

The Plasticity of Mind, Brain and Body Transcript

October 7, 2020

Presenters: Richard Davidson and Melissa Rosenkranz

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>> **Richard J. Davidson:**

Good evening everyone. I'm Richie Davidson and I am the founder and director of the Center for Healthy Minds at University of Wisconsin-Madison and also the founder of Healthy Minds innovations our affiliated nonprofit.

It's really so wonderful to be joining with all of you this evening, we are living in probably the most challenging time in history that any of us has ever lived in.

There are many challenges, the suffering is just extraordinary.

And yet there are silver linings and one of the silver linings is that we can convene virtually in this way.

We have people from all over the world joining us tonight.

There are people from Australia from Russia, and Siberia and different parts of Europe from central and South America. From different parts of the United States and Australia.

This is truly a global community.

We are really honored, and thrilled to have you all join us here this evening.

The research in our organization is dedicated to the goal of a kinder, wiser and more compassionate world and this is why we do the work we do.

The title of this series of events over the next five days is The World We Make.

And this idea is simply the notion that our minds create our worlds and if we can transform our minds, we can transform the world. Despite the challenges and difficulties that we are facing today, we can envision a post-pandemic world, a world that is based truly on justice, a world where well-being is prioritized.

We can envision such a world and we can act in whatever ways each of us can to help promote this vision that I think all of us participating in this event share.

So, each night over the course of five days to talk about different aspects of the work in our Center and our nonprofit and this is on the occasion of tenth anniversary of our Center. It was ten years ago that His Holiness the Dalai Lama came to Madison, Wisconsin to help us inaugurate the launching of this center. This center is really embodying the dream that we can bring together science, and the wisdom from the contemplative traditions to catalyze change, and to support this change through rigorous scientific research so we can actually cultivate well-being and enable humans to flourish, since most of us I think would agree that the trajectory that we've been on is a problematic

one with challenges in so many different places and one of the potential opportunities that the COVID challenge that we no face is that this be a wake-up call for the planet to turn its attention in other directions and prioritize the importance of human flourishing. I would like to begin this evening by thanking our sponsors for this event.

We have many sponsors who have helped us:

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Delta. All of whom have provided support and enabled us to come together this evening.

We encourage you to join us each evening at 7 p.m. CDT for an hour each evening. We know we have been glued to our screen too much too much during this pandemic and so by spacing this out over five days we thought we can help to minimize screen fatigue. The last evening, on Friday evening, we are very honored to present for the first time a very recent dialogue that I filmed just a few weeks ago with His Holiness the Dalai Lama on the occasion of the 10th anniversary of our Center and I will be joined in showing clips of that

dialogue with my dear friend and colleague, Dekila Chungyalpa, who is the director of our Loka Initiative, which you will hear more about during one of the evenings over this week.

After this evening and each evening, we will have time for questions and answers. So please jot them down, and you can write them in the chatbox, and they will be read to us after the dialogue.

The topic for tonight is Plasticity of Mind, Brain & Body. And I am really happy and thrilled to have joining me this evening a dear friend, a student, a former student and a recent addition to the core faculty of this Center for Healthy Minds -- Melissa Rosenkranz.

>> Melissa Rosenkranz:

Richie thank you for inviting me.

>> Richard J. Davidson:

Great to see you Melissa! So, I first met Melissa when she was an undergraduate at the University of Wisconsin-Madison and she came to work in our lab and actually, worked on a study which turned out to end up being the most highly cited scientific publication in my career.

I can assure you that while I think this study was important it was not our best science but it happened to be the right study to do at the right time.

It was the first randomized control trial of mindfulness based stress reduction, the most commonly taught form of mindfulness meditation in the west and Melissa was

part of that study published in 2003, and they showed that in just a short amount of practice over the course of two months, a total of around 25 to 30 hours of practice was sufficient to induce measurable changes in changes in brain function and also changes in immune function and specifically in this case it was changes in how people responded to the influenza vaccine, a topic of potential importance for our current situation today. And what we found in that study is that just two months of practice was sufficient to produce a measurable difference in how people responded to the influenza vaccine.

The meditators actually showed a boost in their antibody titers compared to their controls.

Melissa was a part of that early study and I think it influenced the direction of her career.

Melissa has been deeply interested in how the mind, the brain and the body are all connected and she has exemplified that both in her science and as well as in her own life.

She is really a remarkable woman of so many talents. She has done Iron Man twice! She has been on long term meditation retreats and she is a scientist of impeccable quality.

So, it was amazing to actually have the opportunity to actually have Melissa join our faculty and it is great for you to be here this evening to start us off on this dialogue.

So welcome Melissa.

>> Melissa Rosenkranz:

Thank you, Richie and if I had known how lucky I was way back in what was it in 1998, in that study, I'm sure I would have messed it up for myself.

>> Richard J. Davidson:

Tell us about your journey and what the important influences were in your early career in getting you to the place you are at now and then we can talk a bit about some of the work you are currently doing, but I think it would be interesting for people to hear a little bit about your trajectory and also about this kind of mind, brain, body science that you are doing which really is so unusual and it would help the viewers to understand a little bit about why it is so unusual and part of it has to do with the methodical changes which you have certainly successfully navigated. Why don't you begin by sharing a little bit of your earlier times?

>> Melissa Rosenkranz: Sure! Well when I said how lucky I was to join that study back in 2003, it was lucky because at the time I was just a 21-year-old with big ideas about what I thought was important in the world, and one of those ideas was that our mind incredible power over our bodies.

And I believed that it was true.

I really did not know fraction of what I know now.

And I really did not know it was something I could pursue as a career.

So, I was extremely fortunate to find myself in the happy circumstances, being hired as a research assistant to work on the lab's first meditation study.

And particularly, the role that I played in that study was the immune component of that study, understanding the role of the brain was in shaping the results of the influenza vaccine. It really did go on to shaping much of my career, I didn't know it at the time but now it really has. Now that work has transitioned into studying chronic inflammatory disease and what the role of the mind and the brain is in, initiating chronic inflammatory disease and shaping that course of that disease over a life time.

And at the time, as I said, I did not realize that was something that you could study but that has unfolded over time, that the techniques that exist to do that have been unfolded over time.

When I started neural imaging, it was in its infancy, and there was nobody answering these questions using humans because you really could not study the brain in that way in humans at that time.

But since that time, my work and the work of others in my field, the field now is called psychoneuroimmunology. That field has evolved and now we can answer some have those questions using neuro-imaging tools to understand how the brain really shapes the function of body.

I love that this event is called The World We Make because the way that I think of the work I do and the role of the mind and the role of the brain, really is part of

shaping the world that we inhabit in terms of our own health and well-being.

And it is such an important piece of the puzzle to harness and understanding how our mind and our brain contribute to our illness but also how our mind and brain can be harnessed to prevent deleterious aspects of our health as well as to promote flourishing of our well-being.

>> Richard J. Davidson:

Thank you, maybe you can share a bit about why inflammation is such an important area to focus on why inflammation?

Also, maybe you can say a little bit about how you have actually studied inflammation and what are the different ways you have measured it.

>> Melissa Rosenkranz:

The way that I think about the role of the mind and brain, in this, mind brain body connection and in many ways serving as a prediction device.

And trying to determine based on our previous experiences, based on our memories, and our expectations -- what the conditions that we are going to inhabit and what conditions our body will be in the next second, in the next minute, and in the next hour or week, whatever time scale you are looking at is.

And trying to best prepare our bodies for whatever that circumstance will be.

And so inflammation is an important part of that process when it comes to the immune system because the inflammation is first tool that our immune system has in preventing against invading pathogens so inflammation is at really at work in our barrier tissues in the way that pathogens first enter our body -- entering our nose, our mouth, our gut and that's important. When those signals are transmitted to our brain, our brain responds in a way to best protect us from the potential for invading pathogens but what is interesting is that system evolves at a time when most of our stressors were things like being hunted by a predator or being attacked by a member of a rival tribe or some sort of physical threat, and so it made so much sense for our brain to preempt an injury with an inflammatory response, because that was most likely the circumstance our body was most likely to be in. So, by launching a preemptive inflammatory response it would likely be protective.

But today the stresses that we face usually are not that type of stress that result in injury or exposure to pathogens so that launching of a preemptive inflammatory response now isn't really very helpful, unfortunately and is probably one of the contributing factors in the rising rates of chronic inflammatory disease and just generally an inflamed state that so many people in the world experience and suffer from on a daily basis.

So the techniques that we are working on are both to understand what those connections are and then how to harness them, so we can prevent the negative effects of that chronic inflammation, that can be caused by the stressors we experience in our daily life and also to promoted a healthy balance of immune system function.

>> Richard J. Davidson:

I think it would be helpful now to just say a couple of words which I will do to help viewers really appreciate what you just described and elaborate on it a bit.

One of the evolutionary achievements that we all have as human beings is this big hunk of real estate in the front of our brain which we call the prefrontal cortex.

And that area of the brain is really important for prediction. Melissa talked about prediction.

We know that the prefrontal cortex can anticipate the future and it can reflect on the past also.

Psychologist and neuroscientist call this mental time travel, and this is something that humans can do in a way that far exceeds what any other species is able to do.

And it confers obvious advantages but one of the disadvantages is that we can anticipate something in the future and worry about it.

We can have anticipatory anxiety about it. We can ruminate about something in the past and have negative emotions associated with that rumination.

And so, our mental time travel can actually create an enormous amount of suffering.

There was a famous book, which you know of Melissa, that was written by a good friend of ours, who is a biologist at Stanford, Robert Sapolsky named “Why Zebra's Don't Get Ulcers,” and the reason why Zebras don't get ulcers, I am sure our audience can guess, but the reason why is because they have a really puny prefrontal cortex and they can't do this mental time travel and so they are actually living in the moment in a way that is much more difficult for people to do.

One of the things I often say, and if anyone in the audience has any evidence on this point, I would be interested in learning about it. But I think most of us would agree that the incidents of psychiatric disorders are much greater in humans than it is in any other species.

And it is greater in humans because of this remarkable evolutionary achievement that we all benefit from but also creates a lot of suffering.

So one of the strategies that we have taken in our Center is to examine specific practices that may help to train the mind and brain in ways that would enable the prefrontal cortex to be harnessed in more healthy ways as opposed to the kind of anticipatory anxiety and worry and rumination that can lead to a lot of suffering and as Melissa explained can also activate the inflammatory response even though there is nothing happening in our environment other than all of the stuff going on in our head.

>> Melissa Rosenkranz:

If I could just elaborate on that a little bit. I think it is so powerful to understand how important our expectations are for the functioning of our body. There are all kinds of super cool studies that show how radical the expectations that we have or what we believe is happening, has on our actual physiology.

And I can talk about all kinds of really interesting examples but one that I think is really good for the moment is that someone who believed that they had been exposed to COVID and were very concerned about their likelihood to develop COVID then actually developed a fever, nausea and many symptoms consistent with COVID and then later learned, they actually hadn't been exposed.

The point that I am trying to make is not that this was psychosomatic at all but the belief that something is happening in your body can actually bring about physiological changes that are consistent with that belief, and that is an example of when that can happen when in a situation when your mind or your expectations or beliefs can harm or create harmful circumstances in your body but that can also go in the other direction where the expectation or your prior experience with something can create a protective context in your body as well.

And that is I think one of the things that makes the work that we are doing in center unique, is though we are not the only ones addressing this question but really trying

to understand how we can intervene to harness those expectation and that power of the mind to promote health and well-being and not to be just to have it be a neutral factor if that makes sense?

>> Richard J. Davidson:

Yeah, that's great! One of the coolest studies that I know of on the potential beneficial effects of expectation is this study that was done quite a few years ago. It was published in science a very prestigious journal, with Parkinson's patients and what they did in this study is that these patients all had been given L-DOPA for the first time, which is a drug used to activate the dopamine system which is where the disease resides in Parkinson's patients and there are particularly in the early stages of treatment with L-DOPA and there are really discernible consequences, beneficial consequences of taking L-DOPA and what they did in this study is soon after their initial doses of L-DOP, they randomized the group to either receive placebo, a sugar pill or to continue receiving actual L-DOPA. They measured the changes in their brain with a special brain scanning technique called Positron Technique Tomography where they were actually able to measure the dopamine release in the area of the brain that is specifically impacted.

And the nigral striatal region, so they can actually measure the consequence of this. And what they found remarkably is that when the patients were switched to placebo, they were initially showing as high an elevation

in dopamine in the nigral striatal region of the brain were patients were receiving the medication.

But it was around the 20% increase.

This is really an amazing observation that illustrates how specific the power of expectation can be in transforming in our brain.

One of the things I spent a lot of my time in the earlier part of my career regaling about was to help the lay public appreciate the kind of dualistic notions of mind and brain that we often have adopted in our culture, where we often think about, well-being for example as something psychological and it is not really sort of physical.

And yet, all of your research Melissa shows that if it is psychological, it is also physical.

>> Melissa Rosenkranz:

Yes definitely, and that power of expectation paired with the context is so incredibly powerful in bringing about the reality of the reality of your body really of what is happening in your body.

What Richie described with L-DOPA has also been shown in the immune system and immune conditioning and it's been shown and that is actually is one of the things that inspired my entire career is the ability to classically immune system. Much in the same way that Pavlov's dogs learned to salivate in response to the sound of a bell, you can do the same thing with a immune response and just Richie was describing the specificity of the release of L-DOPA in response of

receiving the placebo, when that's when the patients were expecting you can get the same effect with conditioning the immune response and one classic example of this was Robert Ader's work who was one of the founders of the field psychoneuroimmunology and he demonstrated that when paired with a novel taste or scent an immune modulating drug could produce the same effects when the immune suppressive drug was paired with novel taste or scent. Then the participant was re-exposed just to the scent or taste alone would actually show the same immune response as they would to a very potent drug and it's very specific. And that has been used therapeutically to reduce the amount of drugs that people with diseases that require drugs that are toxic to them have to take.

It's also responsible for the phenomenon that people who are going through chemotherapy sometimes just associate driving up to the hospital, where they receive chemo making them nauseous and that's an example of where that physiological conditioning can be harmful. But we can take those same relationships and harness them for really positive effects. That's where I see the really exciting dimension of this work.

In fact, we have done some of that not with conditioning but using mindfulness training as a way to improve asthma control in individuals who have moderate severity of asthma.

>> Richard J. Davidson:

And before you talk about that, we will work on asthma control, I want to just have a little bit more context and have the viewers appreciate how you actually came to study asthma.

And so, we at one point were reflecting on physical diseases that are major public health issues.

Where there is incontrovertible evidence that shows that psychosocial stress can actually exacerbate the symptoms of the illness and where this is very good measurable biological end points for the illness and we thought that if we can identify an illness of this sort, it would be a good model system, if you will, for exploring mind, brain, body interaction and for a variety of reasons, and I should say that there are many illnesses which fit the bill, so-to-speak but for a variety of reasons we chose asthma.

This has been a major focus of your work, Melissa. So, I wonder if you can say a little bit about sort of how we landed on asthma, why asthma is so useful?

If you will as a disease that is not only a disease where we can actually make a difference to improve the lives of asthmatics but where it serves as a model for this kind of mind, brain, body interaction?

>> Melissa Rosenkranz:

Sure, and yeah asthma has been part of my work really since the beginnings, since I was a graduate student. And there are several factors that went into landing on asthma and also one of reasons why I have stayed at UW for so long because this work has really flourished here, and there are a few reasons why it has flourished here, and one is that we have at UW one of the best asthma research groups in the world.

And I have been very fortunate to be able to work with that group.

Asthma, as you mentioned Richie, is very vulnerable to stress and emotion and induced flare-ups. There is a high co-morbidity between asthma and psychopathology primarily anxiety and depression.

If you have asthma, you are more than twice to likely to have anxiety and depression than somebody who does not have asthma. One of the most important factors for me was the crux of my career was focused on trying to understand the mechanisms through which this relationship happened. What are the neural pathways that give rise to this relationship?

And in order to really study those mechanisms you have to be able to study the disease process itself.

And what is unique about asthma is that we can provoke exacerbation like conditions in asthma without it being particularly risky or unpleasant for our participants and without influencing really the course of their disease.

So to do this, we used what is called an inhaled allergen challenge where our participants who have allergic asthma actually inhale what they are allergic and it will provoke airway inflammation and we can study their brain when they're in a non-inflamed state and then we can study their brain using neural imaging tools when they are experiencing airway inflammation and we can see how their brain processes emotional information differently and in those two conditions, we can provoke a stressful experience and see how that impacts their response to inhaled allergen, which is a study that we just wrapped up recently.

So there are a number of things that we can do with asthma and there is also a clear objective outcome measures in asthma including measures of airway inflammation that we measure through local tissue, that we cannot do with chronic inflammatory diseases for example in rheumatoid arthritis and can't really take a sample the synovial fluid or the joint very easily. That will be very invasive and our participants are not going to want to do it and it's not necessarily ethical and provoking an episode in a disease like that does impact the course of the disease. That's not ethical to do.

>> Richard J. Davidson:

Let me interrupt you for the interest of time because we a few more minutes before we move onto questions.

And I wanted to ask how different forms of meditation may change the mind and the brain in ways that might impact the inflammatory response in asthma?

And you have really been a pioneer in examining that question using the most rigorous tools we have available today.

Tell us what you found?

>> Melissa Rosenkranz:

Well, I think that one way to understand this is by thinking about the fact that the body is always sending signals up to the brain and informing about the condition of body and what it should be prepared for and the brain is responding sending signals down to the body and regulating those processes so it's kind of a circle.

Two of the key regions that are involved in this circle of communication are the intel and anterior singular cortex and depending on –

>> Richard J. Davidson:

Two regions of brain that has important connections to different parts of the body.

>> Melissa Rosenkranz:

Right and so you can sort of think of those two regions in some ways as sentinels that are on the lookout for threats that are coming.

Threats from the body and depending on the psychological status they can be more or less cued up and sensitive to those incoming threats.

So, you can imagine that a meditation practice that is focused on the body, might have the impact of reducing the reactivity of those brain regions.

So, when the brain is receiving these signals, from the body, they are less likely to overreact, so-to-speak.

And you know, you have to keep in mind that this communication is bi-directional so the signals are coming up from the body but then the brain is responding in trying to prepare the body for what is to come next. You can imagine that can get out of control if those brain regions are responding in an aggravated sort of way.

But if you can reduce that activity of those brain regions you have the potential to reduce sort of the domino effect of that cascading effect of that inflammatory response.

We actually found evidence that those brain regions are involved in the processing of emotional information.

And what we are trying to learn now is what are the neural circuits through which meditation can impact the measurable outcome of disease course.

We have used asthma for this purpose, and we have shown that nearly 8 weeks of beginning mindfulness

training can improve asthma control. This is both self-reported and objective measures of asthma control in terms of how much medication people are using, how many times they have been woken up by their asthma in the night.

You know, how much inflammation they are having in their lungs.

These objective measures of asthma that are used clinically are reduced in people who have undergone meditation training compared to people who have not.

>> Richard J. Davidson:

What is your final thought?

>> Melissa Rosenkranz:

We are in the process trying to understand what has changed in the brain as a consequence of that meditation training that is related to the change in outcome measures that we are seeing in response to mindfulness training.

So, you will have to stay tuned for the answer of that question.

>> Richard J. Davidson:

Great!

Well thank you Melissa and there are a lot of questions, I think, so I believe Shaun will come on. Hello Shaun!

>> Moderator:

Hello everyone, thank you for joining us everyone. Our first question, what tools can be used to increase resilience and reduce psychological distress in those who cannot even sit briefly in silence?

>> Melissa Rosenkranz:

You want to take it?

>> Richard J. Davidson:

I will start, and you can add whatever you like.

I would say that we're a great believer in the development for example the Healthy Minds program of very short periods of practice, to begin with.

And so, people often say they cannot sit still and meditate, and what we often will then say is tell me what the minimum amount of time is that you feel you could sit?

And do this every day for at least 30 days.

Even if it is just one minute.

That is one strategy.

A second strategy is forget about sitting!

Don't sit still.

And you can engage in this same mental practice as you are engaged in other activities of daily living.

Our Healthy Minds program app, which is freely available throughout the world, and if you take a look at this app you will see that there are practices that you can do that are called active practices which do not require you to sit for one minute, you could do while you are walking, while you're the dishes, while you're doing your laundry, whatever it might be. So, I would encourage you to explore these different options and figure out what may work best for you.

>> Melissa Rosenkranz:

You know I like that you talked with not having to do meditation sitting.

One of my favorite ways to meditate is actually while exercising.

So, I am a runner and a swimmer.

And I love to focus on my mind and try to still my mind while I'm doing those activities and in fact, it makes them so much more enjoyable and profound, I feel like, but it is also important to realize that mindfulness meditation practices may not be for everyone and there a lots of ways in which you can care for your mind and your well-being.

So, exercise is another one, spending time in nature.

That often in and itself event without trying does settle the mind in ways that being in the midst of a chaotic environment does not.

Spending time connecting with others is another practice that we can do intentionally to cultivate our well-being and these things that we don't think about as meditation or mindfulness type practices are actually components of what we are cultivating during the intentional meditation practices and you can do them without thinking the fact that you are meditating or doing anything that you associate with a contemplative practice.

>> Richard J. Davidson:

Thank you.

Next question?

>> Moderator:

Thank you.

Our next question: Is there research that shows differences between biological markers of stress such as interleukins and contemplative practices?

>> Melissa Rosenkranz:

There is research showing associations between contemplative practices, and changes objective immune markers if I understand that question correctly and the literature to be honest in that regard is very mixed. Some studies show changes, some studies do not. And it is important to realize that immune system is there for a reason. Inflammation is not necessarily a negative thing, we need it. In fact, we would die without it.

And if you remember when I started this conversation, we talked about why inflammation is so important particularly; inflammation and barrier tissues.

So, where you really tend to find effects is where you are studying people who have elevated inflammation to begin with.

And there, you are finding sort of unhealthy levels of inflammation, a dysregulation if you will, of the immune this system that you are then reigning in and bringing more control. When you're studying healthy populations, you don't tend to see changes in markers as often. It is usually in populations that are suffering from some sort of the inflammatory conditions.

>> Richard J. Davidson:

Thank you, Okay next question.

>> Moderator:

Okay thank you.

So, the question we have now: Is breath focused meditation advisable for asthmatics? Can focusing on breath for someone struggling with breathing a safe practice technique?

>> Melissa Rosenkranz:

That is a really good question. We have one dataset to speak to that.

A lot of meditation that was taught in asthmatic participants that use breath meditation and I do think that a lot of participants found it beneficial and I don't think it I would say that is unsafe.

>> Richard J. Davidson:

It is mindfulness of breathing; it does not involve any manipulation.

>> Melissa Rosenkranz:

That is an important distinction because I do think manipulation of breathing may cause problems for some people who have asthma but merely focusing on the breath, actually many people with asthma find quite helpful and I would not think that there is nothing unsafe about it.

Although everyone should be their own guide, and if they are finding, and meaning that question maybe arose from the idea that focusing on breathing particularly for somebody who is very new at it may give rise to panic.

If one's airways feel tight and tension can give rise to increased anxiety.

And so, if someone is experiencing that, they should back off and try different attention on a different aspect of their experience.

Try something else with that speaks.

>> Moderator:

Next question, can you train someone with really advanced chronic pain to stop their pain?

>> Melissa Rosenkranz:

Thank you for that question and first and foremost and the idea that meditation stops pain is not accurate.

So, my dear friend and teacher John Kabat-Zinn, would always say that the idea of mindfulness is to change your relationship with your pain or your suffering as it's not going to make it go away and this is not magic bullet, it's not magic at all.

Really it changing your relationship with and the degree of suffering that's associated with the experience of pain. But it will not make the pain go away. I do think people who are suffering from very severe advance pain can be helped by these practices just like someone who has more mild pain.

It works the same way but it isn't going to make it go away.

And it can help.

>> Richard J. Davidson:

I completely agree, thank you.

>> Moderator:

Could you speak to the evidence of that rumination and anticipatory anxiety relating to chronic inflammation.

>> Melissa Rosenkranz:

I don't know of any specific evidence to speak to the relationship between rumination and anticipatory anxiety related to chronic inflammation but theoretically, they are very closely related when you think about the constructs that give rise to an inflammatory response we know that the increased experience of stress, causes a cascade in the body that causes a release of inflammatory mediators and one of the most striking effects actually that is really permeating the literature right now is effects of early childhood adversity on inflammatory markers and the development of inflammation across the lifespan. And this being one of the ways in which early child adversity leads to all of the impacts that it has across one's lifespan.

And so I think that rumination and anticipatory anxiety are sort of two are parts to this much bigger picture of this psychological sense of threat and we're prepared for constantly that puts our body in a state on being prepared for injury and it isn't a good match for the circumstances that we are actually in that lead to these situations of dysregulated inflammation.

>> Richard J. Davidson:

Maybe one more question?

Shaun if can you give us one last question?

>> Moderator:

Have your studies shown a connection between inflammation and over stimulation of sympathetic nervous system?

>> Melissa Rosenkranz:

There is a lot of literature showing that and there are several pathways in which the experience of psychological stress and emotion more generally gives rise to inflammation in the body and one of the major pathways involved in that is sympathetic nervous system activation. So the sympathetic nervous system innervates immune system organs in the body and the bone marrow which can influence the lineage of different cells which are emerging from the bone marrow cells participating in inflammatory processes and the neurotransmitters and chemicals that are released from this the sympathetic nervous system are known to be catalyst for activating inflammation in the body so yes, the sympathetic nervous system is definitely involved.

>> Richard J. Davidson:

Thank you so much, and we have ten minutes left and we will do a little practice but I want to ask you one question Melissa before we end, you are involved in some work that truly is on path breaking and has enormous public health implications.

And to sort of preview and ask a question about it, one of the issues which you are exploring is whether the local inflammation that we see in a disease like asthma may provoke or may be associated with a more systemic inflammation that can include inflammation in the brain which can actually accelerate neural degeneration and produce premature brain aging as well as various forms of dementia and cognitive decline. Can you just share with us whatever you can in just two minutes and what the implications of that work might be of how contemplative practices which may be an anecdote to some of this may have a salubrious effect modulating those processes and actually leading to better brain health?

>> Melissa Rosenkranz:

Yeah, so this is an area of research that is occupying a lot of my time these days. It's this idea that inflammation in the body provokes inflammation in the brain, this has been shown in a variety of different models.

And I am not the only one studying this question but the evidence does suggest that inflammation in the body and including asthma, does provoke inflammation in the brain.

And inflammation in the brain is one of the factors that is associated with all different sorts of neural degeneration including those associated with Alzheimer's disease and other forms of dementia as well as other types of neural degradation.

And I am not suggesting that asthma will leads to these long-term consequences and it's a question we are pursuing this now but if this does bear out and if our hypotheses are right, it suggests that asthma is only one disease that affects about 10% of the population, and maybe are greater risk for dementia than they would otherwise.

That has all sorts of implications for public health and public policy including how we manage those diseases but one of the ways is that we can manage those diseases is through these contemplative practices.

And we now have evidence that meditation can improve asthma control and prevent airway inflammation.

If that is true it can be one tool of protecting our brains against premature aging and the neural degradation that maybe associated with chronic inflammation in the body.

And I think a really important area of pursuing.

>> Richard J. Davidson:

Great thank you so much Melissa and we will end this evening with a witness of practice which I will happily guide.

We have people from all over, it is so wonderful to see you.

And I would like to invite you to sit in an upright posture. Perhaps close your eyes, and we can give our eyes a rest.

But if you feel more comfortable with your eyes open, that is fine too and let's begin by simply settling in our bodies, and bringing awareness into our bodies. Checking in with how we are doing.

And as we begin this short period of practice together, it is often helpful to remind ourselves why we are here.

And why did we all make the intentional choice to gather together this evening?

Let's see if we can find within us the recognition, that calming our mind and opening our heart is beneficial not on for ourselves, but it is beneficial for all of the beings that we touch directly and indirectly.

So, let's spend a few moments seeing if we can find this altruistic motivation for doing this practice.

During this time of the pandemic, there is great suffering and so many challenges around us.

In order to live our daily lives, we depend on so many others.

Perhaps to deliver packages to our house.

Front line medical care workers.

Folks who deliver the mail.

Whatever they maybe.

Neighbors who help us in one way or another.

Our children.

Our parents.

Let's bring one or two people who have been helpful to you during this time into our mind and heart.

Let's allow this sense of appreciation to be present.
Appreciating all they are doing to be helpful at this time.
Let's extend the circle of appreciation for all who joined
us tonight, and Siberia, to Australia, to Mexico and
many many others.
We all share, I think, a common vision of a kinder, wiser
and more compassionate world.
And let's extend this appreciation to all of us and what
each of us is doing to help nudge the world in a
healthier direction.
So, for those of you whose eyes have been closed,
please open them.
And I want to end by thanking everyone for joining us
this evening.
I would like to remind you again that we are doing
different events each evening at 7:00 central U.S. time.
Tomorrow's event will be on the developing mind and
we are going to explore how inequality affects
emotional health of children and their families.
Specifically, looking at the effects of poverty and trauma
on the developing brain and what we can do about it.
And I hope this free event is valuable to you and we
encourage you to share this with your friends and
family.