

The Neurobiology of Trauma: How the Brain Experiences Unresolved Trauma

A Webinar Session with
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and Ruth Lanius, MD, PhD

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of Behavioral Medicine

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Contents

Defining the Four Deficits of Early Life Trauma	3
How We Study the Effects of Trauma on the Brain	4
How Early Childhood Trauma Affects the Brain	6
Exploring the Relationship between Emotional Numbing and Alexithymia	8
Connectivity: Brain Activation and Clinical Symptoms	9
The Default Mode Network	10
Exploring Three Concepts Related to Early Life Trauma	11
Visualizing the Default Mode Network	12
Future Directions in Trauma Treatment: The Stage-Oriented Approach	14
TalkBack Segment with Rick Hanson, PhD and Bill O’Hanlon, LMFT	17
About the Speakers	23

The Neurobiology of Trauma: How the Brain Experiences Unresolved Trauma

with Ruth Buczynski, PhD
and Ruth Lanius, MD, PhD

Dr. Buczynski: Hello everyone. I am Dr. Ruth Buczynski, the President of the National Institute for the Clinical Application of Behavioral Medicine and a licensed psychologist here in the State of Connecticut. I am so glad that you are here today. Welcome back to our series on the treatment of trauma.

My guest tonight comes highly recommended by Stephen Porges and Bessel van der Kolk. We are very excited to hear her work and the topic is something I know you have been asking for – what happens in the brain of someone with unresolved trauma?

Dr. Ruth Lanius is Associate Professor of Psychiatry at the University of Western Ontario in London, Canada. She is co-editor of the book *The Impact of Early Life Trauma on Health and Disease*, a member of the Board of Directors of the PTSD Association of Canada, and an author of many published papers and chapters.

Ruth, thanks for being here. It is so good to talk to you!

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

Defining the Four Deficits of Early Life Trauma

Dr. Buczynski: Eventually, we will get to what early life trauma means for treatment, but first, how does it affect the brain?

Dr. Lanius: People who have post-traumatic stress disorder related to early life trauma have four important deficits. One involves problems with emotional awareness - being disconnected from their inner emotional life, not knowing what they feel and not having a language to communicate their feelings. That often leads to a cascade of difficulties in relationships and in their ability to regulate their emotional states; they don't know what they are feeling.

Individuals with a history of post-traumatic stress disorder related to early life trauma often have problems with emotion dysregulation; they're on an emotional roller coaster. They feel like they have no control over their emotions - actually they feel controlled by their emotions.

That can lead to a number of difficulties like substance abuse; people feel so overwhelmed by their emotions that they often turn to alcohol or street drugs in an attempt to regulate their emotions.

They can also turn to disordered eating habits like starvation - people often tell us that when they starve themselves, their emotions get less intense – or binge purging in an attempt to numb themselves for short

“The four deficits: problems with emotional awareness, emotion regulation, self-referential processing, and a stable sense of self.”

“When taking a person’s history, put the symptoms into the context in which they occur.”

periods of time in order to overcome the intense emotional experience.

As a result of emotion dysregulation, people can also turn to self-mutilation; people often tell us that they cut themselves, burn themselves, pick their skin or tear out their hair in a desperate attempt to calm those overwhelming emotions.

It is important to be aware of the context in which emotion dysregulation occurs. When you take a history, ask people why they are doing this; why they are taking drugs; why they are resorting to disordered eating. Attempt to put the symptoms into the context in which they occur.

Emotional awareness and emotional regulation are two huge problems because the whole social function is difficult for our patients. As Bowlby said, when people grow up not having a secure base, they often don’t have a caregiver they can rely on. They don’t know what a normal relationship is - what trust is, how to manage anger or how to feel safe with someone else.

Our patients have tremendous difficulties interacting socially and this is related to the concept of self-referential processing – how we really view ourselves.

Our patients with post-traumatic stress disorder related to early life trauma often see themselves as being worthless, broken, not worthy of being treated well and they expect the worst things to happen to them.

“...when people grow up without a secure base, they don’t know what a normal relationship is...”

If you perceive yourself in this way, it is very easy to get involved with relationships that are problematic, which is a key problem with our patients. In addition, they often experience intense shame and guilt; their self is annihilated and this further perpetuates these destructive relationships.

The four deficits - emotional awareness, emotion dysregulation, social dysfunction/self-referential processing and not having a coherent and stable sense of self - feed into each other. Those are the four areas I want to focus on during my talk today.

How We Study the Effects of Trauma on the Brain

Dr. Buczynski: What is your research like? How do you identify what is going on in the brain when someone has experienced trauma or is reliving it later?

Dr. Lanius: We do a number of experimental paradigms. When we first started doing our research, we actually had people recall their traumatic memory versus a neutral memory, an anxious memory or a sad memory that wasn’t related to their traumatic experience.

“...people respond very differently when recalling their traumatic memory.”

One of the first things we learned from our patients was that people respond very differently when recalling their traumatic memory; we saw this by using a magnetic resonance imaging scanner (which I am going to refer to

as fMRI from now on), which helps us to see what brain regions activate when people are recalling their traumatic memory.

When asked to recall their traumatic memory, about seventy percent of people have a reliving flashback response; they feel that they are right back at the scene of the trauma and they can see, hear and feel things they experienced there. We had a man who was stabbed in the neck and he could actually feel the blood running down his neck while he was in the scanner.

These fragmented memories are being relived as if they are occurring now, even though they may have occurred twenty years ago – these are really timeless memories.

About seventy percent of people who experienced their traumatic memory like this had an increase in heart rate. In the frontal lobe, the activation of the medial prefrontal cortex, which has dense connections to the emotional brain and the amygdala, was decreased. We hypothesized that this would lead to an over-activation of the emotional brain, including the amygdala, and cause this hyper-arousal and fear response.

“The other thirty percent disconnect... by having out-of-body experiences.”

The other thirty percent of people reacted very differently. When they heard the traumatic memory in the scanner, they disconnected from the emotional content of the memory by having out-of-body experiences or feeling like everything was unreal. They would often say, “I was disconnected from the memory” and they usually didn’t have an increase in heart rate.

We saw very different patterns of brain activation for them. Rather than seeing a decrease in the medial prefrontal cortex, we actually saw an increase. The medial prefrontal cortex has dense connections with the emotional part of the brain, the amygdala, as I spoke about earlier. We interpreted that to mean that this part of the brain was dampening the amygdala, leading to hypo-emotionality and lack of heart rate response.

Dr. Buczynski: Will these people have alexithymia?

Dr. Lanius: Some will have alexithymia, which is the inability to know what you’re feeling and put words to your feelings. We found that people who had an out-of-body response while recalling their traumatic memories tended to have a greater history of prolonged early life trauma. They tended to go between these out-of-body experiences and reliving responses, whereas people with solely adult trauma tended to only have re-experiencing experiences.

Alexithymia was related to a history of early life trauma and prolonged trauma. When we looked at all the studies through meta-analysis, we also found that alexithymia is very prominent in the veteran population; they seem to have a real problem knowing what they feel and putting words to their feelings.

Dr. Buczynski: Would you hypothesize that they acquired that problem in the service or that they came to the service this way?

“When asked to recall their traumatic memory, about seventy percent have a reliving flashback response.”

“Alexithymia is related to early life trauma and prominent among veterans.”

Dr. Lanius: Probably a bit of both. There are some theories about emotional awareness – for example, by Lane and Schwartz – that hypothesize that you need secure attachments with caregivers in order to fully develop your capacity for emotional awareness (knowing what you feel).

But when you are working in the military, it is not always beneficial to know what you are feeling because it can be so overwhelming. Part of your job is to suppress that. There may be some early developmental problems, in addition to being in the service, but also I think part of the training is to numb-out and not know what you feel. Future research really has to disentangle the two and the relationship between them.

Dr. Buczynski: Do you think a lack of attachment or trusting relationship goes with early childhood trauma because that trauma might not have happened had the parent or adult been more in charge?

“...you can never understand trauma outside the context of the attachment relationship.”

Dr. Lanius: Absolutely. I think you bring up a very important point; you can never understand trauma outside the context of the attachment relationship.

Dr. Buczynski: Even though the perpetrator might not be the primary person; it might be a neighbor, an uncle or boyfriend.

Dr. Lanius: Absolutely. If the child has a secure base and protective caregiver who is in tune with the child and more likely to pick up on difficulties, the child is more likely to disclose the abuse because they feel safe. If that is not present, that is a large risk factor for the traumatic event having much greater effects.

“...a lot of people, especially with early life trauma, go back and forth between detachment and hyper-arousal experiences.”

Dr. Buczynski: It seems to affect the brain in two different ways: seventy percent of the people seem to have a hyper-arousal and thirty percent of the people seem to have a detached separation from the experience.

Dr. Lanius: Yes, and it is also important to realize that a lot of people, especially with early life trauma, go back and forth between detachment experiences and hyper-arousal experiences.

How Early Childhood Trauma Affects the Brain

Dr. Buczynski: How much have we been able to actually determine, in terms of what is happening in the brain? What effect does early childhood trauma have on the brain?

Dr. Lanius: We are making gains in understanding the neurobiology underlying emotional awareness, emotion dysregulation, social-emotional processing, self-referential processing and the relationship to the sense of self this may have.

We are still in the early stages, but I think over the last several years we have made gains in understanding what happens in the brain with those four key aspects of early life trauma.

Dr. Buczynski: What do we know about social functioning, the third aspect?

Dr. Lanius: Recently, in neuroscience literature, we have learned a lot about social-emotional processing - how emotions are experienced within the context of a social relationship.

They can be positive or negative in nature. For example, praise and pride are positive social emotions, whereas feeling rejected or criticized are negative social emotions. The neural circuitry specifically underlying social-emotional processing has been identified in healthy individuals.

“...emotions - positive or negative - are experienced within the context of social relationship.”

Social-emotion processing includes many areas of the brain. The dorsal medial prefrontal cortex is a brain region that allows us to engage in self-reflection and knowing what we feel. The posterior cingulate cortex helps us to evaluate objects and events for self-relevance.

The temporal poles have been shown to be involved in mentalizing - attending to your own mental state as well as the mental health of others. The amygdala, which we have talked about in terms of being part of the fear center, is also important in social-emotional processing.

“The circuitry of social-emotional processing is disrupted with PTSD related to early life trauma.”

Knowing this neural circuitry in healthy individuals gave us a chance to start examining it in people with post-traumatic stress disorder. Paul Frewen and I, along with others in our group, embarked on a study of positive and negative social emotions.

We found that this circuitry of social-emotional processing seems to be disrupted in people with PTSD related to early life trauma. We see changes in the dorsal medial prefrontal cortex, the area involved in self-referential reflective functioning, as well as the amygdala and the temporal poles (the area involved in mentalizing).

Dr. Buczynski: What is the definition of mentalizing?

Dr. Lanius: Mentalizing is the ability to attend to your own mental states as well as those of others. If you think about a mother mentalizing her infant, it is the mother’s ability to keep the mind of the infant in her own mind.

It is an extremely important concept for psychiatry and for pediatrics, because it is a key process in developing a secure attachment or a secure base for the child. There are now several psychotherapies developed by Peter Fonagy, John Allen and others that help further the process of mentalizing in an attempt to heal from complex attachment trauma and other early life traumatic experiences.

“Mentalizing is the ability to attend to your own mental states as well as those of others.”

Dr. Buczynski: You just gave us two names that might be unfamiliar to folks. Since it is a process they might want to look up, is there a particular name for that therapy?

Dr. Lanius: It is called mentalization-based therapy and it is designed for people with a history of early attachment trauma and other life trauma. It’s often used in borderline personality disorder.

Dr. Buczynski: How do you do your own research? Was it a matched control study?

“...mentalizing-based therapy is designed for people with a history of early attachment trauma...”

Dr. Lanius: We usually study two groups: people with PTSD related to early life trauma and a group of healthy individuals with no psychiatric history.

Ideally, we would also study people with a history of severe early life trauma without post-traumatic stress disorder, but we found that if we matched our PTSD

group with people who have had a similar extent of traumatic history, invariably they will also have a psychiatric history.

Dr. Buczynski: Are you saying that there aren't any people that have had early life trauma who don't currently have psychiatric histories?

Dr. Lanius: Not at all. There is a definitely a group that have had a history of early life trauma and have never developed PTSD. But we found that if we match our groups by the extent of the traumatic experiences that they have had – and our group has had tremendous experience of early life trauma – then we invariably find some psychiatric history.

Dr. Buczynski: You have them in the FMRI machine to look at different brain regions and see whatlights up?

Dr. Lanius: That's correct. To look at social emotions, we have them imagine themselves in both positive and negative social scenarios. For example, a positive scenario was being at a birthday party and your friends singing a birthday song to you and hugging you. A negative social-emotional scenario would be seeing your boss for a job evaluation and your boss criticizes you for your work.

Dr. Buczynski: Did you feed the particular scenario to them?

Dr. Lanius: Yes - they had to imagine themselves in that situation.

Exploring the Relationship between Emotional Numbing and Alexithymia

Dr. Buczynski: Let's talk about emotional numbing, which is not the same as alexithymia. Can you tell us the differences, the similarities and what that looks like in the brain?

“...Emotional numbing is when you are unable to have loving feelings toward your children or partner.”

Dr. Lanius: The two concepts are certainly related. Emotional numbing refers to being unable to have positive or negative emotions - feeling emotionally dead, like you are unable to experience any positive or negative emotional responses.

If you are unable to have loving feelings toward your children or partner, that invariably creates a lot of tension within the family structure.

Alexithymia is related in that people don't know what they feel and they also have difficulties putting words to their feelings. When our patients feel emotionally numb, it often leads to them not being able to find words for their feelings.

The concepts are certainly related, but they also have their differences.

Dr. Buczynski: Do you see any differences depending on the age at the time of the trauma?

“When our patients feel emotionally numb, they are often unable to find words for their feelings.”

Dr. Lanius: We haven’t looked at that in detail. Emotional numbing and alexithymia can certainly occur during adult and early life onset traumatic experiences.

Future research will need to examine the effects of the attachment relationship in conjunction with early life experiences and those effects on both emotional numbing and alexithymia.

Dr. Buczynski: Is there an operational definition of *early life*?

Dr. Lanius: When I refer to *early life trauma*, it is really childhood and adolescence, up to sixteen.

Dr. Buczynski: Have you looked at trauma as a result of something that is beyond the caregiver’s control like a car accident, loss of a parent or refugee situation?

Dr. Lanius: We have looked at motor vehicle accident-related post-traumatic stress disorder and studied quite a number of patients with workplace traumatic experiences. People who develop PTSD after a motor vehicle accident or workplace accident will often have early life traumatic experiences as well.

The intense emotions experienced during the motor vehicle or workplace accident, such as helplessness or horror, often feed into memories related to early traumatic experience and this makes the symptom picture much more complex.

However, there are also people who develop PTSD as a result of adult traumatic events that do not have early life traumatic experiences.

“People who develop PTSD after a motor vehicle accident often will have had early life trauma...”

Dr. Buczynski: Does it feed into that helpless feeling they may have felt with their caregiver of “No matter what I do, I can’t seem to get this person’s attention or get a stable connection?”

Dr. Lanius: Absolutely. For example, if someone involved in a workplace accident doesn’t feel supported by their employer, this may activate not feeling supported by their parents during childhood and potentiate the emotional experience after the workplace trauma.

Dr. Buczynski: Do we see any difference between genders?

Dr. Lanius: There are some studies emerging that look at gender differences with regard to the social emotions, numbing and alexithymia. We haven’t looked at the neurobiology of different genders, but that is an important area for future study.

Connectivity: Brain Activation and Clinical Symptoms

Dr. Buczynski: When looking at the brain, are we mostly thinking in terms of what is lighting up in the brain or are we able to look at things like connectivity between one brain region and another?

Dr. Lanius: That's a great question! We are interested in looking at three things: specific brain region activation, how regions activate together - how they network, and specific clinical symptoms like numbing and alexithymia and how they relate to brain function. For example, if someone experiences more alexithymia, how does that predict brain activation?

“In order to understand the effects of early life trauma, you need to understand the relationship between symptoms and brain function.”

Dr. Buczynski: So the first two things you looked at were which brain regions were affected and how they activate together in networks. What was the third?

Dr. Lanius: The third one was the relationship between clinical symptoms like emotional numbing or alexithymia and how those symptoms relate to specific activation of areas of the brain or how they related to a whole network activating.

You can get the relationship between what the person experiences and brain activation. In order to understand the effects of early life trauma...you need to understand the relationship between symptoms and brain function.

Dr. Buczynski: How do you do that part of the research?

Dr. Lanius: This involves taking very detailed behavioral assessments of what people experience. Having a detailed assessment of their symptoms and experiences in the scanner allows us to correlate them with brain activation patterns. It involves a detailed understanding of what your patient experiences and applying that to your knowledge of brain functioning.

“...detailed assessments of symptoms and experiences in the scanner allow correlation to brain activation patterns.”

The Default Mode Network

Dr. Buczynski: I don't know if this is too complicated to get into, but you've recently suggested that default mode network connectivity is affected in adults who have suffered early childhood trauma. Can you define “default mode network connectivity?”

Dr. Lanius: Marcus Raichle and many others have done a lot of work on the default mode network in healthy individuals. The default mode network is active and connected when the brain is at rest; when we are not engaging in any specific cognitive task.

This network consists of several brain regions. One is the posterior cingulate cortex that we spoke about earlier, which is involved in evaluating objects and past events for self-relevance. When the brain is at rest, this area has dense connections with the medial prefrontal cortex, the area that is involved in self-referential reflective awareness.

The parietal lobes are also part of the default mode network and they may help us to experience an embodied sense of self. The temporal lobe is also part of this network.

“The default mode network is active and connected when the brain is at rest.”

This network is really active when the brain is at rest, which is when we engage in self-referential processing. It is thought that this network is important in helping us respond to environmental changes.

What’s also interesting is that this network consists of brain regions that are important to the theory of mind, autobiographical memory and being able to look into the future. All three of these concepts are relevant for people with PTSD related to early life trauma.

Exploring Three Concepts Related to Early Life Trauma

Dr. Buczynski: Could you describe the three concepts?

Dr. Lanius: Theory of mind refers to the ability to attribute mental states, desires and intentions to oneself, as well as other people, and to know that mental states, desires, intentions of other people are different from your own.

Children learn this over time as they grow up and this is starting to be looked at in post-traumatic stress disorder related to early trauma and I think it will be very relevant in the future.

Autobiographical memory refers to the combination of episodic memory, which is memory about personal experiences, and semantic memory, the general knowledge or facts about the world.

Our patients with post-traumatic stress disorder have had significant difficulties with autobiographical memory; these memories are often very fragmented. They are not experienced as memories of the past, but rather as sensory fragments and are timeless and being relived.

Often these memories are also not organized properly, so you don’t experience the memory from beginning to end and you are flooded with these sensory fragments in a non-organized way. Autobiographical memory, for that reason, is also very pertinent to post-traumatic stress disorder.

Our patients who have experienced post-traumatic stress disorder related to early life trauma often have a complete incapacity to think about the future.

They are reliving their experiences and so preoccupied with their intensely negative sense of self or fragmented sense of self that they don’t have the ability to look into the future or plan for the future.

Brain regions of the default mode network overlap with the theory of mind or the biographical memory and the ability to think about the future, which may be relevant in post-traumatic stress disorder.

“People with PTSD related to early life trauma have difficulty with theory of mind, autobiographical memory, and looking into the future...”

“...The default mode network has been proposed to be very important for self-referential processing - how we think about ourselves...”

The default mode network has been proposed to be very important for self-referential processing –how we think about ourselves. We spoke earlier about how this is impaired in our patients with PTSD related to early life trauma; they often perceive themselves as broken, damaged and expect the worst.

When they have severe dissociative symptomatology, they often also have a fragmented sense of self; you get

this combination of a self-loathing, full of shame sense of self that is also fragmented at times.

The question that arises is, “Can we use the disturbances in the default mode network in post-traumatic stress disorder related to early life trauma as a model for this intensely disturbed sense of self that we see in these individuals?”

We have recently proposed that this may be one way of starting to understand the intensely problematic sense of self in this disorder.

Dr. Buczynski: What do you mean when you say “Can we use the default mode network as a model?”

Dr. Lanius: The sense of self is obviously very complex and difficult to study in terms of neurobiological function. In order to figure out whether the default mode network is a good model for a sense of self, we have to turn towards behavioral measures of sense of self and the negative cognitions that are a part of post-traumatic stress disorder.

“Can we use the disturbances in the default mode network in PTSD related to early life trauma as a model for this intensely disturbed sense of self?”

Once we have completed measurements of these phenomena, we need to ask “How can we relate the behavioral measures to the dysfunction that we see in the default mode network?” and “Is there a relationship?”

Those future investigations will help us to see whether alterations in the default mode network is a good model for understanding the disturbed sense of self in patients with post-traumatic stress disorder related to early life trauma.

Visualizing the Default Mode Network

Dr. Buczynski: Do you have a way of measuring the default mode network in the brain?

Dr. Lanius: Absolutely –there are thousands of studies that have looked at default mode network both in healthy controls and a variety of psychiatric conditions, so we have very good methodology for doing this. We are getting more sophisticated with the imaging analyses that are becoming available to us, which allow us to really look at this network in detail.

Dr. Buczynski: What does the default mode network of a healthy individual look like?

Dr. Lanius: In a healthy individual, when the brain is at rest and engaging in self-referential processing, the posterior cingulate cortex (which evaluates objects and past events for self-relevance) is tightly coupled to the medial prefrontal cortex, which is involved in self-referential awareness.

There is connectivity with the lateral parietal lobes, which may be part of being able to experience embodied sense of self, and often the temporal lobe as well. In a healthy individual, when the brain is at rest, all these areas are connected. You can see this connectivity in an FMRI.

Dr. Buczynski: What does the default mode network look like in people who have had a lot of early childhood trauma?

Dr. Lanius: In our study, the default mode network in people with post-traumatic stress disorder related to early life trauma looks very different. I am going to focus on two nodes of the network; the connectivity between the posterior cingulate cortex and the medial prefrontal cortex.

Basically, what we see is almost no connectivity between these two regions. Or we only see some connectivity within the posterior cingulate cortex.

“...in people with PTSD we see almost no connectivity between these two regions.”

You would see a very significant difference in connectivity—you have essentially no connectivity between those two nodes of the network.

In the developmental literature, a number of groups have looked at how the default mode network develops during childhood and adolescence.

What they find is that you don't have a lot of connectivity between the posterior cingulate cortex and the medial prefrontal cortex until later on in adolescence, which means when we compare the default mode network of people with PTSD related to early life trauma, it almost looks like that of a child aged seven to nine years old.

Our group hypothesizes that the effects of chronic early life stress and the toxins that are associated with chronic stress may affect the myelination process of the fiber bundles – namely the corpus callosum that connects the posterior cingulate cortex and the medial prefrontal cortex. Future studies will really have to disentangle what is going on.

Dr. Buczynski: Has anyone looked at the default mode connectivity of a soldier who has had post-traumatic stress?

“...the default mode network of people with PTSD related to early life trauma looks like that of a child.”

Dr. Lanius: There are a couple of recent studies...that have looked at amygdala connectivity with some of the structures that are part of the default mode network. They have seen altered connectivity between the amygdala and the default mode network and have proposed that this may be one mechanism underlying emotion dysregulation in post-traumatic stress disorder.

“Altered connectivity may be a mechanism underlying emotion dysregulation in PTSD.”

Dr. Buczynski: You would almost expect that. If you were a soldier out in the field knowing that at any moment something could kill you...

Dr. Lanius: Yes.

Dr. Buczynski: It is very interesting that it looks like the default mode connectivity is at the stage of a nine-year-old, in terms of development. Can we tie this idea of the default mode connectivity to treatment?

Dr. Lanius: We need a lot of studies to replicate our findings in order to see whether other groups find similar results. In looking at the disturbed default mode network in people with PTSD related to early life trauma, a question arises.

Can we really get a default mode network and a sense of self that resembles a healthy individual with appropriate psychotherapeutic intervention? That is the two million-dollar question.

In addition, depending on the degree of early life trauma and the age at which it occurs, are there different outcomes? Do we need different psychotherapeutic interventions to get this default mode network online and looking like an adult default mode network?

Future Directions in Trauma Treatment: The Stage-Oriented Approach

Dr. Buczynski: What would this kind of trauma treatment look like, and how do we think that would translate into day-to-day functioning?

Dr. Lanius: These are all important questions that will need to be answered in the future; we need to understand more about how the default mode network relates to specific functions related to early life trauma. For example, how does dysfunction of this network relate to emotional awareness, emotional dysregulation, social-emotional functioning and the sense of self?

Once we have a greater understanding of that, we now have to put these individuals through a stage-oriented trauma treatment.

“...a stage-oriented approach to trauma treatment is effective in alleviating symptoms of PTSD.”

Let’s say they’ve improved in the following functions: they have increased emotional awareness, increased capacity to regulate their emotions, view themselves with much less self loathing, are much less fragmented, and their social functioning has really improved.

How does that map onto changes in the default mode network? These will be key questions that need to be answered in the next decade.

Dr. Buczynski: I know that when you talk to a researcher the proper answer is, “Well, it needs further study.” I respect that, but what treatments look promising to you?

Dr. Lanius: For PTSD related to early life trauma, a stage-oriented approach to trauma treatment makes a lot of sense and there is recent evidence – both by Marylene Cloitre, Julian Ford and Martin Teicher, as

“You focus on enhancing emotional awareness and the capacity for emotion regulation.”

well as others, that a stage-oriented approach is effective in alleviating symptoms of PTSD.

In the first stage of treatment (stabilization), you focus on enhancing emotional awareness and enhancing capacity for emotion regulation by teaching people to have safer social relationships, be more assertive and to set boundaries so they can feel safe within their body.

By the end of that phase of treatment, you hope the individual now has words for their feelings, knows what they’re feeling, has some skills to regulate their feelings, is more self-compassionate towards themselves and can be mindful of the moment – not pulled into the past or future, but that they can be in the present. As a result of all this, they should be able to have more constructive and safer interpersonal relationships.

Once you have established that form of safety, you then focus on the traumatic memories; help people put these memories into the past so they are no longer flooded by them through exposure-based techniques – either in vivo exposure or in narrative storytelling by writing about their traumatic experience.

Patty Resick and Marylene Cloitre have shown that it is important to help the person make meaning of their trauma. What has the trauma led them to become? How has it influenced the way they perceive their sense of self?

In addition, allow them to grieve the losses that they have incurred as a result of their trauma. Throughout therapy, it is also important to be aware that with every gain you make, there is also a grieving process; it makes you aware of what you have never had – Onno van der Hart talks about this beautifully. The grieving process throughout therapy is very important.

“Once safety is established, you help people put these memories into the past so they are no longer flooded by them.”

The final stage of therapy involves reconnection with friends and work-related activities – which you begin as early as you can, but in the severely traumatized it is often difficult to begin in the early stages because they feel unsafe and have a real difficulty connecting with other people .

Reconnecting people with friends, work-related activities or going back to school should really foster their sense of self-esteem, their sense of purpose and help them to experience a more embodied and coherent sense of self.

Dr. Buczynski: That was amazing and brilliant! Thank you. Many of us use exposure therapy when treating people with post-traumatic stress, but it is not part of the first stage of treatment?

“...with every gain you make, there’s also a grieving process - it makes you aware of what you’ve never had...”

Dr. Lanius: It depends on the type of individual you are treating.

If you are treating someone with a more simple form of PTSD who experienced adult onset trauma, that person can benefit from a couple of sessions of anxiety management. Then you are ready to move on to exposure-based treatment.

I think exposure-based treatment is probably the core treatment.

The individuals we have talked about today are different - they have had chronic early life traumatic experiences and their symptoms are much more complex. They have difficulties with emotional awareness, emotion dysregulation, social functioning, barriers, and this distorted sense of self.

In this population – and we need a lot of future research to address this appropriately – I think a stage-oriented treatment model needs to be considered.

If you don't have emotional awareness, you don't know what you feel and you don't have words for what you feel. Because exposure-based treatment relies on the patient telling you about their inner affective states and reporting symptoms to you, you need to teach them to be aware of their feelings and to put them into words first before you engage in exposure-based treatment. You do the same for someone who is dysregulated and goes into hyper- and hypo-arousal states quickly.

In order to do good exposure treatment, somebody has to be emotionally engaged with the memory. But if you are treating someone dysregulated who goes into hyper- or hypo- arousal states, that is often not possible.

You have to help people get into *the optimum window of tolerance* that Allan Schore and Pat Ogden talk about, where they can process the traumatic material and not become so hyper- or hypo-aroused that the emotional processing stops.

“...help people get into the optimum window of tolerance where they can process the traumatic material...”

In terms of social interactions, if somebody is in a relationship with a chronically abusive partner, they are much more likely to be in extreme emotional

states that prevent them from appropriately engaging in emotional processing of the traumatic material.

Establishing safety, emotion regulatory capacities and emotional awareness are very important before you move on to exposure-based treatments.

Dr. Buczynski: We are unfortunately out of time. Everyone on the call, I would like you to go to the Comment Board and tell us how you are going to use what you heard tonight. First of all, tell us what struck you; what did you learn –I have taken a bunch of notes here and found this fascinating, and I am sure you did, too –and how you are going to use what you heard tonight. And please, when you do, put in your first and last name, your city and state or country, and your profession.

“It's very important to establish safety, emotion regulatory capacities, and emotional awareness.”

Ruth, thank you so much for your time and for all of the research that you and your colleagues are dedicated to. It is helping us all, as a profession, whether we are the researchers or the practitioners doing the therapy; it is making a big difference in how we will be able to reach out and help heal so many people that are broken and wounded right now.

Dr. Lanius: Thanks so much for inviting me, Ruth.

Dr. Buczynski: Thanks. Take good care now. Goodnight everyone.

TalkBack Segment with Rick Hanson, PhD and Bill O’Hanlon, LMFT

Ruth: I’m back again with my buddies. This is Rick Hanson, a psychologist, an expert in mindfulness meditation, and the author of several books including *Buddha’s Brain* and his latest, *Just One Thing: Developing A Buddha Brain One Simple Practice At A Time*.

Also here is my good friend, Bill O’Hanlon. He’s the author of thirty books, including *The Change Your Life Book*.

Both Rick and Bill speak all over the world, so we are very lucky to have them here giving us ideas and applications for what each speaker said.

“...people with early life trauma can move back and forth between states of hyper and hypo-arousal...”

So, we just heard from Ruth Lanius – what stood out to you?

Rick: Two things struck me as particularly fresh and powerful. One is her notion that people who have early life trauma can move back and forth between states of hyper-arousal and hypo-arousal; they don’t necessarily get locked into one mode or the other.

I imagined my way into that inner experience of a person who has been hijacked back and forth between those two modes - that would be very destabilizing and distressful for them.

The second thing that struck me was that everyone in her sample that had early life trauma (up to age sixteen - so it could even be in middle adolescence) *had* during that period a psychiatric history. In other words, they had significant psychological pathologies, distress, and dysfunction.

“...everyone in her sample that had early life trauma...during that period had a psychiatric history...”

Bill: For me, the validation for somebody that does this kind of brain-based research, what we know clinically, is that when people are jacked-up from their traumas – when they are *hijacked*, as Rick said, they are not available for *most* of the therapeutic interventions we are doing.

“...people, jacked-up from their traumas, are not available for most of the therapeutic interventions we do...”

I think that is why a lot of these nonverbal techniques have come to the fore for trauma. Talk therapy only works when that part of your brain is available to process that sense of self, the executive function and mentalization – all of the things that she talked about.

I think the first step is calming down that person’s amygdala – or whatever language she used – and making them available for what you do next. That became *so* clear for me as I heard her talking.

Ruth: Jumping into more detail, people with PTSD frequently experience problems with their sense of self, as we heard from Ruth - and you both mentioned that as well.

Can you give us some ideas of how they can rebuild that sense of self? What might a practitioner, therapist, nurse or physician do to help them rebuild that sense of self?

Bill: I call this the *3D process*. One of the things I have noticed as an after-affect of trauma is dissociation. We know this is very common in the wake of trauma. People disconnect from themselves - disowning their sense of self - “That isn’t me.”

They shut it off. It’s like that *shadow stuff* that the Jungians talk about, and the other aspect of the *shadow stuff* is to devalue, as in “It’s bad” or “I’m bad.”

“...the therapist offers compassion and a nonjudgmental approach to these shadow aspects...”

First, I think you need to find ways to gently *notice* those aspects of yourself and then, secondly, start to move toward and embrace them with self-compassion - she mentioned this and I think it is *such* an important component.

The therapist offers compassion and a nonjudgmental approach to these *shadow aspects* of people - the shameful dissociated aspects of people - and then models how that person can turn toward the self.

I had a client once who gave me a book and said, “You hvae to read this to figure out how to treat me,” and I felt like, “Oh, no, another book! I don’t need that!” But the whole book was about someone coming to terms with some aspect of themselves that had been split off - it was a wonderful story.

It was a science fiction book by Ursula K. Le Guin, the first book in *The Earthsea Trilogy*, and it was really a metaphor for how you need to turn *toward* instead of turning away - running away or cutting off that aspect of yourself.

Ruth: Rick, do you have anything to add?

Rick: First, I appreciate Bill’s nod to one of my favorite books, *A Wizard of Earthsea*, and its appropriateness to this discussion of reclaiming that which has been disowned.

I appreciated that he distinguished between the two aspects of *sense of self*. One aspect has to do with a sense of coherence or integrativeness, and the other aspect has to do with sense of worth. Those are *very* different, and I think sometimes they get mushed together in the language; it helps us if we tease them apart.

One thing that helps develop the first aspect of a stronger sense of self— a sense of coherence – is to follow the neuroanatomy and go down to the basic processes.

Damasio called this *core consciousness* - the basic sense of the coherence and unification of bodily experience or the “sensate” experience from moment to moment.

“...talk therapy only works when that part of your brain is available to process sense of self, executive function, and mentalization...”

“...you need to turn toward instead of away...from that aspect of self that has been split off.”

“...to help develop a sense of coherence, follow the neuroanatomy and go down to the basic processes.”

For example, you can come down into a sense of the *ongoingness* of something simple that doesn't have a lot of associations, like present-moment hearing, present-moment tasting of something pleasant, or drinking water.

You can also come down into touch that feels safe, or an ongoing sense of action. The basic sensory motor sequence of reaching for a cup, sensing the cup, expecting what the cup will feel like when one holds it, and then bringing it back and having those expectations confirmed – this can happen over and over again.

For me, there is a kind of modesty and humility in appreciating how much higher-level cognitive and affective processing rests upon more fundamental sensory motor processes and circuits – it gives us a lot of opportunities.

We can go down to those elemental experiences that don't have a lot of association with trauma – particularly if we choose with a little wisdom and clinical insight – and then build that up from the bottom, going all the way up again.

Ruth: What exercises would you provide to an adult patient who was having trouble with mentalizing; not only attending to their own mental status, but also to the states of their children, spouse, or people they are with?

“Mentalizing...is a capacity to observe one's own interior states, which may be elemental in the sense of *pure sensation*.”

Rick: *Mentalizing*, as you well know, is metacognition. In other words, it is a capacity to observe one's own interior states, which may be elemental in the sense of *pure sensation*. One's interior states may also be complex thought cascades - about one's stepparents, who were not very helpful, for example.

With trauma – *do no harm* – we give up the possible benefit of nine things to make sure that we avoid the negative impact of one.

We start with elemental observation of what one is experiencing – “What does this glass of water feel like as I drink it? What does it feel like to have my thirst quenched? Where is my attention right now? How do I *feel* about what I am attending to?”

It is especially important to feel *pleasant* sensations as much as possible. The primary way to build up resources inside is through *positive* and *pleasant* experiences. It is not the only way, but it is truly the *primary* way.

The problem is, as we know, the brain is very inefficient at converting pleasant experiences into resources inside.

One way to do that is to sustain mindful attention to *pleasant* experiences which are relatively safe for people to do – such as, “What am I attending to that is pleasant?”

“The primary way to build up resources inside is through *positive* and *pleasant* experiences.”

Finishing up, we can move it out to *mentalizing* about the states of mind of other people. “What are *we* paying attention to right now? How are *we* sharing a simple, ordinary pleasant moment here?”

On that foundation, one can then move more safely into more complex mentalizing about the state of mind of other people, including areas that are more problematic.

Ruth: Let’s move on from mentalizing to another problem that trauma patients have. Many adult trauma patients are often caught in the past. One of the things we want to do is help them get into the present and develop any ability to plan for the future. Bill, do you have thoughts on that?

Bill: Sometimes I talk about how, not *all* of them, but a certain aspect of them, are frozen in time somewhere in the past. As Dr. Lanius said, when trauma patients are under stress, they tend to get drawn back or pulled back to a feeling, memory, physiological state or neurological state of the past.

“...when trauma patients are under stress, they tend to get pulled back to a feeling, memory, and physiological or neurological state of the past.”

I do simple things – again, I like what Rick says about small steps – and I use future language, which I learned to use when I studied with Milton Erickson. He was very future oriented and he would say, “*When* you are able to regulate your emotions better, *when* you are getting along with your spouse better.”

He would *presume* that they would get it and he used this pre-suppositional future language. Some of the NLP people call this *sleight of mouth* - where you slide in the assumption that they *will* have a future and it *will* be better.

Rick was talking about focusing on the good and bringing *that* to your awareness. I also invite people to focus on the possibility of the good in the future, in small ways.

If I say, “Oh, you’re going to be great and everything’s going to be...” that’s too much. But when I put in, “*As* you start to feel better... *When* you start to feel better...” that is a little seeding of a future orientation.

Language is a virus – and I think as it starts to affect *them*, *their* language starts to affect *me*; we influence one another. So I start to put in that *future* language.

“...by using pre-suppositional language, you slide in the assumption that they will have a future and it *will* be better.”

Ruth: One of the things she talked about was the default mode network and how the different parts of it lose connection with each other. Do you have any thoughts, Rick, about how we can improve connectivity, even if the person is still somewhat dysregulated?

Rick: I have two things to say about that. The first is that her key point about the default network was really about the disconnection between regions in the brain that are involved in self-reflection and regions in the brain found towards the back that are focused on relevance and salience - the emotional value to *me*.

People who are traumatized and ruminating have a default network that’s going in a big loop, like they’re caught in a hamster wheel. They feel, “Oh, this affected me; it mattered to me; it hit me hard” without the ability – located more in the front – to think about it productively.

“People who are traumatized...have a default network that’s going in a big loop...”

As Bill was saying, you can help people increasingly reflect on themselves, see themselves in a larger context in time or move forward in time to a better place.

You can also help them understand that they are like other people who have this issue. You can bring language to things and address alexithymia – these are all different aspects of bringing *self-reflection* to *self-relevance* and that will help connect.

The second thing I want to say is that the default network has some problems. It is easy to get caught-up in negative rumination, which is a major factor for psychological problems.

New research has shown that there are actually networks on the side of the brain, especially the right side for right-handed people and probably half of all lefties, who have language on the left.

These lateral networks can offer some of the benefits of an integrative experience, open awareness and present-moment awareness, without getting caught up in self-referential rumination.

“...new research shows how lateral brain networks can offer benefits of the integrative experience and present moment awareness...”

Ruth: Fascinating. I think we have time for one more quick question. Bill, Ruth talked about traumatized people seeing themselves as broken and damaged. I know *many* of the people that I would see who would fit that description. Do you have any ideas about helping them work on that negative self-image?

Bill: Yes, just a couple. I tell a lot of stories, and here is a classic story, although I’m not going to tell the whole thing.

Every day, a woman goes to the river with two pots on her shoulder. One of the pots has a little crack and on the way back, it spills. After about two years, it complains, “Hey, I’m the messed up one. I’m all broken.”

So the woman shows the broken pot the side of the path where it always spilled – and there grew a bunch of beautiful flowers. So tell a little story that says that value *can* come out of brokenness.

“...you can tell a story to your patient - show how value can come from brokenness...”

But the other thing is – this goes back to what Rick does in *Buddha’s Brain* and his latest book – that there is an unbroken wholeness within us that we can connect to - the brokenness and the wholeness simultaneously exist.

People who are dissociating can hold two contradictory things; they split and they jump back and forth. In a weird way, they sometimes get this better than other people: you are broken and you are whole - you are messed up and you are totally okay.

Holding both of those opposites to the same moment, instead of flipping back and forth between them, is a skill that we can invite people to learn.

Ruth: Now, we do have to wrap up. Thank you both; I think you’ve made some important contributions.

This has been a fascinating call. Everyone, please go to the Comment Board and tell us what stood out to you and how *you* are going to use what you heard tonight.

Also, if you are a Gold Member, we will be sending you the links to both the video and the audio in just a couple of hours; we will send you the transcript Friday afternoon.

If you are not a Gold Member and you would like to be, just click on the link right below.

Next week, we will be talking with Bessel van der Kolk and continuing our conversation about the brain and getting into more treatment ideas. So be sure to join us next week – you won't want to miss it.

“Holding opposites to the same moment...is a skill we invite people to learn. ”

About The Speaker:

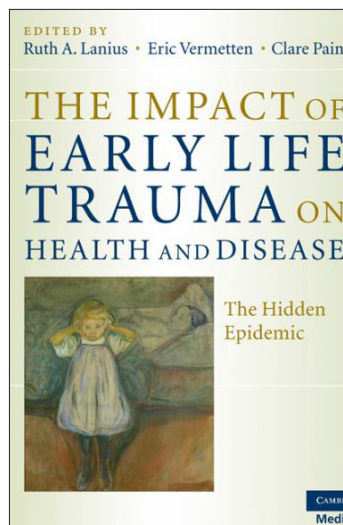


Ruth Lanius, MD, PhD, is an Associate Professor of Psychiatry and the director of the PTSD research unit at the University of Western Ontario. She established the Traumatic Stress Service and the Traumatic Stress Service Workplace Program, both specializing in the treatment and research of PTSD and related comorbid disorders. She currently holds the Harris-Woodman Chair in Mind-Body Medicine at the Schulich School of Medicine & Dentistry at the University of Western Ontario.

Her research interests focus on studying the neurobiology of PTSD and treatment outcome research, examining various pharmacological and psychotherapeutic methods. She has authored more than 100 published papers and chapters in the field of traumatic stress, regularly lectures on the topic of PTSD nationally and internationally, and recently published *The Impact of Early Life Trauma on Health and Disease* with Eric Vermetten and Clare Pain.

Featured Books by Speaker: Ruth Lanius, MD, PhD

*The Impact of Early Life Trauma
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About The TalkBack Speakers:



Rick Hanson, Ph.D., is a neuropsychologist, author, and teacher as well as founder of the Wellspring Institute for Neuroscience and Contemplative Wisdom. He teaches at meditation centers in Europe, Australia, and North America. His work has been featured on the BBC and in *Consumer Reports Health*, *U.S. News and World Report*, and other major magazines.

Rick is currently a trustee of Saybrook University. He also served on the board of Spirit Rock Meditation Center for nine years, and was President of the Board of FamilyWorks, a community agency. He is trained in several meditation traditions and leads a weekly meditation gathering in San Rafael, CA.



Bill O'Hanlon, LMFT, is a dynamic, inspirational speaker and prolific author (over 30 books so far) who helps motivate people and organizations to determine what they are meant to be doing and to remove the barriers to succeeding at those goals.

Originally trained as a psychotherapist, Bill has become known for his collaborative and respectful approach, irreverent humor, storytelling, clear and accessible presentation style, and his infectious enthusiasm for whatever he is doing. He teaches seminars, leads trainings, writes books, coaches people and offers websites, podcasts, blogs, web-based courses, teleclasses and audio and video programs.