How to Apply Mindfulness to Your Life and Work

The Neurobiology of Mindfulness:
How Being Present Can Change the Brain

the Main Session with
Dan Siegel, MD and Ruth Buczynski, PhD
# Table of Contents

1. How Mindfulness Affects the Brain ................................................................. 3  
2. How Presence Impacts Your Physiology .......................................................... 4  
3. How Presence Relates to Happiness .................................................................. 5  
5. The Traits of Mindfulness .................................................................................. 8  
6. How the Concept of Presence Affects Telomeres ............................................. 13  
7. From Mindful State to Mindful Trait .................................................................. 15  
8. How Presence Is an Emergent Self-Organizing Process ................................. 17  
9. A Quantum View of the Mind ........................................................................... 19  
10. Mindfulness and Internal Attunement ............................................................. 21  
11. Relationship and Attachment through the Lens of Mindfulness and Presence ... 23  
12. Presence and Emotional Support ..................................................................... 24  
13. Meditation and Mind-Wandering ..................................................................... 26  
14. References ........................................................................................................ 29  
15. About the Speakers ......................................................................................... 30
Dr. Buczynski: Hello everyone and welcome. I'm Dr. Ruth Buczynski, a licensed psychologist in the State of Connecticut and the President of the National Institute for the Clinical Application of Behavioral Medicine. I'm so glad that you are here with us.

We have a wonderful session prepared for you with one of NICABM's favorite guests, and I'm just so excited to get started.

This is a person who is knowledgeable in so many different areas. So, Dan Siegel, welcome. It's great to have you here.

Dan is a physician trained at Harvard University. He is now the clinical professor of Psychiatry at UCLA School of Medicine. He's co-director of the Mindful Awareness Research Center at UCLA and also the executive director of Mindsight Institute.

So again, welcome, Dan. It's great to have you here and let's jump right in.

Dr. Siegel: Thanks, Ruth. It's a pleasure to be here. Thank you for inviting me.

How Mindfulness Affects the Brain

Dr. Buczynski: Now, we have a wide range of topics we want to cover. But I'd like to start, I suppose, by asking a little bit about: How Mindfulness Affects the Brain? So, let's start with that: Why do we think that mindfulness affects the brain?

Dr. Siegel: That's a really great question, Ruth, and a wonderful one to start with. Wherever we come from in life – in our personal lives or for any profession – whether we're helping people become educated, or working with them clinically in hospitals, or in clinics, or psychotherapy suites – whatever we do, there's a way where we can help people become more present in life and allow them to let go of judgments and the harsh, internal dialogue.

“We can help people become more present and allow them to let go of judgments.”
That just allows them to enter a more receptive state. The word *mindfulness* is very interesting because it has no formal, accepted definition in the research world.

There's still a debate about how you would define what it means to *Be Mindful*, or what it means to have *Mindful Awareness*...

So we will play with some of the definitions that are out there, but the gist of it is, essentially, *being present without being swept up by judgments*.

### How Presence Impacts Your Physiology

Training the mind to be present like that has shown empirically, in carefully controlled research studies, that it can lead to some really amazing and important changes in your physiology.

There’s improvement in your immune system; there’s improvement in an enzyme called telomerase that raises this capacity to repair the ends of your chromosomes and maintain them.

**Dr. Buczynski:** Can you spell that for people who might want to study this further?

**Dr. Siegel:** Sure...this is just so exciting. Telomere is spelled t-e-l-o for *telo*, and then m-e-r-e for *mere*.

A telomere is the end of a chromosome; it’s a cap that Elizabeth Blackburn at UC San Francisco won the Nobel price for discovering.

This cap and the enzyme telomerase, which is spelled t-e-l-o-m-e-r-e and then, whenever you see an a-s-e, it means that you have an enzyme, is a protein that makes stuff happen in the body.

Telomerase maintains and repairs the ends of the chromosomes. Now the reason this is important, just to get the physiology correct for our discussion is that when each of your cells divides, it needs the integrity of the DNA, the nucleic acids in the chromosomes that are in the nucleus of the cell, to maintain themselves.

If there are no caps (telomeres), they (the nucleic acids) kind of frizzle out and ultimately the cell is no longer...
able to reproduce.

Over time, with aging and with stress, you can lose your telomeres and then your cells get ill and they can die.

**Dr. Buczynski:** Actually, I've written about this before in our blog. Some people are using the length of the telomere as a measure of health – the longer the telomere, the better.

**Dr. Siegel:** Yes, that’s right. Elissa Epel, Elizabeth Blackburn and Tanya Jacobs have all done different work in this area, together as a team, but in different publications.

Elissa Epel is the lead author in a number of studies.

She and I and two of my interns just wrote a whole paper on *The Power of Mindfulness to Promote Well-Being* - not just inside of yourself but even relational well-being. We can talk about that later.

Elizabeth Blackburn is the senior researcher in all this, but in her lab are Elissa Epel and also Tanya Jacobs, who was the lead author in a paper that showed that mindfulness training increases telomerase levels.

Those are correlated with other studies that showed presence, which, basically, is something related to mindfulness...and we can talk about what the difference is between mindfulness and presence.

If you naturally have presence, even if you don't train your mind to be present... that's a very big indicator in raising your telomerase levels.

**How Presence Relates to Happiness**

**Dr. Siegel:** There’s just one last thing I’ll say about presence in terms of (health), and I’m sorry, if this response is too long, but presence actually leads to happiness.

When they do a path-analysis of the correlation of you being happy and you being present, they are able to determine, and it’s very clear, that it isn't just that you're happy so you're present.

It's that you're present and that makes you happy.
The opposite of presence is something called mind-wandering, which we really want to distinguish from intentionality, which is, let's say, resting by a lake or if you go to Martha's Vineyard like you just did, resting by the ocean and saying, "I'm going to let my mind wonder and just relax." That's not called, in research terms, mind-wandering.

When you're resting by the lake or ocean, you're intentionally letting your mind creatively come up with new combinations that you don't control. That's not mind-wandering.

We should come up with a different name for that – that's what we could call mind-freeing or something like that.

But when you're mind-wandering – thinking about things that distract you from what you're doing that are negative, or even if your mind-wandering is on positive things – both of those lead to unhappiness and they're associated with lower levels of telomerase.

That's really an amazing finding just in the last couple of years: to explore what it means to be present.

Presence is a mind process – it's your subjective experience, in consciousness, of having attention stream energy and information flow into awareness. That's what presence is.

Instead of thinking about what happened last week, or worrying about what I'm going to do tomorrow...I stay present.

I'm thinking about you, and I'm thinking about this helicopter flying overhead where I am right now and hoping everyone can hear us.

I stay present without – so whatever happens, I still know that I'm here. I'm still aware of the helicopter – it's staying distant – I'm relaxing and I'm aware of my physiology. All that would count as presence.

But if I were talking to you, and in my mind, I'm going, "God, I forgot to go shopping. I've got to make a dinner. My wife just took off, and she won't be here tonight, so I'll probably just have to cook for myself. What am I...?"

If I start doing that, which I'm not doing, but I'm saying that just as an example – that would be mind-wandering.

Even if I just said, "What a great movie I'm going to tonight." I wouldn't be aware of what's happening as it is

"Presence actually leads to happiness."
happening in this moment, which is probably the simplest way of defining *being present*.

Now, mindfulness is not synonymous with presence and exploring.

The difference between those two would be an interesting exercise and probably educational and useful from a clinical point of view – how you apply this in your everyday life.

But, anyway, that's the idea of presence as one component of mindfulness.

**Mindfulness and Presence: Fleshing Out the Difference**

**Dr. Buczynski:** Let's get into that for a minute. You said that mindfulness isn't exactly the same thing as presence.

Let's flesh that out a little bit more, because I don't think we've talked about that ever before.

**Dr. Siegel:** That's interesting ... First of all, it's easy to say. Because there's no agreement on what mindfulness is, it's easy to say that they're not exactly the same. In certain ways, we don't really have a definition of mindfulness.

But let me give you just an example of why I said that mindfulness and presence are not the same, assuming that there's a definition that we could sort of agree on from a research point of view. So here's the idea.

First of all, when we say the word *mindfulness*, the first question to ask – as a human being on the planet – is what does that word really tell us?

From a scientific point of view, it's telling us one of two things. It's telling us there is a state of being – a state of being that is described as right now – where you're being mindful and I'm being mindful in this state.

The other thing – and this could be the second aspect – is that mindfulness could be a trait. We could say that you tend to be whatever you define as being mindful.

This is really what you want to ask in any practice of mindfulness or any discussion like we're having right now: Are we talking about states or are we talking about traits? And those are different.
State is a temporary activation of a way of being whereas a trait is an enduring characteristic of the way you live.

So you may not be mindful right now, but in general, you're a mindful person because you have mindfulness as a trait. So we really want to know more about what that is.

Ruth Baer and her colleagues at the University of Kentucky took five of the major questionnaires that tried to tap into mindful traits, because they were so different from each other.

Basically, she and her colleagues combined them all into one questionnaire. They had these captive undergraduates — hundreds of them — answer the question about: Do you have these mindful traits?

She came up with a beautiful list — it's actually quite an exquisite paper in 2006. If you've never seen it — I think it's in the *Journal of Psychological Assessment* or something like that — Baer and colleagues, 2006.

In that paper — it's just an exquisite way of showing how a researcher thinks deeply about a very complex issue — she tries to take the existing different definitions of traits and then see if you can factor analyze them and come up with something new.

**The Traits of Mindfulness**

**Dr. Siegel:** I haven’t talked about this in a while so let’s see if my hippocampus can pull out of my left brain these five traits. So here we go.

One trait's most directly a good segue from what we’re talking about is being aware of what's happening as its happening.

In other words, if I take a shower, am I aware of the water on my body? Or am I thinking about going to Hawaii? There's nothing wrong with being deep in thought about Hawaii, but it wouldn't be taking a mindful shower.

Now, we’re not trying to be judgmental about this; we're trying to describe it.

People, who tend to feel the water on their body when they take a shower, would have a high rating of being
aware of what's happening as its happening. So, that's the first trait.

The second one – and this is in any order – but the second one is non-judgmental. Of course, the brain is always making evaluations of things – it's always judging.

Even though it's easy to say non-judgmental, it's probably better and more accurate to say that when judgments arise, you don’t take them so seriously – they arise and they go.

As far as we can tell, most brains – you never should say every – but most brains are always assessing things based on prior expectations and prior ways of memory, which we call top-down processing. You just do that – it's just how the brain works, but you can let those judgments go.

I don't know a good word for that, but maybe we should make up a word like pre-judgments.

You're not pre-judgmental – you let pre-judging go. So that's the second trait, and she just calls it non-judgmental.

A third trait is being-with – what Baer and colleagues called, non-reactive.

And non-react doesn't mean you're dead – as if you're a piece of cardboard. It means when you emotionally respond to something, you let yourself come back to baseline pretty readily.

So yes, you have emotions – you are a human being and you're alive – but you don't get lost in your reaction.

Again, just like with judgments, where you get lost in your judgment, this is the same kind of thing.

You’re a human being, but you have to be kind to yourself and let these reactions come in and come back to baseline. That's number three – it’s called non-reactive.

Number four is a really fascinating one, and it’s why I say mindfulness is not the same as presence...

“When judgments arise, you don’t take them so seriously – they arise and they go.”

“You have to be kind to yourself and let these reactions come in and come back to baseline.”

So far, all of these traits could go along with presence – they're not contradictory. But this fourth one is really interesting.

This is the ability to name what's going on inside of you. It's the ability to describe, in words, the internal world. Now, that's really interesting.

You can be present and have no words, right?
So this is the quality of being able to name it – when we get to the brain pretty soon, we can talk more about this later, but I'll just say this now – I believe deeply that mindfulness is a very integrative process.

And I just want to show you why I'm bringing it up at this moment.

Part of the integration is not only being open and receptive to what's going on in a sensory way – where you're experiencing the here-and-now sensations of the shower – but in addition to that, which is probably a good definition of presence – it’s just being in the flow of whatever is going on sensorily.

This is where – in this view of what mindfulness traits require – you don't just have a sensing capacity which is a lateralized circuit in the brain.

You also evoke your mid-line circuits, which are observing circuits that let you witness an experience and ultimately narrate it.

I remember that with the acronym, OWN. One of my students came up with that. You OWN the experience: Observe, Witness, and Narrate.

Mindfulness requires this observing capacity. It is why, if we do get angry with someone and we’re mindful, we don't punch them.

If it’s just presence and you're present with your anger, there’s nothing about the definition of presence that says you're not punching people when you’re angry.

But with mindfulness, you have the capacity to distance yourself from the here-and-now emotional experience.

You observe it, witness it, and narrate it. You can even say, “I'm angry. I feel like punching this person. Punching is not a good thing for that person or for me, or for the larger situation here. So I'm having a larger context in the here-and-now presence that I have, and therefore I choose not to punch.”

For me, this trait, that Baer and colleagues beautifully articulates, relates to a study by Norman Farb and colleagues in Toronto that came out in December of 2007.

I was asked to be a discussant on that paper where they found that after eight weeks of mindfulness-based
stress reduction training, people who underwent the training compared to those in the control group were able to distinguish an observing circuit, which is mid-line from a more lateralized sensing circuit.

For me, in the book I’d written before that – *Of Mindful Brain* – that was the hypothesis. Part of the integration that I think mindfulness is all about is differentiating these different streams of awareness and then linking them.

That's why mindfulness is different from just straight presence.

The final one, the fifth trait that Baer and colleagues talked about, is very much related to that. It's present in everybody who is considered mindful and has mindful traits, but what she did in the factor analysis was to see if these were relatively independent constructs.

These four were independent from each other, but this fifth one, which was present in all of them, was only independent if people had been taught to meditate, which is interesting because that's the self-observation.

With this, we’re able to say, “There is a Dan here at this moment, engaged in this really fun, interesting discussion with Ruth.”

At the same time, the self-observation part of me is going, “I hope this is helpful for other people in whatever their work is – in hospitals, occupational therapy – all kinds of therapy – parenting, nursing, or in the work of being a physician – all of whatever we do.” That’s the observing part of me – that’s an observing capacity...

I remember this with the acronym SOCK – there’s the Sensory stream, the Observing stream, and the Conceptual stream, which is the concept of (understanding) that getting the word out about mindfulness is really important.

I remember this with SOCK – Sensation, Observation, Concept, and Knowing.

For me, being mindful is all four of these streams of awareness – being differentiated and linked (within a capacity of) wholeness.
You can be present with your knowing; you can be present with your concept; you can be present with your observation; you can even be present with your sensing.

So, presence isn't different. It isn't in tension against those (streams). It’s a quality of those (streams). Presence is really an aspect of just being with whatever is...

I write a lot of books, and if I'm sitting, writing a book like *Brainstorm* that I just wrote – I was writing it for teenagers and their parents – I had to constantly have a part of my mind observing: who are you talking to at this moment? Who you're talking to in this sentence?

If I were the generation hearing the sentence for the other generation how would I feel? So that wasn't just sensing my fingers on the edge of a typewriter. I had to be really present to the complex, interpersonal experience that I was writing about.

I've never written a book so challenging – keeping two different, aged recipients in mind at the same time. So let's see if anyone reads the book!

Anyway, the experience was interpersonal when I was doing it.

**Dr. Buczynski:** Let me sum up. We’ve talked about presence and how it is different from mindfulness.

Then we've gone into Ruth Baer’s work. She turned out five different traits of mindfulness through her factor analysis. First, there is awareness of what is happening as it is happening, then there is the non-judgmental part – you don't take judgment so seriously. Then there’s the non-reactive trait or not getting lost in reactions...

**Dr. Siegel:** That’s like equanimity...

**Dr. Buczynski:** The fourth trait was the ability to name or narrate, and the fifth was self-observation...

**Dr. Siegel:** Let me just say one more thing about the name and narrate. It's really about describing things.

We don’t expect people to explain things with big theories. It's just a way to say, “I'm observing right now that my hand is moving, and I'm feeling a sense of joy in communicating with you.”

I don't need to explain it (in terms of) the brain or its whole history...It's just describing with words the internal experience of what's going on.
Dr. Buczynski: From there we started talking about telomeres – finding that there's some exciting new work that's showing how telomeres are somehow correlated with mindfulness.

I'd like to say, in a lot of research – and I'm talking outside of mindfulness now – people are studying telomeres as a measure of health.

One of the things they also notice is the more you exercise aerobically, the longer your telomeres will be.

So, you were talking about telomeres and that mindfulness or meditating can have an impact on the length of telomeres...

Dr. Siegel: At least on the level of telomerase – that's literally what the study showed...That's a marker for what we believe would be increased.

It's hard to measure those things substantially. It's easier to see just how much telomerase is going on. But anyway, those are thoughts that go along with each other.

**How the Concept of Presence Affects Telomeres**

Dr. Buczynski: In thinking about the telomere and the concept of presence, have those been linked at all?

Dr. Siegel: Yes, in two ways.

In the Jacob's et al study that came out a bit ago, there was a three-month Mindfulness Meditation Training done in part through UC, San Francisco, and in part through UC, Davis. Telomerase levels were elevated with mindfulness training. So that's number one.

Number two, unrelated to training the mind, but just a trait of the mind, when they did studies of mind-wandering, which is the opposite of presence, they found that the lower your mind-wandering, the higher your presence and the higher your telomerase level. Now, that was a robust finding.

So what we hope to do in getting this finding out to people who are working in medicine, or working in (other therapies) is to show them that as stress increases, telomerase then decreases the length of the telomere. And we know that aging does the same thing.
We want to identify people who are at risk. For example, people taking care of individuals who are chronically ill – someone is just not recovering, and you’re faced with the emotional closeness of someone you care about – whether it’s a family member or someone related to your professional work.

You want to make sure that you have the ability to stay present, and not have that emotional closeness become overwhelming. So, decreasing stress certainly avoids burn out, and literally is also going to keep you younger.

We do know from studies of people who take care of individuals, let’s say with cystic fibrosis or Alzheimer’s disease that their telomeres are shorter and their telomerase is lower. That’s a known fact.

In the intervention studies now being done – they haven’t been published yet – we want to teach those individual, in nursing, in medicine, in occupational therapy – in any kind of capacity of helping people who are in a very long term condition – we need to make sure that we take care of ourselves first.

“Clinicians of any persuasion should really be given resilience training.”

The studies are going to look at (these issues): Can you reverse the whittling down of the telomeres? Can you prevent that from happening in the first place if someone is trained (in presence)?

Clinicians of any persuasion should really be given resilience training, which happens when you are taught to be present. Plus, the one way we know how to do that is through mindfulness training.

**Dr. Buczynski:** Yes, and we can broaden that to teachers and first responders and parents. All kinds of people have positions that are trying to their experience and can be stressful.

The more we can provide something that would help them be resilient, the more they can both carry out to be their best selves as well as to be healthy in the process.

**Dr. Siegel:** Excellent!

**Dr. Buczynski:** It will be nice to see that as we get better and better at providing training or some different kinds of interventions for people who are caregivers and not just the practitioners, but even for spouses who are in that role.
From Mindful State to Mindful Trait

Dr. Siegel: Yes, here we're talking...about mindful traits.

The hope is to train people to intentionally create a mindful state, and over time, this state will become a trait.

Here’s the brain basis of that. The mind, and we can talk about how we handle that word, but with the mind – your focus of attention (and we’ll keep it very, very specific) – you stream energy and information flow in a concentrated way through specific circuits in the brain, so that patterns of neural firing are created.

Now, once you do that with regularity, as you repeatedly use attention to activate certain clusters of neural firing patterns...those patterns become reinforced literally with the activation of genes, the production of proteins, the straightening of your synapses, and sometimes the growing of new neuron.

With time and with this skill, you develop a myelin sheath among inter-connective circuits, so that not only the speed is a hundred times faster but the refractory period is 30 times shorter.

So we have 30 x 100 which is 3000 times quicker that you’re getting this pattern going, and that's exciting.

But what is even more exciting is when you’re myelinated, the coordination and balance – the integration of the system – is much more effective.

You're not only increasing speed, you're increasing the integrative capacity of this larger system to work.

With all that being said, when you train the mind to focus awareness in a certain way, you’re getting the mind to get the brain to fire. That repeated firing –the firing at the moment – creates the state.

With the repeated firing – what we think is going to happen and there’s evidence to support it – is that the repeated firing creates the repeated state, which then increases synaptic connections through growing new synapses, reinforcing old ones, sometimes growing new neurons, and probably laying down myelin.
All this repeated firing might even (make) epigenetic changes, we don't know – that's going to be studied in the future.

Methyl groups and histones can alter gene expression, and those are changed by experience too—we just haven't studied that yet.

But in all these ways, what we're hoping to show is that mindfulness training improves the integrative capacity of the brain and this is my take on it.

You won't see this pretty much anywhere else, but it's kind of a twist from the discipline that I work in, which is interpersonal neurobiology.

We see integration as the common mechanism of well-being – it's a fundamental system between us and within us that allows you to coordinate and balance things.

All the structures that have been shown in research on mindfulness training, that increase their thickness – structural thickness – are integrative structures in the brain.

The reason that's important is that integration is what allows coordination and balance. Integration in the brain is what permits regulation.

When we say we want to have better self-regulation – for example, I want to feel better about my emotions, or I want to have clear thinking, or I want to have my relationship be awarding – that all comes from what is called self-regulation.

Whenever you hear the word regulation, it comes from integration.

What’s amazing is that you and I can learn to focus our mind to integrate our brain. As we do that, of course, the brain is going to change.

When we used to talk about this in our field – and ten years ago, people rolled their eyes and said we were out of our minds even though no one really ever knew what the definition for that really was! But they knew we were out of it.

Luckily, though, in the last 10 years, a lot of research actually supports that exact idea.

What you do with your mind changes the structure of your brain, and if you do this in a way that develops
presence, as studies are now suggesting, it improves your health.

In this article that Suzanne Parker, Benjamin Nelson, Elissa Epel, and I wrote called the *Science of Presence*, the whole notion is: Why would it be that being present increases telomerase?

In that paper, we offer a hypothesis on why we think that's the case and maybe it’s too wonky to describe it here.

Dr. Buczynski: No, let’s hear it!

**How Presence Is an Emergent Self-Organizing Process**

Dr. Siegel: When you look deeply at a definition of the mind, which in my field, Interpersonal Neurobiology, offers this definition which basically looks at the mind not just as consciousness and subjective experience and all that, but also at this third aspect of the mind, which is this emergent self-organizing process that arises from energy and information flow in the complex system that is both your body and your relationships.

So we see the mind as both embodied and embedded in your social world.

Now that definition is really exciting, but it's not embraced by hardcore scientists in certain disciplines like neuroscience, because they think the mind just comes from the activity of your brain.

It’s a part of the story in being trained as an attachment researcher and studying relationships and being close with people working in the field of anthropology who study culture.

So, our culture, our experiences in relationships, and the ways that we experience childhood connections with our caregivers – all of these absolutely shape the mind.

The mind is as much embedded in our social world as it is embodied in the nervous system which is way beyond just what's up in our head...

It's a fascinating finding that after asking 100,000 people in the mental health field and 14,000 people in the education field, that neither of those two fields has a definition of the mind.

I’m in psychiatry as a branch of medicine, and we don’t have a definition of the mind. The field of psychology,
which is your field, and believe it or not, it does not have a definition of the mind. Even the field of “philosophy of mind” doesn't have a definition of the mind.

It’s been fascinating to talk with leaders of all these different disciplines, and ask them very directly: Do you have a definition of the mind? It’s then that they realized that they don’t.

Some of them realized that they didn’t...even before the question was asked, which in itself, is fascinating, but that's a whole other conversation we could have.

I just want to prepare you and prepare any of your listeners by saying that the mind definition I’m offering to you isn't really embraced by a lot of people.

So please, take it with a grain of salt – you may think its nonsense.

We, in the field in which I work, interpersonal neurobiology, feel that it is a very powerful way to explore education, parenting, as well as mental and medical health.

“Presence is a self organizing emergent process.”

In looking at the definition of presence, it gives us an entree by saying that presence is a self organizing emergent process that is both embodied and relational and is regulating the flow of energy information.

We see presence as fitting right into the notion of integration – and that is a complex system which is linking its differentiated parts.

It’s a complex system that reaches optimal self-organization, and that's a whole other talk we can do at another time.

I’d just like to highlight that aspect of (presence) because when you see that it’s permitting you to differentiate and link to ongoing experience whereas mind-wandering doesn't do that.

Then you realize that people either have the trait of being present – that it just happens naturally in their lives – or that people have trained their minds to be present, which is probably more the case for most of us or for any clinician who wants to have more presence in their life as they face the challenges of being a clinician.

“People either have the trait of being present or people have trained their minds to be present.”
Then, this presence permits integration to happen.

What we do in this paper – and certainly in all the writings that I do – is to examine the process of integration and how the mind, when it's able to link differentiated parts, allows the body to achieve states of receptivity, of turning on to what Steve Porges would call the Social Engagement System.

"Integrative processes of the mind allow the self, within the body and within the relational world, to achieve presence within and between."

This is the whole system where cortisol decreases, muscles relax, stress is reduced, and immune function improves.

All of these are an outcome of integrative processes of the mind that allow the self, within the body and within the relational world, to achieve this presence within and between.

That's basically the shortest summary of the long paper we wrote together.

And I'll just say this – without the definition of the mind, we would never have been able to write the paper.

Without the deep exploration of what it means – and this would take us far a field so I don't want to do it – but when you really say there's a process that’s regulating energy and information flow, you have to address the question.

All information rides on energy flow, so that's easy because it’s a pattern – it symbolizes something.

But energy can only be understood in a really deep way, and I talk a lot about this in the *Pocket Guide to Interpersonal Neurobiology*.

**A Quantum View of the Mind**

**Dr. Siegel:** When you really go deeply into how the mind, in fact, might regulate energy, then you see that it passes along a continuum between certainty and uncertainty.

Literally, it’s just like a photon – it has a wave particle property to it.

This quantum view for some psychologists is ridiculous and they roll their eyes, and they curse and get all upset.

"When you go deeply into how the mind might regulate energy, then you see that it passes along a continuum between certainty and uncertainty."

"Integrative processes of the mind allow the self, within the body and within the relational world, to achieve presence within and between."
But the fact is, if you hang out with physicists like I do, and you say, “I'm hypothesizing that the mind is a process of regulating energy,” their ears kind of perk up.

Then, when I say, “What is energy? They say, “We don't really know. But it comes in different forms – there’s electrical energy, chemical energy, light energy – there are all these different forms.”

And it's measured. Some physicists – not all physicists – say it’s measured along this probability curve.

Based on my experience and training in mindfulness, mindfulness allows you to drop the energy curve from these points of probability and certainty to what I call an open plane of possibility where you relax old patterns – you let go of judgments.

You're able to receive what's happening as its happening from this open plane.

I just did an immersion weekend and yesterday, we talked about it. It was amazing to have these advanced students talk about how they applied this in a practical exercise called the Wheel of the Awareness.

This is where people can actually train the mind to drop these peaks of certainty that entrap you either in chronic pain or in psychological conditions that we call psychiatric disorders.

To actually drop them down into this hub of the wheel from this rim (was amazing). They all were recording what their own experience was with their clients and what their patients’ experiences were.

So, this is not something that's just theoretical – it's something that has a powerful foundation to it, and then you can have practical applications, too.

Even in the book, *The Whole-Brain Child*, we teach children to use this Wheel of Awareness practice that basically allows them to free their minds up and to be present.

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**Dr. Buczynski:** Right. Although when we're talking about it as the Wheel of Awareness, we're just talking about different parts along the hub...

**Dr. Siegel:** Along the rim...

**Dr. Buczynski:** Right! Whereas today, you're talking about it as not getting too attached – I’m using that word
— you didn’t. But you used the word certainty.

As we...pull back from certainty, which I think a lot of people in mindfulness talk about – they use the concept of not getting too invested in your story...

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**Mindfulness and Internal Attunement**

**Dr. Siegel:** That's really interesting what you’re bringing up. That's a whole fascinating discussion.

I know for me, the formal practice of mindfulness is really new in my life.

The first time I started exploring it, I was fascinated by some of the things I was reading – like Jon Kabat-Zinn whose outcome measures from mindfulness training and mindfulness-based stress reduction were basically identical to what we, in my field of attachment research, had found never looking at mindfulness or anything like it. But they were the same!

I was at the neuroscience meetings there, and I was just wandering around, looking at the posters, and there were a couple of them about mindfulness.

So, I went up to one of the researchers there and he said, “What are you up to?”

And I said, “I’m an attachment researcher. I don’t know much about this mindfulness stuff, but it's weird because it looks like they have identical outcomes. Why would the relationship of love between a parent and a child result in the child’s mind developing the exact same things as it would by sitting alone on a cushion for a couple years?”

He said, “You really are completely wrong.” To which I said, “Good, I want to be wrong – I want to just clarify what I'm wrong about.”

He said, “In mindfulness practice, we get rid of attachments.” I said, “I don't know what you’re talking about.”

Then, he explained, “It’s when you’re clinging on to six ideas of identity.” I said, “No, no, no...I'm in attachment. I study love. I study the way parents love children enough to let them be free. It’s not clinging on to them. So it's just an interesting word to get stuck on!
By saying *attachment*, Ruth, you mean, not clinging on in a fixed way to previous existing narratives about who you are...

**Dr. Buczynski:** Right. We think of reactivity and what makes us hyper-reactive is that we're certain the other person meant what we think...

**Dr. Siegel:** Yes...so that would not be being present really. You’re bringing your top-down, prior judgments – your pre-judgments into it.

Here's the fascinating possibility. This was my experience...in being immersed in all of this, and I talk about it in *The Mindful Brain*.

I think mindfulness is a way of having what we can call internal attunement.

The relationship between a parent and a child that promotes secure attachment is interpersonal attunement.

What they share in common, is an attunement...For a parent, attunement means...if you are my daughter, Ruth, I’d be tuning into not just your behavior – I wouldn’t just be perceiving your behavior – I’d go beneath behavior to your internal world, and this is what I call Mindsight.

I would sense your feelings, your thought, your memories, your expectations, and I’d imagine what it’s like to be you.

Then I would be attuned to you. The studies are very clever: If I were your dad and this was happening to us, year after year, you’d do pretty well. You’d have a secure attachment. It wouldn't guarantee great things, but it would set you up for resilience in a good way.

There are a lot of other factors that influence development – genetics, friends, all sorts of things.

But attachment is one thing that we, as parents, can do something about. So, that's a good thing.

**“Attunement with mindfulness is an observing-self that is open and receptive to what’s actually going on as it's going on in your sensing self.”**

But now, what is internal attunement with mindfulness?

I think, and I know this sounds weird, but I think it is an observing-self that is open and receptive to what’s actually going on as it's going on in your sensing self – your experiencing self.

Now, I wrote that in *The Mindful Brain*, and I got a bunch of rolling
eyes – as if to say, “There is no observing circuit. There’s only awareness.”

What was fascinating to me was that six months later, Norman Farb (University of Toronto) found these two independent circuits and found exactly this: they’re differentiated, and I think they get linked in mindness.

This is where the notion of internal attunement comes from...You do have an observing-self that could say, “You shouldn’t be talking to Ruth, Dan, that's not right. You should be out exercising and increasing your telomeres or whatever.”

My mind’s observing-self could be super harsh with my experiencing-self...

But if I'm really going to be mindful, I attune, and I say, “Look, it's really great to talk to Ruth. You can exercise later. It's all fine. Take a deep breath. Be present to what's happening as it’s happening.”

That attunement is a gateway to presence.

**Relationship and Attachment through the Lens of Mindfulness and Presence**

**Dr. Buczynski:** Let’s go back to something you said a moment ago. We were talking about attachment and how this quality of good parenting helps build resilience. Then you said that, of course, there are other things like generics and friends...

I'm so glad that you're starting to think about and study presence. I’ve often wondered if presence isn't – not perhaps a way of measuring what we throw around and call charisma, but in a way, is it a measure of that? Is charisma something similar to presence?

Also, in thinking about the concept of presence, the person who has a lot of friends may also be the person who is most present....

**Dr. Siegel:** That's fascinating...

**Dr. Buczynski:** Because if you think about this from a Gestalt prospective, you go from awareness that builds into excitement, which builds into an aliveness and that has to be presence.

“It's the interruption of presence that makes us get stuck.”

It's the interruption of presence that makes us get stuck...so if you think of presence as a live energy, it would be the opposite of mind-wandering. I
think you could find that that is also the person who people want to be around.

**Dr. Siegel:** That's a fascinating proposal and it feels right, and it would be interesting to see if anyone has studied it.

It really would bring the fields of relationships, development, and attachment together with mindfulness and presence in a big way. That's a really great idea, really, really nice.

You're absolutely right. I don't know about charisma -- I don't know exactly what that is. But I know in terms of relationships where people evoke from others a desire to be with them, it would be something you could study.

What's really interesting about that is Alan Stroufe, with his colleagues at the University of Minnesota, did study kids before they were born and then followed them into their first year of life and then has followed them into their third and fourth decades of life.

I don't know if they had a measure of presence -- I don't think they did. But they certainly had a measure of relational ways of being that correlated with secure attachment.

It would be really interesting, then, to do another study and see if you could figure that out. That'd be fascinating. That would be really, really interesting.

You’d also see, by the way, just to build on your hypothesis... As you know, one of the best predictors of your health, your longevity, your overall sense of well-being and even your happiness is through supportive relationships.

It's really interesting to take that apart in a factor analysis sort of way.

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**Presence and Emotional Support**

**Dr. Siegel:** When people study supportive relationships, do they mean they’re talking about emotional support?

Could we detect presence as the key feature when someone identifies emotional support?
Just to give you an example – a number of studies that I've been looking at recently in finishing up this *Brainstorm* book, point to when you're facing a challenge, the thing that really keeps you going is a network of emotional support, not instrumental support – that people are going to get you this or get you that.

It’s the emotional support.

I would love to know exactly how emotional support correlates with presence, in just the way you're saying it – because then, you'd say... emotional support is presence.

...when you take the word emotion, no one exactly has the definition of what emotion is.

In my view – in this wild and wacky way I think, emotion relates to shifts in integration.

When I hear the words *emotional support* – if you and I were in an emotionally supportive relationship – it means that when I get together with you, my degree of integration is elevated...because you're present with me.

With emotional support – if you interpret emotion as shifts in integration – for it to be a positive supportive relationship, you're going to raise my level of integration.

When I look at Barbara Fredrickson’s beautiful work in positive psychology, her work can really be interpreted as an example of positive states that are increasing in integration.

In the positive psychology view of negative state – I don't like to use that term – but from this framework, those states will be decreasing integration, and that's why they feel uncomfortable.

**Dr. Buczynski:** Particularly if – when people get together – you and I or anyone – we're open to the moment of what gets co-created...and not necessarily just attached to just the pieces I already know, which can lead us into talking at each other instead of with each other...

**Dr. Siegel:** Believe me...that is a beautiful way of describing how we can thrive with uncertainty.

Because if you and I were dating together, and we had a preconceived idea – prejudice – on how things should be, we aren’t willing to be vulnerable to allow the process to just unfold as it's going to unfold without controlling it.

In many ways, presence has a certain courage to be vulnerable, and in that, you become a part of something
larger. I call it *mwe* – it’s m-w-e, and it means *me*, but it’s also this togetherness, and that’s the *we-ness* of it all. That’s the interpersonal presence.

**Dr. Buczynski:** One thing I wanted to point out to everyone – remember back to the trauma series when we had Ruth Lanius with us. She talked about...some of the research that was done on women who had early trauma and how, when they parented a baby, they were unable to make their baby smile. They were unable to...connect to that baby.

If you think about that now, you can put that into the context of what Dan and I are talking about – this whole idea of presence evolves, to some extent, from either mindfulness or from this parenting with attachment.

If you’re parented without the attachment, you come to something like what Ruth Lanius was talking about – where you haven’t had anybody focusing that support – and that ties into what you just said – you birth new ideas not from instrumental support but from emotional support.

All of this plays out...

**Meditation and Mind-Wandering**

**Dr. Buczynski:** One thing I wanted to get to before we have to stop and we do have to stop really soon, is this idea of mind-wandering.

I was having a bit of distress...in the beginning of our conversation when we started talking about mind-wandering – probably because a lot of my meditation involves mind-wandering!

**Dr. Siegel:** When you say *involves* it, do you mean that you evoke it?

**Dr. Buczynski:** No. It’s just sort of evoked...and I don’t think that I’m...unusual in that regard.

**Dr. Siegel:** No. I think that’s an extremely...common experience that people have.

First of all, that's very, very common.
In many ways, the focus – if you're doing mindfulness meditation – is to train the mind to detect when you've become distracted from what your intended focus is and to bring your attention back to the present moment, the target of your attention or – your chosen intentional one, like the breathe, for example.

That training has been shown to make people happy.

Everyone’s training mind wanders, so don't worry about that.

You're just going right for the beast – you're saying, “Let me give myself no other focus but the breath for 20 minutes.”

That's pretty boring – if you know what I mean. So, you're just exercising your muscle.

We really need to think carefully about someone who’s just living life and going around, and then the beeper goes off and the researcher says, “Do you know what you're doing?” They're involved in life.

Now, that's probably very, very different than intentionally setting up a mindfulness meditation frame where you have one target for an extended period of time, and your mind has a mind of its own.

That's (definitely) a training to be present and the research shows, even as I mentioned, when you do that for three months – mostly this focused concentration on things like the breath and strengthening attention – those people got happier and they got higher telomerase levels, so they don't have to worry anymore.

That's very different from just your random beeper study, which is how they do the mind-wandering to see if you are someone who’s living life, but you're not even aware of what you're living.

That's a very different thing. I’ve found it particularly amazing that if you had a tendency to mind-wander, even if it was to mind-wander about positive daydreams, it’s still associated with unhappiness – that is, it caused unhappiness!

I could understand people being unhappy – not wanting to be doing what they're doing and so their mind wanders, but this is the opposite – the act of doing it.

That's very different from the mind-wandering that happens in the isolated mind state of a mindfulness meditation training.

So I hope that makes you feel better, Ruth, and everyone else as well – because that's true with everybody.
Even for people who have been doing this for 40 or 50 years, the mind always wanders.

It’s so important to get this message out – this is what we’re doing in our Research Center in UCLA.

We’ll tell people, “Look, it’s actually a moment to be kind to yourself when your mind wanders and you say I’m just human.”

Like a muscle, your mind gets distracted – that’s the relaxing of the muscle – and you redirect attention to the target, and in this case, it’s the breath and your mind gets strengthened.

“Like a muscle, your mind gets distracted – that’s the relaxing of the muscle – and you redirect attention to the target, and in this case, it’s the breath and your mind gets strengthened.”

That's the only way you can really work out a muscle – let it get distracted and then redirect.

Now, of course, people are going to want to get distracted so they can keep on doing this. It’ll be hard enough to just keep on, let’s say, the breath...

Dr. Buczynski: Dan, thanks so much! This has been an awesome, fascinating conversation with so much to think about and to get caught up on – in terms of the people who are doing really interesting work in many different aspects that all tie together and fit in.

I couldn't think of anyone any better than you to bring all those ideas together – so thank you very, very much!

Dr. Siegel: I thank you, Ruth! This has really been a lot of fun...
Benjamin Nelson, Suzanne Parker, Elissa Epel, Dan Siegel.


*Mindfulness training and neural integration: differentiation of distinct streams of awareness and the cultivation of well-being.*

http://scan.oxfordjournals.org/content/2/4/259.full
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