amazing part of us, but it's very, very sensitive to stress. That part of our brain isn't always online. When you're going about your busy activities of the day, there are certain parts of your brain; you're not using.

Remember, the core regulatory network's down on the lower part of the brain. They're continually getting input from your senses: outside senses, what you hear, see and feel internal feedback. This incoming input is processed at this very primitive level. It's processed and then, if necessary, acted on. Here's an example of when it would be necessary to act on that information. You put your hand accidentally on a hot kettle, and you withdraw your hand before you even know what it is. That's because the brain stem has gotten a signal of tissue damage. It would take too much time to process it at an emotional level and then process it at a cognitive level. Then the cognitive part of your brain would go, "Oh, that's a hot kettle. I should remove my finger." By the time you did all that stuff, your finger would be really badly burned. So, in many cases, it's important to act before you think.

Now, the dilemma with the human brain is that it's organised to process information sequentially. You'd meet your partner, and they say, "I love you," and all this great stuff. None of that gets to your cortex without going through the reactive part of your brain and then the emotional part of your brain. There is, at least, a three-part sequence for information before it gets to the part of your brain that can actually cognitively, really understand stuff. When you're talking to a child, "Why did you do that," or, "I want you to do this next time", they don't even hear that. That will be short-circuited because of your frustration and anger. They're going to feel that from you because the human brain is contagious to the effect and emotions of others. So, they're going to be so stirred up, they're going to be a little dysregulated. "I'm in trouble. I'm dysregulated. I'm going to get killed. Mom's going to kill me. Mom's going to kill me." All they hear is, "Rah, rah, rah, rah, rah, rah." Their brain goes, "See, she's mad at me." They don't hear the words.

When we're trying to talk to people – coaches, parents, therapists – about communication, communication is getting something from my cortex, through the emotional part of my brain, out into space, through the emotional part of your brain, up to your cortex. There are a lot of places it can go wrong.

Elise: So brilliant. That is just gold, understanding that. You gave the example of a parent and a child, but what about just two people in an intimate relationship, or what about a boss and your colleagues? It's not just the kids.

Bruce Perry: Everybody.

Elise: If you're in a working relationship, you have no idea what's conditioned. Maybe they've had two months of trauma in the beginning, and they're so hypersensitive. It's so complex.

Bruce Perry: It does play out in every aspect of life. Take the workplace thing that you're talking about. The supervisor may come in and just

not be aware of what's going on with the person, and just give some directions, and then go off. Come back, and they haven't acted on what they were told to do. Then they get mad. Then they write this person up. All of a sudden, there's this whole chain of secondary problems that lead to more problems.

We teach this stuff in corporate environments, in organisational settings. It's amazing how the workplace climate shifts where supervisors are taught to not give instruction until they're sure that they're regulated, first of all. If you're pissed, don't try to communicate with somebody. Go take a breath. You do your regulatory stuff, and then you come and engage the person. Then you engage in a process that you're mutually taking the temperature of, "Are we going to be able to talk about this?" Sometimes, they agree, "Let's talk about this later."

Elise: Because you're tuned in. They actually are aware of this new concept of, "Am I regulated or am I not regulated?" It's so empowering to have that.

Bruce Perry: Yes, it's unbelievable. We've taught this to people that are blue-collar construction workers. They literally decided – at this huge oil company that's a refinery – on their little hard hats, they have a little thing that shows where they're regulated. They'll see the supervisor coming, and they'll put the thing, which basically means, "Don't talk to me now."

Elise: That's great.

Bruce Perry: It's unbelievable. What they've had is it's decreased all of their onsite incidents and accidents tremendously.

Elise: I think it's just this fact that if you're not in the area of trauma or neuroscience, you walk around your whole life thinking, "I'm a human," but you don't realise the way that biology is just so determining in so much of your emotional and interpersonal life.

Bruce Perry: It's powerful stuff. The nice thing about it is I think that once people learn a couple of these principles and a few simple strategies, it really is empowering. You're obviously involved in one of the major strategies for becoming regulated. Being able to be in a position to effectively communicate with somebody and connect with somebody. There are many ways that we can help people get into a state where it will be easier for them to connect with their capacity to be humane. Those human qualities that make us what we are – they're really the best of us as a species – it's all stored, it's up in the higher parts of our brain. If we're so dysregulated, we're hungry, we're thirsty, we're busy, next appointment, next appointment, that goodness, that best part of us is just neutralised. It's just shut down.

Elise: You didn't explicitly write about this, but what are your thoughts around something like meditation and trauma? Because there are two sides to that, I think.

Bruce Perry: It's interesting. I grew up doing a lot of meditative practices in the context of competitive sport. As I got older, I realised that I was doing some form of almost self-hypnosis. Then I learned, formally, how to do induction techniques and hypnosis. As I moved through my career I started to spend a lot of time with First Nations and traditional healers, and the meditative component of those practices is huge. I know that people use that word like they use the word trauma. It means different stuff for different people. But fundamentally, I believe that the capacity to learn, to use these gifts that we have, these cognitive capabilities, through meditative prayer or other meditative practices, really are empowering. They're literally strengthening capabilities in your cortex that allow you to do things that you would not previously be capable of doing. I do think that for many people, having that capacity is really helpful for healing from their trauma. I do think it can be used very, very successfully with people that have trauma.

The model we have is called the Neurosequential model. It's not like we wouldn't do cognitively oriented things. It's just that we do them

after we get to a certain level of regulation. I think that the capacity to fully engage in and expand your capacity for some of the meditative practices does depend upon the capacity to have some fundamental regulations. So, there may be precursor activities that lead into, or there may be certain breathing techniques that facilitate. Some people use yoga as part of getting into a meditative process. I think that mental state is incredibly powerful. I think that when people can learn how to get there intentionally, and when people can learn how to use that capability, it's a tremendous superpower.

Elise: You did earlier raise the aspect of Indigenous and traditional practices. I was really interested in your book. I used to do a lot of percussions, and you wrote something about rhythm. Could you say something about that?

Bruce Perry: I talked earlier about these core regulatory networks. They start developing in utero. One of the great qualities of the brain, the way the brain makes sense of the world, is that it takes patterns of neural activity that are cooccurring and it connects them. In utero, when your little foetal brain is developing, you're developing core regulatory networks that come from your foetal body. Those signals say, "Your body temperature is fine, you have enough fluid, you're not hungry, you're not thirsty, you're not cold, you're not hungry." These are incoming signals that say you're regulated. What's happening at the same time that all the sensory input from the outside world – that your little senses are beginning to perceive – are coming in, in rhythmic patterns that are predominantly, not exclusively, but mostly coming from maternal heart rate. So, your little brain is continually getting vibratory, tactile, and auditory input the entire time it's organising. So, that little part of your brain, little core regulatory network, associates pattern, repetitive rhythmic activity, rhythmic somatosensory activity with being regulated.

After you're born, you swaddle the baby up, you replicate intrauterine sensory cues, and you rock and move the baby. Even our language, even human language, has the same rhythms as maternal heart rate, the

submultiples of maternal heart rate. So, everybody's got some somatosensory rhythmic activity that regulates them: chewing gum, walking around, swaying, these stereotypes that these little kids do, they're all in the same rhythms. EMDR is in the same rhythm.

You go to all Indigenous healing. They use dancing, drumming, singing. All rhythmic. Across all cultures, there's this unifying set of rhythms that people find regulating.

Elise: That is fascinating.

Bruce Perry: Yes it's pretty powerful. A pretty cool thing. So, in class, when we want kids to be able to pay attention, we want their cortex open, we should encourage them to walk, to chew gum, to do these things that we tell them not to do. It's unbelievable. All the stuff that would make it easier for them to learn, we don't let them do. Study after study after study shows that if you're walking when you learn something, you remember it better. If you're chewing gum when you take a test, you do better. All kinds of stuff that is pattern, repetitive, rhythmic stuff.

Elise: Two more questions, and then we'll wrap it up. You mentioned before about resilience and trauma, and that some stress is a good thing, and actually, we need it. It's like weightlifting for the system. I've always wondered, in our society, there are certain things we do, like what you just said. There are things that we do that actually are the opposite of science and that we just go along with it because that's what's going on. My question is around how do we know, with children, how much stress is too much? Often, for example, I hear parents going, "It's good. Toughen them up. Don't mollycoddle. That's good. Put them in the deep end, and they'll have to deal with the challenge, and that's good." How do we gauge, as parents, how much stress is too much?

The example that came to mind actually – it might be a bit controversial – but preschool and kinder. This classic thing of the parents dropping

their kids there. Then at the beginning of the year, you've just got all these howling children. For me, that was very difficult. I worked my way around the system with that because I didn't feel good. But the facilitators are like, "It's fine. They all cry." It's taboo because people need to go to work. So, I'm very sensitive around that.

Bruce Perry: Well, we could handle that very differently. We could manage kids that have a harder time by being more sensitive and creating a variety of transitional activities that would make it easier. Here's our tendency. Our tendency is to declare what we want as adults and make kids conform to that expectation. The reality is, because of the malleability of kids and the flexibility of kids, we get this normal curve. Some kids, don't blink twice because they've had enough opportunity with separation and novelty that this is no big deal. Most kids, it's like, "Holy shit. But I'll do it if you say I should." They'll limp along. It's not great, but they'll get through it. Then some kids, it's terrible, it's catastrophic. These kids have a higher probability of developing school phobia and all that kind of stuff.

The reality is what we should do is create a differentiated process that gives the children agency. They will tell you what's a moderate dose for them. A classic example of this is if you take a box that's wrapped as a present and you throw it in the middle of a pre-K classroom, one-third of the kids rush in and want to tear it apart, and open it, and see what's in it; one-third of the kids follow those kids and look over their shoulders, see what's going to happen; and one-third of the kids literally back up, like, "What the hell is that?" That's what happens. My preference, as a parent, has always been to give my children opportunities to tell me what is tolerable and what isn't tolerable.

Elise: Yes, that's really helpful.

Bruce Perry: If you look at Emilia Reggio environments or Montessori environments, they tend to be like, that. They have an array of things out there. But then the child self-selects where they want to go spend their time. Children almost always will gravitate towards something that

they're developmentally working on. You don't see a lot of 18-year-old kids playing school. You see a lot of kids that are in kindergarten and who are just trying to manage the whole thing about school, and they're doing re-enactment play to master it.

Elise: Then, of course, there must be a difference between temperaments. I think in our society, that classic thing of, as a parent, if you have a shy child, there's pressure somehow. "They'll be right." It's the cookie-cutter approach. So, what you're saying is to see the child, and somehow, if you can, allow agency for the child to work out what feels comfortable so that they can dose themselves.

Bruce Perry: That's part of it. Then the other key part is all kids will feel more comfortable leaving their comfort zone if they're scaffolded. So, if there's somebody that they feel safe with, who is part of the challenge, and is supportive and encouraging – not pushing, but supportive and encouraging – and is able to go, "Wow, that's awesome. Look at that. You can do this." Then they're more likely to venture out of their comfort zone more frequently. Then once they do, they feel some mastery and some pleasure with it. But if you push a kid out of their comfort zone, they're just going to want to retreat back in. It's very counterproductive. You're actually making more problems than you're solving.

Elise: My final question is about intergenerational trauma. It's actually driven by a personal question because, as a grandchild of Holocaust survivors myself, I've always wondered a lot about this. Grandparents that had the whole deal. Lost the families. Concentration camps. Probably no surprise that I ended up studying psychiatry and all of this. You talk about this in the context, actually, which is really interesting, about racism. Transgenerational trauma and racism. Can you say something of what is known about whether it is biological? Is it transmitted through biology, or is it more through the emotional nurturing ruptures that happen?

Bruce Perry: There's a table in the book, I think. I wanted it to be in the book. I don't know if it made it to the book. Kind of embarrassing. I don't even know what's in the book.

Elise: We'll go with it. I think I remember it. Yes. We'll go with it. It's in the book.

Bruce Perry: I have the table in the book. Part of what our species can do that's incredibly unique is that we can pass the experiences from previous generations. We can distil them, we can digest them, we can pass them forward in very intentional ways more effectively than any other species. That's because of the malleability of the cortex and because, for whatever reason – there are some clues to this, but human beings can absorb more bits of information per second than any other species. So, this allows us to essentially, pass things to the next generation that are not passed in our DNA. There are certain non-genetic mechanisms to pass information. So, for example, English, You speak English. There's no genetics that codes for English. There is genetics that allows you to make sounds, but the way we put those sounds together is completely an invention that's transmitted through learning.

Now, it turns out that the way genes are expressed in our body will be regulated by various proteins and other chemicals that can be modified and changed. For those of you who don't know anything about this, you probably learned about this in elementary school, but every single cell in your body, except up your reproductive cells, your gametes, your egg, or your sperm, every single one of your other cells has exactly the same DNA. But the DNA that's expressed in your bones is different than the DNA expressed in your muscle, which is different than the DNA expressed in a nerve cell, for example. The way that happens is that these proteins and chemicals that are in your chromosomes, basically, turn on or turn off the production of protein from your DNA.

It turns out that you inherit how those chemicals are set in your chromosomes from your mother and your father. In some cases, they

inherited that from their mothers and fathers. So, there is a transgenerational passage of the set-points of some of these important chains of activation of genes. Some of them have to do with stress and the set point for your stress response system.

If you have ancestors that experienced significant stressors that included malnutrition, genocide, or all kinds of other things, the degree of challenge that their body experiences would result in modifying some of these proteins and chemicals that turn on and turn off certain sets of genes. For people who are in a family line where there have been extreme, traumatic experiences, it's highly likely that some element of that has been inherited through the set point of these epigenetic factors.

Rachel Yehuda has done a small study of survivors of the Holocaust and their offspring and has shown some of these epigenetic changes. There's a lot to be explored and a lot more to learn, but it does appear that that's one of the potential mechanisms that we track by which we can pass, generation to generation, the experiences of trauma and the response to trauma.

Now, the good thing about that is that you can change back those set points. You can change them back, particularly by having high-quality early life experiences of nurturing and caregiving and the kind of stuff we were talking about before. So, the set-point of those core regulatory networks can be tuned up by a history of trauma, and it can be turned back towards normal by having a history of positive attachment experiences.

Elise: There's a lot there. We've covered a lot of ground. Thank you so much for your time, Bruce. It's been really, really fascinating. I'm sure the listeners will want to dive more into things. So, where can they find you and what you're doing? There are your books.

Bruce Perry: I'm really so bad at all this stuff. I guess the easiest way, if you're interested in learning more about our work, is honestly, just go to

Google and type in my name, and you could get to one of our websites pretty quickly. We've got a website, neurosequential.com, that has a lot of information about the work we're doing.

Elise: There are often a lot of teachers and therapists that might be listening, and this work might be particularly interesting to them. Just a few quick questions that I ask everyone. A couple of books that have really had an impact on you. They don't have to be in the field of trauma; just books have really lit you up.

Bruce Perry: I love to read all the time. I think I've learned more about trauma by reading novels than I have reading our own literature, which is pretty dry, actually. One of my favourite novels about trauma is *East of Eden* by John Steinbeck. It is one of the most insightful articulations of transgenerational attachment problems and trauma. It's an excellent book, so I recommend that. I like *Narcissus and Goldmund* by Herman Hess.

Elise: Great. They're a couple of good ones. A life lesson that you've learned or earned that you would share with your younger self.

Bruce Perry: My younger self knew this pretty early, but basically, the lesson would be that the noise, and the storm, and the chasing of bobbles, and awards, and grades, that doesn't mean shit. Doesn't matter. What really matters is how you are with the people around you. Are you present? Are you kind? That's what matters.

Elise: Finally, just one thing that you would love the listeners to take away from this conversation.

Bruce Perry: The one thing I wish people really could let sink in, they hear this kind of stuff all the time, but I wish it would really sink in. That is the power they have when they can be fully present. It really is a gift to the person that you're with, but it's also a gift to you because that process is reciprocal. Your ability to connect as a parent, a teacher, or anything with another person, is completely dependent upon your

ability to be present. So, I think that that's the most important thing. When you are present, that's an incredibly powerful physiological act. It changes the biology of the person you're with, and it changes your biology. So, it's a more biological intervention to be present than it is to give somebody a pill.

Elise: Wow. Great. What a great way to end. Thank you so much.

Bruce Perry: Thank you.

Elise: Hope the listeners go out and find *What Happened to You?* and the many other books you've written. Wishing you well. Thank you so much for your really important work.

Bruce Perry: Well, thank you for everything you do. I think what you're doing is amazing.

Elise: Thanks.

Bruce Perry: You're making the world a better place. So, thank you.

Elise: Thanks a lot.