

Neuroscience and the Art of Self Care
Psychotherapy Networker Symposium
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EXERCISES AND NEUROSCIENCE FOR WORKSHOP ON NEUROSCIENCE AND THE ART OF SELF CARE

EXERCISE #1: SHARING KINDNESS

In just a moment, I'll ask you to move your chairs so you can work in groups of four, because a big part of self care is social engagement, meeting each other and developing a sense of community for the day, allowing the regulation and resonance of others to calm and expand ourselves.

In your groups of four, you'll each take two minutes to say your name and where you're from, and then share a moment of kindness that has happened to you, this morning already, or earlier in the week, or earlier this year, even back in the third grade. Sharing a moment when someone offered you a gesture of kindness, held open the door, picked up something you had dropped, smiled as you walked down the hallway, sent a supportive e-mail when you were going through a hard time, something that registered in your consciousness as support from the universe, something that gave just a little lift or a little steadiness in that moment. And you'll each take turns doing that for two minutes.

So, you'll share your stories, and then you'll do another round of two minutes each, exploring what it's like for you, in this moment, to be sharing your story with folks and receiving kind attention, resonance, support, even non-verbally, maybe especially non-verbally, from the others in your group. You'll take turns doing that. Then you'll take a moment to simply become quiet, focus your attention inward, and notice any changes in your sense of being, and then we'll come back to the large group and de-brief.

The Neuroscience of Sharing Kindness

Our brains are social organs. We're hardwired evolutionarily to develop and mature our brains through interactions with other people. The brain learns the most, changes the most, in interactions with other brains. That's certainly true for the developing brain when we're young, but it's also true lifelong. Neuroscientists were able to image the brain changing itself - neuroplasticity - only about 10 years ago, thought of course it's always been true. The brain is able to grow new neurons, and more importantly, new connections among the neurons - synaptic connections, lifelong, essentially re-wiring its neural circuitry, even building new brain structure, lifelong. That's the basis of all learning.

Lifelong learning through human interaction is one of the best ways we have to keep our brains facile and functioning. And the brain learns best when it feels safe, safe enough to explore, as hopefully we experience here today with each other, and when the exploration is fun and adventurous. We'll learn more about the role of pro-social emotions and behaviors like kindness, compassion, joy, gratitude, patience, forgiveness in self care as we go throughout the day, too. And more about the resonance circuit in our brains that allows the sharing of experience with others to nourish and resource us toward resilience.

EXERCISE #2: HAND ON THE HEART

Sit comfortably in your chair. Allow your eyes to gently close. Focus your awareness on your breathing, gently in and out. When that's steady, place your own hand on your own heart, feeling the warmth of the touch of 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. Breathe in a sense of ease, safety, of calm and peace into your heart center. You may elaborate this as you wish. Breathing in a sense of contentment, well-being, a sense of acceptance, of delight, a sense of kindness for yourself, gratitude for others. Slowly gently breathing in qualities of self care into your heart.

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 be a moment with your beloved partner or a beloved child, or parent, though the dynamics of those relationships can sometimes be complicated and the emotions mixed, so you may choose a moment of being with a dear friend, a trusted teacher, a close colleague or neighbor, a moment when you felt seen and accepted, loved and cherished. It may be your therapist, your grandmother, a third grade teacher. This person could be a spiritual figure like Jesus or the Dalai Lama. Could be a beloved pet. Pets a great, actually.

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.

The Neuroscience of Hand on the Heart:

We are evolutionarily hard-wired to experience stress in response to danger or threat. The stress response is a crucial element in our survival as a species. We are also hardwired to reside in a baseline of calm and equanimity, also a crucial element in our survival as a species and our thriving as individuals. This baseline of calm and equanimity is called the window of tolerance, a useful neuropsychological term coined by Dan Siegel almost 15 years ago.

The window of tolerance is easy to understand, easy for patients to understand, very helpful when dealing with stress and trauma. Imagine a zone between two lines. Within the zone our bodies are calm and relaxed, but engaged and alert. This window of tolerance is the zone of interest, curiosity, enthusiasm, as well as equilibrium and inner peace. It's where we can be resilient from, we can cope well, because the nervous system is in balance, in equilibrium, and our higher thinking brain, the cortex, remains on line.

When the vagus nerve in the brainstem senses any danger or threat, even anything new - in the external environment or within the body's own inner landscape, it signals the amygdala - our 24/7 alarm center in the mid-brain, to assess the situation. The amygdala scans its own implicitly encoded memories of safety and danger and, if it senses danger, it sends signals through our HPA axis - hypothalamus-pituitary-adrenal axis - to activate the sympathetic branch of the autonomic nervous system, the branch that mobilizes the body to respond quickly to a stressor.

The neurochemical messenger is adrenalin, also known as the stress hormone cortisol. Cortisol cause the body to rev up and act. If our autonomic nervous system is not well-regulated by the pre-frontal cortex of the higher brain, we can sometimes rev up right out of the window of tolerance in our survival response of fight-flight or freeze - deer in the headlights - we're activated but frozen. All of this happens very rapidly and completely unconsciously. Our bodies do not need any conscious processing whatsoever to activate a stress response.

If the sense of danger tips into a sense of life threat, without enough regulation by safe connections with others, the dorsal vagal nerve in the brainstem will actually so activate the parasympathetic branch of the autonomic nervous system, the calming branch, that we become immobilized; the body shuts down into a state of collapse, paralysis, helplessness, fainting, playing dead so the lion won't eat you. Fight, flight, freeze, collapse, are all survival responses of our autonomic nervous system, hardwired into the body. We experience these, our patients experience them. These early primal responses to perceived danger and life threat are how we have survived as a human species. These responses can get encoded so deeply in our brains they become the automatic habitual response to any startle, even to anything just new or different.

Our nervous systems and our bodies can activate and mobilize without fear, of course. We are active in our lives going about our business seeing patients, writing symphonies, creating governments, and solving global warming. We can be very calm and immobilized without fear - taking a nap on the beach or falling asleep after making love. But when we are revved up or shut down out of fear, anxiety, stress, we want to know how to come back into the baseline of our window of tolerance quickly.

Deep breathing, longer on the exhale than on the inhale, activates the parasympathetic branch of the autonomic nervous system, the calming branch. Inhales activate and energize the body; exhales calm down and relax the body. Breathing or pranayama has been a core practice in yoga to relax the body and steady the mind for 3500 years.

Breathing positive emotions into the heart center calms down heart rate variability, bringing the rhythm of our heart into a steady smooth coherence, according to 30 years of research by the HeartMath Research Institute in Santa Cruz, CA.

The warm touch of the hand on the heart also helps calm the body. Feeling sensations of warmth and calm in the body communicates calm to higher brain from the bottom up, the efferent nerve pathways of the ventral vagus nerve. The heart actually has neural cells in it - why we can feel heartache or a breaking heart when we lose a connection with someone we're treasured. Those cells are why we can feel the soothing comfort of love and connection, too. The body calms the brain. Essential to know that for self care. (To have a regular practice of meditation, yoga, chi gong, progressive muscle relaxation, very, very helpful.)

But the primary reason Hand on the Heart helps bring the body back into the window of tolerance is that remembering moments of feeling safe and loved activates the release of oxytocin in the brain. Oxytocin is the hormone of safety and trust, bonding and attachment, calm and connect. Oxytocin is the molecule of motherly love and the neurochemical basis of therapeutic resonance. And...oxytocin is the direct and immediate antidote to the stress hormone cortisol.

When we feel safe and loved, that someone has our back, that we belong and are loved and cherished, the oxytocin generated in the hypothalamus of the same HPA axis that generates cortisol, immediately down-regulates the cortisol. When we feel safely connected, the heart rate returns to normal whether that's calming down the revving up of the sympathetic nervous system back into the window of tolerance or stimulates the increase in the heart rate out of the syncope of too much parasympathetic. Knowing we are safe and loved, safely connected to others, is the body's best protection against the damaging effects of stress. Sue Carter of the Chicago Psychiatric Institute and one of the nation's leading researchers in oxytocin says, "People under the influence of oxytocin don't have the same stress response that others do; bad news rolls off them more easily."

We can also prime the brain with oxytocin to be buffered against stress before the stressor event occurs.

Jim Coan of the University of Virginia did a study at Richie Davidson's Cognitive and Affective Neuroscience Lab at University of Wisconsin where research subjects, all women, were told they would be receiving a slight electrical shock to their ankles while they were lying in an fMRI scanner. The scanner would record what was happening in their brains as they went through the procedure. The women going through the experiment alone reported both anxiety beforehand and the registering of the pain in the brain as the shock happened. The scanner showed increased activity in the amygdala where we register fear and in the anterior cingulate where we register emotional and physical pain. The women holding the hand of the lab tech reported and showed less anxiety, their scans registered less pain than the controls. The women holding the hand of their husbands reported no anxiety; their scans did not register any pain, and some even reported a pleasant sensation because they were holding the hand of their husbands. (Safe touch releases oxytocin, too.)

Phil Shaver at UC Davis found similar results, that oxytocin can prime the brain or buffer the brain to feel less stress. Subjects were asked to think of someone who loved them, the controls were not, and then subjects in both groups were shown photographs of disturbing scenes that could cause a stress response. The research group who had been primed to think of someone who love them first showed less of a stress response when shown the photographs than the controls.

We can give our brains baths of oxytocin whenever we are with someone we love and who loves us (for real, not supposed to). Neuroscientists have demonstrated many times that even remembering someone whom we love, with whom we feel loved, is enough to release small but regular doses of oxytocin. Sue Carter also says, "A single exposure of oxytocin can create a lifelong change in the brain." As Dan Goleman says in Social Intelligence, "Repeated exposures to the people with whom we feel the closest social bonds can condition the release of oxytocin, so that merely being in their presence, or even just thinking about them, may trigger in us a pleasant does of this neurochemical balm. No wonder office cubicles are papered with photographs of loved ones."

EXERCISE #3: LETTING IN THE LOVE

Settle comfortably in your seat, allow your eyes to gently close, focus your attention on your breathing, rest comfortably in the simple presence of awareness. When you're ready, let yourself become aware of how you are holding yourself in this moment, are you kind toward yourself? Are you uneasy with yourself? Are you feeling critical of yourself? Just noticing, just awareness and acceptance of what is, without judgment, or if there is judgment, noticing that.

Then, when you're ready, bring to mind someone in your life whom you know unconditionally, genuinely loves you. They love and cherish you; your very being feels safe in their presence. It could be a teacher or dear friend, could be a partner or a child, could be your beloved dog or cat. Could be a spiritual figure - Quan Yin or the Dalai Lama, your own Wiser Self. Someone who simply accepts you as you are, and loves you.

Imagine yourself being with them face to face,. They are looking at you with such acceptance and tenderness, such love, such joy. Feel yourself taking in their love, their acceptance of you.

Now imagine yourself being them, looking at you, looking at yourself through their eyes. You - being them - seeing yourself as they see you. All the love and openness, feel that as them toward yourself.

Now come back to being yourself, you are in your own body again, experiencing them looking at you again, with so much love and acceptance. Feel yourself taking in their love, their acceptance. Let the love deeply into your own being. Feel it in your body; set the intention to remember this feeling any time you need to.

The Neuroscience of Letting in the Love

There's a neurobiological reason for the power of visualization: the same neurons fire in our visual cortex when we imagine a banana as when we see a banana for real. When we are remembering a person or situation in visual memory, the processing is as real in the brain as when we are seeing them in person. A guided visualization like this can powerfully harness the brain's neuroplasticity in support of self-care.

EXERCISE #4: GRATITUDE PRACTICE

We'll do this exercise also in groups of four. The first part of the exercise is simply a time for your own personal reflection, and then you'll share what you've discovered with your group.

So in your own quiet reflection, take a few moments to pause from thinking about anything else at the moment, and begin to think of some of the many people that are helping you keep your life going in this moment: someone who helped you find your car keys when you were distracted by rushing on to the next thing; a friend who sent a supportive e-mail when your nephew wrecked your car (though not himself.); the grocery clerk who promptly swept up the jelly jars your exuberant 3-year old knocked off the shelf; a co-worker who took over your duties for the day when a nasty flu simply would not let you get out of bed. Take a moment to focus on any gratitude these memories evoke; notice the sensations of gratitude as you let them resonate in your body.

[pause]

Expand the circle of your awareness to gratitude for the people staffing the local hospital right now, in case you slip on a rug on the way to the bathroom, break a bone in your foot or wrist, and have to be rushed to the emergency room. People staffing airports, drug stores, fire stations, gas stations, testing water quality at the municipal reservoir so that when you turn on the bathroom faucet you have drinkable water to drink. Practice gratitude for the people growing our food and recycling our garbage, for the entire web of life that keeps our life going, moment to moment to moment.

[pause]

Then take a moment to share with the others in your group, going around the circle if you like, what you noticed about who you are grateful for in your life, and what happens in your own awareness, your own sense of yourself, as you intentionally cultivate a sense of gratitude in this way, and then also reflect on the giving and receiving passing back and forth among you, simply being listened to, witnessed, in your own gratitude practice, or hearing something someone is grateful for sparking ideas of your own.

The Neuroscience of Gratitude Practice

We know that any experience, any experience at all, causes neurons in the brain to fire. Repeated experience, repeated firings. Axiom of one of early neuroscientists Donald Hebb, neurons that fire together wire together. That's how learning happens. By practicing cultivating savoring and taking in, installing in our neural circuitry experiences of positive emotions, especially the complex pro-social emotions of kindness, compassion, patience, joy, generosity, tranquility, we create the neural pathways in our brains that make it much more likely we will respond to life events with an open heart rather than a contracted one, with resilience and care rather than fear, with approach rather than withdrawal or avoid.

Research has shown, again at Richie Davidson's lab, that focusing attention and awareness on pro-social emotions like compassion evokes what is called the left shift in the brain. There is increased neural activity in the left pre-frontal cortex of the brain. The left shift is essential for self-care, because for reasons of evolution and survival as a species, the brain has a well-researched, well-documented innate negativity bias in the right hemisphere of the brain.

The right hemisphere of the brain develops earlier and faster than the left hemisphere at first, so it is developmentally more neuronally connected to the limbic system of the brain, our earliest structures for processing emotions. Because our earliest emotions are oriented toward survival, we're hardwired to be more sensitive to alarm and danger, especially around disconnection in relationships in the right hemisphere of the brain than in the left. The right hemisphere has a tendency to focus on fear, anxiety, anger, shame, guilt, and assess experience a little more pessimistically. Thus there is a neurobiological tendency to withdraw or avoid when the RH is processing info, a whiff of pessimism and contraction.

The left shift isn't about thinking more with the left hemisphere of the brain, The left hemisphere which developed later when the cortex is more mature, tends to assess experience more optimistically. It can perhaps draw on memories when we have survived and coped well before. but it is about when we can pause and reflect and assess whether we're really in danger or not. When we can get a larger perspective on the subjective experience of the right hemisphere, we can see more options, alternatives, choices. We tend to approach life's experiences rather than avoid them. We tend to be more optimistic and happier when there's a left shift.

When focusing on positive emotions evokes a shift in neural firing to the left hemispheres of the brain, we shift our stance toward experience from the withdrawal-avoid tendencies of the right hemisphere to the tendencies to approach of the left hemisphere. We are more open to experience and to learning, leading to deeper happiness and well-being.

EXERCISE #5: LAUGHTER

In your small groups, identify and share with each other how a moment of laughter has helped you feel more bonded with other people, helped you cope with circumstances that were stressful, helped your body come back into equilibrium. Notice any laughter arising as you share your stories.

The Neuroscience of Laughter

Researchers consider laughter to be a mechanism of communication and bonding rather than an emotion per se. Laughter evolved millions of years before speech. In fact, the evolution of laughter helped re-structure our nervous system, increasing brain volume in areas that coordinate breathing, vocalization and cognitive comprehension, laying the foundation for the evolution of speech. Babies will smile, coo, giggle, chuck, and guffaw months before they speak. Laughter helps developed the brain structures necessary for speech. Dacher Keltner of the Greater Good Science Center at U.C. Berkeley considers laughter as significant a shift in our social organization as the evolution of tool making and the evolution of opposable thumbs.

Laughter triggers catecholamines in the brain that heighten alertness. Laughter releases endorphins, the body's natural pain killer. Laughter cleanses the body of the stress hormone cortisol, lowering blood pressure, reducing stress and increasing pain tolerance. Laughter's alternating contraction-relaxation of the diaphragm releases tension in the body, bringing our autonomic nervous system into balance. (The physiological effects of a good session of laughter can last up to 45 minutes.)

Laughter increases the flow of blood and oxygen through our coronary arteries, reducing the risk of heart disease and stroke. Laughter staves off the anxiety and depression that can severely impact heart functioning. Laughter mitigates the damaging effects of inflammation, reducing the pain of arthritis. Laughter strengthens the immune system, helping the body fight off viruses and cancer. Laughter helps stabilize blood sugar levels in diabetics. Laughter improves respiratory functioning in patients with chronic lung disease. Laughter even burns calories.

Many different research studies show: workers who laugh regularly, long and hard, focus better, think more creatively, and problem solve better than co-workers who do not. People who laugh tend to be more efficient, more productive, and make fewer mistakes than their stressed out co-workers. Laughter helps people cope with traumatic loss and grief by providing a brief vacation from mourning.

Laughter facilitates group cohesion and solidarity because people are sharing a mental and acoustic space with each other. Our laughter builds a reciprocal resonance; we laugh together with another like a duet or chorus, especially with friends. Laughter signals a shared understanding of the world; it's foundational to like-mindedness, interdependency, and intimacy. According to psychologist John Gottmann, founding director of the Gottmann Institute for Researching and Restoring Relationships, the absence of laughter predicts divorce far more consistently than the presence of outright animosity.

Transition from Bottom Up to Top Down

So far this morning we've explored the neuroscience of self care, resilience and well-being from the bottom up. From the regulation of the unconscious, body-based reactivity of the brainstem and ANS which can trigger us out of our baseline equilibrium of the window of tolerance to become too stressed or too depleted, through the limbic system which assigns emotional meaning to the ups and downs of our days and keeps its own unconscious rolodex of what's safe and what's dangerous, what's working and what's not working, especially in interactions with other people, including our patients. It's good self care to notice when clients are making us angry or anxious or depressed or dissociated when we're sitting with them. Through the hormonal system where we can bring ourselves back into our own window of tolerance, our own equanimity through activating the release of oxytocin. Through the cultivating of positive and pro-social emotions that can antidote the negativity bias of the right hemisphere and shift the processing of the brain to the more optimistic and approach oriented left hemisphere.

Now we're going to shift the focus of self care and the neuroscience of it to conscious top down processing. How we can use the tremendous capacities of our cortex, the higher human brain, for conscious processing of experience, to harness the neuroplasticity of the brain to bring about more care, resilience and well-being.

We begin with the awareness and noticing of mindfulness practice that has been in the background of everything we've done this morning. Mindfulness simply means paying attention to the experience of the moment, with an acceptance or friendliness toward the experience, no judgment or ill will. Awareness, consciousness, mindfulness practice as awareness in the present moment, and nonjudgmental acceptance of what we're aware of in the moment, then reflection and inquiry into what we're aware of in the moment, does strengthen many of the structures in our brain key to our self care.

The practice of mindfulness is similar to Freud's even hovering attention or the unconditional positive regard toward experience of Carl Rogers. Not a cognitive analysis but an embodied inquiry. Mindfulness practice comes from a 2,500 year old tradition of training the mind to see clearly the causes and conditions of suffering, always with a sense of compassion for that suffering, and then doing practices like cultivating the wholesome and letting go of the unwholesome that would lead to enlightenment and the complete liberation from suffering. So, mindfulness - the ultimate program of self care - even the beginning practices of mindfulness, is a natural dovetail with the work we do as clinicians and as people interested in self care.

EXERCISE #6: EATING A RAISIN MINDFULLY

Hold three or four raisins in your hand. Notice any reactions to holding the raisins, looking at them, not eating them yet. Notice the color, the texture of the raisins, the lightness of them in your hand. Notice what happens as you lift one raisin to your mouth; notice any change in your experience. Notice what happens when you roll one raisin around in your mouth without biting into it yet; notice the texture; notice your tongue moving the raisin around. Then, notice what happens when you bite into the raisin; notice your experience of taste, smell, sensation in your mouth. Chew the raisin slowly, then finally let yourself swallow the raisin. Notice your experience as the experience changes. Now, put the remaining raisins in your mouth; again notice your experience as you play with, chew, swallow the raisins. Notice your experience after the raisins are gone.

Neuroscience of Mindfulness

Even this introductory level of mindfulness practice over time increases the cell volume of the anterior cingulate, the brain structure right next to the pre-frontal cortex we use to focus our attention. That makes sense, the more we use any structure of the brain, the more it can grow new cells, like working our muscles out at the gym. Strengthening our capacity to focus our attention is very helpful as we try to see clearly what's going on and even what we can do about what's going on. That's important because the anterior cingulate cortex is also the structure that helps us integrate our thoughts with our feelings. So if mindfulness practice strengthens the functioning of the anterior cingulate cortex and that helps us integrate our thoughts and our feelings, we can be more resilient and live with greater well being.

Research also shows that mindfulness, even at the introductory level, strengthens the insula - the structure of interoception in the brain that lets us know what's going on in our bodies - which improves our self attunement and self empathy, then eventually attunement and empathy with others as well. Again very helpful if we want to track how comfortable, how nourished, how resource we feel in our very being or not.

Mindfulness, because it allows us to pause, step back, reflect on experience, get a different perspective on things, strengthens the functioning of the pre-frontal cortex which, if you had a chance to read the handout for this workshop posted on the Symposium website, you'll remember is the master integrator of the brain, what I call the CEO of resilience and well-being and certainly the structure that promotes the insight and self-awareness that can be essential to self care.

EXERCISE #7: AWARENESS OF THE BREATH

Allow yourself to sit quietly. Find a posture for your body that feels comfortable, relaxed yet alert. Allow your eyes to gently close or rest open in a soft gaze. Bring your awareness to your breath flowing gently in and out of your body, noticing changes in the rhythm, the intensity, the sound of your breathing. Notice your belly rising and falling with each breath; you may even feel your breath moving through your entire body, your whole body breathing. As you focus your attention on your breathing, allow yourself to notice that you are aware not only of the breath itself (the object or noun or thing of your awareness) and the breathing itself (the process or verb or the unfolding of experience moment-to-moment you are observing), but that you can be aware of the focusing of attention; you can be aware of the steadiness of the awareness itself, aware of the experience of the moment but not embedded in it as it changes. You may notice that your attention occasionally wanders as you focus on your breathing. No problem. Noticing the wandering is "waking up" to awareness again. Bring your attention back to your breathing. Practice noticing your breath until you can focus on the breath for one full minute. Even one minute of practice begins to change your brain.

Neuroscience of the Mindfulness of Breathing

Traditionally training in mindfulness practice begins with focusing attention on our breath, a seemingly neutral object of awareness. Focusing on our breathing brings our awareness into the present moment. There can be a temporary refuge or respite from the cares of the moment when we focus simply on the life force itself coming and going through our bodies. We can stop, we can breathe. When we're not tangled in the commentary, we can find a calm center, the eye of the hurricane.

But breathing is actually a fairly sophisticated object of awareness. Normally we take our breathing for granted; the breath comes and goes even without our conscious awareness or volition. But when we do become conscious of its comings and goings, we begin to become conscious as well that this breath is the very life force that sustains our very existence; noticing our breath taps us into an awareness of something much larger and vaster than we are. And as we notice that every breath comes and every breath goes, we begin to perceive the transience or impermanence of everything coming and going, including what was worrying us in the moment, this too shall pass. So mindfulness even of simple breathing can shift our perspective, an essential element of self care when we are caught in worries or concerns and can't easily find a way to shift them.

EXERCISE #8: NOTICING AND NAMING

1. Imagine you're walking down the sidewalk in the neighborhood where you live. You notice a friend walking toward you on the sidewalk on the other side of the somewhat busy street. You call out and wave "hello!" but there's no response. Notice your own split-second reaction to that no response in your own body; notice whatever thoughts might begin to cascade in response to your body's reaction. Notice any reactivity to those thoughts. Notice if your thoughts follow a pattern that you have noticed before.
2. Now imagine that your friend sees you and, on their own, calls out and waves "hello!" to you. Again, notice your own split-second reaction in your own body to their connecting with you now. Notice any shifts in your body; notice any shifts in your thoughts. Notice if your thoughts follow a pattern that you have also noticed before.
3. Take a moment to name the reactions and the patterns you noticed.

The Neuroscience of Noticing and Naming, and Naming Patterns as Patterns

Mindfulness allows us to notice and name any of these experiences. When we gently name our experiences, we keep the pre-frontal cortex of the brain online, the structure of our brain that allows us to step back, reflect on our experience, and gain insight into it.

Mindfulness allows us to be present, in the moment, to the experience that is happening in the moment, reflecting on experience in the moment as the experience that is happening in this moment. With practice, we can notice any thought as a thought, any pattern of thoughts as a pattern. We can notice any feeling as a feeling, any cascade of feelings as a cascade. We can notice any state of mind, even multi-layered, richly complex (torturous) states of mind as a state of mind. We can notice any process of the brain - planning, organizing, evaluating - as a process of the brain. We can notice any story that we've told ourselves since we were five, or twelve, or since we got married, or since we got divorced, as a story. We can know that any view, no matter how forcefully compelling or stubbornly held in this moment, is not - does not have to be - true in all moments. We can see clearly that sometimes I think this way, sometimes I don't. I'm thinking or feeling this way now, but I wasn't ten minutes ago or yesterday.

We can realize that what we're seeing is not the ultimate truth but are tracings, or the entrenchment, of patterns of neural firing in the brain. Every feeling, thought, sensation, or response to feeling, thought, sensation is a product of our brain processing experience and encoding tracings of

the experience in our neural circuitry. Every mood, state of mind, anxiety, depression, excitement, delight, every process of our brain, planning, organizing, evaluating, is generated by our brain's processing information and registering it in awareness, in explicit memory, or most often outside of awareness in implicit memory. As we observe our processing, the mindfulness allows us to see clearly, oh this pattern is a familiar pattern. I often think or feel exactly this way. This state of mind is very familiar, comfortable or uncomfortable, pleasant, unpleasant, or neutral, but recognizable.

When we become fully aware in the present moment of any phenomena - a feeling, a thought, a mental state, a pattern of behavior, a view, a belief, we light up the entire neural network of that phenomena - the entire constellation of body sensations and impulses, the emotional valence, the cognitions and beliefs. When we shift our full awareness of that integrated state to a full awareness of another integrated state, we are shifting among entire neural networks of various states of being, not just our conscious thoughts about them.

This shifting among entire neural networks is what is necessary to be able to shift ourselves, from what David Wallin, author of Attachment and Psychotherapy, calls an embedded "me" this always happens to me, this is the real truth of who I am or how life is, to an empowered "I", sometimes I think this way, sometimes I don't. I'm thinking or feeling this now, but I wasn't ten minutes ago, or yesterday.

The noticing and naming the various states of being, as well as noticing and naming the shifts among them, does help keep the pre-frontal cortex of the brain online, so that we can step back and reflect on the states and the state shifts as patterns or states that can be shifted rather than being embedded in them or identified with them. When we're not tangled in commentary, we can find a calm center, the eye of the hurricane. We being to find the space among the states of being, the choice points where we can choose how we relate to these states of being and intentionally shift among them.

EXERCISE #9: BREATHING OUT TO INFINITY; RELAXING SELF INTO NON-SELF

Sit comfortably. Allow your eyes to gently close. Focus your awareness on your breathing, gently in and out. Focus your awareness on your breathing, and then notice your own awareness of your breathing. Awareness allowing you to know you are breathing. When that awareness of your breathing is steady, begin to notice the breathing of the people around you, no need to do anything, just noticing other people breathing as you are breathing. And noticing your awareness of that. Expand your awareness a bit to know that all the people in this room are breathing; become aware of everyone here breathing together, and become aware of your awareness. Expand your awareness more to include people you know, who are not in this room, and you know they are breathing in this moment, too. Notice your awareness of your awareness of everyone breathing. Expand your awareness to include people you don't know, outside this room, perhaps elsewhere at the conference, elsewhere in Washington; become aware of all kinds of people breathing, breathing together. Notice your awareness of your awareness. Expand your awareness to include people all over the country, all over the planet, all breathing. Expand your awareness to include all living creatures, breathing, breathing in the parks, the forests, underground, in the lakes and rivers, in the oceans, the sky. All sentient beings breathing, breathing together. And notice your awareness of your awareness of the breathing. Expand your awareness to include all forms of existence, some breathing, some not. Expand your awareness beyond our planet to all the forms of existence, and the space between the planets and stars. Expand your awareness out as far as you can imagine; and notice your awareness of your awareness expanding.

Now bring your awareness back to being aware of sitting in this room, in this moment, breathing, hearing my voice.

The Neuroscience of Relaxing Self into Non-Self

One of the most important constellations of patterns we can observe and gain insight into is the "self" - the constellation of thoughts, feelings, behaviors we and others come to identify as "me" or "I". This "I" is seen in traditional mindfulness practice as ever-changing, ever-unfolding, nothing fixed or permanent when thoroughly unpacked as a "mental content."

With steady practice, mindfulness begins to penetrate the "substance" of our personal self, much as modern physics has been able to penetrate the "substance" of any material object. Modern physics has probed the reality of nature to discover there is far more space between atoms, and particles of atoms, than there is "stuff," a vast spaciousness in the densest of matter, paralleling the vast spaciousness between the stars in the galaxies.

Similarly, the practice of mindfulness allows us to begin to experience a similar spaciousness between the thoughts and judgments and reactivities of our "self" and experience more of the flow, the possibility of shift among all the "stuff." As the functioning of our brain shifts from an intentional focus on the "stuff" to a receptive awareness of the "space" between the stuff, not a cognitive analysis but an embodied curiosity, we begin to experience a flow between the "objects" of our awareness. We get unentangled from the entire commentary about self as self. When we loosen our grip on the "stuff: of our "self", we relax directly into an experience of openness, clarity, calm. With practice, this drop can happen within a breath or two. This new "object" of our awareness - non-self - is called true nature in the Buddhist tradition, but it is a universal phenomenon called presence, essence, the sacred in other traditions.

What's important about "dropping" into this experience of true nature for self care is that universally this true nature feels like our "true home." We experience our "self" to be centered, balanced, profoundly OK. Even though we have penetrated through the layers of "stuff" to the space that holds the stuff, a kind of emptiness or no-thing-ness, the subjective experience is more of every-thing-ness, abundant enough-ness. We feel whole and complete. The quality people have universally identified as the expressions of this true nature - trust, equanimity, energy, integrity, generosity, etc., are the qualities we come to recognize as our true self.

The patterns of neural firing that would generate this subjective experience of true nature - true self - have not yet been mapped in the neuroscientists scanners per se, though the "truth sense" of the experience is verified by millions of individual practitioners over thousands of years.

Neuroscientists have begun to identify pathways, circuits in the brain that could explain this shift from focused attention to spacious openness, from self to non-self. One circuit that we're most familiar with is called the medial (middle) network that integrates brain structures in the midline of the brain as though you were pulling your fingers from right between your eyes up over the center of your skill all the way back down to the top of your spinal cord. The brain structures in this medial circuit, including the master integrator, the pre-frontal cortex, are what pull the sense of self together - our history, our personality, our identity, who we are and how we came to be who we are. How we operate in the world. It's truly important that that sense of self gels into a stable (yet flexible!) coherence. Steady resilience.

A second lateral network, as though you were putting your hands out to the sides of your skull above and including your ears, uses brain structures like the temporal and parietal lobes to orient us differently in time and space. The “facts” and “rules” of who we are and how we are operating in the world loosen their grip a bit. We might most commonly experience the lateral circuit in times of daydreaming or reveries. As we let ourselves relax into a more open spacious awareness (it helps to be curious!) the sense of self that we have so carefully crafted over the year and that strategies of that self we developed to stay safe and strong in the world, begins to “let go”. As we let go of a lot of the messages that shape our sense of who we are and how to behave in the world, we come into an experience of simply being that feels more vast, more timeless.

It is the mature pre-frontal cortex that allows us to toggle back and forth between these two networks of self and non-self. Meaning a mature pre-frontal cortex is what allows us to be self-aware; to accomplish the developmental task of developing a functional personal self and remaining aware of that self and feel safe enough to “let go” of that self into a more spacious consciousness as well, a more flexible neural receptivity that allows us to re-wire different patterns constellating the personal self more easily, should we choose to do that.

EXERCISE #10: SHIFTING PERSPECTIVES-SWITCHING THE CHANNEL

Whenever we can notice and name patterns as patterns, even deeply entrenched patterns of self, we can do what Dan Siegel calls monitor and modify. This reflecting on patterns as patterns is the gateway to response flexibility; I can choose how to respond to what I’m experiencing in this moment. We can notice and name a pattern and choose to shift it, choose to switch the channel.

With a partner, explore for a few minutes each a pattern you know is a familiar habitual automatic pattern for yourself, a hole in the sidewalk, one that you would like to change. And identify, or help each other identify, the counter wholesome pattern of thought or feeling or behavior, the positive pro-social emotion, you could use to consciously antidote it.

The Neuroscience of Shifting Perspectives - Switching the Channel

When we shift the channel, we are cognitively overriding a negative pattern with a positive one. This is the basis of MBCT for depression, and other mindfulness based cognitive therapies. Switching the channel is based on the neuroscience principle that all mental activity sculpts neural structure. What we use in the brain increases, what we don’t use in the brain atrophies. The brain builds structure, and prunes structure, and even re-organizes structure, based on our pro-active self-directed neuroplasticity, lifelong. That’s what neuroplasticity is. Generating new neurons from new experiences, and generating new neural connections, new circuitry based on repeated new experiences. We repeatedly focus on positive emotions and behaviors to make them the new automatic habits in the brain, and we walk down a different street so the old habits atrophy. Mindfulness allows us to catch and shift the channel in new more wholesome directions, like the pro-active social emotions we learned about earlier.

Transition to the Resonance Circuit

The overarching umbrella of this day of neuroscience and the art of self care has been conscious compassionate connection. Consciousness, compassion, connection is what promotes the functioning of the brain at its best and what promotes the psychological functioning of ourselves at best.

Neuroscience of the Resonance Circuit

Resonance

All human beings are hardwired in their brainstem to reverberate instantaneously - without any conscious processing needed at all - to the emotions and actions of the people around them, especially around danger or threat. There is a hardwired, body-based synchronous reverberation with other people’s inner states.

Resonance is the beginning of our social engagement system that allows us to skillfully relate to the human beings of our “tribe,” with all of humanity. We reflexively “read” the body-based signals that constantly flow between us and other human beings. Resonance is why we yawn when we see somebody else yawn; why we flinch and say “ouch” when we see someone hurt themselves; why we spontaneously go “Oh!” when the baby goes “Oh!” Resonance is the basis of emotional contagion that can sweep us into an energy field larger than ourselves - how anger can sweep through a soccer crowd, or a concert audience jumps to its feet as one organism in exuberant applause after a moving performance; how anxiety about failing health or a failing marriage gets passed on - unconsciously - to a child. Resonance can operate in a positive direction. We can pick up positive emotions of people in this room today and go home with an uplift. These body based non-verbal reverberations can be so powerful, they can infuse a space with positive energy.

We can mis-read these signals, of course. We pick up the “vibe” when we walk into a meeting or a party and, sometimes from how our early conditioning has nurtured or distorted this capacity, either see safety where there is truly danger or perceive danger where, in fact, there is none. But the capacity to learn how to use resonance skillfully is hard-wired in and completely recoverable.

Attunement

When we move up the brain structures of the resonance circuit from brainstem-based resonance to through primitive emotional processing centers of the limbic system in the mid-brain to the mirror neurons in our cortex, we add the capacity of attunement. Attunement is “reading” the valence of our own or other people’s emotional signals, beginning with safe, dangerous or neutral similar to the hedonic tone of pleasant, unpleasant or neutral, all the way to distress or well-being. We read the emotions of others through non-verbal signals of facial expressions, body language, tone of voice processed by the right hemisphere of the brain. (According to A. Mehrabian in *Silent Messages*, 55% of all emotional meaning is conveyed through facial expressions and body language; another 38% is communicated through tone and rhythm of voice; only 7% is communicated through words.)

Mirror neurons were discovered by Italian neuroscientists in 1996. The term originally described a series of information processing mechanisms in the brain that allows us to comprehend the intention of another human being when we see them act in a particular way. The same individual neuron fires in our brain that is firing at that moment in the other person’s brain moving them to act as they do. The mirror neurons in our brain allow us to create a mental representation of what is happening in the other person’s brain around intentional behavior.

The discovery of mirror neurons has been extrapolated to the notion that mirror neurons play a key role in the resonance circuit and could very well be the neurological basis of empathy. As we observe another person's non-verbal communication, neurons are firing in our brains in the visual, superior temporal and parietal cortices, "mirroring" what we're seeing, and sending the signal of that mirroring through our own insula (remember - the structure of interoception lets us know what is going on in our bodies). We "feel" what the other person is feeling in our own bodies. That information is sent back up the nervous system through our own insula again to our pre-frontal cortex where additional mirror neurons peppered throughout the pre-frontal cortex can decipher what these signals mean. (The pre-frontal cortex is the structure of resonance-attunement-empathy and making sense of experience.) This is why the mindfulness that strengthens the insula - "knowing" what's happening in our bodies - is so crucial to mindful empathy. The mindfulness, that can discern whether what I'm aware of in my body now is currently happening now, or is an implicit memory of something I experienced in the past, is also crucial to accurately deciphering what our attunement means.

Empathy:

Empathy works through the pre-frontal cortex and related structures in the "higher brain" or cortex to move beyond resonance and attunement, to generating a cognitive understanding of experience. Why somebody might be feeling the way they do, or with self-empathy, why we might be feeling the way we do. Empathy "makes sense" of whatever is happening, or has happened before; empathy generates meaning out of our experiences and our reactions to our experiences.

Empathy then communicates that understanding, that meaning in words, so that the meaning is shared, between us and another, or between us and a part of ourselves that needs its specific experience understood.

Empathy is dyadic; it all happens in a dialogue with another. Besides the story making sense, the emotional truth of the story has to "land," ours with them or theirs with us. The meaning of the experience has to resonate; the attunement has to be accurate, the empathic process has to consciously check out that a "moment of meeting" has indeed occurred.

EXERCISE #11: DEEP LISTENING

This exercise is done with a partner. Decide who will be speaker first all the way through and who will be the listener first all the way through. When you have each answered the repeating question fully, you can switch roles so you each get the benefit of practicing listening and being listened to.

The listener will ask the speaker a question (samples below); the speaker will answer as honestly, as thoughtfully, as they can. The listener listens silently, though attentively and appreciatively. The listener then simply says "Thank you for letting me know that." And asks the same question again. The speaker drops a little deeper into their own inner truth and answers the question again from a different angle or from a deeper level of understanding. The listener listens as before, and when the speaker is finished, again says, "Thank you for letting me know that," and then repeats the question again. The speaker answers the repeating question for as many rounds as they are still discovering new understandings or feelings about the question. When the speaker is done (and thanks the listener for listening), the two of you switch roles. When you have both completed the rounds of listening and being listened to, you can de-brief, sharing what you noticed about your experience in each role.

Sample questions. How do you best care for yourself? How do you know when you need more self care? What brings you joy in your life? What has brought you sorrow? What worries you now? When have you found courage in dark times? What are you grateful for? What are you proud of? (The speaker answering the questions chooses only one; the listener asking the question then repeats it.)

This kind of listening can lead to the compassionate listening that happens in moments of deep loss, in realizations of disturbing truths we don't want to hear, in times of disorienting change and transition. Compassionate listening requires us to set aside everything that is not simply presence and openness. We listen to the whole being of another with our whole being.

EXERCISE #12: RESONANCE AND ATTUNEMENT

Turn to your partner. Simply gaze into your partner's eyes, allowing your self to see in them the nobility of their true nature. Their innate goodness and radiance of their being, and silently wish them well, sending them expressions of loving kindness: may you know the deepest happiness, may you have ease of mind and heart, and let yourself know that your partner is sending you expressions of loving kindness as well. Taking in that kindness.

Then allow your awareness to shift. Imagine what human sorrows your partner might have experienced in their journey, what losses, what griefs, what pain of the human condition. Silently begin to send them expressions of compassion: May your sorrows be held in loving awareness, may your sorrow ease, may you feel my care for your suffering. And let yourself know that your partner is sending you compassion for your sorrow and suffering as well. Let yourself take in that care and compassion.

Then allow your awareness to shift. Imagine what human joys your partner may have experienced in their journey. What accomplishments and competencies they might have achieved. What blessings of abundance and love they might have experienced on their journey. And silently begin to send them expressions of sympathetic joy, happiness for their happiness. May you fully delight in your delight; may you feel your joy deeply. And allow yourself to know your partner is sending you expressions of joy in your joy as well. Let yourself take in the sweetness of their joy in your joy.

Then allow your awareness to shift again to expressing wishes for calm abiding to your partner, wishes for equanimity: Whatever happens on your journey, may you perceive and respond to it with a calm ease of mind and heart. May you have deep inner peace. And allow yourself to know your partner is sending you expressions of the wish for equanimity, for calm abiding for you as well. Let yourself take in the calming energy of their well-wishing.

Allow your awareness to shift one more time to simply being in your own being, noticing whatever is going on for you right now. Awareness of your inner experience, and awareness of your awareness.

EXERCISE #13: EMPATHY AND SELF-RIGHTING

Again, groups of four, taking two minutes each to share an experience where someone else's empathy - resonance, attunement, empathy, steadied you and got you back on track. Helped you "self-right." Not an experience of your steadying someone else, we do that all the time as clinicians, but you being steadied by someone else's resonance-attunement-empathy.

EXERCISE #14: SALT IN THE LAKE

There's a teaching story in the Buddhist tradition that helps us learn how to deeply re-pair and re-wire any troubling thought that's happening right now or a traumatizing memory that still hijacks us from the past.

If you take a teaspoon of salt, dissolve it in a glass of water, and then take a sip of the water - yuk! The water is too salty to drink. But if you take a teaspoon of salt, dissolve it in a large freshwater lake, then dip the glass into the lake and sip that water, the salt has dissolved in the larger lake; there's no taste of it at all. Scientists now understand the neural mechanisms in the brain that allow us to "dissolve" emotional trauma in our larger practices of mindfulness, empathy, resourcing with positive emotions, and a deep sense of our own goodness, so that the memories no longer have the power or charge they once had.

A few pointers while doing this exercise:

1. Be well resourced in your own goodness before beginning anything else. Draw upon your refuges and resources.
2. Anchor your awareness firmly in the present moment; you are safe here, now, and will still be safe when you retrieve a memory of what happened back there, back then.
3. Start small! A teaspoon of trouble, not a ton. One small specific relational moment when resilience went awry. With practice, over time, re-conditioning can indeed dissolve a ton of salt, but please let your brain feel successful with the smaller memories first.

Sit comfortably in your chair. Focus your attention on your breathing, breathing calmly and deeply into your heart center. (Hand on the Heart is just fine, too.) Call to mind a particular moment of ease and well-being. Or a particular sense of your own goodness. Or a particular moment when you felt safe, loved, connected, cherished. Or specific people who love you, who believe in you. Remember one of these moments in as much detail as you can, in as many levels of your body-brain as you can - a visual image, the feelings that the memory evokes, where you feel those feelings in our body, any thoughts you have about yourself now as you remember the sweetness of that moment then. Let yourself savor this moment in a mindful and compassionate "holding" of the memory.

When you feel bathed in the good feeling and are still anchored in the larger awareness of safety in the present moment, call to mind a moment of experience when things went awry between you and another person, however slight or terrible, a hiccup or a hurricane. (But chunk down the terrible to one little bit of it. Start with a small storm and work up to the hurricane.) As you go back into the memory of that moment, imagining what was happening then quite vividly, remain in your observer role rather than getting sucked into the experience again. Evoke this memory to light up all the neural networks - visual images, body sensations, emotions, thoughts or beliefs at the time. Memories of what you said and did, what someone else said or did; who else was there; how old you were and how old they were; what you were wearing and what they were wearing, Maybe you wish you could have said or done something differently at the time, but didn't. Maybe you wish someone else had done something differently at the time, even if that could never have happened in real life. Remember the moment, the feelings of the moment, in as much detail as you can.

Then, in your imagination, begin to visualize a more positive wished for outcome. What you wish could have happened differently. What you would have said or done differently. What the other person could have done differently, even if this never could have happened in real life. What someone else not even in the original scenario could have said or done. Perhaps you even wish none of this had happened at all. You can imagine what would have happened if this event hadn't happened. Imagine the new scenario in as much detail as you can. Let the new story unfold as you would have wished. You are creating a scenario that completely disconfirms or contradicts what happened before.

Hold the two scenarios in your awareness at the same time. You don't have to do anything here; your brain knows how to do this on its own. It's its own mechanism. (Or toggle back and forth between them, always refreshing the newer, more positive scenario to be stronger.) After a few moments, "let go" of what happened before and just rest your attention in the new scenario. Let your mind play out this new scenario, and then notice how you feel now. Notice any emotions or thoughts or beliefs about yourself that come up now, and if they are more positive, resilient, let them soak in. Then bring your awareness back to the present moment.

The Neuroscience of De-consolidation - Re-consolidation

The mechanism is called neural de-consolidation - reconsolidation. When we recall a memory, any memory, it activates the firing of the neural network of that memory for an instant, even if the memory has been held implicitly, outside of awareness for a long time. The neural network of the memory "lights up" for a fraction of a second. In that fraction of a second, the neural network of that memory falls apart and reconsolidates many times. This is how memories change naturally over time. With any activated memory, the synaptic connections between neurons that hold that memory pattern together deconsolidate and reconsolidate - it's a natural process. We can use the deconsolidation-reconsolidation mechanism of our brains to pro-actively change our relationship to problematic emotional memories in the following way:

First, we consolidate a resource of positive memories - initial consolidation. Why cultivating positive emotions is so helpful to self care. The neural networks of positive states are firing - falling apart and reconsolidating in the brain naturally, so quickly we don't even notice the process. Then, in a state of mindful empathy, we bring to awareness the moment of memory we want to "dissolve".

- You were chosen last for the neighborhood softball team; the sting of "not good enough" lingers to this day;
- You mis-read someone's worries about not being able to pay their rent this month; were a little flip in your quick slap on the back and "keep your chin up"; they've ignored you now for two weeks steady;
- Your sister-in-law just can't seem to hear that you won't be coming to her house for Thanksgiving and will instead celebrate with friends as you have done for the last three years; you resent her obliviousness to your own wishes.

Focusing our conscious awareness on the second memory "lights up" the neural networks of that memory also. Now the neural networks of both memories are lit up simultaneously, held in a dual awareness. (This does take practice; this re-pair is how the brain re-wires.)

As the paired memories are held in conscious awareness simultaneously, the networks fall apart and reconsolidate together. When the positive memory is strong enough (the “lake” of mindfulness, empathy and positive emotions large enough) the reconsolidation of the positive memory will trump the reconsolidation of the second more negative memory, re-wiring them together in a more wholesome way, often instantly, often permanently.

In the last 7-10 years, the neuroscientists have been able to image this process in their scanners for the first time, so now they can see what happens in the brain when we harness the process of de-consolidation re-consolidation. This is the basis of all trauma therapy. It is what allows a trauma experience to dissolve in our neural circuitry like the salt dissolves in the lake. This is the neural mechanism underlying the powerful changes we see in trauma therapies like EMDR or SE or Sensorimotor. Bruce Ecker wrote a great article in January-February 2012 issue of the Psychotherapy Networker, The Brain’s Rules for Change, www.psychotherapynetworker.org. This re-pairing of neural networks re-wires the brain.

This technique does not change what happened, but it does change our relationship to what happened, especially if the positive memory directly contradicts or disconfirms the negative memory. It doesn’t re-write history but it does re-wire the brain. I can’t promise this experiment will work right off the bat. I can promise this is how re- re-wires trauma.

The Neuroscience of the Dopamine Circuit

Dopamine is the neurotransmitter of pleasure and reward. When we experience something as pleasurable or rewarding, dopamine is released in the brainstem. Dopamine helps us “feel good” with our experience, i.e., with the release of dopamine we feel alive and energized. We want more. This is partly how we get into ruts, doing what we have always felt comfortable doing before, getting better at what we’ve always been good at, coping in ways that have always worked before, still work now, not pushing our brains to try new strategies, discover new ways of being and coping.

Dopamine operates on the basis of expectation. When the brain experiences what it expects to experience - we turn on the kitchen faucet and water comes out - ah, a safe and happy camper; dopamine levels stay steady. If something unexpected happens - we turn on the faucet and no water comes out - the reward of the same ole, same ole expectation is disrupted. The disruption of what’s predicted, i.e., something “new”, not what we expected, switches off the dopamine and generates a slight unease in the body. A “mistake” has been detected. No more goodies until we can figure out what’s going on. No moving forward until we determine it’s OK to move forward.

The insula, the structure of interoception that “reads” what’s going on in the body, communicates this unease - “uh oh, is this still safe or is it now dangerous?” to the anterior cingulate cortex - the structure that focuses our attention internally as well as externally. Spindle cells in the anterior cingulate cortex - the fastest transmitting neurons in our brain - pick up the unease of this disruption of the dopamine and instantly saturate the rest of the cortex with that feeling of unease, which we can readily interpret as anxiety in the face of something foreign. Some neuroscientists refer to this function of dopamine as the “oh shit!” circuit.

“You’re probably 99.9% unaware of dopamine release, but you’re probably 99.9% driven by the information and emotions it conveys to other parts of the brain.”

- Read Montague, Baylor University

We can so easily interpret that unease as anxiety that can automatically lead to “no” or “later”. It feels like a risk to try something new. Sometimes we can talk ourselves out of trying a new entrée at a new restaurant in a new city, or visiting a foreign country, or venturing into the “foreign-ness” of a new career or the intimacy of a new relationship. We need to know how to work skillfully with our dopamine system so that we are not stopped in our tracks every time we stumble into the unexpected or need to venture into new territory.

Bill Bowen, developer of psycho-physical psychotherapy for 30 years, suggests that our body-brains move on a continuum in the face of anything new from the survival responses of fight-flight-freeze that would de-rail any positive activation completely, all the way to adaptive activation and the free flowing expression of creativity. Somewhere on that continuum there is a somatic threshold that we feel viscerally in our body, where the body-brain stops us from going forward even though consciously - mentally, emotionally, spiritually - we are ready to dive in. I.e., writer’s block; cold feet the morning of the wedding; the last-minute justification “I don’t know anybody at the party and I’m too tired anyway.” This somatic marker is the disruption of the dopamine which is letting us know, “Uh oh, this is not what was expected.” It’s not. It’s new.

EXERCISE #15: CROSSING THE THRESHOLD: DO ONE SCARY THING A DAY

To overcome this somatic marker of “uh, oh!” we need to practice doing what feels risky or scary anyway. When we deliberately face our fear of doing something new, something that could possibly go wrong or evoke deep doubts about ourselves as human beings, we come to the brink of that somatic threshold that would block us from moving forward or that would steer us back into the certain, the familiar, the comfortable.

By choosing to face the fear and intentionally cross the threshold into action, we are deliberately choosing to evoke new experiences that would re-condition the signal anxiety in our nervous system. By pairing an old pattern of fear or block with a new more positive pattern of courage and action, we contradict the old - neural deconsolidation-reconsolidation at its finest - and we re-wire it.

“Do one thing every day that scares you.” was Eleanor Roosevelt’s sage advice 70 years ago.

Practicing facing the fear - crossing the threshold into action at least once a day - creates a new default in the brain, a new normal of “Sure I can” that restores the dopamine function of pleasure and reward every time we experience ourselves successfully crossing that threshold.

In your small groups of four, take a few minutes each to brainstorm what are some of the one scary things a day you could do when you return to your office, your life, on Monday morning. And how could experiences from today or this conference help you do them?

EXERCISE #16: TAKING IN THE GOOD

Practice noticing moments of kindness, of understanding, of “feeling felt.” Someone lets you cut in front of them in line at the corner deli when you’re desperate to get change before the meter maid tickets your car. Someone notices you picked up the trash left by a park bench and smiles as

you walk by. A new neighbor brings you homemade lasagna after you've spent six hours moving into a new apartment in the pouring rain, and then checks the next morning to make sure you're OK.

Take a moment now to go inside and identify a moment of goodness or joy from today, a delight in learning or delight in a conversation today, that you could take in. Let the experience register in your consciousness. Notice how this moment of resonance makes you feel: perhaps remembered, included, happy. Take in the felt sense in your body - a warmth, a relaxation, an opening. Notice what fills your heart - perhaps gratitude, joy, peace. Let yourself feel the feeling in your body, savor it, soak it in, let it begin to become a resource that could carry you through the rest of the day, the rest of the conference.

The Neuroscience of Taking in the Good

Evolutionarily, culturally, we are so hardwired and so conditioned to look first at what's wrong, what's negative, rather than what's right with what's wrong, rather than remembering that storms pass and skies clear, (the negativity bias we learned about earlier) that we can automatically "go there" and get stuck there for long periods of time. As Rick Hanson says in his book Buddha's Brain, we have Velcro for the negative and Teflon for the positive. To truly practice self-care, we must deliberately practice receiving and reinforcing any new, more positive experiences of ourselves, including in relationships with others by "Taking in the Good."

EXERCISE #17: SETTING INTENTION

Take a moment now in your own quiet reflection to identify tools and techniques from this workshop you would like to incorporate into your life, into your clinical work, in the coming days, weeks, months, that will support your own self care. And, in your own mind, already imagine yourself implementing this intention. Create for yourself a memory for the future that will remind you in the days ahead.

The Neuroscience of Setting Intention

The most important practice we can do to sustain learning from today is repetition. Activating the firing of the same neurons over and over by repeating the same or very similar experiences over and over. Neuroscientists disagree on how many repetitions it takes to install a new habit of mind or behavior in our neural circuitry. I've heard 17 times, I've heard 58. Studies do show that repetition builds out brain structure, much like working out at the gym builds our muscles. But it definitely takes more than once.