

Meditation and Mindfulness Practices for the PCS Patient

Brenda Lovette, M.S. CCC-SLP, RYT-500

Financial Disclosure

- Full time employee at Emerson Hospital
- Sole proprietor of private practice: Healthy Expression
- Receive royalties/stipend for continuing education courses on Northern Speech Services, Motivations Inc, and SpeechPathology.com
- Receive royalties for publications through Lash Associates

Learning Objectives

1. Describe the impact of meditation and mindfulness on the body, mind, and brain.
2. Identify the role for meditation and mindfulness in the management of PCS
3. Demonstrate 2-3 mindfulness techniques for patients or for personal wellness.

Agenda

Meditation and Mindfulness for the PCS Patient	
Guided Practice & Intention Setting	5 min
Meditation and Mindfulness Defined	10 min
Impact of Meditation on the Body, Mind, and Brain	20 min
Guided Practice	10 min
Rationale and Application for the PCS Patient	35 min
Status of Meditation for Neuroplasticity Group at Emerson	5 min
Guided practice	10 min
Mindfulness for the Clinician	5 min
Practice Teaching/Educating	10 min
Questions and Comments	10 min

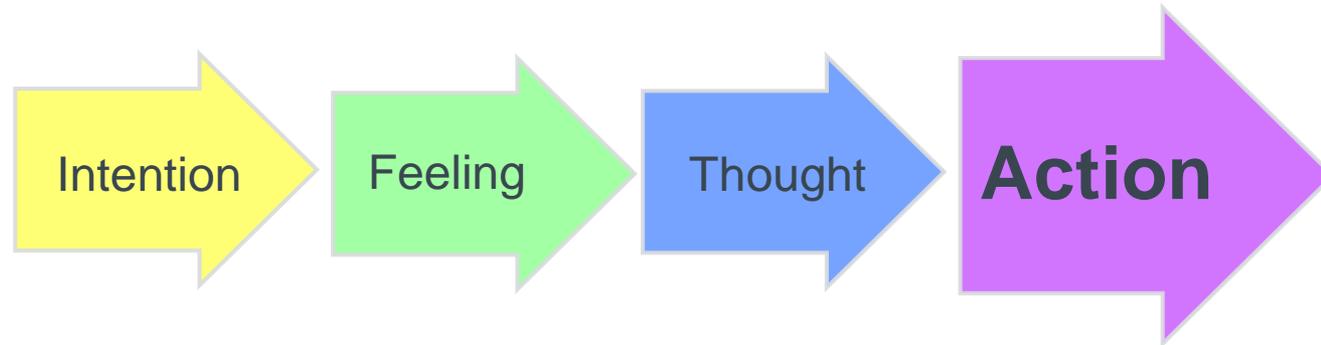
Guided Practice and Intention Setting

"Every action, thought, and feeling is motivated by an intention..."
- Gary Zukav

Guided Practice: *Breath Awareness*



Intention Setting



My Intention: Leave you feeling empowered and clear on how MM may fit into your clinical practice and your LIFE

Your Intention: What would **you** like to get out of this course?

Mindfulness and Meditation, defined

"Every action, thought, and feeling is motivated by an intention..."
- Gary Zukav

What's the difference?

Mindfulness	Meditation
“Paying attention, on purpose, to the present moment, non- judgmentally.” - Jon Kabot Zinn	“To engage in mental exercise such as concentration on one’s breathing or repetition of a mantra for the purpose of reaching a heightened level of awareness.”
<i>The mindset</i>	<i>The technique</i>

The Many Meditation Techniques (“brands”)

- Mindfulness Based Stress Reduction (MBSR)
- Vedic, Mantra, Transcendental Meditation (TM)
- Compassion Meditation (Meta Meditation/Loving Kindness)
- Prayer
- Gratitude Practices
- *Pranayama
- *Yoga
- Etc...

All share commonalities: focused attention and passive attitude

Meditation: train your monkey mind



Myths and Facts

Meditation does not mean “clearing your mind”

When we can become an observer of our mind stuff, we begin to separate ourselves from our thoughts

- I AM angry, versus I FEEL angry

Stressful experiences are often difficult *because* of our stressful thoughts

Is Stress Bad?

- Sympathetic and Parasympathetic Nervous System
- Allostasis vs Homeostasis
- Some evidence to suggest that stress is good!
 - Kelly McGonagall
 - Reflect on your life: how has conflict/stress/challenge resulted in growth?
- However, prolonged stress response in the absence of danger can cause wear and tear (Allostatic Load)
- Learned hyper-response to perceived danger (PTSD, PCS)



The Mind Body Connection

Turn of 16th Century – Rene Descartes proposed that body and mind are separate substances (“Dualism”)

Now, we are starting to see the connection again

- Stress related disease
- Placebo/Nocebo Effect
- Social/health outcomes

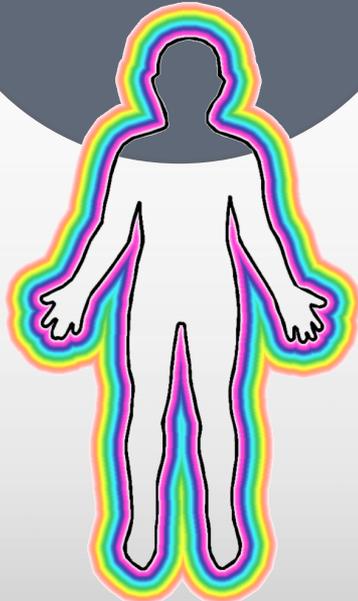
Three legged stool (Benson)

1. Surgery
2. Pharmaceuticals
3. Self-care



Effects of Meditation on the...

Body



Mind



Brain



Effect on the Body...

The Relaxation Response: The opposite of Fight, Flight, Freeze

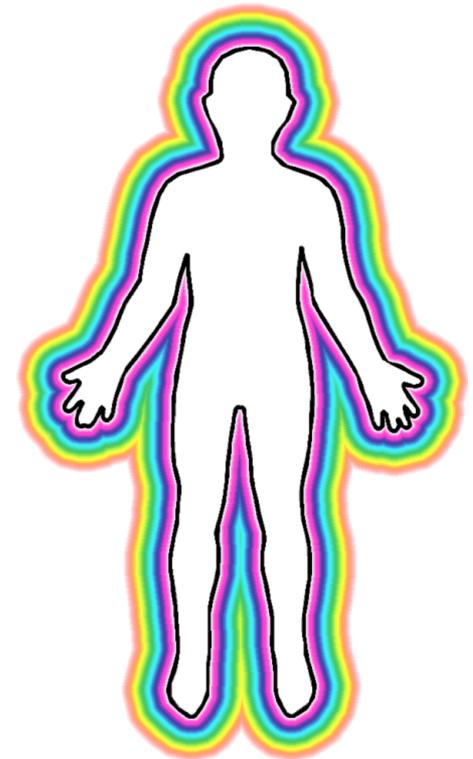
- Herbert Benson

Measureable physiological markers

- Activates parasympathetic nervous system
- Reduces cortisol (marker of stress)
- Reduces blood pressure
- Reduces heart rate
- Reduces muscle tension
- Improves heart rate variability

Two crucial elements

- ⊠ Object to focus on
- ⊠ Passive attitude



Benson, H. (1975) The Relaxation Response. William Morrow and Company.

Blood Cortisol Levels

Participants: 30 second-year medical school

Practice: 4 day mindfulness training program

Measures: Serum cortisol levels pre and post meditation and mental health questionnaire

Results: Statistically significant decrease in cortisol level after meditation program.

Turakitwanakan, W (2013). Effects of mindfulness meditation on serum cortisol of medical students. *Journal of Medical Association of Thailand*. 96(1). 90-95.

Effect on the Mind... (mood and cognition)

“If you are anxious, you can’t learn. It’s like dropping seeds on concrete. With a quiet mind, people take things in.”

-Herbert Benson



Benson, H. (1975) The Relaxation Response. William Morrow and Company.

Generalized Anxiety Disorder

Participants: 93 individuals with generalized anxiety disorder

Practice: MBSR vs. Stress Management Education (control)

Measures: Hamilton Anxiety Scale, Clinical Global Impression of Severity & Improvements, Beck Anxiety Inventory

Results: MBSR improved stress reactivity and coping

Hogea, E.A., et al. (2013). Randomized controlled trial of mindfulness meditation for generalized anxiety disorder: effects on anxiety and stress reactivity. *Journal of Clinical Psychiatry*. 74(8): 786-792.

Meditation & Cognition



✓ Memory

Alexander et al., 1989; Newberg et al., 2010a; Grant et al. 2010, Innes et al., 2012 & 2017, Eyre et al. 2016

✓ Executive functions

Alexander et al., 1989; Newberg et al., 2010a

✓ Attention

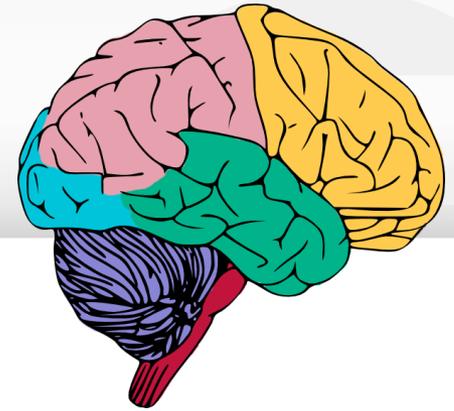
Alexander et al., 1989; Pagnoni & Cekic, 2007; van Leeuwen et al., 2009; Prakash et al., 2012

✓ Language

Alexander et al., 1989; Newberg et al., 2010a; Marshall et al., 2014, 2015 & 2018

Marciniak, R. et al. (2014). Effects of meditation on cognition in the context of aging and neurodegenerative diseases. *Frontiers in Behavioral Neuroscience*. 8: 17.

Effect on the Brain...



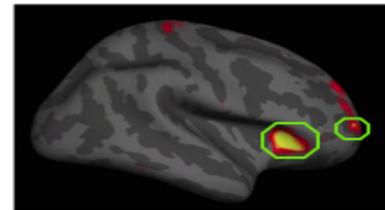
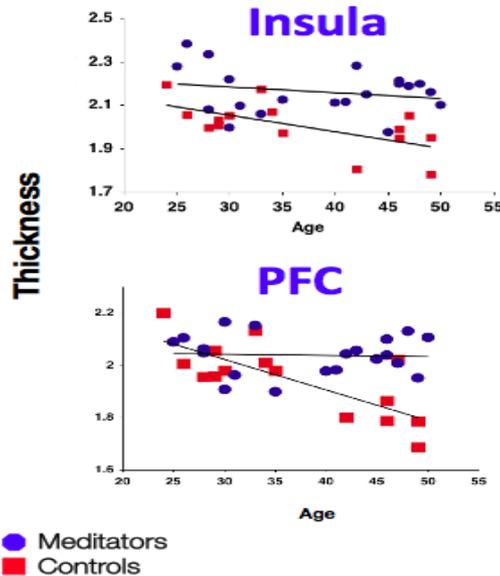
Brain Imaging of Meditators

- ✓ Increased cortical thickness
- ✓ Decreased activity in the amygdala
- ✓ Increased grey matter in the hippocampus and the temporo parietal junction
- ✓ Increased cerebral blood flow in the prefrontal cortex, thalamus, putamen, caudate nucleus and midbrain
- ✓ Increased gyrification (Lazar, 2005)
- ✓ Structural enlargements in prefrontal network involved in ventromedial prefrontal cortex and inferior frontal sulcus (Chau et al. 2018)
- ✓ bold signal in anterior cingulate and dorsal lateral prefrontal cortices were higher (executive and attention areas) (Mahone et al., 2018)
- ✓ Bold signal was lower in pons and cerebellum (arousal areas) (Mahone et al., 2018)
- ✓ Larger gray matter volume in rostral anterior cingulate cortex (rACC) (Hernandez et al., 2017)
- ✓ Association between depth of silence and functional connectivity between B anterior insula and rACC
- ✓ Mental silence associated with brain regions and networks of top-down attention and emotional control

Effect on the Brain...

Preserved cortical thickness with aging

Preservation of Cortical Thickness



These graphs show age and cortical thickness of each individual. These figures show brain areas (the insula and the prefrontal cortex (PFC)) that are thicker in practitioners of Insight Meditation than control subjects who do not meditate.

Lazar et al 2005

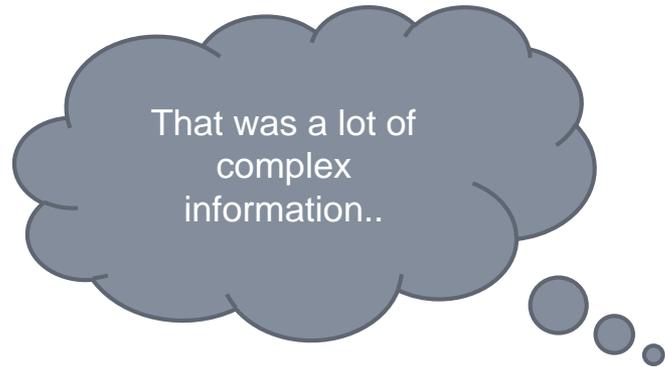
Lazar, S. W., Kerr, C. E., Wasserman, R. H., Gray, J. R., Greve, D. N., Treadway, M. T., . . . Fischl, B. (2005). Meditation experience is associated with increased cortical thickness. *NeuroReport*, 16(17), 1893-1897.

Effect on the Brain...

Short Term Meditators:

- Increased functional connectivity between the amygdala and a region implicated in emotion regulation (ventromedial prefrontal cortex)
- meditation training may improve affective responding through reduced amygdala reactivity, and heightened amygdala–VMPFC connectivity
- potential mechanism by which MBSR effect emotion regulation

Kral, T. et al (2018) The impact of short and long term meditation training on amygdala reactivity to emotional stimuli. *Neuroimage*. 118(1) 301-318

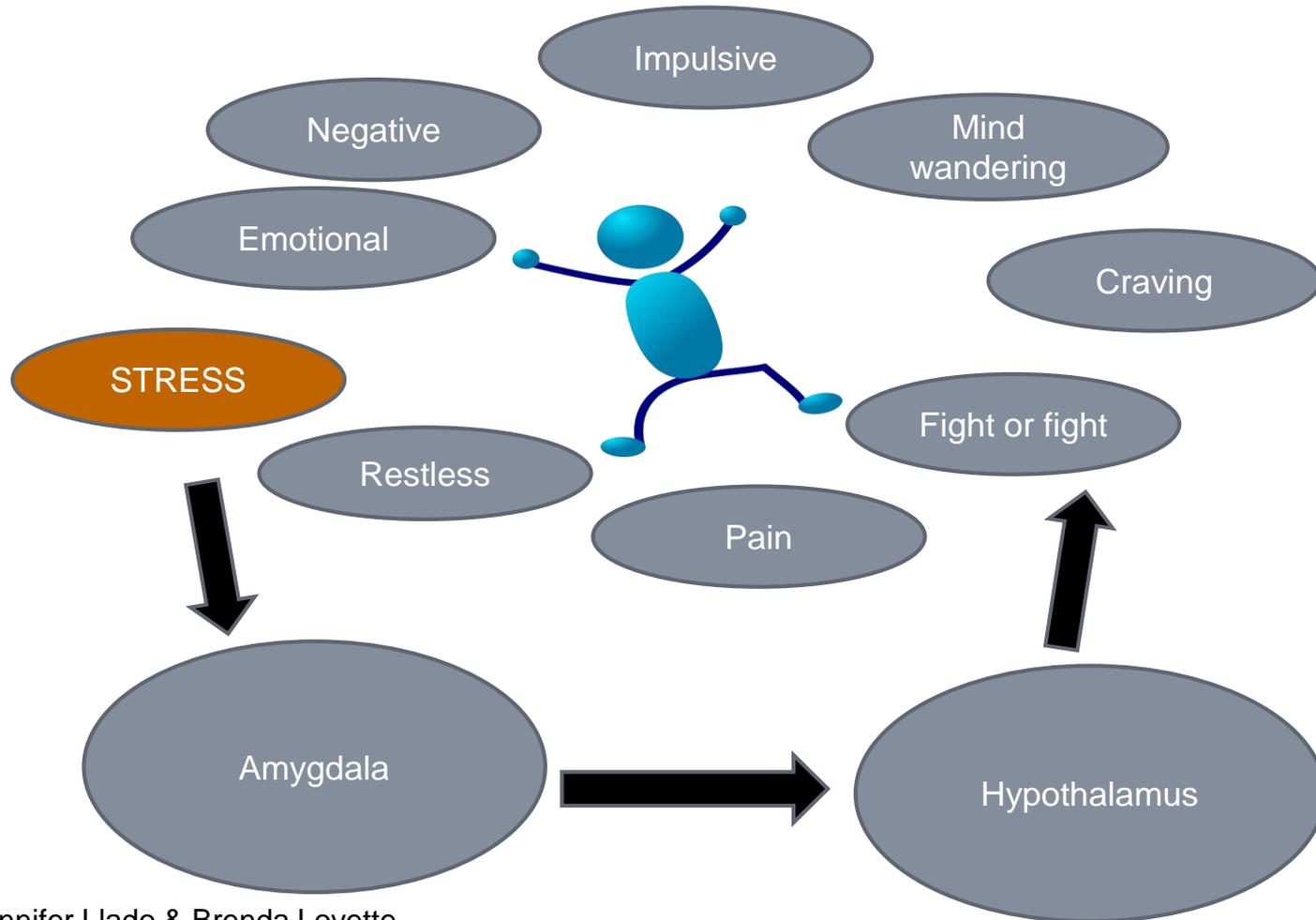


That was a lot of
complex
information..



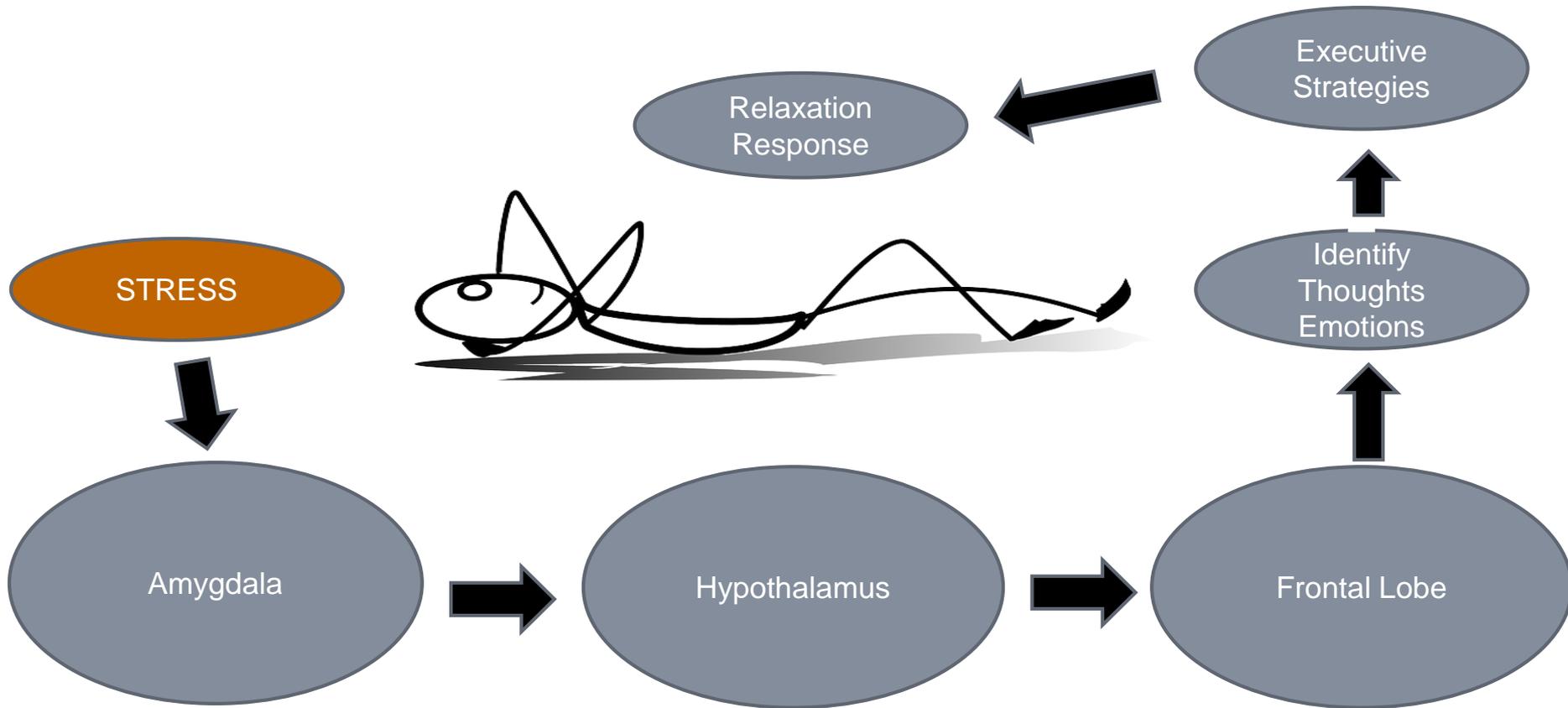
But, you know what this *feels* like!

Mind-Body Connection



© 2018 Jennifer Llado & Brenda Lovette

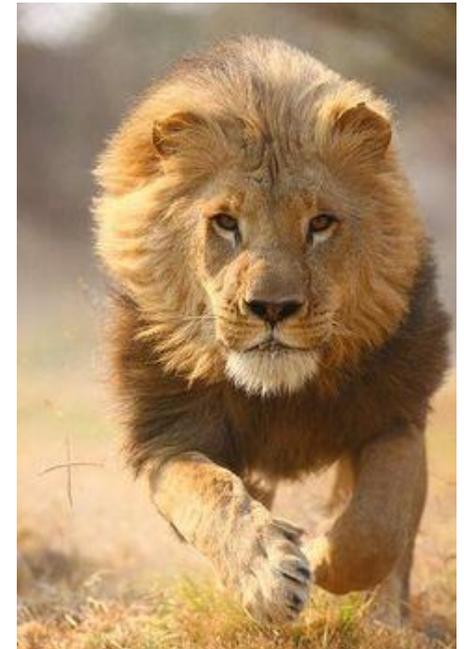
Mind-Body Connection



© 2018 Jennifer Llado & Brenda Lovette

Functional Implications

- Meditation sets up the brain to be rewired in a way that promotes learning, growth, and perspective (neuroplasticity!)
- Strengthens ability to integrate brain networks more readily (not getting stuck in a thought loop)
- Note: There's no bad brain function!
 - But, we can be more effective and content when our brain functions are balanced



Guided Practice: *Body Scan*



Meditation and Post Concussion Symptoms

"Meditation is like a gym in which you develop the powerful mental muscles of calm and insight." – Ajahn Brahm

PCS Symptoms

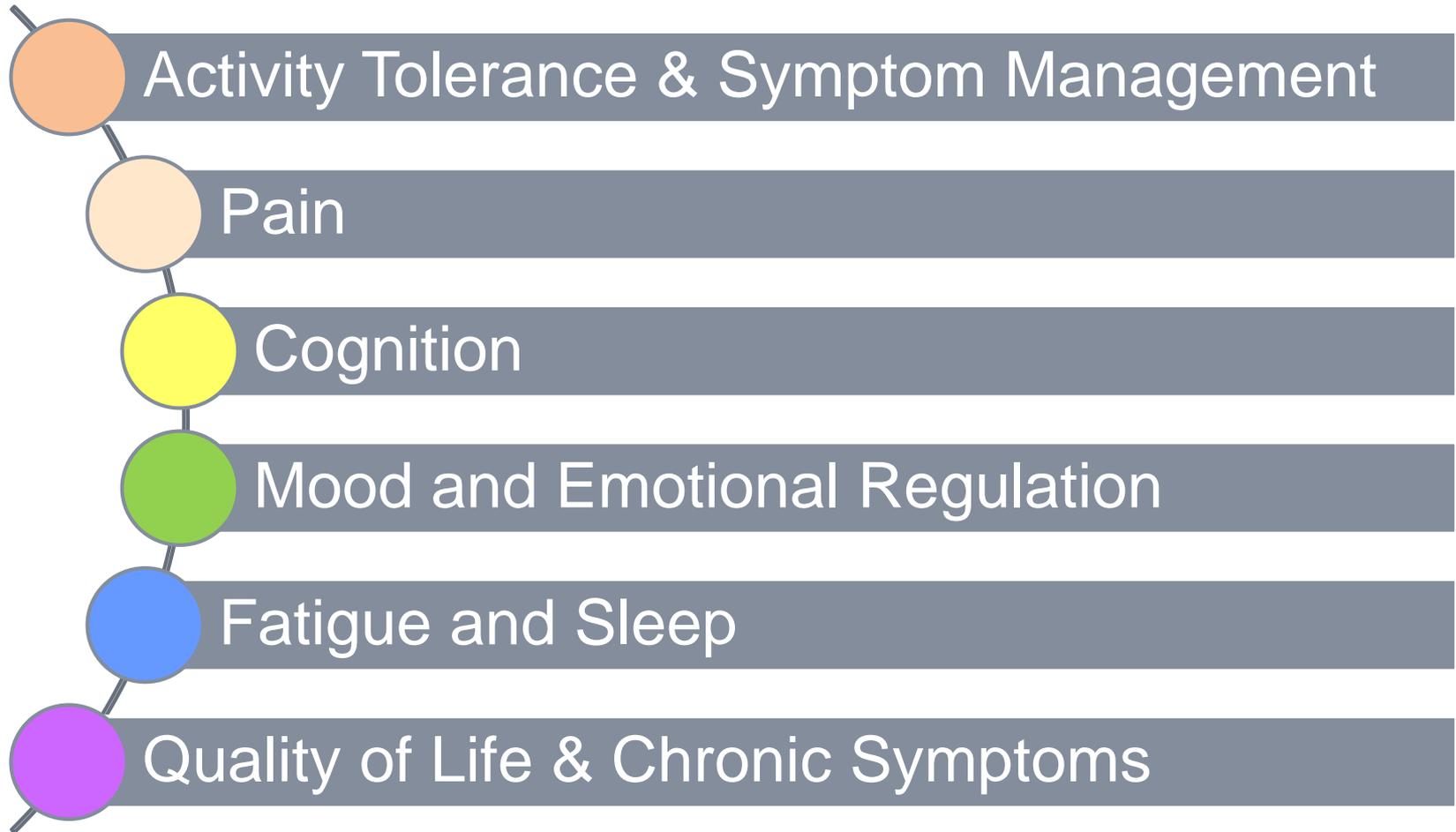
Somatic	Cognitive	Affective
Headache	Endurance	Fatigue
Dizziness	Attention	Emotional Lability
Nausea	Executive Function	Anxiety
Visual Disturbances	Confusion	Irritability
Balance	Brain Fog	Sadness
Phonophobia	Processing Speed	

Theoretical Rationale for the PCS patient

Our patients:

- Report pain
- Demonstrate cognitive challenges
 - Attention
 - Insight
 - Executive Function
 - Emotional Regulation
- Benefit from symptom management techniques (including rest)
- Have mood changes (depression/anxiety)
- Sleep disturbances (difficulty falling and staying asleep)
- Benefit from feeling autonomous and productive

Rationale for the PCS patient



You are about to hear about some research...

- There are hundreds of studies on these topics
- Researching is inherently challenging...
 - Variables when working with human participants
 - Small sample sizes
 - Variety within the types of meditation techniques
 - Funding



Activity Tolerance & Symptom Management

- Patients report difficulty with tolerating daily tasks related to home, work, academic, and community activities.
- Report symptom escalation in the setting of cognitive challenge, sensory input, etc..
- Symptom threshold (2 points from baseline)
 - Requires predictive awareness, insight, and application of strategies (pace and break)
- Rehabilitation includes gradual increase in activity tolerance

Activity Tolerance & Symptom Management



Pain

- One of the most common PCS symptoms
- Patients often try many medications/interventions with mixed results

Pain Management

Participants: 10 Iraq and Afghanistan Veterans with TBI

Methods: Eight weeks of 2 sessions per week, one hour each) Mindfulness Meditation (MM) with home program recommendations

Results:

- Pain intensity and Pain Interference were reduced in the MM group
- Improvements were maintained one month later
- * Decreasing pain is not a principle focus of acceptance based therapies

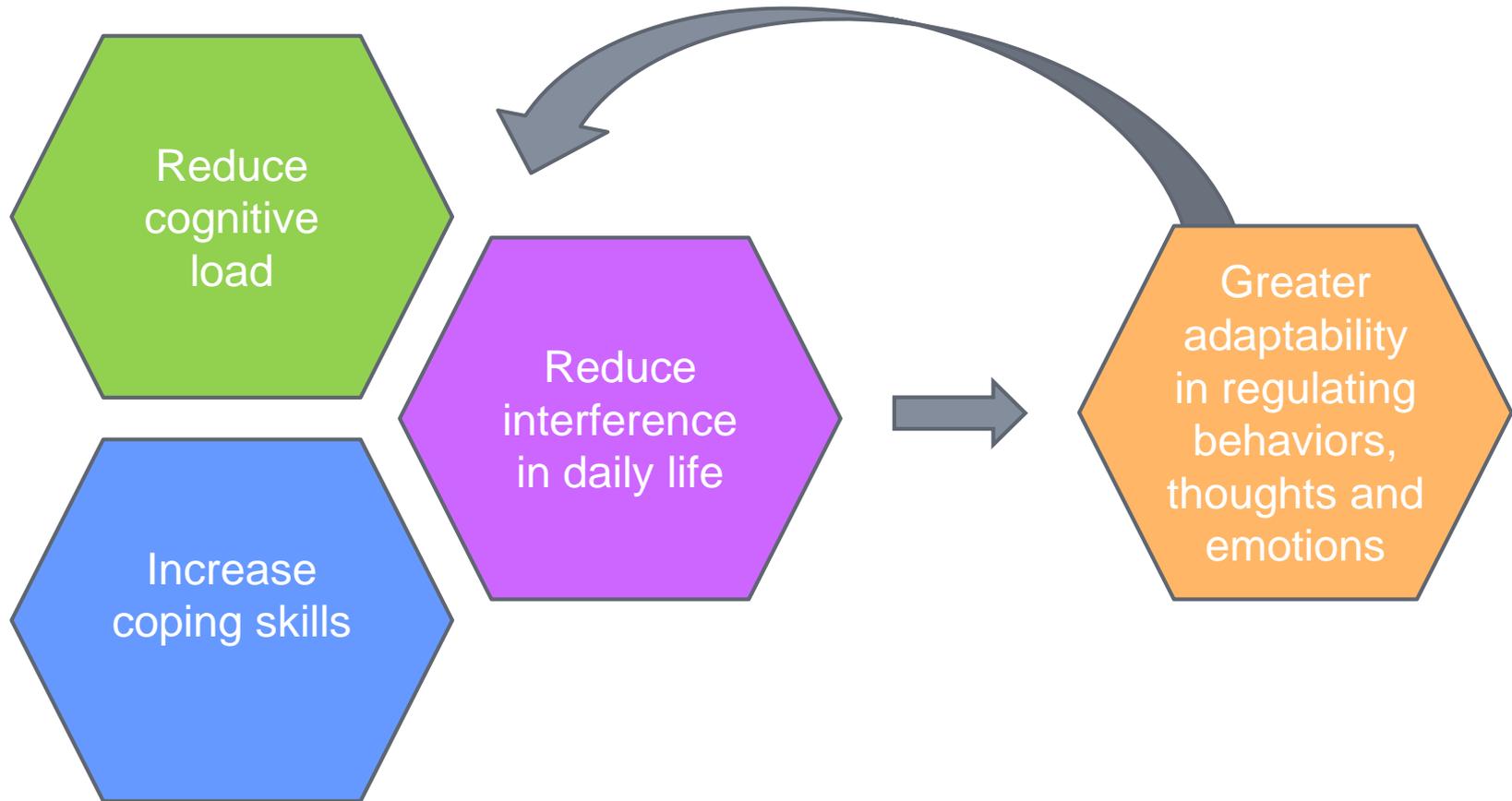
Nassif, T., Chapman, J., Sandbrink, F., Norris, D., Soltes, K., Reinhard, M., Blackman, M. (2016) Mindfulness meditation and chronic pain management in Iraq and Afghanistan veterans with traumatic brain injury: a pilot study. Military behavioral health. 4(1) 82-89

Pain Interference

- “How much has pain interfered with general activity, mood, walking ability, normal work, relations with other people, sleep and enjoyment of life”
- MM encourages sustained attention on pain sensations from a *nonjudgmental perspective*, without evoking unpleasant emotions and cognitions

Nassif, T., Chapman, J., Sandbrink, F., Norris, D., Soltes, K., Reinhard, M., Blackman, M. (2016) Mindfulness meditation and chronic pain management in Iraq and Afghanistan veterans with traumatic brain injury: a pilot study. *Military behavioral health*. 4(1) 82-89

Shift in How Pain is Perceived



Nassif, T, Chapman, J, Sandbrink, F, Norris, D., Soltes, K, Reinhard, M, Blackman, M. (2016) Mindfulness meditation and chronic pain management in Iraq and Afghanistan veterans with traumatic brain injury: a pilot study. *Military behavioral health*. 4(1) 82-89

Patient Perspective: Pain



Cognitive Symptoms

- Attention
- Memory
- Executive function (emotional regulation)
- Treatment (SLP) targets cognitive retraining and development of strategies – Meditation may be an appropriate modality for *both*

Cognition

Participants: 22 participants with mTBI (post onset >7 months) ages 18-62

Frequency/Duration: 10 week group modeled after MBSR with modifications for mTBI

Measures: Perceived QOL Scale, Perceived Self Efficacy Scale, Neurobehavioral Symptom Inventory, Neuropsychological Tests, Self-report Problem Solving Inventory, Self-report Measure of Mindfulness

Results: Clinically meaningful improvements in QOL, self-efficacy and smaller but significant effects on working memory and attention

Azulay, J., Smart, C., Mott, T., Cicerone, K. (2012). A pilot study examining the effect of mindfulness based stress reduction on symptoms of chronic mild traumatic brain injury/post concussive syndrome. *Journal of Head Trauma Rehabilitation.*

Patient Perspective: Cognitive Symptoms



Mood and Emotional Regulation

- Anxiety & Depression
- Emotional Regulation as an executive function skill
 - Self monitoring
 - Apply executive strategies (solution focused thinking, reaction versus response)

Depressive Disorder Following TBI

Participants: 559 adults with complicated to mild TBI

Measures: Patient Health Questionnaire Depression and Anxiety modules & European Quality of Life Measure. Interviews conducted at 1 month, 6 months, 8 months, 10 months and 12 months post TBI

Results: 53.1% met criteria for major depressive disorder (MDD) at least once in the follow period.

“Assessment and tx of TBI typically focus on physical and cognitive impairments, yet psychological impairments represent significant causes of disability.”

Bombardier, C. et al. (2010). Rates of major depressive disorder in clinical outcomes following traumatic brain injury. *Journal of American Medical Association*. 303(19): 1938-1945.

Emotional Regulation

Participants: 25 participants ages 18-62 (10 stroke, 5 TBI, 7 autoimmune, 3 others with post injury period of >10 months)

Frequency/Duration: 10 week group with weekly 2-hour sessions of the Mindful Attention Program (MAP)

Results: Clinically meaningful improvements noted in emotional regulation, moment-to-moment awareness and on measures of central-executive aspects of working memory and regulation of attention

Conclusions: “A Mindfulness Attention Program designed for brain injury can positively impact emotional regulation with a mixed brain injury population.”

Azulay, J. & Mott, T. (2016). Using Mindfulness Attention Meditation (MAP) with Mixed Brain Injury Population to Enhance Awareness and Improve Emotional Regulation. *Journal of Psychology and Clinical Psychiatry* 6 (5).

Patient Perspective: Emotional Regulation



Fatigue & Sleep

- Fatigue and sleep disturbances are common in our patient population (more on this tomorrow!)
- Meditation and relaxation activities can help patients fall asleep and stay asleep
- Yoga Nidra (body scan)

Fatigue & Sleep

Participants: 18 individuals s/p stroke and 11 s/p TBI, all were rehabilitated except for symptoms of chronic fatigue. Separated into treatment and delayed treatment groups

Practice: 8 week MBSR with modifications for memory/cognition

Measures: Mental Fatigue Self Assessment, Comprehensive Psychopathological Rating Scale (CPRS), Neuropsychological tests for processing speed, attention, and working memory.

Results: Decline in mental fatigue after MBSR program for both groups (no significant change for wait list group prior to beginning program). Similar results for processing speed.

Johansson B, Bjuhr H & Rönnbäck L (2012). Mindfulness-based stress reduction (MBSR) improves long-term mental fatigue after stroke or traumatic brain injury, *Brain Injury*, 26(13-14):

Coping with Chronic Symptoms

- Unfortunately, some of our patients have persistent symptoms after we have tried all available treatments
- Meditation may help them to cope



Our patients may...

- Learn ways to manage symptom escalation
- Improve self awareness
- Deepen their understanding of neuroplasticity
- Improve focused attention
- Improve emotional regulation (strategies and retraining)
- Reduce pain interference
- Reduce depression and anxiety
- Improve overall feeling of wellness and quality of life
- Etc??

How Can it Fit Into Our Clinical Sessions?

- Education
- Guided practice for symptom management and focused attention
- Recommendations for home program
- Referral to community resources and courses



Documentation

- Evidence-based intervention
- Meditation is a modality to address our classic rehabilitation goals
- For documentation and billing, focus on observations and outcomes (just as you would with any treatment technique)

Goal Area	Sample Documentation
Pain Management	Pt reported neck pain at beginning of session, rated 6/10 on Wong Baker Scale. After guided meditation/relaxation pt reported reduced pain, rated 3/10.
Attention	During basic functional activity (completing a form), pt demonstrated frequent loss of attention to task due to internal distractors. Pt participated well in guided meditation and was subsequently able to maintain focus for remainder of activity.
Emotional Regulation	Pt reported frequent emotional outbursts in home environment. Participated in education regarding meditation as a strategy for initiation of solution focused thinking. Expressed understanding and ID'd 2 potential opportunities for application.

Considerations for Special Populations

- Long time meditators
- Children
- Moderate-Severely injured
- Physical accommodations (positioning)



Resources

- Smart Phone Apps
 - Insight timer (free)
 - Calm, Headspace (subscription)
- YouTube Videos
- Local MBSR Course
- Local meditation and prayer groups
- Books/Publications
 - Palouse
 - BrainSave by Dr. Titus Chiu

In Development: Group Program

Meditation for Neuroplasticity



Program Overview

- Based on MBSR Group Program (Jon Kabat-Zinn)
 - Adaptations for BI population (shorter sits)
 - Accommodations (repetitions, written info is simplified)
 - Additions (SLP and Neuropsych concepts)
- Initial interview followed by 8 weekly sessions, 75 minutes in length
- Developed as a new clinical offering for PCS patients (chronic, plateaued)
- Plan to research outcomes

Guided Practice: *Loving Kindness Meditation*



Mindfulness for the Clinician

“If you think you are too small to make a difference, try sleeping with a mosquito.”-Dalai Lama

Meditation for Health Care Professionals

- Meta analysis: Mindfulness meditation has a positive impact on nurses' and nursing students' stress, anxiety, depression, burnout, sense of well-being and empathy
- Important to have a meditation practice yourself in order to teach!
- Mindfulness helps to establish “therapeutic presence”

Van Der Riet, P., Levett-Jones, T., Aquino-Russell, C. (2018) The effectiveness of mindfulness meditation for nurses and nursing students: An integrated literature review. [Nurse Education Today \(65\)](#) 201-211

Therapeutic Presence

Availability

- to the client

Openness

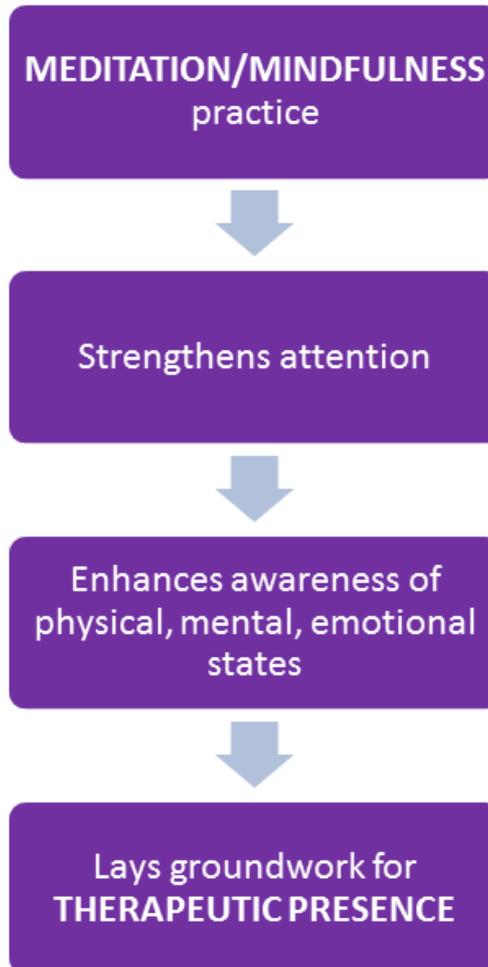
- to one's own experience

Capacity to Respond

- objectively

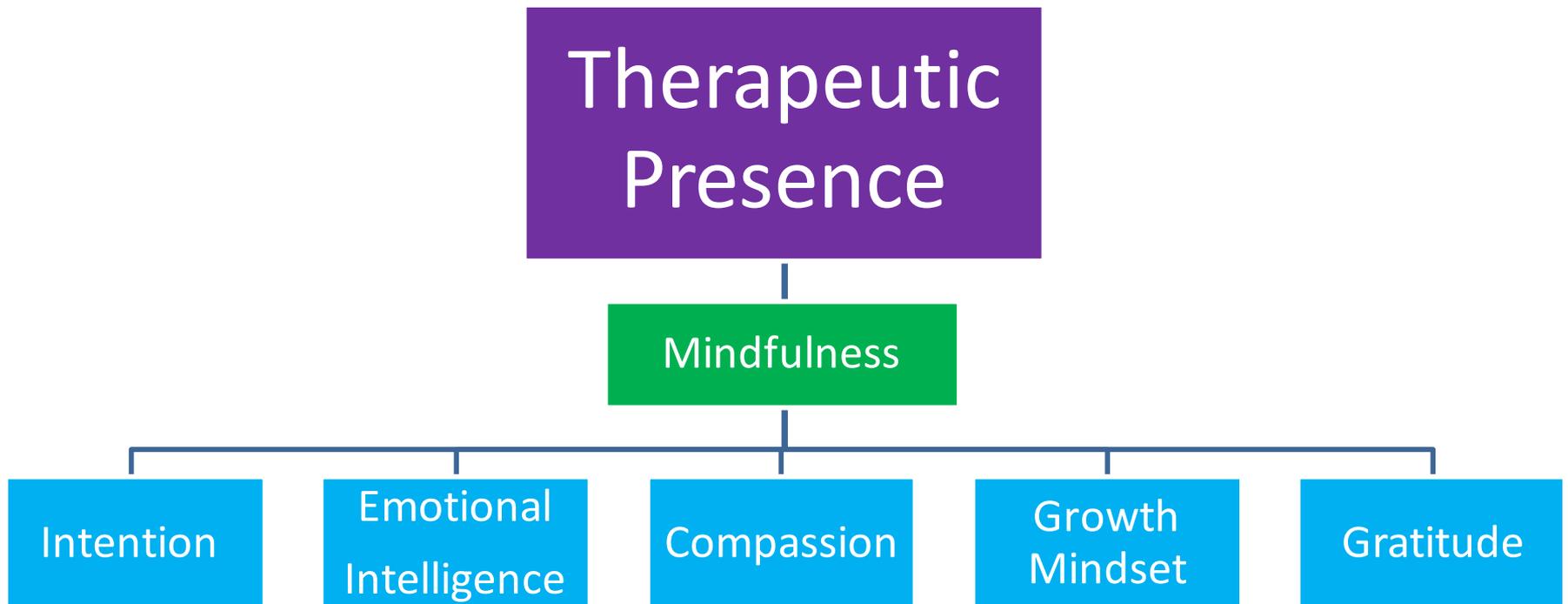
McCollum, EE. & Gehrt, D. (2010). Using Mindfulness Meditation to Teach Beginning Therapists Therapeutic Presence: A qualitative study. *Journal of Marital and Family Therapy*. 36(3). 347-360.

Mindfulness and Therapeutic Presence



© 2018 Jennifer Llado & Brenda Lovette

5 Pillars of Therapeutic Presence



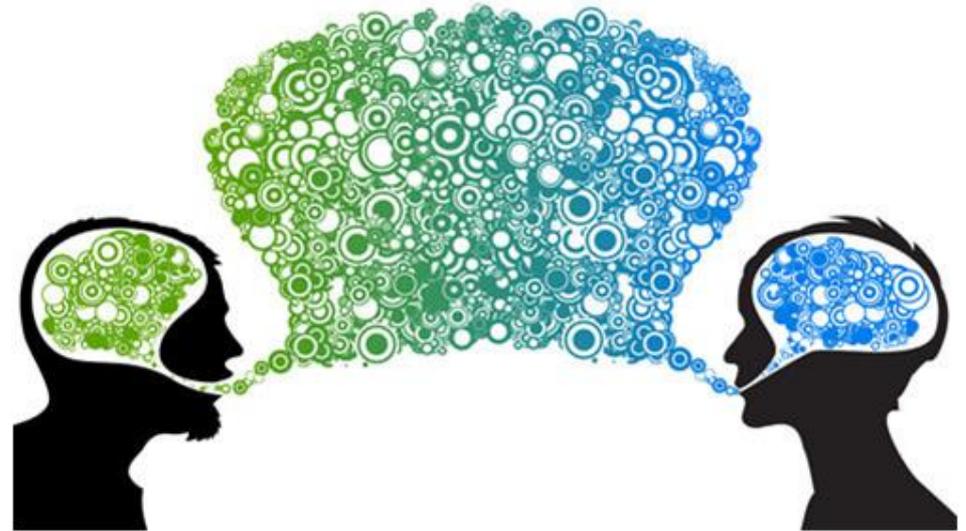
Jen Llado MS MS CCC-SLP and Brenda Lovette MS CCC-SLP RYT © 2018

Practice Teaching/Educating

Turn to your neighbor

- Person with longer hair – explain the benefits of meditation
- Person with shorter hair – guide your partner in one minute mindfulness practice

- Reflections?



Questions and Discussion



