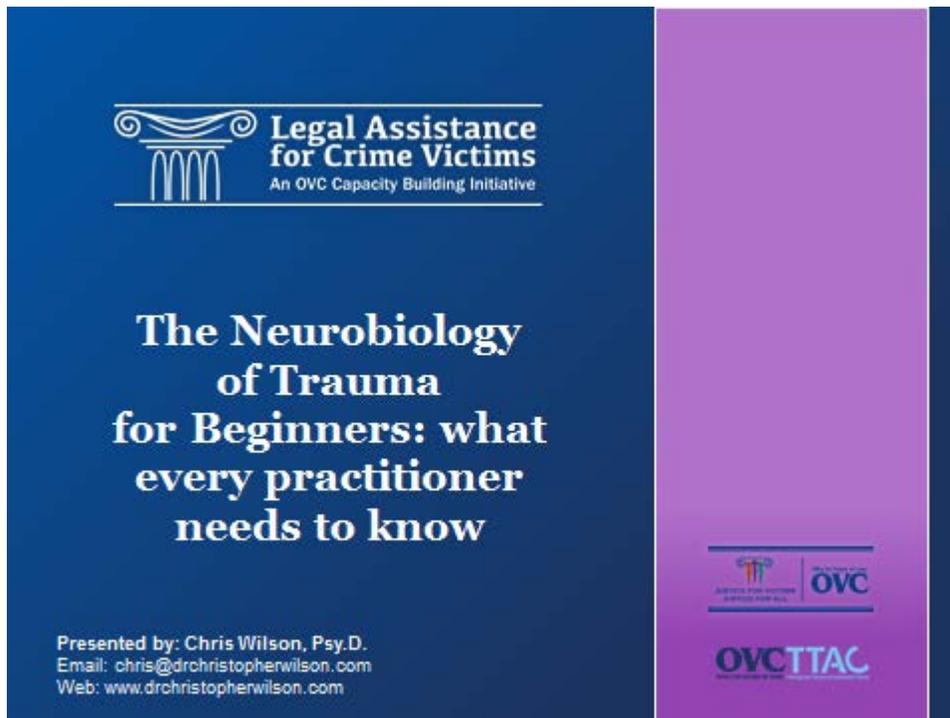




OVC
Webinar Transcript

**The Neurobiology of Trauma for Beginners:
What Every Practitioner Needs to Know**

July 24, 2013



Welcome

Meg Garvin: Good afternoon, everyone. This is Meg Garvin. I am the Executive Director of the National Crime Victim Law Institute (NCVLI). And I want to welcome you all to this Webinar training, *The Neurobiology of Trauma for Beginners: What Every Practitioner Needs to Know*. We will be together for the next 75 minutes listening to Dr. Chris Wilson talk to us about the neurobiology of trauma and how it impacts our work in crime victims. I want to remind everyone that this training is being recorded and will be available later online. But I also just wanted you all to know that you will be recorded. I am going to do a few introductions and some basic information here at the beginning and then put it right over to Dr. Wilson.

Meg Garvin: So some logistical information. Very first and foremost, we want you all to know that this is part of the Legal Assistance for Crime Victims OVC Capacity Building Initiative. NCVLI is partnering with OVC TTAC on this Capacity Building Initiative that OVC launched which is really, truly exciting. OVC is taking a true leadership role in ensuring that, as part of the toolkit of services for victims of crime, that legal services are available to them. And NCVLI and OVC TTAC are trying to implement pieces of that Capacity Building Initiative, one piece of which are Webinars that give you practitioners in the field, legal practitioners, our allied professionals, all the tools you might need to provide legal services to victims. And from NCVLI's perspective and our partners' perspective, understanding how trauma impacts survivors is absolutely critical to legal services and effective legal services for victims. So we are just thrilled to have this Webinar and to have it be part of the Capacity Building Initiative that OVC has launched. And we thank you all for joining us. We will have almost 300 people we think from across the country joining us today which is really, truly exciting for us.

Flow of the Webinar



- You are muted but you can ask questions & participate – and we hope that you do!
- You will receive an email with the powerpoint slides and the recording of the Webinar will be available online.
- Please provide feedback!

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Flow of the Webinar

Meg Garvin: So we are going to do just a few more logistical things at the beginning. All of you are muted right now. You can ask questions. And the next slide that I just gave you a sneak peek of is going to show you how to do it. You will receive an e-mail with the PowerPoint slides at the end of the Webinar. You will also have access to the Webinar online after this training both on TTAC's Website as well as NCVLI's Website. So it is going to be available to you and your colleagues if you need it in the future. We also are really interested in your feedback both with regard to this training and future trainings. So what we ask from you is to fill in two very brief, I promise you that they are very brief surveys, questionnaires about this training. One will be e-mailed to you immediately upon the closing of the Webinar and one will be an attachment to the e-mail that you receive later—or link, excuse me—a link to the one you will receive later that has the PowerPoint attached also. We ask that you complete both of them because they ask slightly different questions about how we can improve both this training for the future and the Capacity Building Initiative as a whole. So thank you so much. I understand that there is a little bit of an echo on my microphone. We are going to try and get that figured out for all of you. And then since I will not be talking too much, hopefully it will not be too bothersome.

How to Ask Questions During the Webinar

Legal Assistance
for Crime Victims

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How to Ask Questions During the Webinar

Meg Garvin: The next thing I want to do logistically is show you how you can ask questions. When you need to ask questions, we are going to save about 10 minutes, 5 to 10 minutes, at the end to ask questions. But on your screen over on the right-hand side there is a box that says, enter a question for staff. And up on your screen right now there is a picture of what that looks like. You can just type a question in there and that will be relayed to Dr. Wilson and he will either integrate it as he goes, or he will wrap it up at the end with questions. And wonderfully we are going to have attorney Rebecca Khalil here from NCVLI facilitating all the questions at the end and adding some practitioner questions that have been nagging at us here at NCVLI that we want to ask Dr. Wilson also. So your questions will get answered either online today by Dr. Wilson or we will follow-up with you.

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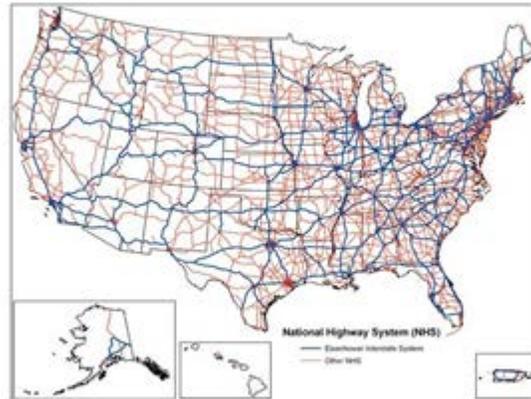
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Meg Garvin: And then the last logistical piece is, if you are having technological difficulties, this is the telephone number that you can call. It is up on your screen right now or you can go to www.gotowebinar.com. Those are the places where, if you have any technical difficulties, go there. Those of us at NCVLI cannot answer those questions for you. What we can answer is to remind you that you will get to the PowerPoint afterwards. So you do not need to ask that question of us, and that the recording will be available later. So those things we can answer. These things, technological things, please call GoToWebinar.

Presenter Introduction

Meg Garvin: So that is the end of the preview. But before we even turn this over to Dr. Wilson and he gives you his few thoughts before he begins, I want to formally introduce Dr. Wilson. Dr. Wilson received his Psy.D. from Pacific University here in Oregon, and we are so fortunate at the National Crime Victim Law Institute to have him in our own backyard. He is a practitioner here in Oregon, right in Portland. He is a national trainer, having trained for the Southern Poverty Law Center, at the Office for Victims of Crime, End Violence Against Women International, as well as NCVLI over the years. He is a go-to in the community for understanding how trauma impacts victims. He has worked in the prison system here, working with both male and female offenders and helping them as they process their own traumas as well as recover from their perpetration. He has trained for us on trauma, on vicarious trauma, and a myriad of other things and we are just truly lucky to have him joining us today. And with that, I am going to turn it over to Dr. Wilson to give you his few thoughts before we begin. And we look forward to learning from you, Dr. Wilson.

A Few Thoughts Before We Begin



A Few Thoughts Before We Begin

Dr. Wilson: Thank you very much for that kind introduction. Welcome, everybody, to the Webinar. I would like to just share a few thoughts before we jump in. And I want to clarify a few things. This presentation is truly intended for those of you who are beginners when it comes to understanding neurobiology and the brain. And one of the things that I will promise to you today is I am not going to show you any pictures of the brain. For those of you who may have taken any classes in college or graduate school that included slides of the brain, I found those to be a bit overwhelming. And so today we are going to be simplifying some of the functions of the brain. And the way that I want you to think about that is if you look up at that slide there, you have got a slide of essentially a roadmap of the United States of America. And if that was a roadmap of the brain, we would be talking about one little stretch of highway in your town or city. Basically, we are going to try to simplify how the brain responds to threat and how the brain is then affected by trauma so that you can have a better understanding of what is going on for your clients when you work with them. So I want to be really clear also. I am not a neuropsychologist. I am a clinical psychologist. And it is important that you understand basically what I understand, because we all are going to be in a position of, hopefully, working with folks who will benefit from the knowledge that you are going to gain today.

Goals for the Session



Provide understanding of the impact of trauma on the brain in order to:

- Help practitioners feel comfortable talking about the brain & normalizing their clients' experience.
- Further justify the importance of giving victims a voice throughout the process of healing.
- Help clinicians understand the role that awareness of neurobiology can play in helping clients heal.

Goals for the Session

Dr. Wilson: So I am going to look at a couple of the goals for today's session. I hope that this will be helpful to you. I am going to reiterate this first point. In the time that I have worked with victims, I have found it to be incredibly empowering when I talk with them a little bit about what is going on in their brain. And the phrase that I like to use is, "That is just the brain doing what the brain does." Because very often clients feel so disconnected from themselves and from their experiences. And I have found that when I am able to give them a very basic understanding of what is going on in their brain, it helps them normalize their experience, which I think is extremely effective and helpful when it comes to healing.

Dr. Wilson: One other thing that I ought to mention, I am going to be using the word "victim" today as opposed to "survivor." I do that simply because I have trained for many years now with the National Crime Victim Law Institute. And when you are working with victims of crime who obviously will have been traumatized, that term victim is a legal term. And so I have gotten so used to using it that I hope that you all will understand the reasons for me using it today.

Dr. Wilson: So in addition to helping folks normalize their experience, I want to give you just further justification for the importance of allowing victims of crime to have a voice, and victims of trauma to have a voice throughout their own process. And that will make a lot of sense to you when you understand the brain and how the brain is affected by trauma. And then, specifically, the last goal is to help you have an understanding of the role that neurobiology can play in helping your clients. Today we are not just going to look at how the brain is affected by trauma, but we are going to look at how you can take that awareness and tie that into the work you do with your clients to help them heal.

Additional Benefits of Session



Overcoming internalized or less subtle tendencies to:

- Question a victim's story
- Blame victims for not participating in legal process
- Subtly support the culture of silence

Additional Benefits of Session

Dr. Wilson: So a couple of other things that you are going to get out of today. You know we all have internalized tendencies as human beings that are really hard to get away from. So today's workshop is going to, hopefully, help you recognize that, for example, when we question somebody's story, that is human. And you will understand why it is human to question somebody's story. And hopefully, based on what you have learned today, you will have the ability to say, "Oh, I get why I am questioning this," and overcome that tendency.

Dr. Wilson: I think any time we are working with victims we also have a tendency to become invested in the outcome of a case. And I want you to have an understanding of the neurobiology of trauma so that you will be able to more effectively deal with that internal or not so subtle tendency to be upset if somebody does not follow through with the legal process.

Dr. Wilson: And then, finally, to help us all overcome this very subtle support that we give to the culture of silence around victimization. And we will talk a little bit about that at the end.

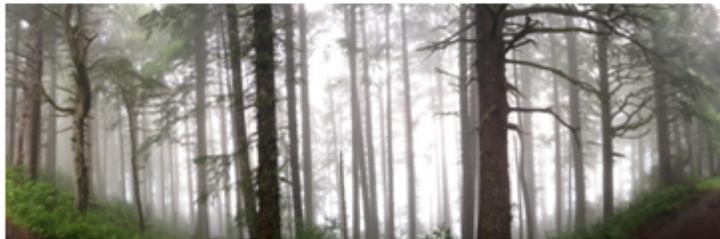
Defining Trauma



What's your definition?

"Trauma is not a disorder but a reaction to a kind of wound. It is a reaction to profoundly injurious events and situations in the real world and, indeed, to a world in which people are routinely wounded."

~Bonnie Burstow



Defining Trauma

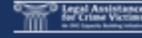
Dr. Wilson: So let us jump right in. I want to start by asking you to think about what your definition is of trauma. One of the things I have found over the years is that we use words so frequently without actually thinking about what they mean. I was doing a training just last week and a participant asked me for a definition of a word and I had to stop and think to myself, "Oh wow, what is the definition of that word?" The word was jealousy. I thought, "Oh my gosh, how do I define jealousy?" So I want you to think about, how do you define trauma for yourself? And then I want to give you a quote. This is a quote that I love. This is by a woman named Bonnie Burstow. And just read that because I think in our society we have a tendency to pathologize reactions to trauma. And I love this notion that trauma is not a disorder. It is a reaction. And when I read this quote, this is the quote that brought up for me the phrase that I love to use, which is, "This is the brain doing what the brain does." Because, indeed, we live in a world in which people are routinely wounded. And I think the more we can normalize those responses, the better able we will be to assist those who have suffered from trauma.

Defining Trauma

- **Trauma:**
 - physical, cognitive, and emotional response
 - to events and situations that are distressing and
 - overwhelm a person's existing or previous coping mechanisms.
- Your subjective experience (not the facts/event) determine whether an event is traumatic.

Dr. Wilson: So I just want to go over a couple of bits about trauma that you may already know. First, to give you a very specific definition. There are three pieces to defining trauma and one is the response. It is physical, it is cognitive, which means it affects your thinking. And it is an emotional response as well. And it is to situations that are distressing. If they are not distressing, they are not going to be traumatic. And then this last piece is that distress or stress overwhelms your existing or your previous coping mechanisms. And something to keep in mind about this is that it is subjective. Determining whether an event is traumatic has nothing to do with the facts. It has everything to do with your emotional subjective experience.

Important Information About Trauma Survivors



- Traumatic events happen to competent, healthy, strong, good people. No one can completely protect themselves from traumatic experiences.
- Having symptoms after a traumatic event is not a sign of personal weakness.
- By understanding trauma symptoms better, a person can become less fearful of them and better able to manage them.

(Adapted from a National Center for PTSD fact sheet)

Dr. Wilson: And my guess is that many of you already knew that and that, hopefully, was a bit of a review. I believe that these events, excuse me, these next comments are also going to be a review for many of you, that I want to remind you that traumatic events, they happen to everybody. Trauma is an equal opportunity provider, so to speak. And when you have symptoms related to your traumatic event, they have nothing to do with personal weakness. That is what today is all about. It has to do with neurobiology. The bottom line is that when your clients understand their trauma symptoms, they have a tendency to become less fearful of them and better able to manage them, which is what we are all about today.

Understanding the Brain

Simplifying the brain - it's easier to understand than you may have been led to believe...

- The brain in your fist:
a 3D map in your hand

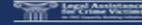


Understanding the Brain

Dr. Wilson: We are going to move on now and talk about the brain. So there is a wonderful clinician, psychiatrist, and researcher down at UCLA named Dan Siegel. Dan Siegel taught me this technique called the brain in your fist. So if you make a fist like the one that you see on the screen, you have in front of you a very simple diagram of the brain. Now, I want to remind you again, we are simplifying today. We are not going to reduce the functions of the brain. So I am not going to be saying that a certain part of the brain only performs this function. Or that a certain part of the brain is the only part of the brain involved in a particular process. But by simplifying it, I think it is going to make it easy to understand. And the bottom line is, you do not have to understand the complexity in order to understand enough to talk to your clients intelligently and help them make sense of themselves and their experience.

Dr. Wilson: So the first thing to know about the brain in your fist is this. It is a 3D map in your hand.

Understanding the Brain



- **Cortical (thinking/awareness) = fingers**
- **Subcortical (beyond awareness = below fingers**
- **Limbic system = thumb**
- **Pre-frontal cortex = nails**



And so you have got, basically, your fingers which represent the frontal cortex and parts of your brain that have to do with thinking and awareness. Those are your fingers. We call that the cortical part of the brain. And then below your fingers, for example, your thumb, we call that the subcortical regions of your brain. That has to do with beyond awareness. So, if you look at your thumb, your thumb represents something called the limbic system. Now, that is not a word you are going to have to remember. But the limbic system basically is related to your emotional experience. The limbic system has responsibilities that are related to what you experience emotionally. And then if you look at your nails, your nails represent something called your pre-frontal cortex. And that I am going to want you to remember because the pre-frontal cortex plays a role in how we respond to threat and how we then are influenced and affected by trauma. So the limbic system has two specific parts that are related to how your brain responds to threat, and then the parts of your brain that are affected by trauma. So think about this for a minute. Remember, the definition of trauma has to do with an event that has some sense of threat or some sense of you feeling as though you are frightened, overwhelmed, etc.

The Brain's Response to Threat



- The brain's response to threat involves several structures including:

In your thumb:

- The amygdala - the early warning system
- The hippocampus - adds immediate context

In your nails:

- The left pre-frontal cortex (LPFC) - adds life context

The Brain's Response to Threat

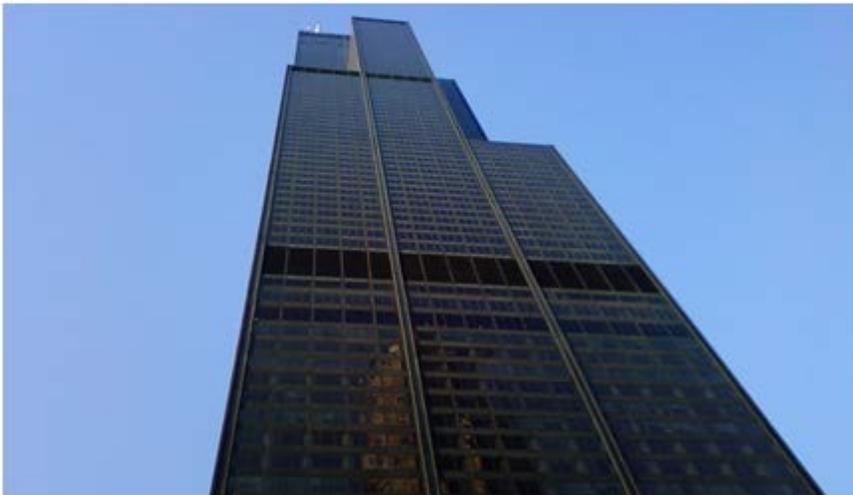
Dr. Wilson: So we have to look at how does the brain respond to any type of threat? And it involves three structures that we are going to talk about today. It involves lots of structures, but we are going to talk about just three. And the first is called the amygdala. And it is in your thumb. Okay, so right off the bat you already have some information about the amygdala. And that is the amygdala is subcortical beyond awareness. So your amygdala is going to fire before you are even aware of it. And this will make perfect sense to you here in just a second.

Dr. Wilson: So, it is interesting, when I get to present in front of an actual physical audience, I am able to look out into the crowd very quickly and understand whether this cultural reference is going to fly. And that is, I look to see how many people have gray or white hair in the audience. Because if you do, you remember a TV show called "Lost in Space." If you are younger, you may simply remember a remake of the TV show in the form of a movie called "Lost in Space." But for those of you who do not know, "Lost in Space" is about a family. They went from planet to planet and their son, Will Robinson, would inevitably in every episode become lost somewhere on that planet. But, thankfully, he had a robot that back in the 1950s and 1960s version of the show I am fairly certain looked like your child's Halloween costume. A box and some vacuum tubes. But basically, Will Robinson's robot would say, "Danger, danger, Will Robinson, danger," anytime Will was about to be faced with danger. So that is how I want you to remember your amygdala. Your amygdala is your early warning system. Your amygdala is consistently taking in information from the environment and determining whether or not there is a threat to you in the environment. And so when the amygdala starts to fire, your amygdala is telling your body there is a threat in the environment. Okay.

Dr. Wilson: Next, you have the hippocampus. So the hippocampus then takes that immediate threat and adds context. So, for example, your hippocampus will take that information that there is a threat, maybe there is a fire alarm going off, and the hippocampus, because it has to do with memory, will allow your brain to say, “Okay, based on what is currently present in the environment, am I safe?” So this probably will make sense to you that other parts of your brain are going to be scanning the room and taking in the input from your eyes, your ears, your nose. And if you smell smoke, your hippocampus is going to say, “Ah, that fire alarm that went off appears to be related to an actual potential fire,” because you have memories of what is safe and what is not safe stored in your hippocampus. You have learned over time what is safe and what is not safe. So your hippocampus gives you that ability to compare what is going on in the moment with what you know to be safe and unsafe in the past. It adds this immediate context in the moment.

Dr. Wilson: And finally, in your nails you have got your left pre-frontal cortex. And that adds life context. So if you forget about immediate context for a moment, you have a narrative of your life that helps you understand safe versus unsafe. And the best example that I can give you regarding this notion of narrative and safe and unsafe is to give you a very concrete example of how this whole system works together.

Imagine for a moment...



Imagine for a Moment

Dr. Wilson: Now, I imagine there are probably some people today who are from the Midwest and have been to Chicago and have spent some time in the Sears Tower. I had an opportunity to spend some time at the very top of the Sears Tower many years ago. I was at a workshop on leadership when I was in college. And again, if you have gray hair you probably remember the movie, “Ferris Bueller’s Day Off.” And sure enough, I found myself with my head pressed against the glass windows looking down at the folks. And I want you to imagine that you are up there yourself on the top floor of the Sears Tower looking down on the street, taking it all in, when all

of a sudden you hear a loud bang inside the building. Now, what is going to happen? Right off the bat, your amygdala is going to fire. Okay, so that is your early warning system. There is a loud bang in the environment. Your amygdala is going to say danger. You are going to have the release of adrenaline and you are going to prepare for what I am sure you are all aware of is the fight, flight, or freeze response. And many of you probably already were aware of the freeze response. But that is a fascinating piece that I just want to cover very briefly because when the research came out that suggested that it was not just fight or flight, but it was also freeze. I remember thinking to myself, that makes so much sense. Because I wonder how many of you had the same experience as I did as a kid which was you are lying in bed and you are convinced that there is a boogie monster either in the closet or under the bed. So what did you do? Well, if you were me, you pulled the covers over your head and you tried not to move. That freeze response is related to the desire to not be seen. If I am not seen, then perhaps the threat will not egress toward me. So that freeze response is hardwired into us in the same way that a fight or a flight response is wired into us.

Dr. Wilson: So when you are on the top of that Sears Tower and that amygdala goes off, you are starting to prepare for fight, flight, or freeze. And almost instantaneously, along with the amygdala going off, that signal of the bang is then sent to the hippocampus. And the hippocampus then has the opportunity to mediate the response of the amygdala. So the hippocampus is then going to take all the information from your eyes, your ears, your nose, because what do we do when there is threat in the environment? We usually scan the environment. And let us say you look around and you notice that the other people on the floor do not look at all concerned. You smell, and you do not smell smoke. And you start to realize that your heart rate is coming down. You do not hear any alarms in the system or in the building going off. And now you are starting to breathe a little more normally again. Your heart is beating a little more regularly now. And now that signal gets sent to your pre-frontal cortex. And your narrative, your life narrative kicks in. And what is a part of every citizen and individual who lives in the United States of America, or has for the last 10 or 15 years? Part of that narrative is 9/11. So my guess is that many of the folks that would be with you on that floor might say to themselves, you know, just for safety's sake, I know it is a long way down, but let us start climbing. Because if I am going to make a bet here, I would like to bet on us getting downstairs safely as opposed to the potential that we just do not know that there is a dangerous situation below us. So that is where the left pre-frontal cortex comes in. It has to do with reasoning and logic and thinking about a situation in the context of your entire life.

The Brain's Response to Threat

ALSO:

- The hippocampus and the LPFC are involved in memory and memory consolidation...



The Brain's Response to Threat

Dr. Wilson: So, just to review, I am going to go back and remind you that the amygdala and the hippocampus, these are two parts of your brain that are beyond your awareness. So you are going to have that amygdala response and that release of adrenaline, and you are going to be checking out the room before you even are thinking about what is going on. So you may have heard stories in the news of individuals who have come home to a darkened house and they hear somebody in the house and they grab a weapon that they may have had in the house to protect them against robberies and they see a shadowy figure in the hallway and they shoot. That is the amygdala and the hippocampus. Because the amygdala is saying danger and the hippocampus is saying, yes, dark, shadowy figures in the hallway, that is consistent with danger. And in situations like that, the cortex does not have time to process all of that information and result with a conclusion of, hey wait, maybe it is my brother-in-law because remember, my wife or my partner gave the house keys to him because he left some items here when he was here for a party. So you may have read about stories about individuals firing weapons at folks in their homes that turned out to be not burglars and not threats. And that has to do with that slow response of the left pre-frontal cortex compared to the amygdala and the hippocampus.

Dr. Wilson: Okay, so this is basically how we respond to threat. And I want to throw in a little other piece of information. The hippocampus and the left pre-frontal cortex, they also have to do with memory and memory consolidation. So when you had breakfast this morning, you took all of that data and your hippocampus and your left pre-frontal cortex had a large role in storing those memories and then consolidating those memories into what we would call a temporal sequence. So you are able to remember breakfast this morning as a narrative that has what all

narratives have, a beginning, a middle, and an end. And that ability to create that narrative is based on your hippocampus having the ability to store those memories. And then the left pre-frontal cortex having the ability to use those memories in a temporal sequence to create a narrative, create a story about breakfast. So that is always going to be involved in the events you experience throughout the course of the day. When you respond to threat, you have a similar response. Later, though, we are going to talk about the impact of an event that is traumatic on this system of the hippocampus and the left pre-frontal cortex.

The Impact of Trauma



Exposure to trauma results in

- A more sensitive amygdala

- Hyper-sensitivity to seemingly innocuous stimulus

Or

- You're startled easily



The Impact of Trauma

Dr. Wilson: Okay, so let us talk about the impact of trauma. One of the influences that trauma has on the brain has to do with the amygdala. And what we find in the research, and this probably is going to be backed up by your experience, is the fact that the amygdala becomes hypersensitive. The best way that I can describe this is to think about if you are rubbing your fingers together, and you rub and you rub and you rub and you rub. The longer you rub, the more sensitive that skin becomes. And if you rub hard enough, you will create a sensitivity on your fingers such that when you barely touch the finger it will hurt. And so that skin becomes extra, extra sensitive and your ability to feel pain becomes super-increased. If you have ever had a rug burn...I played soccer for many, many years as a goalkeeper and I remember as a kid the first time I played on AstroTurf and I had the worst raspberry rug burn on my hip. And it resulted in me not being able to sit down. It was extremely painful. If we translate that sensitivity to the amygdala, the scientific phrase or the way that we talk about it in the research is—I do not like to read my slides very often, but if you can imagine being at a research workshop and somebody says, “Results in hypersensitivity to simulate innocuous stimulus.” And that is stimulus or stimuli, it is either a single stimulus or a variety of multiple stimuli in the environment. And what that means is, in plain English, is that you get startled really easily.

Dr. Wilson: So you are probably all familiar with the impulse that we all have to become startled. The startle effect. Startle response, excuse me. So if somebody bangs their fist on a chalkboard in a classroom, everybody is going to have some sort of startle response. When you have been exposed to trauma, your amygdala becomes so sensitive that even a door closing—not being slammed—but just a door being closed results in that startle response.

Dr. Wilson: I want you to spend just a minute and imagine what it would be like to consistently get startled. And consistently have that experience of your heart starting to race, feeling a little jittery because that adrenaline starts to fire through your body, and feeling as though you may be in danger. I want you to imagine that is happening to you daily. Sometimes many times a day. It is not often that when we are walking down the street we hear a car backfire. But for somebody who has been exposed to trauma, the equivalent of a car backfiring to you and I happens daily. It is a car door being shut. It is a horn being honked. It is somebody shouting on the street. The amygdala becomes hypersensitive. You are easily startled and your fight, flight, or freeze system kicks in with a frequency that goes way beyond what those who have not experienced trauma experience. So that is the first thing to be aware of. This hypersensitivity in the environment has to do with the amygdala and the early warning system saying, “Danger, Will Robinson, danger Will Robinson”, when in fact there is no danger in the environment. That is a profound, profound effect of trauma.

The Impact of Trauma



Exposure to trauma results in

- High level activation interferes with hippocampus - some think the hippocampus gets bypassed



When is a bang more than just a loud noise?

Dr. Wilson: So, I have a question for you all. We are going to take three poll questions throughout the course of the day. Oh, excuse me; I forgot we have a second point. I jumped the gun. The other piece of the impact of trauma on the amygdala is that when the amygdala becomes activated many, many times over the course of a day or a week, high-level activation of the amygdala appears to interfere with the functioning of the hippocampus. Now, remember the role of the hippocampus. The hippocampus is about immediate context. So I have a question for you. When is a bang more than just a loud noise?

Poll Question #1

Poll Question #1

Dr. Wilson: And now we have a poll question. So if we could have that poll question come on the screen, I would like you all to take a minute and read the question. Have you ever worked with a client who became triggered and then struggled to notice that she or he was safe? So, for example, they were in your office, they heard a noise, they smelled a smell, they believed that they were in danger. And have you ever had that situation that resulted in that person struggling to recognize that they were safe? So they have become triggered. Maybe they start to hyperventilate. Maybe they start to get upset. And it becomes difficult for you to help that person recognize that they are in your office. There is no danger in the environment. So we will give you all a few minutes. Well, not a few minutes. I take that back. We are going to give you all a few more seconds here to answer that poll question and then we are going to talk about how that reaction is essentially the brain doing what the brain does. Because in my experience, when many folks have this experience of a client who...And it looks like 81 percent of you have also had this experience. If we could do a second poll question immediately, which we will not, I would ask you, and how many of those folks determined that there was something wrong with them based on their inability to ground themselves in that moment and realize that there was no danger? Think about that. Basically, somebody has become frightened in an environment with no threat. And when we look back on an event like that, very often the meaning that we make has to do with us being weak, going crazy, having something wrong with us. So if you have had this experience, what I am about to share with you may be extremely helpful.

The Impact of Trauma

Exposure to trauma results in

- High level activation interferes with hippocampus - some think the hippocampus gets bypassed



When is a bang more than just a loud noise?

When you can't put it in context!

The Impact of Trauma

Dr. Wilson: So I am going to take this poll question down and we are going to go back to the slides here. I want you to go back to this question of, when is a bang more than just a loud noise? As far as I am concerned, it is when you cannot put it in context. When you are not able to scan the environment and recognize that that bang was a car backfiring outside. Or it was somebody down the hall dropping a pile of books. When you are not able to use the hippocampus as a way of checking in with what is in the environment compared to what you know to be safe, that bang becomes a threat as opposed to a loud noise.

Dr. Wilson: I want to say just a little more about that because it is really important that you understand this role that the hippocampus plays. So, basically, when that client is sitting in your office and he or she becomes triggered, hears a noise, smells a smell, perceives a threat in the environment, it is going to be likely, because they are in your office, that that has to do with the amygdala being hypersensitive. When that fight, flight, or freeze response gets triggered, what would happen if they had not had a history of trauma is that the hippocampus would kick in and they would be able to look around the room and recognize, oh, I get it, that was just a noise outside. I can see I am in this office. Because the hippocampus allows them to compare what is going on in the moment to their constructed memory of what safety means. And if you cannot connect the present with the past, you have an inability to understand that you are safe.

Dr. Wilson: Another very compelling example of this is if you have ever worked with veterans who have been involved in combat. I had an individual explain to me once in a group that it was extremely embarrassing for him to realize that he had woken up from a nightmare which triggered his amygdala and he then dove on top of his wife believing that he was in combat and believing that there was a grenade that was going to go off in their bedroom. It was embarrassing

to him because he did not understand that this was just his brain doing what brains do. His brain was responding to the threat. He activated and protected his wife. The only reason why he was not able to say, “Oh, I am safe, I am in my bedroom,” was because he could not access that constructed memory of safety and recognize that this place he was in was a safe place. And as you might imagine, it was extremely powerful for him to recognize that this was not a sign of him being crazy. This was not a sign of him being weak. That this was a wonderful example, actually, of his brain doing what brains do when they have been affected by trauma.

The Impact of Trauma



Exposure to trauma results in

- Reduced volume of hippocampus
 - Inability to categorize experience – Impact is on memory and ability to recall



Dr. Wilson: So, if we move to the next slide here, I am going to talk just a little bit more about the influence of trauma on the hippocampus and memory. So if you see the slide up there, that is somewhat of an exaggerated example of my office. And I use this photo because if you remember the slide from earlier in the talk that had to do with memory consolidation, you saw a very neatly organized card file. Well, when we have been traumatized, the way we store those traumatic memories is not organized, nor is it temporal. And what I mean by temporal is we do not put the memories on a timeline. Basically, we just have random pieces of data related to an event that becomes very difficult for us to coherently organize into the context of a narrative. And so exposure to trauma not only results then in the incredibly sensitive amygdala, and losing some of the functioning of the hippocampus, but it actually reduces the volume of the hippocampus, and we have this inability then to categorize experience, which then makes it very difficult for us to remember and recall what happened to us.

Poll Question #2

Poll Question #2

Dr. Wilson: So, I have another question for you. If we could bring that poll question up. I am curious to know whether you have had a client who struggled to talk about his or her traumatic experience soon after it happened. And what I mean by this is it is not just that they could not remember, but they could not even find the words to talk about what they could remember. This, again, is an experience that if you have worked with victims of extreme trauma, sometimes you will hear, “I sat on the ground outside the house,” and this is an example from a client who I had worked with who had been assaulted by her partner. And when the police came, she could not find the words to talk about the experience. And if you have ever had that happen, you will find that very often individuals have a tendency to assume that you do not want to cooperate. And so I think it is important for us to understand that this has something to do with the brain. So if we look at the results of the poll. If we could bring those results up, 90 percent of you have had this experience.

The Impact of Trauma



Exposure to trauma results in

- **Decreased activity in Broca's area**
 - Broca's area is related to speech
 - This may explain the difficulty victims have in talking about trauma

The Impact of Trauma

Dr. Wilson: And what I would suggest to you, if we could go back to the slides, is that this also may have a lot to do with the impact of trauma on the brain. Because one of the things that research has shown is that there is an area of the brain called Broca's area that is related to speech. And when you look at somebody who has experienced a traumatic event, there is decreased activity in Broca's area. So if you have a client who is struggling to talk about their experience, this is one way to help them understand that this may be what is going on. Now, I want to make it really clear. We are not saying that this is always what is going on. I am simply suggesting that this may be a way to help your client understand that this, again, has nothing to do with weakness. It has nothing to do with an inability on their part that they ought to have. It has to do with their brain doing what the brain does.

The Impact of Trauma

Imagine what it would be like if your memory of breakfast was only this:



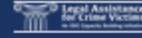
And you couldn't even find the words to describe it...

Dr. Wilson: So, I want you to think about breakfast this morning. And I want to go back to this notion of the hippocampus and memory and memory consolidation, and I want you to think to yourself, what is your narrative of breakfast? Now, this may sound silly, right? Because if you have not been a victim of trauma, it is almost ridiculous for somebody to ask you to think of a narrative for breakfast, right? It is a kind of a “duh” question. Like you have got to be kidding me. Why would a presenter want to ask me what my narrative for breakfast was? Well, the reason why I choose breakfast is because it is so basic to all of us. It is so basic. So for me, breakfast this morning was getting out some oatmeal, getting out a bowl. Putting the oatmeal in the bowl. Remembering that I wanted to put fruit on the oatmeal. Putting the water in the bowl, right? And we have this whole narrative that has a beginning, a middle, and an end.

Dr. Wilson: Here is the thing, though. I want you to imagine what it would be like for you if your memory of breakfast was only the smell of bacon, the taste of orange juice, and a vision of blue jeans. That is what your memory of breakfast was. And so when I ask you to talk about your memory of breakfast and what happened at breakfast this morning, all you can do in your brain is think, I smell bacon, I have the smell of bacon and I can kind of taste orange juice and I can kind of see blue jeans. And then imagine you cannot even find the words to describe what you do know. And I want you to imagine that, honest to God. Imagine how terrifying that would be. And that is just breakfast. That is not being assaulted, sexually assaulted, physically assaulted. That has nothing to do with breakfast.

Dr. Wilson: What I am saying is, breakfast is not necessarily traumatic. What I am saying is in addition to the trauma, you have this response which can also be overwhelming and traumatic. And that is the brain doing what the brain does. That has nothing to do with an individual being weak, with an individual not having an interest in talking about the experience. It has nothing to do with an individual not being willing to participate. It has everything to do with how the brain is affected by trauma.

The Neurobiology of Trauma



Exposure to trauma results in

- a neural network that leads to an automatic response to any perceived threat.
- This response may make one feel like s/he's "going crazy," when it's just the reality of the impact of trauma on the brain.
- It can also result in a neural network that defends against any vulnerable emotions by either shutting down or dissociating.

The Neurobiology of Trauma

Dr. Wilson: So in that moment, your memories, some research has shown that the memories do not even get stored in the hippocampus. They get stored in the amygdala. So we have this fundamental inability to recall the narrative. So the left pre-frontal cortex, if you remember, the left pre-frontal cortex which has to do with creating that narrative, it is not able to make sense of the memories that you have. And then, in addition to that, finally, you have this neural network that results in you responding automatically to any perceived threat in the environment. And that automatic response is the amygdala being hypersensitive, the hippocampus shutting down, and you often feeling like you are going crazy.

Dr. Wilson: This neural network—if you do not know what a neural network is, let me explain. In the brain we have neural networks for everything that we do. The neurons in our brain, they wire together when they fire together. So every time we engage in a behavior, those neurons that are involved in that behavior, they fire. And the more often they fire, the more connected they become. And whatever that behavior was over time becomes easier and easier for us to do. As the neural network becomes more engrained, that behavior becomes easier. So basically, if you think about riding a bike or driving a car, the first time you did that you had to think about it. But over time, the more you drove, the more you rode the bike, that neural network resulted in you not even having to think about putting your foot on the clutch, lifting your foot off the clutch, pressing the gas, and etc., etc. That is a neural network. So when somebody has suffered trauma, they also have a traumatic neural network, a neural network that just automatically responds to any perceived threat. And I want you to remember that perceived threat may be completely innocuous and harmless, but the amygdala is so sensitive that it responds as though it is a threat

anyway. And that is that notion of trauma being about your emotional experience and not about facts in the environment, or the data that is present in the environment.

Dr. Wilson: The last thing I want you to be aware of is that this neural network, it can also result in us either defending against vulnerable emotion by shutting down emotionally, or even disassociating and not allowing ourselves to be present in the moment. That neural network gets activated when there is a perceived threat. And so when somebody disassociates, I want you to remember it is an automatic response. It is part of a neural network. It is not something that somebody is just doing. It is part of the brain doing what the brain does.

The Left-Prefrontal Cortex



- The LPFC is the nail on your middle finger (if your right hand is your brain)
- The main functions of the LPFC are integrative:
 - Use of language
 - Use of logic
 - Tells the story of your life (lying!)

The Left-Prefrontal Cortex

Dr. Wilson: So, let us talk about implications in terms of the work that we do. First thing I want to do is talk about the left prefrontal cortex and some of the implications related to the left prefrontal cortex. The thing to understand about this part of the brain—and remember it is in your fingers. It is the middle finger of your right hand and it is just the nail. And the main functions of this are to integrate and then allow you to use language, allow you to use logic, and to create the story of your life, which Dan Siegel down at UCLA points out, often involves lying to ourselves. So he likes to use the three L's of language, logic, and lying, as a way of remembering that the left prefrontal cortex is about our narrative. And so the reason why we say lying is that very often what is subjectively true to us is not true to everybody else. So we are not saying that folks are liars. We are just saying that the brain creates subjective experience.

Dr. Wilson: A great way to understand this is to think about a 5-year-old child whose parents have gotten divorced. And as we know, 5-year-olds are what we call egocentric. Some would say that 40-year-olds can also be egocentric. But, for the time being, we are just talking about a 5-year-old. And that 5-year-old who is egocentric, the world revolves around their ego. Does what in terms of making meaning and telling the story of his or her life related to the divorce? If you

have ever worked with kids or experienced kids of parents who have been divorced, very often they blame themselves and it somehow was their fault. Which is again, the brain doing what the brain does. So they are egocentric so, of course, it had to have been related to them. Well, that is not true and yet that becomes part of their narrative. So that is what we mean by “lying” in terms of the narrative.

Healing From Trauma



- **The importance of the LPFC in healing:**
 - Putting the story in context
 - Moving memory from sub-cortical to cortical
 - Learning to notice the breath
- **The hippocampus and amygdala appear to be able to “heal” over time – neuroplasticity is cool!**
- **Healing requires support!**

Healing From Trauma

Dr. Wilson: So, the left prefrontal cortex has this huge implication in terms of putting this story of the trauma in context. And so, basically, when we put a story in context, one of the things that we do is we move that memory from subcortical to cortical. From thumb, hippocampus and amygdala, into the left prefrontal cortex. And the implication for that is that we then have the ability to control the memory. So if you have worked with folks who have had that experience of intrusive memories, often helping them create a narrative and putting the story of their trauma in context allows them to then feel a sense of control about those memories and the ability to say, “You know what? I am not going to go to that memory right now. I am going to push that away.”

Dr. Wilson: One of the things that you can do for your clients is help them learn to notice their breath. Because again, one of the implications of healing from trauma, and the implication of this effect of trauma on the brain. Research by folks like Richard Davidson over at the University of Wisconsin has found that—and this is scientific research—that when we notice the breath, there are neural connections to the amygdala that appear to soothe the amygdala. So when you just focus on noticing the breath, you soothe the amygdala. And the cool thing is that in learning to notice the breath, which is a function of the part of the left prefrontal cortex which is noticing that breath and then narrating. Here it comes, it is coming in, it is coming out. And noticing the other narratives that go on, which we call wandering mind, we have this tendency to give the hippocampus and the amygdala the ability to heal or repair over time. That is called neuroplasticity. The brain is incredibly effective in terms of building new neural circuits. When

you can learn to notice the breath and teach your clients to notice the breath, you will find that their amygdala soothes and their hippocampus kicks in.

Dr. Wilson: A quick example of this is if you are working with somebody who has become triggered, you can ask them very quietly and calmly to count the tiles in the ceiling, to notice their breath, to point out and count anything in your office. And that then engages the left prefrontal cortex, engages the hippocampus, and what you will find is that they are then able to notice that they are safe. What I like to tell people is healing requires support. And if that person were sitting in your office and became triggered, without you there being supportive, that individual would likely have a very difficult time noticing that he or she was safe.

Implications for Potential Participation in Legal System



Due to the impact of exposure to threatening stimulus (e.g. facing the attacker in court):

- Victims may be further traumatized by participating in prosecution
- Victims may find healing by participating in prosecution

Implications for Potential Participation in Legal System



- A sense of control over the choice whether to participate is crucial.
- Participation can mean many things!

Implications for Potential Participation in the Legal System

Dr. Wilson: So all of this has implications for participation in the legal system as well. So I just want to go over a couple of points. And one is very basic. You know, your clients may be further traumatized by participating in prosecution. And your clients may find healing in that participation. And the bottom line is choice. I also wanted to point out something that I learned from NCVLI, that participation can mean many things. It does not just mean showing up at a victim impact statement. It has many different forms.

Poll Question #3

Poll Question #3

Dr. Wilson: So I have a third poll question for you before we stop today. So if we could bring up that last poll question. I just want to ask you really quickly. Have you had a client whose account of an incident has changed over time? In other words, they remember more details, they remember a different sequence of events a week later or a month later while you are talking with them, working with them? If you have, obviously I would like you to click yes. If you have not, indicate that you have not. And we will give this just about a minute. And what I am going to do is start explaining this.

Implications for Legal System



The reality of changing stories

- Due to the way the brain stores emotionally charged memories, as well as the impact of trauma on Broca's area, stories will change over time.
- A victim who has her/his own attorney will have a safe place to consistently express their story without ramification.

Implications for the Legal System

Dr. Wilson: Basically, because of the fact that the hippocampus and the amygdala heal over time, you will notice that your clients' stories will change. They will remember details. They will find ways to put that story in context and find a narrative. So 97 percent of you have noticed the stories change. This is not surprising. If we go back to the slide, this is an extremely common experience for individuals who have experienced trauma. And this has to do with neuroplasticity, the brain changes over time, those memories start to come back. The left prefrontal cortex is then able to start putting the story in context and in a temporal sequence. And so, basically, if your client has his or her own attorney, that is a safe place to consistently express the story. Therapy is not necessarily a safe place because, despite the efforts of organizations like NCVLI, sometimes those records do end up in a trial. Whereas a client who has the opportunity to talk to their own attorney about the trauma, it is not doing therapy, it is simply providing the brain with an opportunity to continue to heal over time.

Implications for Legal System



The culture of silence versus the importance of integrating the story of trauma.

- Healing trauma comes not just from having a voice but from integrating the story.
- Victims' rights, including the right to be present and the right to be heard, are crucial in helping victims integrate the story of the trauma, and thus heal.

Dr. Wilson: So, a couple of last things here. I want to talk a little bit about the culture of silence and the importance of integrating stories. You know, healing from trauma, it does not just have to do with having the opportunity to talk, but it has to do with the opportunity to integrate the story. So it is one thing to just have a voice. It is another thing to have that voice integrated into the story of your victimization. And so a victim's rights, which I note here includes, at the very least, the right to be present and the right to be heard. These rights are crucial in helping a victim integrate into the story of trauma this experience of being heard. Because if you can imagine, and I am sure you are all aware, when we have been traumatized we have often been silenced.

One last thought...



“As part of its legacy, trauma leaves its victims with fear networks etched into the amygdala, networks that can be triggered by a multitude of cues that would ordinarily not evoke fear. Trauma also leaves its victims with fragmented and discontinuous memories of what happened to them. As a consequence of these legacies, the...victim faces enormous challenges in the judicial process. To participate in that process - to endlessly recount their trauma, to appear in the court room where the [perpetrator] sits - is equivalent to the zebra consciously choosing to return to the water hole where the lion attacked.”

Lisak, 2002

One Last Thought

Dr. Wilson: So I want to leave you with this last quote, and then hopefully take some questions for a few minutes. It is a quote by David Lisak and, basically, without reading this to you, Lisak points out that when we ask somebody to participate in the criminal justice system, we are essentially asking the zebra to intentionally choose to return to a water hole where that zebra was attacked by a lion. And if you know anything about zebras, that just does not happen. That is not what we do. So there is a tremendous amount of courage to stand in a courtroom, to contemplate standing in a courtroom, and there is a tremendous amount of courage to say no to that and take care of one's self.

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Bibliography

Dr. Wilson: And I want to hopefully encourage you all now to take what you have learned today and use it in the work you do with the clients that you see. And I hope that this has been helpful to you. I have included a couple of things for you to read that are part of the PDF. Some of these, well, pretty much all of these are older works. From my perspective, *The Neurobiology of Trauma*. Or, excuse me, *The Mindful Brain*, is a classic. And I would encourage you to have a look at that, in particular, as well as *Trauma and Recovery*. That is another classic. And so, at this time, I would like to take any questions. So if the moderators would like to either type or read me those questions, I would be happy to answer them.

Questions?



Questions?

Rebecca Khalil: Thank you, Dr. Wilson. We have received a number of really great questions from our participants throughout the Webinar, and I do not think we will have time to get to all of them today. So we are just going to select a few. And if there were questions that we were not able to answer and you still would like answered for you, go ahead and shoot us an e-mail and we will try our best to get you those answers as quickly as possible.

Rebecca Khalil: So I am going to start out with the first one we received, and this addresses the amygdala. The question is: Does the amygdala ever heal from being hypersensitive from past trauma? In other words, are these effects from trauma reversible?

Dr. Wilson: Yes. As I mentioned at the last part of the talk, this notion of neuroplasticity is really wonderful. The amygdala does over time with, obviously, work like mindfulness and being in a supportive environment, it does appear to heal over time. And, of course, every individual is different and it is going to have to do as well with how intense the trauma was and whether that person is then given an opportunity to be a part of a supportive environment.

Rebecca Khalil: Great. We have another question that came in about the amygdala. It is sort of related. And this person asked: Does long-term exposure to stress or danger cause the amygdala to become oversensitive?

Dr. Wilson: Yes, it does. Well, danger, yes. Stress, again, it all depends on your perception of that stress. If you perceive that stress as a threat to you, your amygdala is going to fire. It is the firing of the amygdala when you feel overwhelmed that potentially then results in that sensitive amygdala. So stress, in and of itself, not necessarily. That would have to be a contextual situation.

And my guess is that unless you were talking about stress that included perceived danger, no, your amygdala most likely is not going to become hypersensitive.

Rebecca Khalil: So, after providing us with all this information about trauma and its effects on neurobiology in victims, what would you recommend in terms of educating the courts, the judges, other participants in the justice system about trauma and its impact on victims?

Dr. Wilson: Well, I think that is going to depend on the context. I think there is one very relevant example is if you have had a client whose story has changed over time. Being able to introduce an expert in the area of neurobiology who can talk clearly and plainly about the fact that that story changing may not have to do with what I would assume a defense counsel would imply, which would be that this person is not credible. So being able to talk about the impact of trauma on the brain provides a way to make sense of things like changing stories, which can potentially influence the court and help the court understand that a changing story does not necessarily mean that somebody has fabricated or is not credible. I think in terms of educating around actual testimony, if a person becomes traumatized on the stand, I think it can be important to help the court understand that the inability to talk about or shutting down may not have anything to do with somebody who is no longer willing to participate in the process. Say somebody does not want to show up and actually testify. That may not have to do with not wanting to be a part of the process. It may have to do with the brain saying, I cannot do this because of the implied threat.

Dr. Wilson: Let me also add...I know that we are very nearly out of time. I maintain very close contact with the folks of NCVLI. And if you have any other questions, I would be happy to answer them for you moving forward. And I want to thank Professor Garvin and NCVLI and OVC for making this Webinar happen. And I hope everybody has benefitted.

Rebecca Khalil: So we have time for just one more quick question before wrap-up. And we will provide you with a little bit of information after this. So for those folks still on the line, please hang on because you will probably want this information. The final question we have time for is: In terms of explaining this information to clients or to victims, how might we introduce this information about trauma in a sensitive way if we are not therapists and they have not specifically asked us to give this sort of feedback or these sorts of facts to them?

Dr. Wilson: That is a fantastic question. And what I would encourage you to do is ask this person if they are interested in a little bit of information that might help them understand the experiences that they have been having, assuming they have expressed some concern about those experiences. So if you have somebody who is not particularly concerned about the experiences that they have been having, maybe that is because they are in therapy themselves. Maybe it is because they have already been previously educated. I advocate for asking permission. So I think the most sensitive way to do this is to ask the simple question, "If you are interested, I have some information that might be helpful to you." And then I would use the brain in the fist, and use that as a model and a way of talking about what may be going on for that particular individual.

Completion Code



Completion Code:
PP72413

Rebecca Khalil: Great. Thank you, Dr. Wilson. So final information as we wrap up. As Meg mentioned earlier at the very beginning, you will receive two surveys at the end of this Webinar. One of them will automatically pop up on your screen when the Webinar ends. And we would like you to fill that one out. And another one will be given to you as a link in the e-mail we are sending you with the materials, the slides, and also with a certificate of completion. So you can see on your screen now there is a completion code that you can fill in. And NCVLI has not certified this in advance for CLE credits in any specific jurisdiction. But if you would like to seek credits for attending this Webinar, there is a completion code you can use to verify that you were on the Webinar throughout the entirety. And so please fill out both surveys. The automatic one and the e-mailed link. Both of them measure different things and both are very important to us.

As part of the *Legal Assistance for Crime Victims: An OVC Capacity Building Initiative*, OVC TTAC and the National Crime Victim Law Institute (NCVLI) are working collaboratively to expand the availability of pro bono and no-cost legal assistance for victims of crime nationally.

Part of that collaboration includes developing and delivering a series of Webinar trainings designed to assist attorneys around the country with the tools needed to increase their knowledge base about crime victim issues, and increase their capacity to provide pro bono or no-cost legal representation to crime victims.

For additional information about the Initiative and to register for upcoming Webinars, please visit: <https://www.ovcttac.gov/>

Rebecca Khalil: And before we close we also just want to again thank OVC and OVC TTAC for allowing us to collaborate with them in producing these trainings. And we hope this was of assistance to you and that it will be useful to you going forward. And again, if you would like to contact us, if you had additional questions that we were not able to answer during the limited time we had, you will receive an e-mail from us, but our e-mail address is ncvli@lclark.edu, if you would like to e-mail us those. So thank you, everybody, for joining us today. And thank you, Dr. Wilson, for a wonderful presentation.