

Introductions: Linda, group – interest in neuroscience and/or resilience

What can brain science teach us about resilience and why would that be useful? People have needed to be resilient - coping with the ups and downs of life, the losses and suffering as well as the gains and delights of life - as part of being alive and being human throughout our evolutionary journey. What can the last 20 years of brain science teach us that would help us help others cope better with whatever, cope in a resilient way – managing the emotional waves, keeping the larger perspective, turning to others, leaning on others for support and encouragement in a healthy inter-dependent way without collapsing, becoming overwhelmed, isolated, under-resourced.

Neuroscience can inform our work quite a lot, actually. As research illuminates how the brain actually perceives, processes and responds to experience, it helps us identify which experiences promote resilience and gives us and the people we work with permission to cultivate those experiences with some confidence that they will be helpful.

As I posted in the workshop description, today we'll learn:

- * techniques from body-based trauma therapies to help people stay within their “window of tolerance,” not too hyper-aroused, agitated or panicked, not too hypo-aroused, shut down, depressed.
- * techniques from attachment-based, relational therapies to help people activate the release of oxytocin, the hormone of safety and trust, of “calm and connect,” to antidote the body-brain’s flood of cortisol, the stress hormone of fight-flight-freeze.
- * techniques from mindfulness-based therapies to help people better attune to and reflect on their own experiences and the experiences of others, shifting perspective to keep the big picture and recover resiliency.
- * techniques from interpersonal neurobiology to help people use their innate social engagement system to find comfort and support from other people.

I’m going to be offering a lot of information today, with experiential exercises you can use with your clients woven in as we go along, so we get to experience integrate these practices as we go along. As a back-up, some of this information can be found in an article I wrote in my June e-newsletter, Healing and Awakening in Aliveness and Wholeness, which is archived on my website. I’m passing out quotes about resilience included in that article; my contact info is on that page. There’s also a sign-up sheet if you wish to receive the free e-newsletter.

The most important part of the brain to implement and integrate all of these techniques, and the focus of our learning today, is the PFC – our body brain’s regulatory center, the locus of our executive functioning or ego functioning, the coordinator of the coping mechanisms underlying resilience, underlying what we call our personality. Neuroscientists consider the PFC an evolutionary masterpiece. It is far and away the single most integrative structure in the brain. The PFC integrates information from the bottom up – from the body and all of our senses – through the limbic system – the emotional engine of brain, with top down processing - signals to and from all the other lobes of the cortex – the “higher” conscious processing functions of our brain that are the neural substrate of memory (conscious and unconscious), attention, motivation,

planning, judgment, and behavior. The PFC integrates the different modes of processing of the right and left hemispheres of the brain. The PFC integrates experiences from the past, present and future to create a coherent narrative of who we are and how our life makes sense. It is those many modes of neural integration from the PFC that promotes resilience.

There are nine functions of the PFC. We'll be learning all the techniques I've mentioned in the context of these nine functions. The nine functions were identified by Dan Siegel, psychiatrist at UCLA, author of *The Developing Mind*, *The Mindful Brain*, *Mindsight*, *the Mindful Therapist*. Dan is the founder of a discipline called interpersonal neurobiology – studying how the development of the brain is kindled, shaped, conditioned, and matured by mindful empathic relationships. Resilience is learned in relationships, and only in relationships, especially in the earliest caregiving relationships; we'll learn why as we go along. The relational context for developing resilience is good news for us as clinicians and healers, as we develop with our patients the mindful empathic relationships that can strengthen their pre-frontal cortex and promote their resilience.

1. Regulation of body, regulation of autonomic nervous system

The first function of the PFC is regulation of the body, meaning regulation of the autonomic nervous system (ANS) that is the extension of brain and brainstem throughout the body. The ANS is the part of our nervous system that automatically, without any conscious processing, regulates our heart rate, our breathe rate, our digestive processes. We don't have to be conscious to breathe or to have our heart pump blood or to digest our food, thank goodness. That's all below the radar.

We can become conscious of our breathing as we do in meditation and yoga when we breathe deeply to calm the body and calm the mind. We can become conscious of our heart center, which many visionary researchers see as an auxiliary brain anyway. There are brain cells – neurons – around the heart that are activated when we experience disappointment or grief or shame. Why there can be a literal feeling of heartache or heart break. Why when we breathe a sense of goodness and safety into the heart, the heart rate slows down. We can intuit what is going on in our gut whether something feels OK to us or feel "off".

The ANS is central to resilience because it is what keeps us in a "window of tolerance". I have found clients can understand this concept easily and it's very helpful to them.

The WOT is a zone where our nervous system is relaxed, calm, alert, engaged. When we are in our WOT, which we hope is most of the time, we feel centered and balanced. Everything is humming along in equilibrium. When we are in our WOT, we can perceive-process-respond to life events with a kind of wise equanimity we can cope; we can be resilient.

Optimally, it's the conscious social engagement system of our PFC that keeps us in our WOT. When something new, challenging, alarming comes up, the sympathetic branch of the autonomic nervous system is automatically activated; we unconsciously mobilize to meet whatever the threat or challenge is. When we are regulated by our social engagement system, we turn to people near us to help, for regulation, or we turn to memories of people where we have felt loved, understood, supported, to keep us in the sense of everything is OK, everything is going to be OK. When we are in our WOT, we mobilize quickly, act skillfully, take care of business and

return to normal. So it's the conscious regulation of the PFC through our social engagement system that keeps us in our WOT.

When we are startled or frightened by anything internal or external, more than our social engagement system can handle, or there isn't an internalized social engagement system to handle it, (we'll learn about that deficit of attachment in a moment), and the SNS is activated to mobilize us but without enough regulation, we rev up out of the WOT into alarm, agitation, anxiety, panic rather than wise resilient action. We need to consciously down-regulate the fear and agitation, we need to re-connect with a safe other; we need to activate the calming parasympathetic nervous system to come back down into the WOT where we can think calmly and respond skillfully. Where we can be resilient.

Conversely, if there is not enough activation of the SNS, if there is not enough conscious social engagement to help us feel connected and safe, we can withdraw into an unconscious immobilization of lethargy, numbness, depression, dissociation. Too much PNS without enough connection and engagement. We need for the PFC to consciously mobilize the system a bit, reconnect the social engagement system, have a little more gas of the S rather than so much brakes of the PNS. So we can engage and respond to the challenge of the moment with resilient coping, not a numbed out withdrawal.

I'm going to teach you a very simple technique to use with clients – with ourselves!. To use the PFC and the social engagement system to stay within the WOT to regulate both. Too much SNS, not enough PNS – hyper arousal, and too much PNS, not enough SNS – hypo arousal. It's called Hand on the Heart. We'll do it. And then I'll explain the neuroscience of why this works.

Exercise #1: I offer this Hand on the Heart exercise to activate the social engagement system and keep us in the window of tolerance. It's worth its weight in gold.

Place your hand on your heart. Breathe gently and deeply into your heart center. Breathe into your heart center any sense of goodness, safety, trust, acceptance, ease, you can muster. Once that's steady, call to mind a moment of being with someone who loves you unconditionally, someone you feel completely safe with. This may not always be a partner or a parent or a child. Those relationships can be so complex and the feelings mixed. This may be a good friend, a trusted teacher. It may be your therapist, your grandmother, a third grade teacher, a beloved pet. Pets are great.

As you remember feeling safe and loved with this person or pet, see if you can feel the feelings and sensations that come up with that memory in your body. Really savor this feeling of warmth, safety, trust, love in your body. When that feeling is steady, let go of the image and simply bathe in the feeling for 30 seconds.

[Hand on the Heart – handout also.]

Why this works. The amygdala is a small, almond-shaped structure (two of them one on each side of the brain) in our mid-brain, our limbic system that operates unconsciously 24/7 as our alarm center, and our most primitive emotional processing center. It constantly assesses for threat or danger and when it perceives threat or danger signals the HPA axis to release cortisol – which is the body-brain's response to stress. Cortisol floods our body-brain and mobilizes us to act, to move, to protect, defend, change the situation, cope.

When we don't have enough conscious social engagement of the PFC to keep us regulated in the WOT, the arousal of the SNS and the amygdala's release of the cortisol revs us up right out of the WOT into fight-flight. Of, if the arousal bumps us into patterns of coping through passivity, submission, confusion, withdrawal, or isolation, which we will learn about in a minute, the body can drop precipitously into collapse-freeze, shutting down and immobilizing the system to be safe.

Either way, the antidote to the stress response of fight-flight-freeze and the antidote to disconnection, withdrawal, shutting down, is the regulation of the ANS through oxytocin.

Oxytocin is a neurochemical in the brain that functions as a hormone because it crosses the blood-barrier and circulates in the body as well, one of the latest and hottest discoveries of neuroscience and someday soon it will be on the market to help people experience a felt sense of safety and trust. Oxytocin is the natural occurring hormone of safety and trust, of bonding and attachment. It is released through warmth, touch, movement. Common catalysts for the release of oxytocin are orgasm and breastfeeding. Neuroscientists are discovering any time we feel safe, warm, loved, and cherished, we activate the release of small doses of oxytocin in the brain. They are discovering even thinking about, imagining, remembering being loved and cherished is enough to release the oxytocin.

And oxytocin is the brain's direct and immediate antidote to cortisol. It down regulates the flood of cortisol through our system immediately. It is the hormone of calm and connect that antidotes fight-flight-freeze. Have you seen a child or a friend in the throes of an upset, and a gentle hug and a "there, there" and the child-person calms down and re-groups almost instantaneously. That's the regulating effect of the oxytocin. We come back into the WOT where life can be coped with again because our higher thinking brain can stay online. We can choose how to respond. The reaching out with a hug, a hand on the back, the client's hand on their heart, can release the oxytocin. It also re-activates the social engagement system of the PFC. The oxytocin and the re-engagement creates a felt sense in the body of safety and trust, of connection and belonging. This is a neurochemical transformation to calm us down and re-engage with a safe other. Stan Tatkin also at UCLA, uses this mechanism with couples, a 20-full body hug is enough to release oxytocin and help the couple feel calm, safe and loving again.

So Hand on the Heart – warmth, touch, releases O, deep breathing activates the PNS, (breathing in slightly activates the SNS, breathing out slightly activates the PNS, deep exhales activates more PNS, more calming. Remembering feeling loved and cherished activates the release of O, use the PFC to integrate the breathing, the calming of the heart rate, the release of the O and the reactivation of the SE to soothe and engage. All of this together brings the ANS back into balance, into WOT and we can cope.

Questions?

2. Quelling the fear response

Not only can the PFC calm down the stress response and bring someone back into calm and connection through the social engagement system and the release of oxytocin, the hormone of calm and connect. The PFC can also quell the fear response of the amygdala in the first place. Numerous research studies at U.C. Davis and the University of Wisconsin are now showing that

when someone is “primed” to feel safe, connected, loved before they experience a stressor, their body-brain’s have less reaction to the stressor, sometimes no reaction at all. Stressing events simply roll off them more easily, like water off a duck’s back. This is a fundamental feature of resilience, to simply be less reactive to stressful events when they occur.

Neuroscientists now know the PFC can grow neuronal fibers down to the amygdala; it’s only a few cell layers away, that carry GABA (gamma amino butyric acid) which quells the fear response in the amygdala. (You can buy GABA in health food stores as a stress reducer.) I’ll share an example of this with you and then we’ll do an exercise to practice this.

When I had lasik eye surgery a few years ago to correct lifelong severe near-sightedness and astigmatism, I was naturally a bit nervous before the surgery. The patient has to lie completely still on a gurney with eyes frozen, looking up at the flashing red light that guides the computer to do the laser surgery. I was consciously thinking of all my friends that I knew were thinking of me at that moment, sending me their wishes for ease and well-being. Quite suddenly, the anxiety completely disappeared, and I was flooding with an intense warm sense of being loved. The warmth spread throughout my entire body; I was completely calm for the duration of the surgery.

I was calm for the next eight months. Whenever something occurred that might have caused anxiety in the past, I could notice the event but also notice that my body wasn’t reacting. I stayed calm. I had a chance to ask Dan Siegel about it at an attachment conference at UCLA months later. Yes, thinking of those who love us can release the oxytocin in our bodies that calms down our nervous system. And the pre-frontal cortex is triggered to grow those GABA fibers down to the amygdala to quell the fear response.

Exercise #2. Quelling the fear response. Think of someone who loves you, supports you, believes in you. It helps if you are remembering or imagining someone who is somewhat resilient themselves, but it’s more important that you feel safe, connected, understood, and cared about by them. This could be anyone, partner, friend, parent, child, grandparent, teacher, coach, pet, a spiritual figure or mentor like the Buddha, Jesus, the Dalai Lama. Or you may choose to think of several people, many people. When someone has to face a boss or a doctor, it’s sometimes helpful to have a roomful, a whole circle. Let yourself feel this sense of love and support throughout your body. Really soak it in and savor it. This is your refuge for pre-empting stress, and your resource for coping with whatever might come up as you go through your day.

Notice as we go through the day if this guided visualization helps you feel less stressed by the end of the day.

We do know the same neurons fire in our brain when we see someone we know and love as fire when we imagine them, so there’s a lot of power here to calm down the amygdala before it fires.

3. Regulate emotions

The third function of the PFC is to regulate emotions. Emotions are waves of body sensation that signal us to pay attention, this is important, and that mobilize us to act. Every emotion has signature physiological markers and adaptive action tendencies. If we’re angry, we contract, tense up, ready to fight; anger mobilizes us to take action against injustice or a boundary violation. If we’re afraid, we stop, we go on alert, become hyper-vigilant, we scan, ready to

flee, to run. In sadness and grief, we feel waves of sensations welling up, tears welling up. We fold in and become smaller, more childlike; the action tendency is to pull for comfort and support. If we're feeling ashamed, we feel an inner drop like the rug is pulled out, we collapse we withdraw, disconnect, hide to become invisible, to not draw attention.

We have a negativity bias in our brains, we are evolutionarily hardwired to scan for threats and danger as the amygdala does 24/7. The right hemisphere of the brain is more neuronally connected to the amygdala than the left hemisphere is. The right hemisphere develops more rapidly than the left hemisphere from before birth to about 18 months of age, so the right hemisphere processing of experience early on is more influenced by the amygdala than the left, is more prone to anxiety, despair, shame, withdrawal or avoidance. The left hemisphere develops later, starting at about 18 months of age and by three years of age has overtaken the RH. This coincides with the maturation of the hippocampus where the brain processes experience (conscious and unconscious) into long term memory and beginning about 30-36 months of age is mature enough to store memories in conscious explicit memory. So the LH has a bias toward positive or approach; RH has a bias toward negative and avoid. So when we are experiencing and holding and processing a negative emotion, it's very helpful to have the PFC integrate bottom up body-based feelings with top down cortical awareness and integrate RH and LH modes of processing –sensations, feelings, images with conscious thoughts and beliefs, which is what PFC does.

All of these emotions trigger defensive response, sometimes protective and resilient, sometimes not. There are also emotions of delight, joy, interest, curiosity, play, we're activated but regulated, that mobilize us to move in approach toward an event, experience, person. And emotions of peacefulness and contentment that allow us to remain quietly alert in our WOT.

The PFC is what allows us to feel and recognize and hold the waves of emotions as they move through our body, and they do move through our body as long as we stay regulated, as long as we're not hijacked by the amygdala revving up or shutting down the system.

We can feel hijacked by our emotions, we all have been, when we get into a state and we can't come back out of it for a few moments, or hours, or days, or weeks, or months. (People do get stuck in rage, in depression) So the key to being resilient around emotions is to stay regulated so they can move through, to become regulated by someone else like a therapist or a friend so they can move through, and to let them move through.

The two emotions that are considered pathogenic – they create such formidable defenses that can really derail resilience, are anxiety which we talked about regulating through oxytocin, and shame-guilt, which we will talk about in step #5.

One skillful way to practice being with, managing, processing and letting move through emotions is to allow the emotion, feel it fully, compassionately, and then to skillfully allow a very positive pro-social emotion like gratitude, kindness, compassion, to arise also and allow the two emotions to be present at the same time.

Exercise #3. Regulate emotions. This is an exercise to create the inner space where emotions can be skillfully felt, processed, and moved through. First, sit quietly, comfortably. Breathe gently into your belly, slowly in and out. Breathe a sense of goodness into your belly. Breathe into your belly as though you were safe.

Now remember people or things in your life you are grateful for. Savor the gratefulness throughout your body. Remember moments of kindness in your life, when people have been kind to you, then when you have been kind to others. Savor the feeling of kindness throughout your body. Remember a moment of feeling loved and cherished by someone, then remember a moment of you loving and cherishing someone, even a beloved pet. Savor the feeling of love throughout your body. Let yourself claim the goodness of your own self now.

Then bring into this field of positive emotional energy and well-being a memory of loss, sadness, grief. Maybe not the most overwhelming experience in your memory bank, but an experience of loss, sadness, grief, current or past. Remain mindful of the feeling of the positive state in your body, and allow the feeling of the loss, sadness, grief to be present in your body at the same time. Your mindfulness and perhaps compassion for yourself holding both at the same time. Simply notice what's happening to the feeling state in your body, noticing and being with. And when you're ready, letting them move through.

Tie this to resilience once we do this even once, we know we can, becomes foundation of resilience.

4. Attuned communication, felt sense of other's experience, resonance circuit.

Our PFC learns the first three functions, regulating the ANS, quelling the fear response, and regulating other emotions, - by being in relationship with caregivers who can do that for us. The capacity of caregivers to regulate their own ANS and quell their own fear response and regulate their own emotions – is what matures the PFC of the developing brain of the growing child, or de-rails it. The empathic attunement of a parent to the child's needs, moods, fears, joys, internalizes in the child as the felt sense of a safe haven in the parent, and internal secure base within the child. When the child experiences fear it runs to the parent for protection and comfort. We are neurobiologically hardwired that way. The drive to seek physical proximity to a caregiver in times of perceived threat and danger – is more primary than the drive for food, and operates lifelong. And when the parent protects-comforts the child, the fear response is quelled and the exploration, play motivational systems open up and the child goes off to learn. When a growing child experience fear when they are away from their parent but can remember or imagine the protection and comfort of the parent, they can regulate and soothe and comfort themselves, re-group and go out to play or deal again. They are becoming resilient.

The PFC takes about 25 years to fully mature, well into adulthood. So there are many opportunities for others brains to help the PFC of the child's brain mature into the capacities of resilience, other relatives, teachers, coaches, peers, partners. And even after the child becomes an adult and the PFC becomes stable in its functioning and the neural circuits of response to life become somewhat fixed and automatic, predictable, (sometimes intractable) the brain retains the capacity to grow new neurons and re-wire its circuitry lifelong. We'll learn more about neural plasticity in Step 7. It's the neural plasticity of the brain, our own attuned communication that can help clients develop this function of the PFC well after adulthood.

Back to the 4th function of the PFC, it's the attuned communication of the parent that develops the PFC in the growing child; this is the secure base of secure attachment. And it's the PFC that allows the child to attune to itself and to others as she/he grows up. Develops capacities to relate to self and other in really resilient ways. When the parenting style of the parent is less than

optimal, not empathically attuned and responsive, the parent child develops an attachment style that is less than secure. If the parent is neglectful, indifferent, dismissive, critical, rejecting the child develops an insecure avoidant style, withdrawing from emotions, from people that might trigger emotions. The adult with an insecure avoidant style may look very resilient in the sense of functioning independently, not needing people, not falling apart or becoming emotional, but their resilience has a rigidity, a brittleness to it. They have to avoid a lot of experience emotions, people to maintain, and can be quite lonely and miserable.

If the parent is anxious and preoccupied with their own troubles, sometimes there for the child and sometimes not, if the sense of safety is unpredictable and untrustworthy the child develops an insecure anxious style, relying too much on the parent or caregiver, not able to soothe and comfort itself, being clingy, whiny rather than resilient. The insecure anxious adult may be very afraid of being alone, being abandoned, maybe overly dependent, seeing themselves as pathetic or a victim.

If the parent has been frightened themselves or is frightening to the child, the child can fall into disorganized attachment, dissociate, paralyzed, numb.

We may see any or all of these styles of attachment in our patients, these attachment styles are the neurobiology and psychological determinants of resilience; these early patterns of feeling, dealing and relating have permanent psychological significance in the brain.

We can work with them now by (being regulated and in the WOT ourselves) by attuning to the patient's experience. We use the resonance circuit of the brain to do that. We show up, we're present, we're open and engage, we tune in. We read the signals of the client's physical emotional state through facial expression, eye contact, body posture and gestures, the social engagement system at work. (38% body, 55% facial, 7% words.) You may have heard of mirror neurons, when you see me reach for this glass of water the same neurons fire in your brain as you comprehend my intention as are firing in mine when I am doing this behavior. Louis Cozolino, long time colleague of Dan Siegel at Pepperdine, calls them bridge neurons because they bridge the understanding of intentions and emotional states between one human being and another. The mirror neurons that go off in me as I am attuning to you activate the insula, the brain's structure of interoception, how I know what's going on in my body, which gives me some sense of what's going on in your body. The circuit goes through the amygdala, the emotional processing center where it gets assigned a basic emotional valence, positive, negative, neutral, and up on to mPFC where I can begin to make sense of it. This resonance circuit integrated by the PFC allows me to attune to myself, attune to you, you to attune to yourself, to me. The foundation of empathy, which is attuned communication. I know what you know and you know that I know.

Step 4 attuned communication basis of all therapy, also social-relational engagement. It is now believed that it was the need for empathy in our homo sapiens ancestors, the need to understand immediately what another member of the tribe was needing to communicate even without words that drove the development of the high cortex of the human brain, eventually making language possible.

Exercise #4 Feeling Felt

This exercise requires working with someone who can be present, open, engaged, curious – about anything – and then able to tune in to you in the moment. Someone who can pay attention and “read” your facial expressions, the body language of your postures and gestures, hear the meaning in your tone of voice. Someone who can resonate from within themselves with your experience in the moment.

Attunement is deep listening, below the level of words, to the emotional meaning of your experience. This attuned listener could be a partner, good friend, therapist, or someone completely outside your regular acquaintance. I’ve told the story here before of a nurse who simply sat with me in the parking lot of the skilled nursing facility where my 80 year old dad refused to stay after a stroke. She simply tuned into my grief, confusion, despair, holding her hand on my back until I calmed down. No words, just presence, until I could re-group and find the resilience bring my dad home for another nine months of pretty good living until he died. That’s attunement creating the neural conditions of resilience.

Today, turn to someone and, rather than trying to attune to each other here, though that may happen as we talk, simply share with each other an experience of when you did feel attuned to, you felt someone really “got” you. And you may experience attuning to each other as you do that.

Find a partner you can share an emotional experience with (a positive, joyful experience counts, too!) Sense their “getting” you, resonating with you, even without words. Please practice this exercise with various people until you find someone who can indeed be a true other to your true self.

Step 5. Empathy is considered the integration of somatic body-based and emotional attuning to feelings and cognitive thought and beliefs about another’s experience. Empathy allows us not only to know what’s going on but to make sense of it and to have a compassionate acceptance of it.

Neuropsychologists see empathy as the integration of body-based information and emotional signals and cognitive thought and beliefs about another’s experience, making sense, making meaning, creating understanding, and then checking out the accuracy of that understanding through a verbal feedback loop. I experienced the difference between attunement and empathy when my mother died. Many, many good people could attune to the grief and disorientation I was feeling. And I found it was the people who had lost someone to death themselves who could deeply understand, and convey that empathic understanding of, what I was going through, oftentimes more than I could grasp myself at the moment.

I said earlier that we would look at toxic shame or guilt in step 5. Because we really do need a compassionate acceptance of the feelings of shame and guilt for them to be held without a defensive disconnect to get away from those feelings. A person may feel guilty for something they’ve done or not done; they may feel ashamed for who they are or are not. Either way, the only thing that heals and brings the person back into resilience again is a loving acceptance. From us, from others, from themselves.

I’ll lead you in an exercise to demonstrate this, and then explain more of the neuroscience.

Exercise #5: This exercise helps create self-empathy for the parts of ourselves that may be struggling to be resilient.

Identify any voices in your “inner committee” that are struggling to be resilient in the current moment. Any parts that are scared or shamed or too angry to think clearly. Let them into your awareness, let them be without trying to change them or push them away again. Then, to create the self-empathy for them, bring to mind someone you love, someone you can unreservedly, unconditionally love. This could be a benefactor, a dear friend, a beloved child or a beloved pet. Feel the love you feel for them in your body. Sense the flow of love from you to them. Then, when that’s steady, simply slip the struggling parts of your inner self into that flow. Keep the love and empathy flowing. Don’t blink an eye. Let the love and empathy flow to yourself. If you can, let yourself receive the love and empathy; receive the care, feeling loved and cared for by your larger self. Once these parts feel accepted and included – this is the integrative function of the pre-frontal cortex at work par excellence - your wiser self can once again be in charge of responding flexibly to the situation.

The neuroscience behind this: a mechanism of neural de-consolidation – re-consolidation discovered in the last 10 years. When we remember an event, especially if we can evoke a body memory of the event, when we bring that body memory to consciousness, we light up the synaptic connections that hold that memory in long-term storage, even implicit memory, outside of everyday awareness. The memory network is lit up, the neurons are firing. If we bring up a negative memory, and then bring up, simultaneously, a memory that contradicts or disconfirms the first memory, the two memories are now lit up together, firing at the same time. Neurons that fire together wire together, the memory networks, the synaptic connections, de-consolidate for a fraction of a second, and re-consolidate a fraction of a second later, changed. The neurons of the two memories have wired together. When the second, more positive or more wholesome memory is stronger than the first, more negative memory, the second memory trumps the first memory and changes it in a more positive direction. This change, researchers are discovering, can be immediate, and it can be permanent. . The process of deconsolidation-re-consolidation is how trauma memories can resolve, more like dissolve, and no longer hijack us.

6. Response flexibility

The sixth function of the PFC is response flexibility. The capacity to be able to stop, hold the experience whatever it is (regulate it) step back, engage the cortical capacities to consciously think, reflect, evaluate, and then act.

Emotions moves us to act, remember and we can act reflexively, just based on the turbo-charged perceptions of emotional-survival meanings of the amygdala, or we can stop, pause, it takes 35-seconds for the cortical part of the brain to come online and even register that something has happened; this is where Mindfulness practice can be so helpful. Mindfulness meditation trains the mind to pause, to take a breath, to pay attention and notice what’s happening internally or externally without reacting, without judgment, without moving to fix. There is wise action after the pause, after the reflection, after the clear seeing, after insight. (the next function of the PFC.) but first there is the pause to break the automaticity of the reaction, the habit, to allow choices and options, flexibility in the response.

Can you see how response flexibility would be a core component of resilience? In order to cope with change, we have to be able to change how we cope. The more flexibly someone can be, not chaotic or floundering but flexible, the more choices they have, the more resilient they can be.

There are many practices to cultivate this kind of mindful awareness that creates response flexibility.

I recently learned an excellent protocol to promote response flexibility, from Alan Marlatt in Inquiring Mind who uses it in recovery programs: S.O.B.E.R.:

STOP it takes 3-5 seconds for the conscious processing of the cortex to come online in response to any experience, so we need the pause to hold the unconscious turbo-charged reactivity of the ANS and the amygdala. Counting to ten will do, five deep breaths will do, for the cortex to even be available to process the experience.

OBSERVE Mindfulness practice is so exquisitely excellent here in training the mind to observe what is happening in the mind and body as well as in the external environment without reactivity, judgment, moving to fix or running away. Mindfulness breaks the automaticity of our habitual reactions and allows us to see clearly what is actually happening out there and in our inner landscape of response.

BREATHE deep breathing does calm down the nervous system (back to the window of tolerance, always back to the window of tolerance) and creates the pause we need to see clearly

EXPAND PERSPECTIVE To be resilient, we must be able to dis-embed from the neural cement of habitual response – detach from the experience for a moment, to see the experience of the moment as only one possible experience out of many moments. The experience of this moment is here now, but is not the only experience in this moment, and it is not the only moment in a life. When we can dis-entangle, step back, reflect, we can move from “poor me” to an empowered “I” that can act on its own behalf. This expanded perspective allows us to see any previous patterns of response as patterns. There can be new responses, new patterns, and once we see that, even once, the door is open to look for options and choices about anything and everything.

RESPOND WISELY Role models and proven paths of wise effort (letting go of the unskillful or unwholesome, cultivating the skillful or the wholesome) can be great guides to making resilient choices once we see – from an expanded perspective – that we have choices, even if the most skillful action at the moment is to endure, **SOBER**, in faith that eventually we can effect change, because it is in the nature of everything to change.

Between a stimulus and response there is a space. In that space is our power to choose our response. In our response lies our growth and our freedom. The last of human freedoms is to choose one’s attitude in any given set of circumstances.

- Viktor Frankl

Easy to teach clients. Doesn’t have to have Buddhist overtones. It’s just mindful awareness.

Exercise #6: Response Flexibility: Here’s one exercise to help with the Expand Perspective step of S.O.B.E.R.

Sit quietly. Focus your attention on one particular challenging situation in your life right now. Perhaps not the most difficult right off the bat, but something sticky you'd like to practice expanding your perspective around. Allow yourself to sit with the whole of the experience for the moment, noticing the way it feels in your body, the emotions it evokes, any thoughts and beliefs about yourself coming into awareness. Then remember the many other things going on in your life at this very same moment. People, activities, other priorities or interests that may have been pushed to the background temporarily. Especially identify things in your life that are not this problem. Place the challenge in the context of the whole of your life. Then begin to imagine how you might be relating to this experience a year from now, then five years from now; see the challenge in the context of your entire life. Begin to see how this problem is not the only thing happening in your life at the moment, and this moment is not the only moment in your life. Sense a spaciousness in your consciousness about this problem, and from the spaciousness begin to identify different possible responses, even if they stretch what's ever been possible before.

The neuroscience research being done at the University of Wisconsin where they run adept meditators through an fMRI scanner is accumulating evidence that mindfulness and the related compassion practice strengthen all nine functions of the PFC, slowing down, pausing, noticing, not reacting, helps regulate the ANS and emotions. Cultivating equanimity helps quell the fear response. Focusing attention as meditator do strengthens the ACC adjacent to the PFC. Where we focus attention and integrate thoughts and feelings leading to more attunement and empathy.

7. Insight – self awareness

Substitute: The integrative capacity of the pre-frontal cortex is also essential to be able to take in the difficult truth of trauma or tragedy – that “bad things happen to good people.” To cope with the mysterious and precarious unpredictability of life, we have to be able to expand our perspective from “why me?” to “why not me?” To realize my pain is part of the pain of the human condition, and get on with the work of coping.

The pre-frontal cortex is what creates the coherent narrative of a life – making sense, making meaning of everything that is happening to us as it happens (or later in wise retrospect). To make sense of everything that has ever happened to us in one coherent whole. We must be able to integrate “here's what happened; here's what I did or didn't do; here's how well that worked, or not; here's what I've learned; here's what I would do differently now or who I am differently now.”

The pre-frontal cortex creates the neural integration of the “story” – how we relate to our experience that becomes the platform for Dan Siegel's acronym for mental health: FACES – to be flexible, adaptive, coherent, energized, stable – and that is the platform for the next step into the unfolding unknown.

Mindful awareness is essential for the 7th function of the PFC insight or self awareness, also essential for resilience. We have to be able to see and acknowledge what we're doing, thinking, feeling, and discern whether that behavior or response is working. With mindful awareness we can not only see a pattern of response for what it is – no denial, no confusion, no distortion but we can see the pattern as a pattern. [disembed, shift from “me” to agentic “I” here.] it is one choice of many. This is the expand perspective step of SOBER. This is where deconsolidation of old response and reconsolidation of new response can happen in the brain. Rick Hanson, author of Buddha's Brain, the Practical Neuroscience of Happiness, Love and Wisdom (he could

have said resilience calls mindfulness self-directed neuroplasticity. And here's where clients can use their minds to change their brains to change their lives. Mindfulness strengthen the PFC, more insight, more self awareness, more coherent narrative of here's what happened here's how I can make sense of it, or come to terms with it. Here's how I can go on.

Exercise #7: This exercise is to integrate at least one troubling or traumatizing experience from the past into the coherent narrative of your life now. Remember an event that was troubling or traumatizing for you in the past. State as objectively as you can – here's what happened. Remember what you did to cope at the time, how you survived. Identify what you learned from the experience, what you would do differently now that you couldn't do then. (If you haven't done this step of learning up until now, take the time to do it now.) Have the sense strongly that you are who you are now, remembering what happened then. Have a sense of yourself now large enough to hold what happened then. Decide for yourself right now how you will hold what happened then in the story you have of your life now, how it's part of the meaning of your life now, whether it's lessons learned or skills developed since. If you can identify how what happened has contributed to you resilience now, great, but at least accept that what happened did happen, and it is an intact, not pushed away, part of who you are now. No shame, no blame, just part of the resilience you have now.

8. Intuition

Besides a more clear and conscious knowing of what's what and what choices there might be to cope most resiliently, mindful empathy allows a person to sense into their own core values, to know at a deeply intuitive level, what's right for them to do or not. We call this a gut feeling because the ANS – breath, heart and gut are involved. But intuition is a deep and profound knowing often below the level of conscious processing of what makes the most sense. The PFC integrates that “felt” knowing with conscious knowing and allows our intuition to guide our choices.

Exercise #8: I've often done this technique with clients, with myself and it works more often that not. Say you have to make a decision and you're ambivalent, both sides have pro's and con's and you're not sure. Decide in your mind one of these decisions is heads and the other is tails. Notice what happens when I toss the coin. It's not that the coin decides, but there can be an instant of knowing whether you were glad for the decision, there's relief, or you were disappointed. That flicker of gladness or disappointment is your gut reaction, your intuition telling you what you're feeling right away. You don't have to follow it, but it's there.

9. Morality

This last function of the PFC – morality – is not about right or wrong in the sense of following the rules. It's more based on empathy, and an understanding of the inter-connectedness of all beings, and therefore we can make choices not just for personal survival (which the amygdala does full-time) but for the common good. And when we can let ourselves care about the common good and receive from the common good, we can be much less alone and much more resilient.

Plato said: Be kind for everyone you meet is fighting a hard battle.

Henry Wadsworth Longfellow said, If we could read the secret history of our enemies, we should find in each man's life sorrow and suffering enough to disarm all hostility.

Exercise #9: Here's an exercise to experience our inter-connection with all of life that supports the empathy and sympathy and compassion that supports morality.

Sit quietly. Draw your attention inward. Become aware of your own breathing, gently in and out. When that's steady, expand your awareness to your whole body breathing. When that's steady, become aware of the breathing of all the bodies in this room, the breathe of life shared by everyone in this room. Staying anchored in your awareness of own breathing, become aware of breathing happening beyond this room, other people in your life you know, not physically here in this moment; they are there, breathing. Staying anchored in your own breathing, become aware of people you don't know beyond this room beyond this street, or neighborhood, city or county, all of life breathing, anchoring in your own breathing, expanding awareness as spaciouly as you comfortable can to all beings breathing all over the planet, trees and animals and fishes, even awareness of awareness beyond this planet. Let yourself REST comfortably in his expanded consciousness.

Then let you aware settle again on your breathing in your body, here in this room.

INTEGRATION

The title for the PFC of evolutionary masterpiece is not just for the importance of these nine functions individually, but of the integration of functions that allow us to be fully resilient.

The PFC integrates bottom up processing of experience of body based sensations and emotions with top down processing of experience of conscious reflection and awareness.

The PFC integrates the approach bias of the LH with the avoid bias of the RH so we can wisely engage and have good boundaries.

The PFC integrates the logical, linear, language based mode of processing of the LH with the holistic, imagistic emotional-relational mode of processing of the RH, vastly increasing our options through greatly expanding our perspective of choices.

The PFC also integrates experience of the past with experiences of the present and projections into the future so we can develop a coherent conscious narrative about all who we are.

The PFC, through self attunement and self empathy, allows us to integrate all parts of who we are, all split off, exiled parts or our selves, so we have all of our innate wisdom and use up less energy managing them through denial, dissociation, freeing so much energy for resilience.

The PFC, through attunement and social engagement with others, integrates our experience of self and others with other people's experience of self and others, including us. Brains develop in interactions with other brains, and the PFC allows us to learn how to live life resiliently from people close to us as well as from mentors, role models, literary and historical figures.

The PRC allows us to integrate various levels of consciousness from clear spacious awareness to the moment s of being embedded in an experience, believing this moment, this state, is the only state that's true.

Increasingly mental health is being defined as the neural integration that allows us to be FACES – flexible, adaptive, coherent, energized and stable, all of which allows us to be resilient and whole.

Close with quote on your page of quotes:

Mastering the art of resilience does much more than restore you to who you once thought you were. Rather, you emerge from the experience transformed into a truer expression of who you were really meant to be.

- Carol Osborn