Mindfulness and Neurocounseling: Brain-based Approaches to Building Compassionate Understanding of Self and Others

Dr. Lori Russell-Chapin
Dr. Chris Rybak

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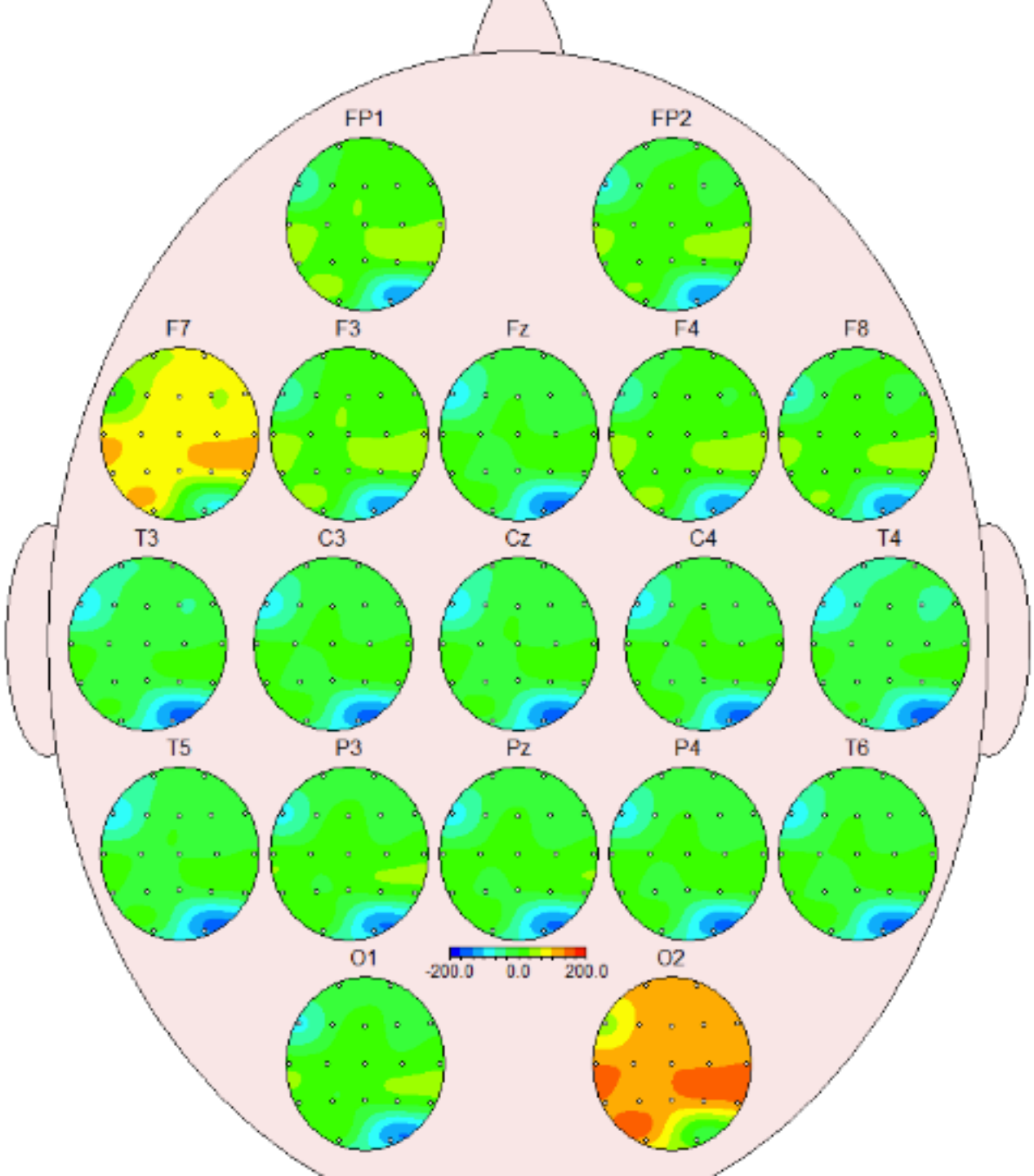
Workshop Objectives

- Participants will be able to define the differences between neurotherapy, neurofeedback and neurocounseling.
- Participants will identify at least three brain-based interventions that assist in building compassionate relationships.
- Participants will practice several brain-based interventions.
- Participants will identify their meditation/mindfulness style.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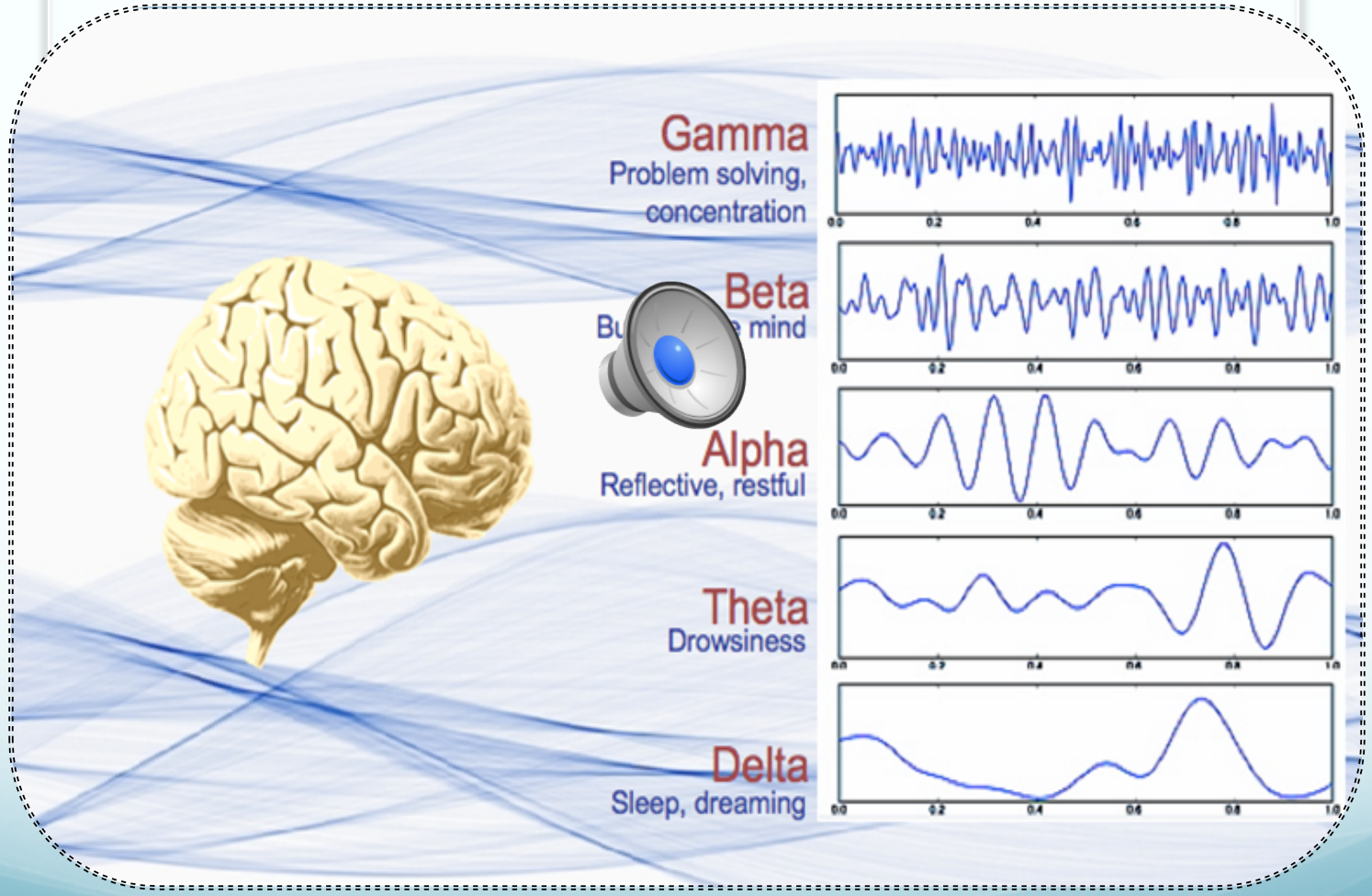
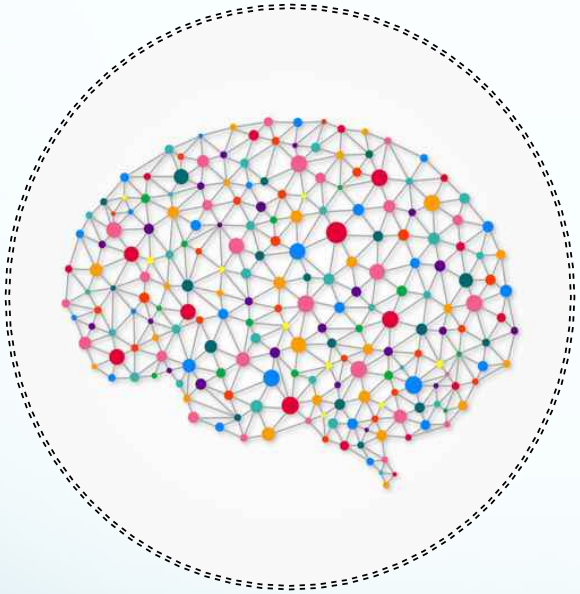
EEG Brainwaves



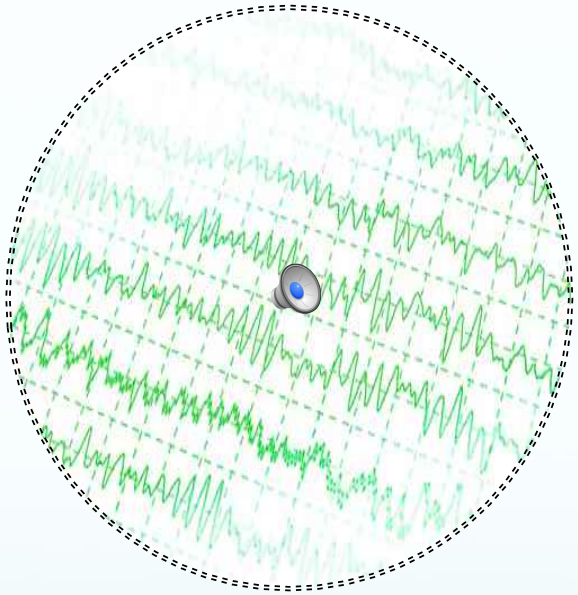
Definitions and Terms

NEUROTHERAPY



A set of neuromodulation techniques that alter neuronal functioning

NEUROFEEDBACK



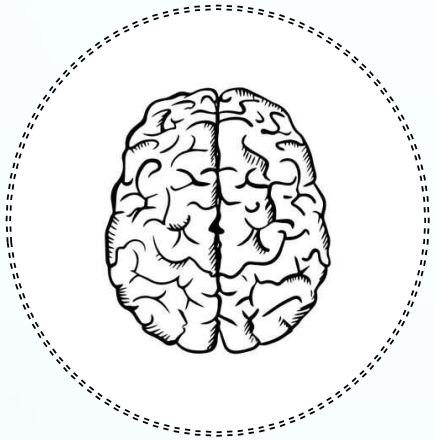
A non-invasive method of brain wave self-regulation training using the principles of operant and classical conditioning.

NEUROCOUNSELING

The integration of counseling and neuroscience in the treatment of behavioral and psychological problems. Correlates behaviors with their physiological and neurological underpinnings

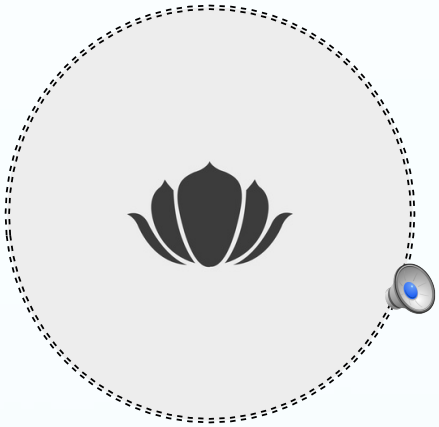
Definitions Continued

Brain-based Techniques-any



Any counseling intervention focused on the self-regulation of the brain and body

Mindfulness



A form of nonjudgmental and nonreactive attention to experiences occurring in the present moment

Self-compassion

Any form of self-care

Other Methods

Intrinsic methods used to calm the central nervous system

What are some potential sources of neurological dysregulation?

Why Neuroscience and Neurocounseling Matters to you?

1. Motivation for change when physiology is added
2. Offers an organizing framework
3. May emphasize more of the unconscious process with early childhood experiences and attachment
4. New counseling approaches are now available.
5. Neuroplasticity comes from counseling and healthy change.

The Neuroscience of Attention

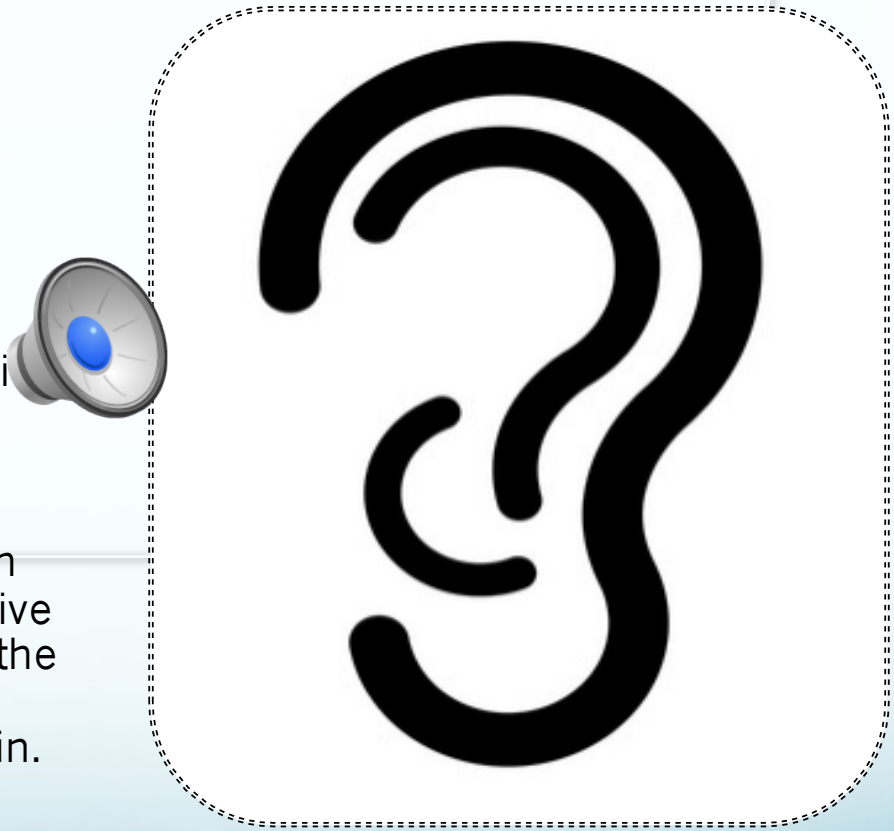
- Alerting-entire brain/body that begins with V, A,T, O, G: the wake-up call goes to the brainstem to produce necessary norepineprine
- Orienting-navigation occurs by either bottom-up or top-down through goal directions
- Self-regulation requires many brain connections: prefrontal cortex, insula and anterior cingulate cortex (ACC)

Empathy & Microskills

- Reflections Skills: meta-analysis by Fan et al. (2011) and Engen and Singer (2013) showed affective empathy with increased activity in the insula while the right supramarginal gyrus works to correct lack of empathy and autocorrects
- Cognitive empathy is associated with higher activity in the midcingulate cortex and the dorsomedial prefrontal cortex.
- When we observe others in pain, the insula and ACC are activated but not the somatosensory cortex.
- Active listening actually "lights" up the brain in fMRI studies (Kawamichi et al, 2014).

So When Counselors Listen….

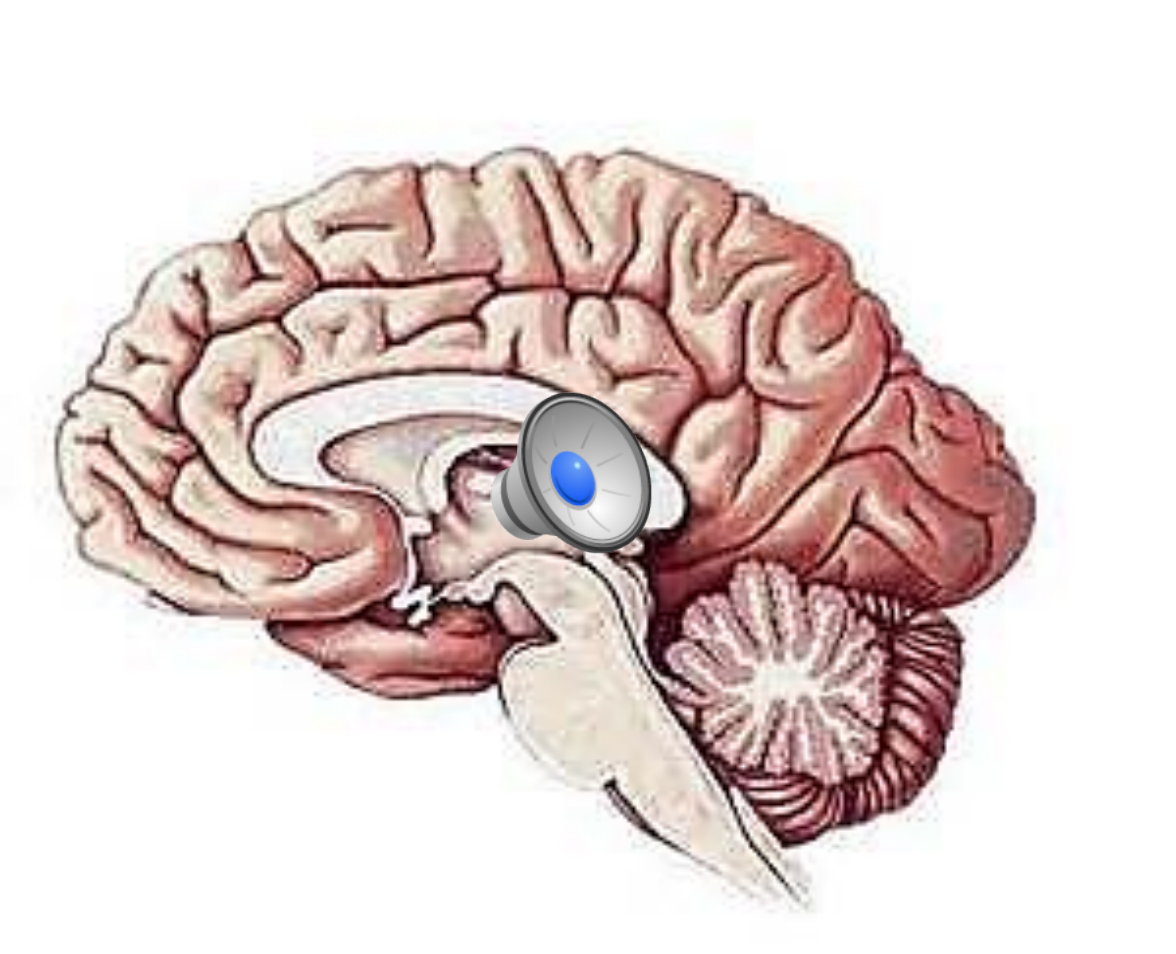
- Abstract positive regard such as attending behaviors- ventral striatum becomes active (Ivey, 2017, in press).
- Therapeutic alliance is critical in creating safety needs through the vagal nerve (Porges, 2011).
- Summarizations are associated wi the Default Mode Network (DMN) and reflection of self and others.
- Being present (here and now) with immediacy needs involves executive functions, limbic HPA hormones, the amygdala, memory in the hippocampus using a holistic brain.
- For neuroplasticity to occur, positive reflections must be maintained for 10-20 seconds…deepen responses (Hansen, 2011).



NeuroMeditation Styles Inventory (NMSI)

- Focus: voluntary control of attention and thought processes
- Mindfulness: dispassionate, non-evaluative awareness of ongoing experience
- Quiet Mind: automatic transcending of the procedures of the meditation practice
- Open Heart: specific focus on an “unrestricted readiness and availability to help all living beings”
- Categories based on attentional states as well as brain activation/deactivation patterns
- Dr. Jeff Tarrant’s work

Basic Neuroanatomy

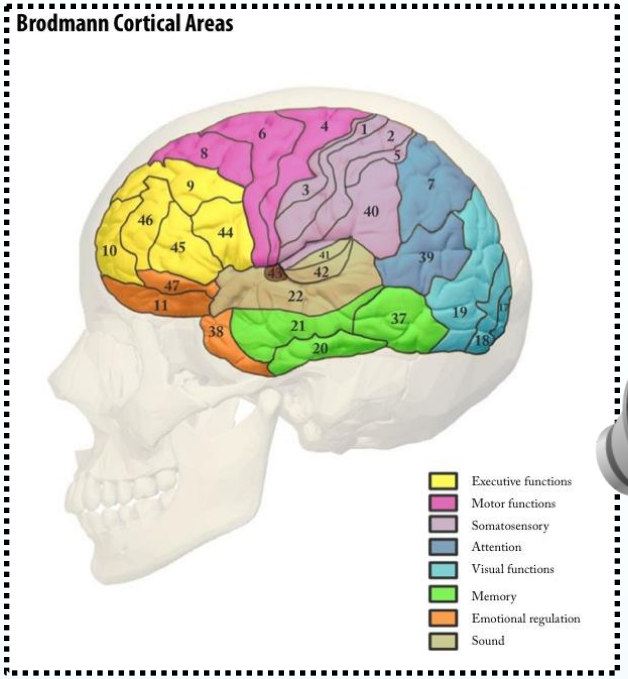


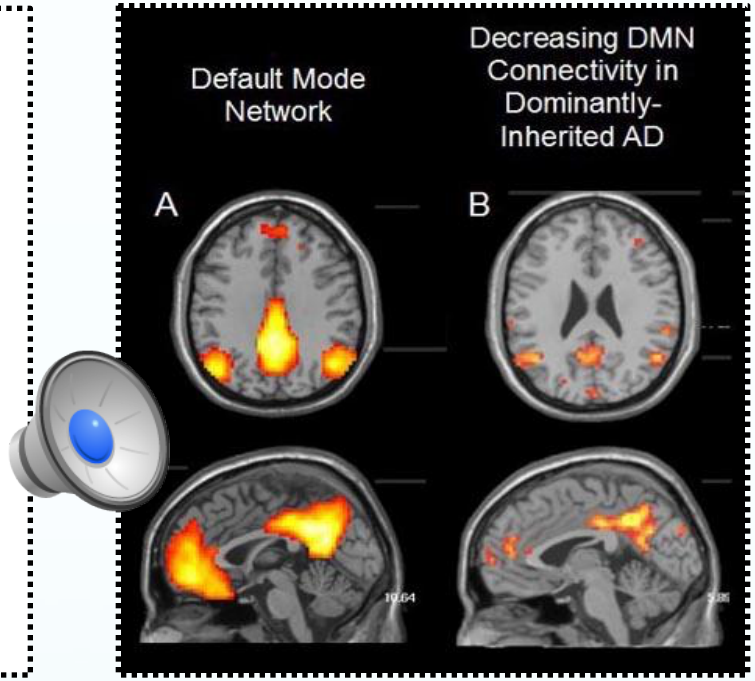
How many neurons are in the 3 lb brain?

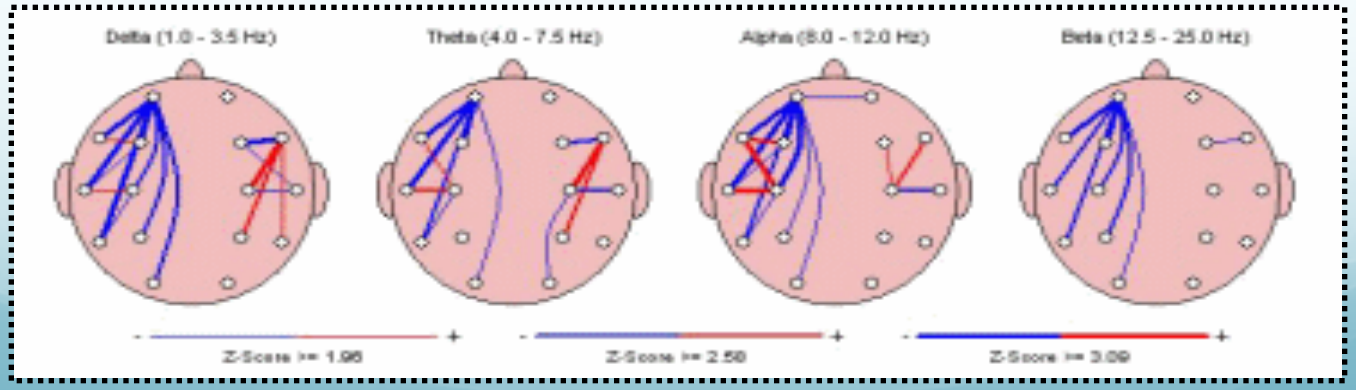
- Adults have 1 billion neurons.
- Each connects to 10,000 others.
- They create over 100,000 trillion synaptic connections.
- There are two times as many neuronal connections in a 3 year old than an adult.
- Connections are constantly modified by internal and external experiences (neuroplasticity).
- Communication is local, regional and global.

http://www.crystalinks.com/brainews.html

Local, Regional and Network Communication



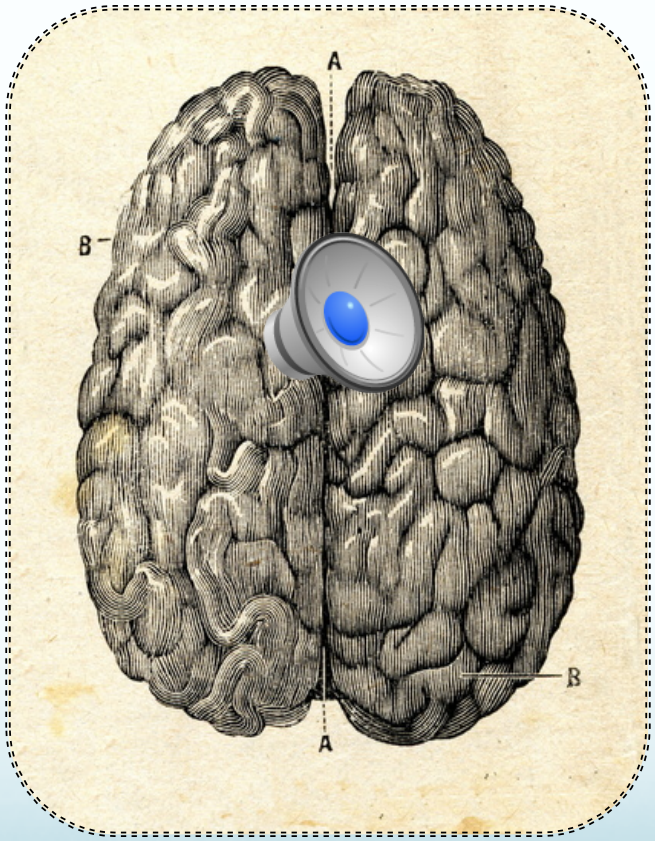




The Two Hemispheres of the Brain

Left Brain Functions

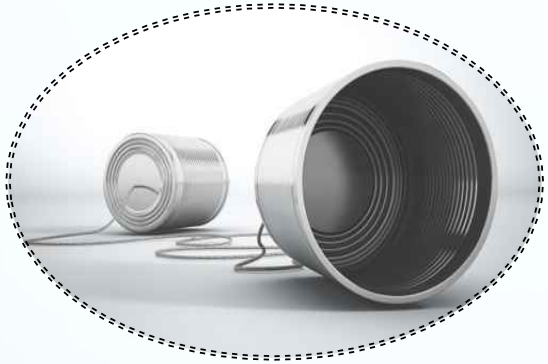
- Right side of body control
- Number skills
- Math/Scientific skills
- Analytical
- Objectivity
- Written language
- Spoken language
- Logic
- Reasoning

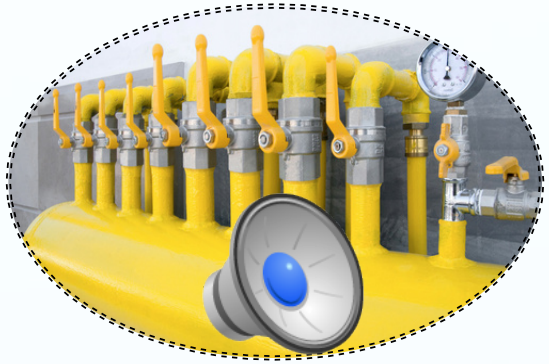


Right Brain Functions

- Left side of body control
- 3-D shapes
- Music/Art awareness
- Synthesizing
- Subjectivity
- Imagination
- Intuition
- Creativity
- Emotion
- Face recognition

Neurotransmitters, Neuromodulators and Neuro Trophin Factors



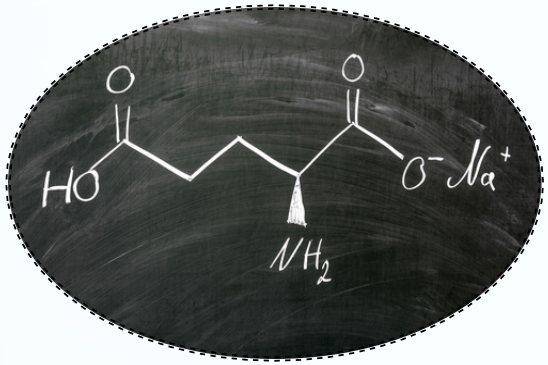


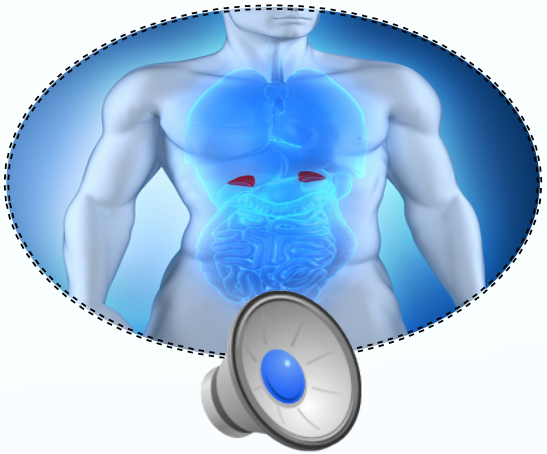
Neurotransmitters
Endogenous signaling molecules that alter behavior or neuron effector cells.

Neuromodulators
Process by which neurons use neurotransmitters to regulate a diverse population of neurons (dopamine, serotonin).

Neuro Trophin Factors
Proteins that induce survival and function of neurons.

Neurotransmitters & Neuromodulators





Neurotransmitters

- Glutamate = GO – Excitatory
- GABA = STOP - Inhibitory

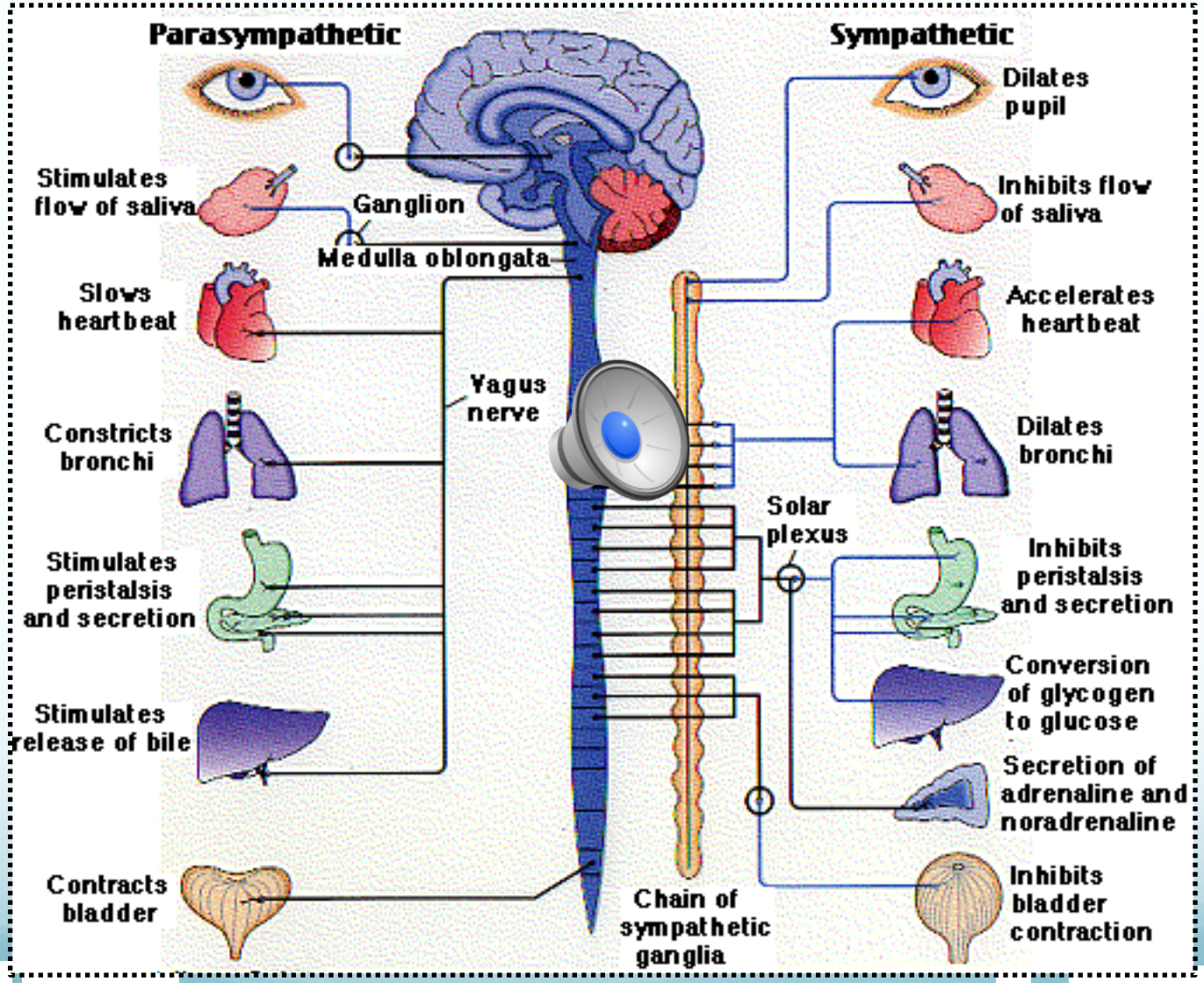
Neuromodulators

- Mono – Amines:
  - Dopamine
  - Serotonin
  - Melatonin
  - Nor Epinephrine
- Hormones
  - Estrogen
  - Testosterone
  - Cortisol

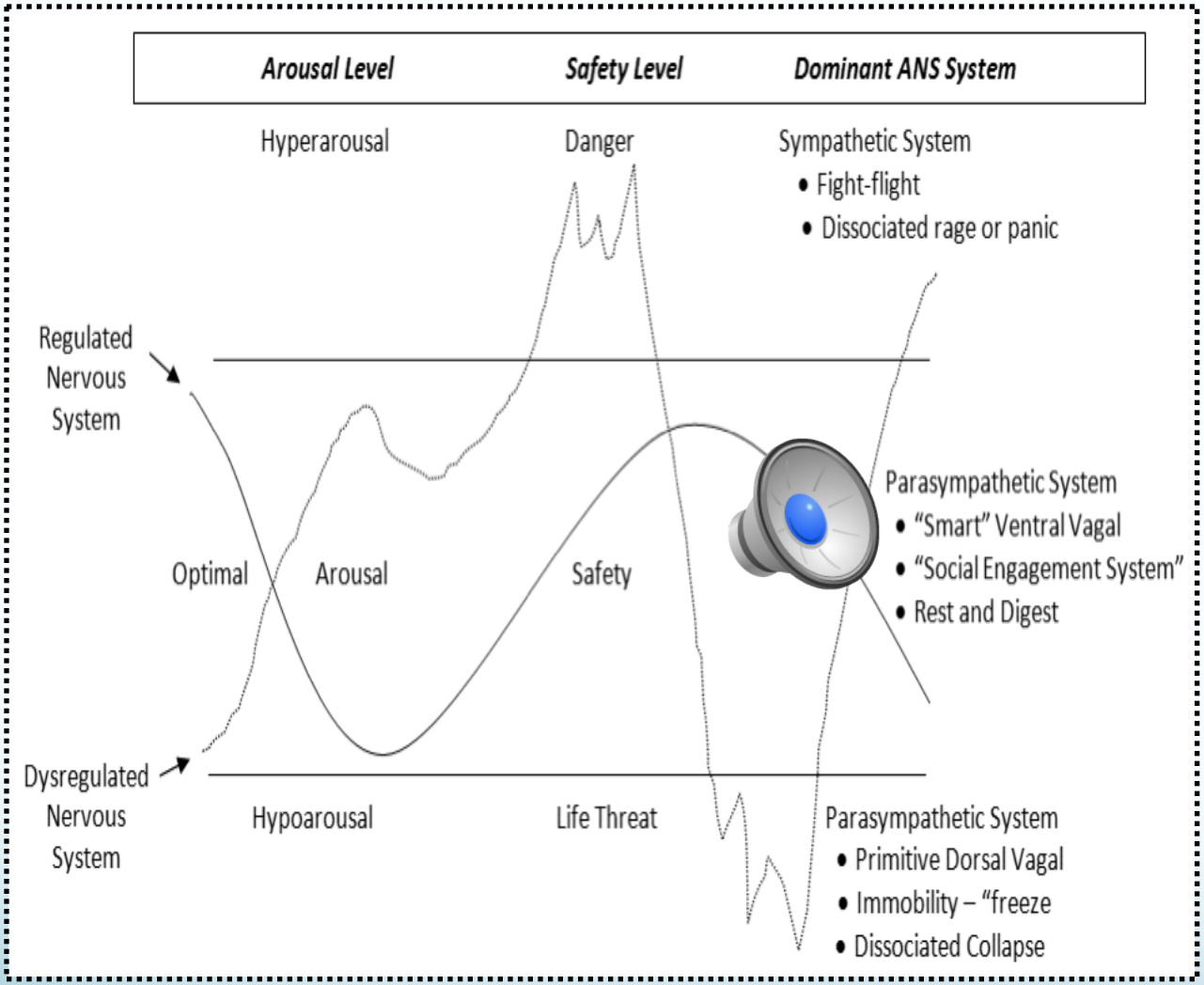
Neuro Trophin Factors

- BDNF = Miracle-Gro &Many Others

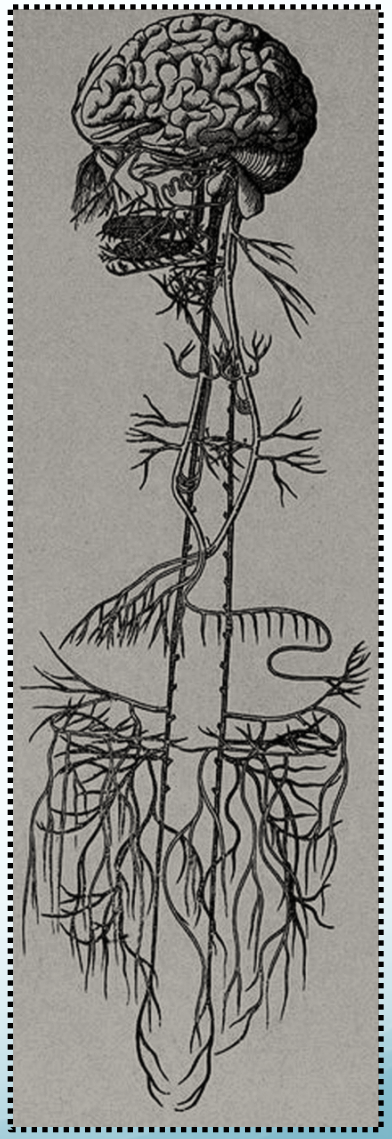
Autonomic Nervous System



Stephen Porges - Polyvagal Theory



Jones, L.. K.. (2013). Recreated with permission from Wheatley-Crosbie, 2006, p.21



http://cranialintelligence.com/2014/06/01/vagus-baby-vagus/

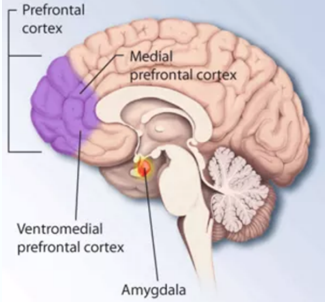
Brain-Based Efficacy Research

- Mirror Neurons-p. 329-anterior insula, anterior cingulate cortex and the inferior parietal cortex for helping with empathy and attunement
- Polyvagal System-Dr. Stephen Porges; 10th cranial nerve; working on safety and oxytocin for assisting with therapeutic alliance and acceptance

Brain-base and Resiliency

- Resiliency-p. 347-the ability to overcome stress and maintain an effective level of appropriate behavior performance when confronted by challenges (Staal, Bolton, Yaroush & Bourne, 2008)
- Allostatic Load

Building Resiliency Loads



- Found that neuroplasticity of the ventromedial prefrontal cortex (VmPFC) is essential to resiliency while coping and dealing with stress (Sinha et al., 2016).
- 30 young adults with no previous physical/psychiatric disorders; conducted fMRIs to assess the stress response and active coping by exposing each to a block of highly aversive visual images
- The control group received no stress, neutral images.
- The VmPFC signals emotional and behavioral control.
- Teaching the skills of reframing and reappraisal help in adaptive coping.

Measuring Allostatic Load

- Resiliency-p. 347-the ability to overcome stress and maintain an effective level of appropriate behavior performance when confronted by challenges (Staal, Bolton, Yaroush & Bourne, 2008)
- Allostatic Load

Measuring Allostatic Load

- Body Reactions to Stress
- Heart Rate Variability
- Blood Pressure
- Inflammation— Fibinogen (clotting)
- Metabolic—Waist, HLD, LDL, Trig., Gluc. Insulin
- Salivary Cortisol AM rising (high) and Slope (decline during day
- HPA Axis, Microbiome, ettc.
- Each influences the other in a bi-directional framework

- Interpersonal (work, family)
- Negative thought patterns
- Community/neighborhood
- Poverty, abuse, harassment
- Financial
- Loss of loved ones
- Trauma
- Toxins
- Fail to exercise, eat right, lack of sleep (Therapeutic Lifestyle Changes)
- Holmes and Rahe Stress Scale: http://www.mindtools.com/pages/article/newTCS_82.htm

Empirically Supported Brain-based Interventions

- Formal meditation practices
- Mindfulness in daily living (TLC)
- Mindfulness-based stress reduction (MBSR)
- Yoga
- Prayer
- Imagery
- Neurofeedback
- HRV
- Inquiry-homework, sensations, poetry-The Guest House by Rumi

The Big Six Therapeutic Life Changes (TLC's)

1. Sleep

2. Exercise

3. Nutrition

4. iTechnology

5. Cognitive

6. Social Relationships

Ivey, et al. (2014).

Sleep Hygiene

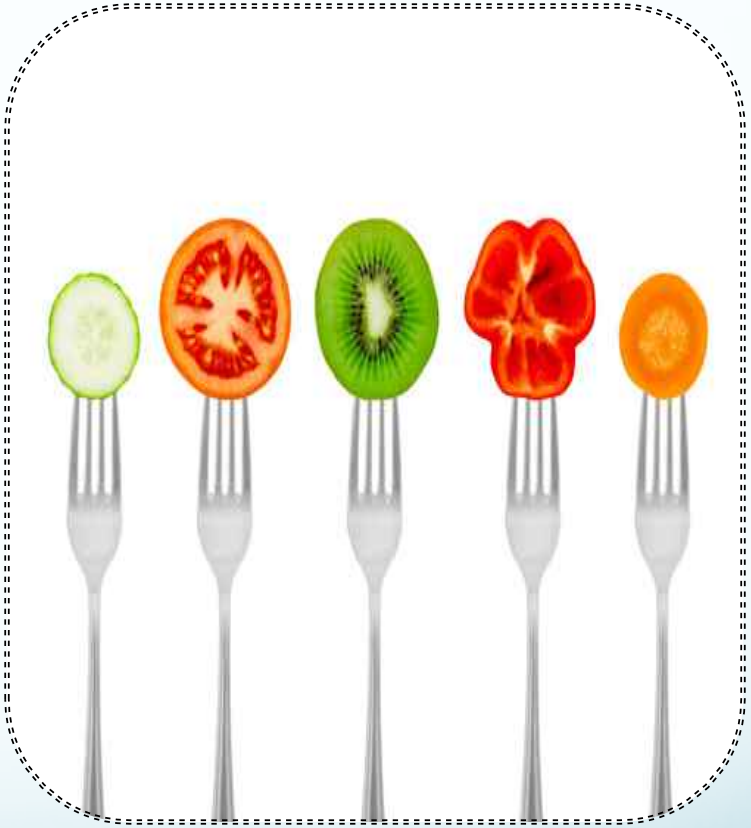
- 7-9 hour of sleep every night (Ivey et al, 2014)
- Increases metabolism and hormones
- Consolidates learning
- Increases attention
- Improves mood
- Allows the microglial cells to wake up and rid the brain of residual toxins (Xie, et al. 2013)

Exercise

- Need at least 20-45 minutes per day with 1 minute of high-intensity interval training (Ratey, 2014)
- NEAT
- Enhances sleep
- Produces dopamine and oth BDNFs
- Treats depression
- Increases gray matter
- Increases life longevity

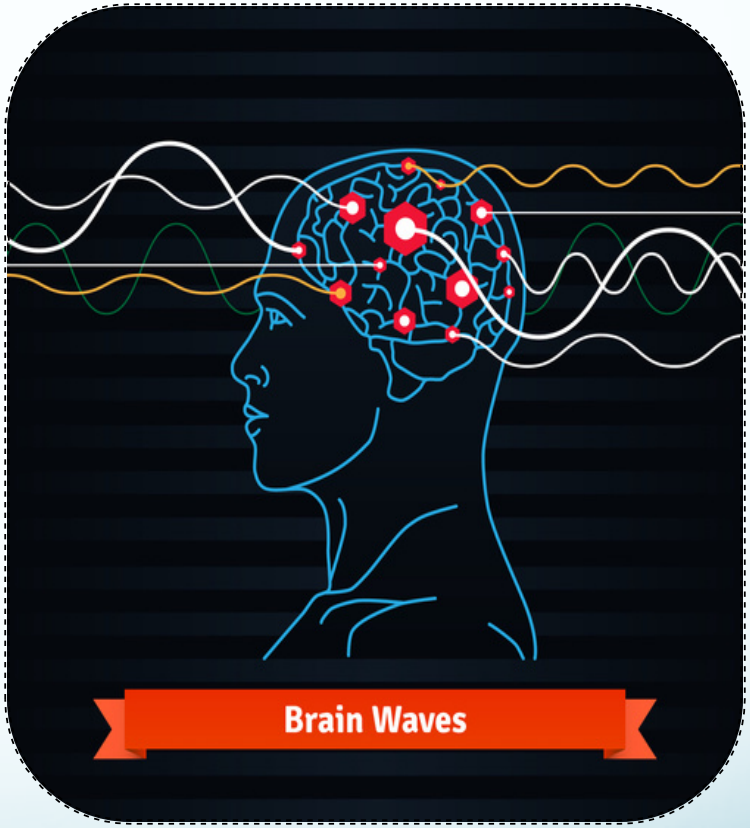
Healthy Nutrition/Diet

- Low fat, complex-carbohydrate, high protein diet
- Eat organic and whole foods, if possible
- Increases myelination
- Decreases inflammation
- Consult with a dietician, functional medicine physician for use of possible supplements
- Assists the gut-brain axis and maintains a healthy gut microbiome
  - Gut microbiome = Sixth sense
  - Little use of alcohol and drugs



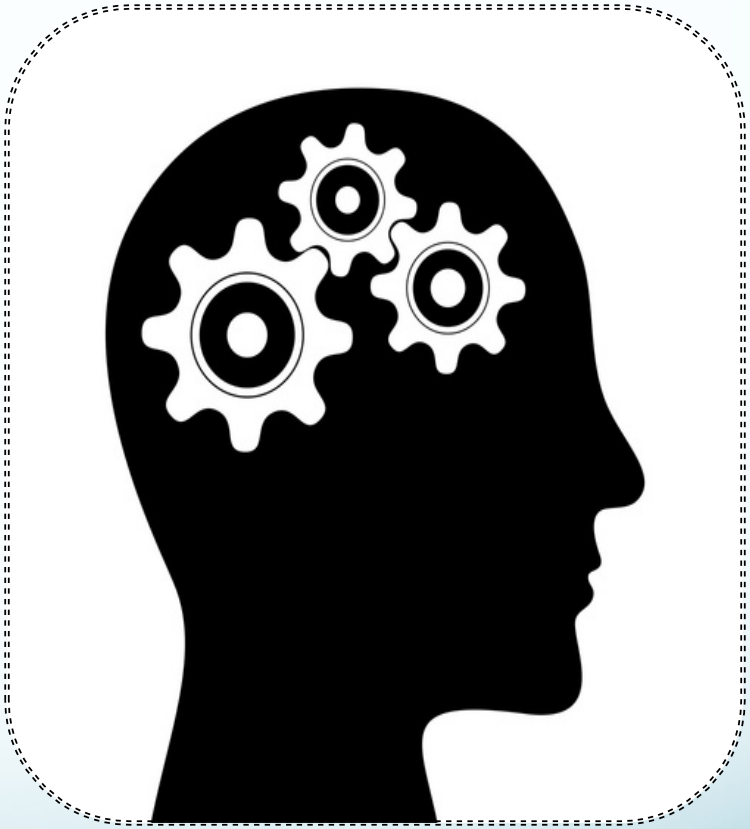
iTechnology

- 12 % of US are addicted; 30% in China
- Too much - disrupts sleep patterns
- Changes the function and structure of the brain with alpha spiking (over-arous 10-20% shrinkage in surface brain area (Swingle, 2015)
- 25 % of young people having sex while texting (Porges, 2014)
- Disrupts social connection and engagement



Cognitive Challenge/Meditation

- Needs to be novel and increasingly challenging
- Builds neuroplasticity: adaptability of the brain; neurogenesis: new neural growth
- Negative Bias: brain is good at remembering bad things; bad at remembering good thing
  - Attention must be held for at least 10-20 seconds for positive emotions to remain
  - HRV and diaphragmatic breathing will assist in over

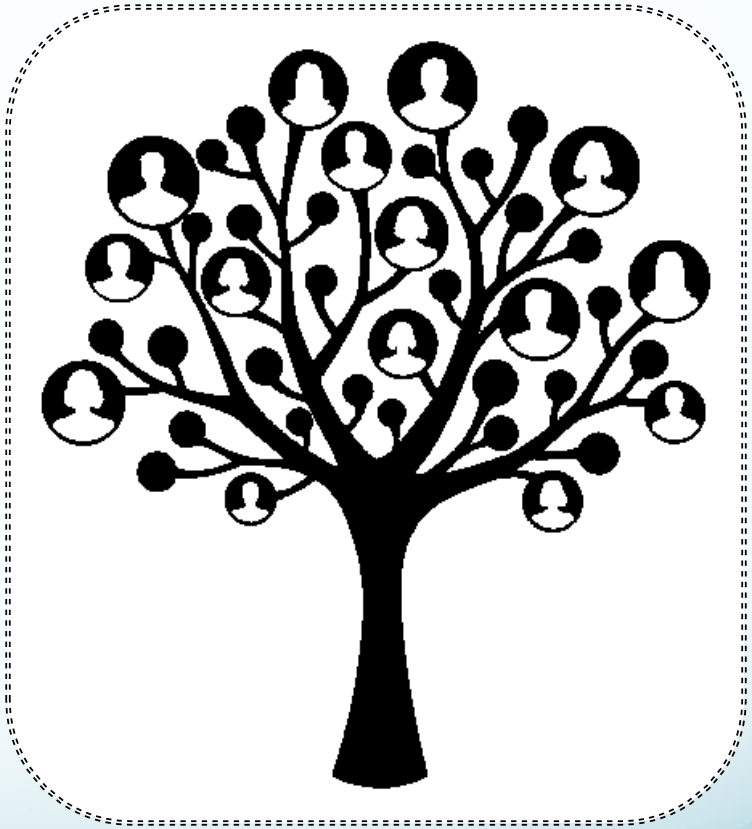


Mindfulness for Counselors

- Mindfulness is a way of training the mind, heart and body to be fully present with life. (Neurocounseling?)
- Two methods: mindful awareness and mindful practice
- Three cores mindful elements: intention, attention and attitude

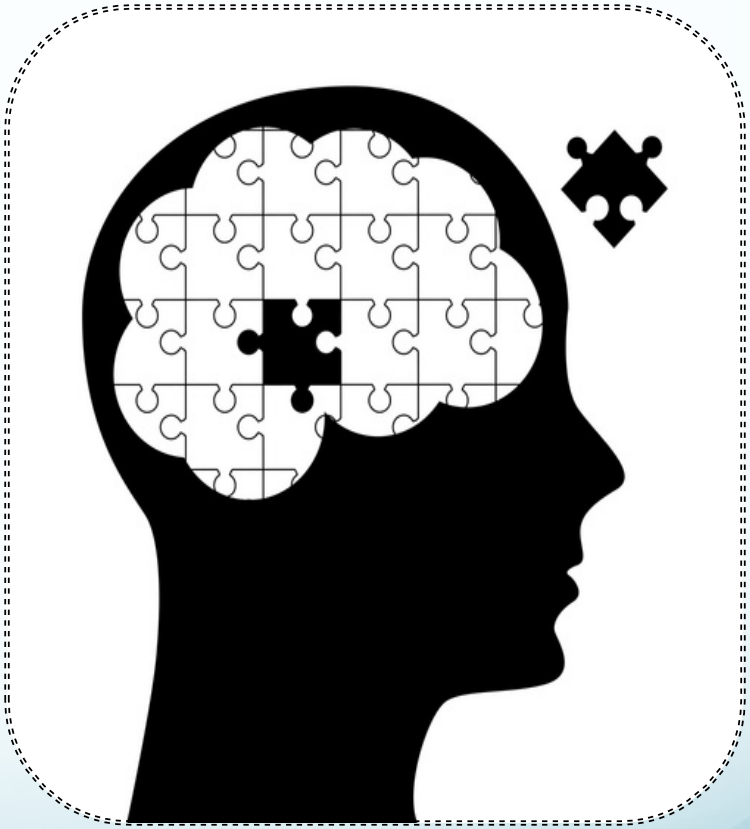
Social Relationships

- Healthy interactions with others and pets
- Increases levels of oxytocin
- Extends the lifespan with face to face bonding
- May offer "emotional and physio safety" using the vagal nerve (Porges, 2014)
- Elicits more "bottom-up and top down" communications
- Eases trauma and assists the amygdala to get smaller and makes more global connections in the brain



Take the TLC Inventory!

- Go to your lowest area for more specific information about that area.



Our Goal: Professionally and Personally

- Encourage neuroflexibility.
- Remember the plasticity paradox.
- Engage in learning, life and fun!

"The strongest oak of the forest is not the one that is protected from the storm and hidden from the sun. It is the one that stands in the open where it is compelled to struggle for its existence against the winds, rains and the scorching sun."

- Napolean Hill

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