A QuickStart Guide: How to Work with the Traumatized Brain

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1. The 3 Differences in a Traumatized Brain

The brain can undergo many changes when a person experiences trauma. Dr. van der Kolk explains which parts of the brain are most affected by trauma, as well as the impact that these changes can have on a patient's behavior.

Dr. van der Kolk: There are three big differences. One is that the threat perception system is enhanced in those with PTSD. These people see danger where other people see what is manageable.

This perception is not in the cognitive part of the brain – this is in the core perceptual part, a very primitive part of the brain.

Basically, this primitive part of the brain is in charge of making sure that your body is okay – it is the fear-driven part of the brain. So, threat perception is enhanced – that is number one.

Number two is that your filtering system, which is a little higher up in your brain that helps you to distinguish between what is relevant right now and what you can dismiss gets messed up.

What other people sort of ignore or don't pay attention to, the PTSD brain starts to pay

attention to, and this makes it very hard to focus on what is going on right now. The filtering system does not function efficiently, and it's difficult to fully engage with ordinary situations.

The third difference is with the self-sensing system, which runs through the midline structures of the brain and various people probably have talked about on your program already.

The self-sensing system that is devoted to your experience of yourself gets blunt. This is probably a defensive response – when you are in a state of terror, you feel it in your body: you feel it in terms of heartache and gut-wrenching feelings –your body feels bad, and as a way of coping with that, people start taking drugs to dampen that system, and other people naturally find a way of dampening that internal response.

But when you start dampening your response to yourself, you also dampen the response to pleasure, sensuality, excitement, and connection – all the deep feelings that are at our core as human beings *(found on pg. 3-4 of your Main Session transcript).*

2. How Flashbacks Affect the Brain

Flashbacks can be described as a fusion of the past and the present, and trauma patients can sometimes have difficulty distinguishing

between the two. Dr. van der Kolk gets into the neuroscience behind this phenomenon.

Dr. van der Kolk: When people start reliving their trauma, much of their brain goes offline.

They immediately get pulled back into the past. Their emotional brain on the right goes back there, sees the images of what happened back then, and experiences physical sensations. Stress hormones get released and the body starts behaving again as if the trauma is happening right now.

The timekeeping part of the brain that tells you, *that was then and this is now*, tends to go offline.

You experience the trauma as if it is happening right now, and the part of your brain that says, "Oh, but that was forty years ago or that was last year," cannot reassure you that this is an issue belonging to the past.

The dorsolateral prefrontal cortex (of the frontal lobe) says, "Oh, yes – that happened to me but that's a year ago – it's not happening right now."

With trauma, the brain cannot do that, so it is happening right now.

People become dumbfounded when they go into their trauma. Clinicians see that, but we are such "talking" type people that we tend to ignore the fact that when you really go into the most elementary, fear-driven situation, you

cannot talk – your body is just making you feel terrible.

Your speech center goes offline, and at that point, the speech center that can generate four-letter words works very well. It is a different area, but the speech center that I am using right now to try to explain something to you goes offline.

For me, that study – it is a long time ago now – about twenty years ago was the opening salvo to help me realize that words are important, but they are limited in their capacity to access the trauma.

When you really go into to your trauma, you become a speechless person *(found on pg. 8-9 of your Main Session transcript).*

For a therapist, it is very useful to know that – and part of our job is to keep that part of the brain active.

That means when you work with patients (I call them patients because I'm a doctor, but many therapists call them clients), it's important to remember that in order for them to overcome their trauma, the therapist needs to bring the dorsolateral prefrontal cortex back online – at the time of the trauma it was knocked out.

In our therapy with clients, we help them to integrate the story and it becomes a memory of the past.

We do this by focusing on being very present in *the here and now* at any moment.

You do that with breathing, tapping, eye contact, feeling your body – keeping your interception aligned.

A big job of being a therapist for traumatized people is to be an affect regulator who keeps their body safe and makes it safe for the mind to visit the past without getting hijacked by it *(found on pg. 14-15 of your Main Session transcript).*

3. How Trauma Can Hijack Three Fundamental Areas of the Brain

There are three basic systems of functioning together in the brain, and trauma can have a profound impact on all three. Dr. van der Kolk describes the three systems and how they can be thrown off by trauma. He also talks about ways that we can help people re-integrate these systems after they've been disrupted by trauma.

Dr. van der Kolk: What I call **the smoke detector** is that primitive brain area that makes you be afraid – the amygdala.

Certainly, in almost every study of trauma, that smoke detector – the amygdala –becomes hyperactive when people are exposed to images/memories of *what happened before.*

One of the big questions in trauma treatment is how do you rewire that amygdala? How do you rewire that smoke-detector system?

Nobody has nailed that yet. What we *do* know is that there is a part of consciousness that allows you to monitor and guide yourself in some way.

To my mind, the real advance in trauma treatment is that we know that you cannot change irrational, organic responses from your body, except by becoming deeply involved in your self – noticing your internal world *(found on pg. 9-10 of your Main Session transcript).*

The cook in your brain is the thalamus. At any particular moment, your brain gets input through your ears, eyes, nose, skin and body, and it converges on the thalamus.

The thalamus cooks and stirs – the cook is the brain's conductor that stirs and puts all these sensations together. It says to me, for example, "Right now I'm talking to Ruth." The thalamus puts all these sensations together.

When you get in a very high state of arousal, your thalamus breaks down, and what is left are the unintegrated images, sensations, thoughts, smells, and sounds of the trauma that live a separate existence.

Trauma is really about sounds and images that make you flash back – your body makes you flash back, and that is very much because the thalamus is not able to do its job of putting all

this together into a piece of autobiography that says, “This – or that – is what happened to me.”

The unintegrated fragments, the “ingredients of the soup” continue to live a separate existence.

In order to overcome your traumatic memories – the flashbacks – you need to calm down the thalamus.

How we do that? We do that through neurofeedback. I think that EMDR can probably do that; we are studying that – how to get control over that out of control piece if the brain and how to calm down the thalamus *(found on pg. 11-12 of your Main Session transcript).*

The watchtower is that medial prefrontal *self-experience* part of the brain. How reactive you are to your environment to a large degree is determined by the size, the activation, and the neural connections of this part of your brain.

The bad news is that the more trauma you have, the worse that part of your brain functions, so that the more trauma you have, the more reactive you become.

The good news is that the laws of neuroplasticity apply to that part of the brain, and the law of neuroplasticity is that the more you use something, the more you build up that part of the brain.

As a traumatized person, you don’t want to experience your internal world – it feels so frightening.

But if you are helped to experience your internal world and you learn to meditate or do yoga, or you learn to activate that part of your brain safely, then you experience less reactivity.

You become more mindful – you can see things happen and not automatically react to them.

That is a very important part of what we now know about treatment – you have to learn to be still, to notice your self, and to tolerate your sensations *(found on pg. 12 of your Main Session transcript).*

4. How Attachment Issues Can Be Linked with a Vulnerability to PTSD in Trauma Therapy

Early attachment issues can often lead to a susceptibility to PTSD later in life. Dr. van der Kolk illuminates the often cyclical relationship between PTSD and attachment.

Dr. van der Kolk: Parents are our first affect regulators. They, for example, get you hyperaroused when they wake you up from sleep to get you to school – and as affect regulators, your parents more or less help *you* to train your central nervous system.

There is now very robust literature from the attachment world which shows that if you have disorganized attachment – your parents are not

a source of physiological safety and you are left to your own devices to cope with the vagaries of the world – then it is the disorganized attachment that causes dissociation.

We thought, when we started in this field thirty years ago, that dissociation is caused by trauma, but there is more and more evidence that dissociation is caused by dysfunctional attachment – you don't have somebody who looks at you and picks you up and responds to you when you are in distress and you learn to deal with your misery by shutting yourself down.

In that way, trauma becomes an interpersonal issue.

What you find is that if you have a parent who is traumatized and your parent either spaces out when you become upset, or becomes more upset than you are – there are quite a few people with parents like that – a child gets hurt and the mother freaks out, and then, the child feels, *What do I do with my getting hurt?*

You never learn to regulate yourself. You don't have the experience in your mind and your brain and your body that says, Bad things have happened to me, but I will be okay.

You don't have this conditioned response of bad things happening to you, so if they do, you can get yourself back on track again.

If you have disorganized attachment as a child, you become much more vulnerable to

developing PTSD as an adult *(found on pg. 16-17 of your Main Session transcript).*

5. Quieting the Limbic System

Trauma empowers the limbic system to take control of the brain, resulting in an animalistic, survival-based response. Dr. van der Kolk touches on how we can start to quiet that part of the brain so that the more rational brain systems can come back online.

Dr. van der Kolk: The impact of trauma is in your animal brain – in your survival brain – and your survival brain doesn't have words or concepts or ideas.

Your limbic system is like a little animal that responds to thunder by blowing up or biting.

Actually, you can be highly traumatized, and be very smart, extremely insightful, and have it all down.

You might have had ten years of psychoanalysis and cognitive behavioral treatment, but when your animal brain gets triggered by a particular sound, smell, or visualization, that animal part of your brain takes over.

Your frontal lobes will be running like *crazy* to keep it under control – you'll be trying to manage that "raging dog" inside of you.

But in order to really overcome trauma, you need to take care of that "frightened dog" inside – and that is really the challenge.

Insight does not quiet down the limbic system.

So, the big question is this: How do you quiet down the frightened animal inside of you?

The answer to that is probably in the same way that you quiet down babies. You quiet them by holding and touching them, by being very much in tune with them, by feeding and rocking them, and by very gradual exposure to trying new things *(found on pg. 17-18 of your Main Session transcript).*

6. How Neurofeedback Can Help Patients Heal from Trauma

Neurofeedback is emerging as a promising intervention for a wide range of indications. Dr. van der Kolk discusses the value and potential of quieting the watchtower of the brain through neurofeedback as a part of trauma treatment.

Dr. van der Kolk: Some very good studies were done in the late eighties/early nineties, and as I read these studies, they looked about as good as any of the studies I had ever seen of PTSD – and very good studies of addiction, actually – very strikingly good results in addiction that other methods haven't uncovered.

We have been doing some neurofeedback research – not much because the funding is so very hard to come by – but we just finished our second study of PTSD, and we got a very robust drop in arousal/confusion scores and an increase in executive functioning scores in a group of about twenty-five people and a control group study who had had multiple/different forms of treatment and who had been resistant to anything else.

Let me talk about this in terms of the watchtower: you can only work with yourself if you can observe yourself and if you can notice what you are doing and be curious about it.

If your frontal lobes are just frantic all the time, you are going to be very involved in what *you* are doing to *me*, and the terrible person you are.

You are not going to be spending a lot of time with, “Hey, what is it about *me* that gets so upset all the time?”

The self-reflective part of your brain is not working. Instead, you’re always working with the signals that come from the back of your brain, “You’re in danger. You’re in danger,” and so you’re focused on the dangers *outside*.

Neurofeedback can quiet down the back of the brain so that you don't feel that danger all the time.

You can actually rewire these brainwaves and you can change the frontal lobes so you can

observe yourself and notice what is going on inside.

Such a critical part of overcoming trauma is to be curious about yourself. Actually, being curious about yourself is an important part of being alive!

But if you cannot be curious because you are scared to death or you are enraged, you cannot really change.

Once you can help people change these internal brain states, you can increase people's curiosity and then they become ready to do psychotherapy *(found on pg. 19-20 of your TalkBack transcript).*

7. Helping Trauma Patients Reconnect with Themselves (and With Others)

Trauma patients often have trouble with interpersonal relationships as a result of a self-protective emotional shutdown. Dr. Ron Siegel shares how to help patients overcome this emotional dampening and open back up to connecting with others.

Dr. Siegel: Sometimes the more dampening responses are subtler, and they're a little bit harder to see because they don't look necessarily like a problem at first glance.

As you pointed out, they're a subset of the much larger human tendency to want to avoid painful experiences – to have ways to step back or detach from, shut down or dampen painful experiences.

As you and I have discussed in some other contexts, while typically it's nice in the short run, the long run consequences of that aren't so nice.

While we manage to escape some pain, we also can get ourselves stuck in a disorder. Folks who've experienced bad trauma get most stuck because it's very dampening, and as you mention, the trauma experience shuts us off from connection. It shuts us off from being with other people.

But what we've learned from Bessel is that social interaction is the critical, critical system for being able to regulate our emotions – we need to feel held and we need to feel safe.

If we're dampening down on social contact to keep, in essence, our heart from being broken again or to keep from being violated in some way again, we're going to lose this totally important resource.

So, the alternative to this is to do what we've talked about before, which is to find a way to reconnect with inner experience so as to be able to connect with outer experience.

One vehicle for this is doing some kind of mindfulness practice that gets us in touch with what's going on.

We've discussed at another point using the body scan to do this as a kind of safe and structured way to go through the different parts of the body to help the person to get in touch with their inner experience.

The key here is to either make it structured enough with the interpersonal contact with the therapist, or structured enough with contact with nature or the outer world so the person doesn't become overwhelmed.

It's important that clients who have been traumatized don't get lost in the opposite of shutting-down and become triggered by a flood of memories and feelings that would be too difficult to bear.

All of this is toward the goal of getting in touch with oneself in order to be able to get in touch with and connect with others *(found on pg. 6-7 of your TalkBack transcript).*

8. Reconnecting with Positive Emotions

People who have experienced trauma often have feelings of shame and a negative sense of self. Dr. Ruth Lanius talks about how we can

help patients overcome these feelings by reliving positive experiences from their past.

Dr. Lanius: We also need to think about the sense of self people often experience as a result of chronic traumatization and the incredible self-loathing experiences that we often see.

Doing something negative or repeating the trauma is very congruent with how people view their sense of self.

We have to bring these positive experiences online slowly – warning them that if they bring them on too fast, that often what we see is a negative effect of interference where they start to experience something positive and all of a sudden, they are flooded by negative emotion.

When we take a history, it's important not only to ask people what's wrong with them, but to take a detailed history of what some of their positive experiences have been. Was there a teacher at school? Was there a secure care-giver you had at any point? Or was there a friend who you felt safe with?

These are histories of safer attachments, but it's important also to get a history of when the person may have felt competent in their lives. For example, was there a sporting activity that you felt you were really good at?

We can then use imagery to help people bring back those memories and start to reconnect to those positive emotions. Again, we want to keep in mind that it has to be, as Ron said, titrated

very carefully because we don't want them to get into those negative emotional states.

Over time, what we often see clinically is that people slowly learn to tolerate those positive emotions, step-by-step – bit-by-bit.

This is also when we see their bodily sensations really changing and moving from a sense of heaviness – a leaden feeling – to a feeling of lightness, feeling happy sensations of warmth in their whole body and their whole being – and not having constipation anymore *(found on pg. 8 -9 of your TalkBack transcript).*

9. Two Exercises to Help Patients Come Into the Present Moment

Dr. van der Kolk talks about how being in the moment can help trauma patients ground themselves in the present. Dr. Joan Borysenko offers two simple exercises that can help keep your patients in the moment on a day-to-day basis.

Dr. Borysenko: The first is that "raisin exercise," where you look at something you take for granted.

Take a raisin, for example. You usually pop a pile of them in your mouth all at once, but instead, you have to develop a deep and intimate relationship with one raisin.

Look at it; feel it: the texture, the stem end, the blossom end; smelling it, involving all your senses; finally putting it in your mouth without popping it; watching the body responses; finally, sticking maybe your one tooth through the raisin and it releases the flavor.

You watch all these things. It definitely brings you into the moment, because actually the flavor of the raisin is much more arresting and piquant than you might have thought.

I think that is such a simple exercise for coming to the moment that it's easy then to generalize, how do you come into the moment when you're eating a piece of chocolate cake?

Since there's such a blunting of sensations of pain and pleasure that accompanies trauma, I find it very interesting how Bessel focuses on, *okay, we have to bring people into the here and now.*

So, I would say something like the raisin exercise because it's easy. Start with what's easy anymore *(found on pg. 5 of your Next Week transcript).*

There’s another simple exercise that I’ve used for almost thirty years, and that I’ve used with clients. It’s a gratitude exercise. I learned it thirty years ago from Brother David Steindl-Rast.

What he said was this: “You make a deal with yourself that every day, just before bed, you will think of one thing to be grateful for that you’ve never felt grateful for before.”

So it can't be some stock thing like, *I'm grateful to have a roof over my head* or *that I have a job* or *that somebody loves me,* which are all wonderful!

It actually has to be something that happened that day that you related to very intimately, that you could feel in your body – one of these subtle 'here and now' perceptions that Bessel really is talking about.

"If you do gratitude exercises like this it *trains* mindfulness, whether you sit in meditation or not, you're looking for something during the day. You're searching for the inner sensations. They're linked to something and it causes you to pay more attention and be in *the here and now.*

I think that one gratitude exercise is *extremely* transforming for people. It takes no extra time, you're living anyhow. It's really unexpectedly powerful *(found on pg. 7 of your Next Week transcript).*

10. Help Your Patients Tolerate Their Feelings to Re-Integrate the "Cook" of the Brain

Dr. van der Kolk talks about **the cook** of the brain, or the thalamus, and how can result in a hyperactivated thalamus. Bill O'Hanlon shares a technique he uses to help his clients accept the

things that they are feeling, positive or negative, in order to calm the thalamus.

Mr. O'Hanlon: I would say, "It's okay to be numb. It's okay not to remember. You can remember, and you don't have to."

So, I use two techniques of permission inclusion.

One is permission to be where they were. Numb, if they were numb. Agitated, if they were agitated. Frightened, if they were frightened. And forgetting if they were forgetting, or repressing if they were. Permission for *being*, permission to *do* something, and then permission *not* to do something.

You don't have to remember. You don't have to feel anything right now. You don't have to be in your body right now –that's permission to be where they were.

It melted that hardness that they had in them to keep that stuff away, and all of a sudden, the *not*-numbness would come in.

It melted that hardness that they had in them to keep that stuff away, and all of a sudden, the not-numbness would come in.

People would just sort of relax into the idea, *there's nothing they can do wrong.*

I think that's a way to calm down that thalamus and bring in the missing pieces *(found on pg. 8-9 of your Next Week transcript).*