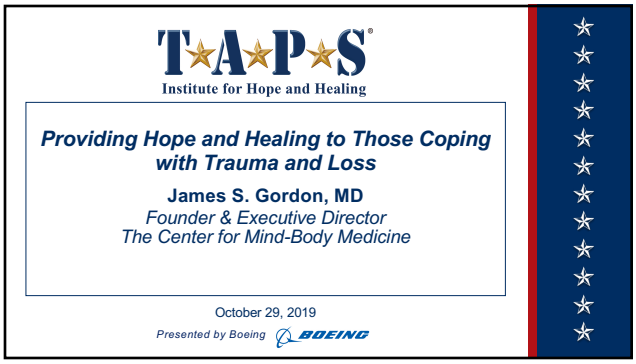
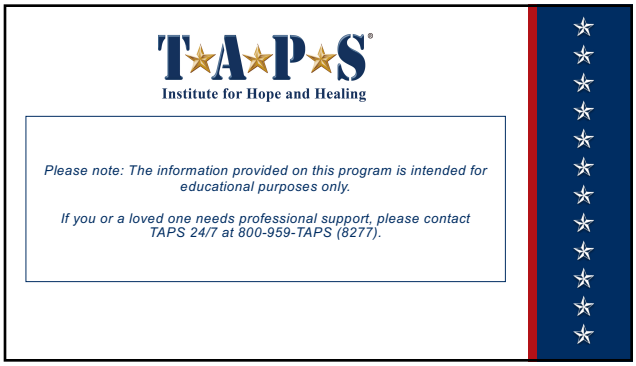

TAPS
Institute for Hope and Healing
Providing Hope and Healing to Those Coping with Trauma and Loss
James S. Gordon, MD
Founder & Executive Director
The Center for Mind-Body Medicine
October 29, 2019
Presented by Boeing
BOEING

1


TAPS
Institute for Hope and Healing
Please note: The information provided on this program is intended for educational purposes only.
If you or a loved one needs professional support, please contact TAPS 24/7 at 800-959-TAPS (8277).

2


"Trauma comes to all of us, and its consequences can be terrible. That's the truth and the bad news. The good news is that all of us can use tools of self-awareness and self-care to heal our trauma and, indeed, to become healthier and more whole than we've ever been."
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3

Disclosure Information

Gordon, James S., MD

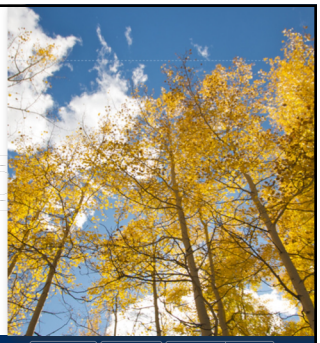
- Founder & Executive Director, The Center for Mind-Body Medicine. Indicated no relevant affiliations or financial interests.
- Speaker has not presented any promotional talks to any pharmaceutical companies within the past 12 months.
- Speaker will not discuss off-label or investigational drug use.

4

Mind-Body Medicine

The understanding that mind and body are inextricably connected and all of us can use tools and techniques of self-care to:

- Relieve stress
- Enhance resiliency
- Reverse the damage that trauma does
- Restore hope



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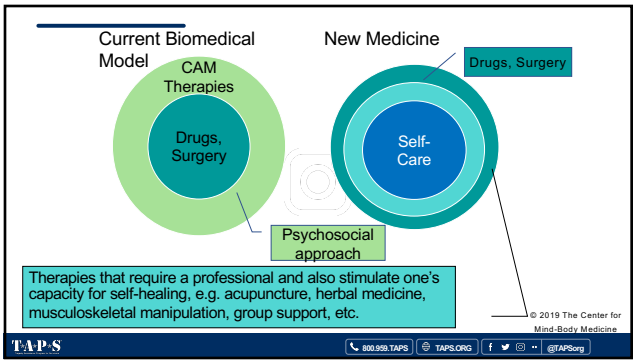

6


Mind-Body Skills Groups Techniques
Autogenics and Biofeedback
Exercise
Nutrition
Prayer
Self-Care
Relaxation
Self-Awareness
Meditation
Imagery/Self-Hypnosis
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7


Meditation and Medicine
• Definition: Relaxed moment-to-moment awareness
• Meditation is central to mind-body medicine and to healing
• Meditation and medicine: come from the same Sanskrit root word, meaning to "take the measure of" and "to care for"
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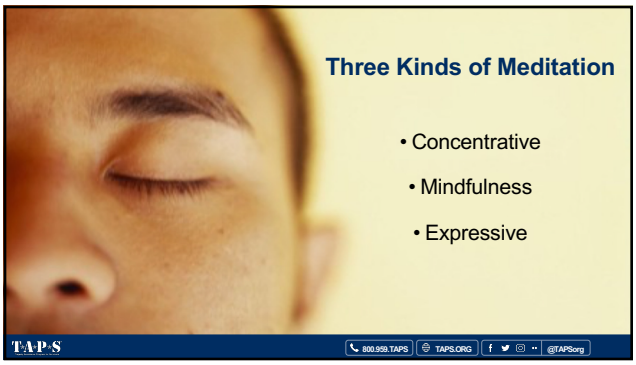
8


Three Kinds of Meditation
• Concentrative
• Mindfulness
• Expressive
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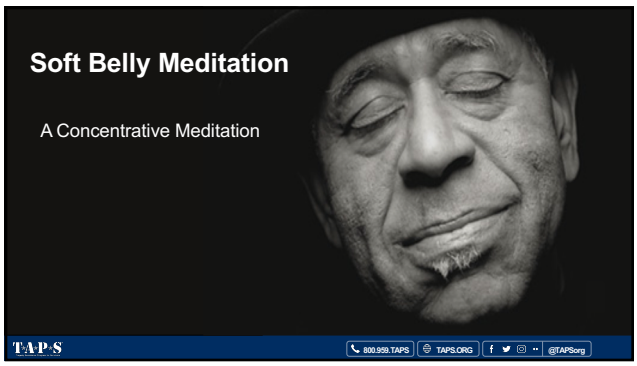
9


Soft Belly Meditation
A Concentrative Meditation
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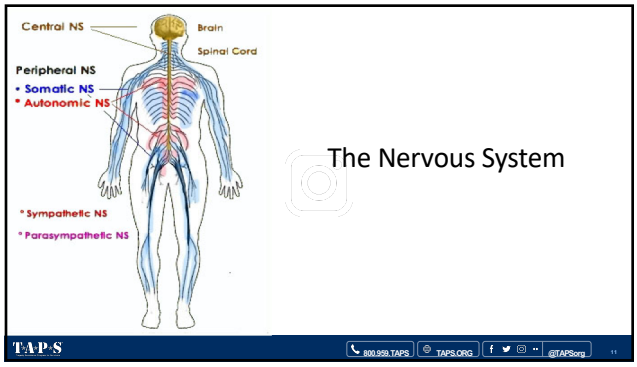
10


Central NS
Brain
Spinal Cord
Peripheral NS
• Somatic NS
• Autonomic NS
• Sympathetic NS
• Parasympathetic NS
The Nervous System
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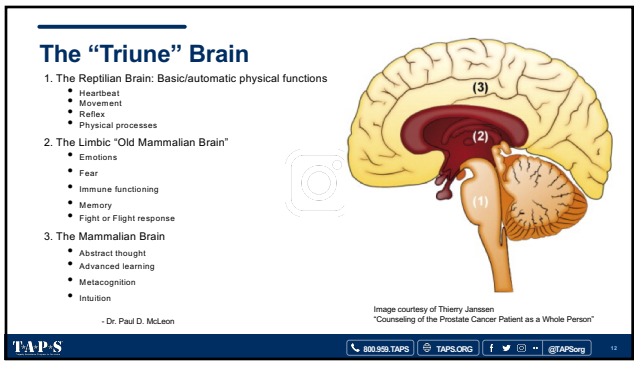
11


The "Triune" Brain
1. The Reptilian Brain: Basic/automatic physical functions
Heartbeat
Movement
Reflex
Physical processes
2. The Limbic "Old Mammalian Brain"
Emotions
Fear
Immune functioning
Memory
Fight or Flight response
3. The Mammalian Brain
Abstract thought
Advanced learning
Metacognition
Intuition
- Dr. Paul D. McLeon
(3)
(2)
(1)
Image courtesy of Thierry Janssen
"Counseling of the Prostate Cancer Patient as a Whole Person"
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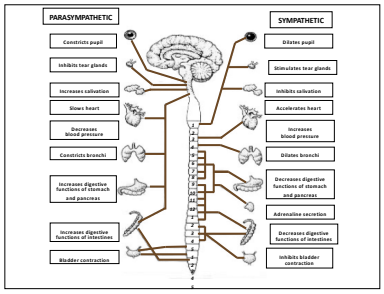
12

Fight or Flight

Walter Cannon, MD (1926) recognized that certain immediate physiological changes occur in response to an acute stressor, consistent with dominant activity of the Sympathetic Nervous System

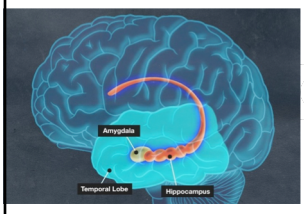
- Danger or stress
- Arousal and preparation
- Increased heart rate
- Faster breathing
- Muscular tension
- Coldness and sweating
- Decreased intestinal activity, generally but increased in distal colon (diarrhea)
- Dilated pupils
- Increased blood viscosity
- Mediated by periorbital, frontal cortex (limbic system), hypothalamus, and autonomic nervous system

13



14

The Limbic System



Hippocampus

- stores and compares memory
- matures late
- helps integrate emotions with thoughts, concepts, social interaction

Amygdala

- assesses safety and danger and helps assess facial expressions
- directly connects to fight or flight
- increased blood flow in depressed people

15

Polyvagal Theory- Hierarchy

1. We are wired to be able to use our "social engagement system" to address a stressful circumstance (myelinated vagus parasympathetic circuit)
2. If social engagement fails, we devolve into more primitive fight/flight (sympathetic circuits dominate)
3. If fight/flight fails, ancient reptilian unmyelinated vagus circuit takes over >> immobilization, dissociation (aka "freeze" response")



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The *Freeze* Response

- "Deer in headlights"; mouse & cat; trapped in war
- In extremely threatening situations, response may be Parasympathetic dominance
  - Most primitive response
  - Inhibition of motor function
  - Slow heart rate, decreased blood pressure, etc.
- Higher baseline anxiety may predispose
- May be persistent in those with PTSD

Mongeau R et al. Neural correlates of competing fear behaviors evoked by an innately aversive stimulus. *J of Neuro.* 2003 May; 23:3855-3868.
Porges, SW. Social engagement and attachment: A phylogenetic perspective. *Ann NY Acad Sci.* 2003 Dec; 1008:31-47.

17

Fight or Flight and Freeze are natural and life saving. They are meant to be quickly turned on and off.

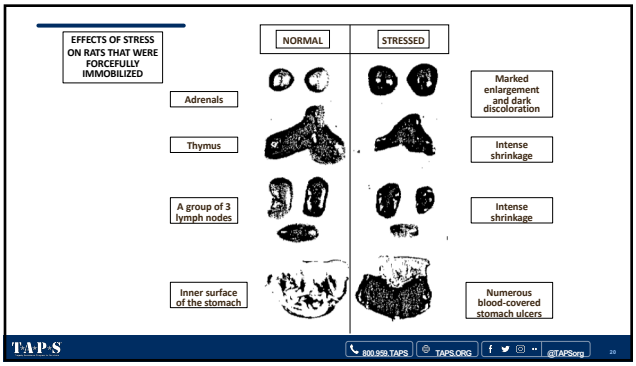
Problems come when they persist.

18

The Stress of Life (Hans Selye,1956)

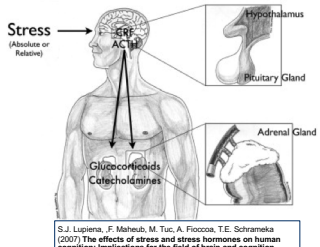
- In general, stress comes when fight or flight is prolonged beyond immediate reaction and/or repeated
- Alarm (Fight or Flight)
- Adaptation
- Exhaustion

19



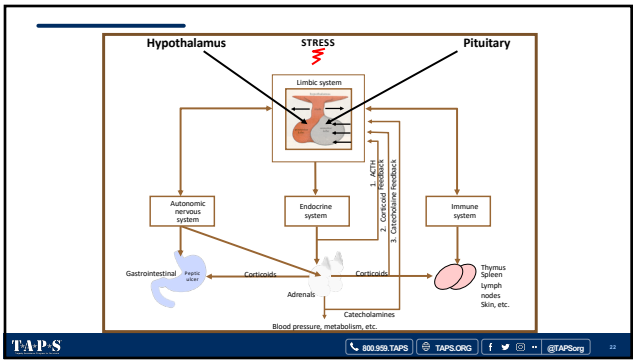
20

The HPA Axis



S.J. Lupiena, ,F. Maheub, M. Tuc, A. Fioccoa, T.E. Schrameka (2007) **The effects of stress and stress hormones on human cognition: Implications for the field of brain and cognition.** *Brain and Cognition*. Volume 65, Issue 3, December 2007, Pages 209–237

21


Hypothalamus
STRESS
Pituitary
Limbic system
1. ACTH
2. Cortisol feedback
3. Catecholamine feedback
Autonomic nervous system
Endocrine system
Immune system
Gastrointestinal
Peptic ulcer
Corticoids
Corticoids
Thymus
Spleen
Lymph nodes
Skin, etc.
Adrenals
Catecholamines
Blood pressure, metabolism, etc.
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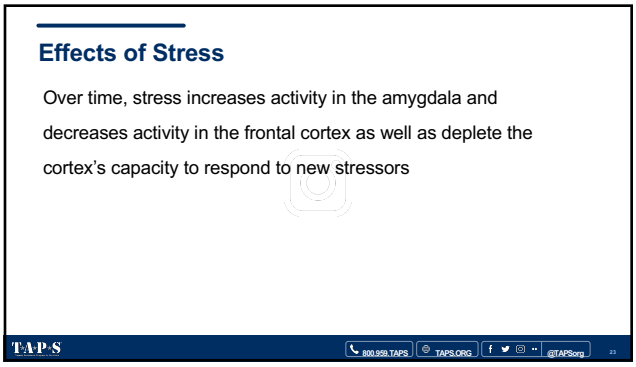
22


Effects of Stress
Over time, stress increases activity in the amygdala and decreases activity in the frontal cortex as well as deplete the cortex's capacity to respond to new stressors
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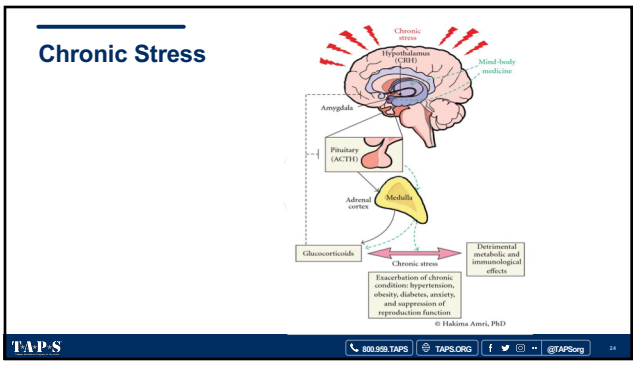
Chronic Stress
Chronic stress
Hypothalamus (CRH)
Mind-body medicine
Amygdala
Pituitary (ACTH)
Adrenal cortex
Medulla
Glucocorticoids
Chronic stress
Detrimental metabolic and immunological effects
Exacerbation of chronic condition: hypertension, obesity, diabetes, anxiety, and suppression of reproduction function
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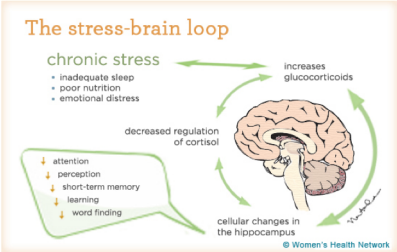
24

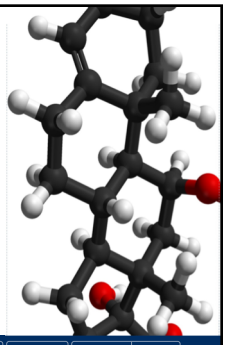
Prolonged Stress Response



25

In Response to Prolonged Stress

↑ Elevated levels of serum cortisol
↑ Abdominal fat deposits
↓ Sensitivity of fat cells
↑ Cholesterol
↑ Appetite
↓ Immunity
↓ Cells in hippocampus



26

Stress Affects DNA (Telomeres) and Shortens Life

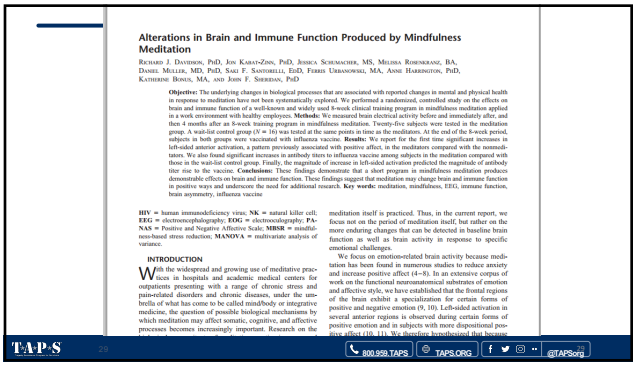
- Telomeres = repetitive regions of DNA at the end of chromosomes associated with longevity. They protect against deterioration in the DNA replication process.
- Considered normal for telomeres to get shorter with age, BUT accelerated telomere shortening has been correlated with stress

Blackburn EH, Greider CW, Szostak JW. Telomeres and telomerase: the path from maize, Tetrahymena and yeast to human cancer and aging. Nat Med. 2006 Oct;12(10):1133-8.

27

Most of what has been damaged can be repaired.

28



Alterations in Brain and Immune Function Produced by Mindfulness Meditation

Richard J. Davidson, PhD, Jon Kabat-Zinn, PhD, Jessica Schumacher, MS, Melissa Rosenkranz, BA, Daniel Muller, MD, PhD, Saki F. Santorelli, EdD, Ferris Urbanowski, MA, Anne Harrington, PhD, Katherine Bonus, MA, and John F. Sheridan, PhD

Objective: The underlying changes in biological processes that are associated with reported changes in mental and physical health in response to meditation have not been systematically explored. We performed a randomized, controlled study on the effects on brain and immune function of a well-known and widely used 8-week clinical training program in mindfulness meditation applied in a work environment with healthy employees. **Methods:** We measured brain electrical activity before and immediately after, and then 4 months after an 8-week training program in mindfulness meditation. Twenty-five subjects were tested in the meditation group. A wait-list control group (*N* = 16) was tested at the same points in time as the meditators. At the end of the 8-week period, subjects in both groups were vaccinated with influenza vaccine. **Results:** We report for the first time significant increases in left-sided anterior activation, a pattern previously associated with positive affect, in the meditators compared with the nonmeditators. We also found significant increases in antibody titers to influenza vaccine among subjects in the meditation compared with those in the wait-list control group. Finally, the magnitude of increase in left-sided activation predicted the magnitude of antibody titer rise to the vaccine. **Conclusions:** These findings demonstrate that a short program in mindfulness meditation produces demonstrable effects on brain and immune function. These findings suggest that meditation may change brain and immune function in positive ways and underscore the need for additional research. **Key words:** meditation, mindfulness, EEG, immune function, brain asymmetry, influenza vaccine

HIV = human immunodeficiency virus; **NK** = natural killer cell; **EEG** = electroencephalography; **EOG** = electrooculography; **PANAS** = Positive and Negative Affective Scale; **MBSR** = mindfulness-based stress reduction; **MANOVA** = multivariate analysis of variance.

INTRODUCTION

With the widespread and growing use of meditative practices in hospitals and academic medical centers for outpatients presenting with a range of chronic stress and pain-related disorders and chronic diseases, under the umbrella of what has come to be called mind/body or integrative medicine, the question of possible biological mechanisms by which meditation may affect somatic, cognitive, and affective processes becomes increasingly important. Research on the meditation itself is practiced. Thus, in the current report, we focus not on the period of meditation itself, but rather on the more enduring changes that can be detected in baseline brain function as well as brain activity in response to specific emotional challenges.

We focus on emotion-related brain activity because meditation has been found in numerous studies to reduce anxiety and increase positive affect (4–8). In an extensive corpus of work on the functional neuroanatomical substrates of emotion and affective style, we have established that the frontal regions of the brain exhibit a specialization for certain forms of positive and negative emotion (9, 10). Left-sided activation in several anterior regions is observed during certain forms of positive emotion and in subjects with more dispositional positive affect (10, 11). We therefore hypothesized that because

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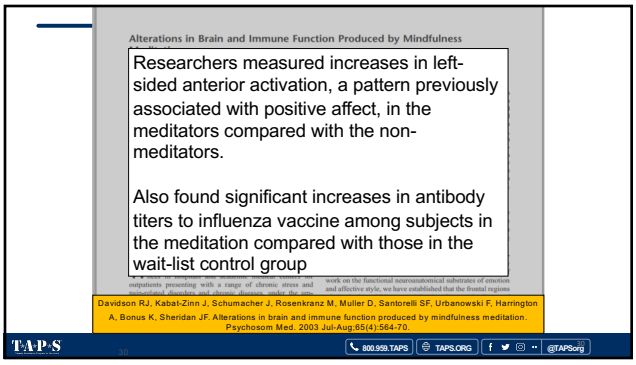


Alterations in Brain and Immune Function Produced by Mindfulness

Researchers measured increases in left-sided anterior activation, a pattern previously associated with positive affect, in the meditators compared with the non-meditators.

Also found significant increases in antibody titers to influenza vaccine among subjects in the meditation compared with those in the wait-list control group

outpatients presenting with a range of chronic stress and work on the functional neuroanatomical substrates of emotion and affective style, we have established that the frontal regions

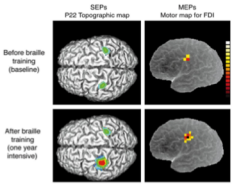
Davidson RJ, Kabat-Zinn J, Schumacher J, Rosenkranz M, Muller D, Santorelli SF, Urbanowski F, Harrington A, Bonus K, Sheridan JF. Alterations in brain and immune function produced by mindfulness meditation. Psychosom Med. 2003 Jul-Aug;65(4):564-70.

30

Neuroplasticity

- The brain's ability to reorganize itself by forming new neural connections, experiences, and actions can cause structural changes in the brain

Ex: Enlargement of the sensorimotor cortical area devoted to the reading finger found in those learning to read braille.



- Major implications for our understanding of one's potential to heal and change behavior

31

Stress Reduction and Structural Changes in the Amygdala

- The amygdala is known to register threats and is a critical part of the "fight or flight" response. Chronic stress is associated with greater connectivity between the bilateral amygdala and anterior cingulate.
- Stronger connections between the bilateral amygdala and anterior cingulate is the basis of fear memory formation
- Studies have shown that a 3-day intensive mindfulness meditation training intervention reduced right amygdala and anterior cingulate connectivity in a sample of stressed unemployed community adults (N=35)
- Stress may increase the connections between the amygdala and anterior cingulate cortex but brief training in mindfulness meditation could reverse these effects

Taren, A. A., Gianaros, P. J., Greco, C. M., Lindsay, E. K., Fairgrieve, A., Brown, K. W., ... Marsland, A. L. (2015). Mindfulness meditation training alters stress-related amygdala resting state functional connectivity: a randomized controlled trial. *Social Cognitive and Affective Neuroscience*, nsv066.

32

Neurogenesis

- The process by which new brain and nerve cells are generated from stem cells
- Eriksson first demonstrated growth of new cells in the adult human hippocampus - *memory/emotion processing*
- Newer research suggests that neurogenesis also takes place in cerebral cortex – *executive function*
- Neurogenesis shown in additional areas in animal models

Taren, A. A., Gianaros, P. J., Greco, C. M., Lindsay, E. K., Fairgrieve, A., Brown, K. W., ... Marsland, A. L. (2015). Mindfulness meditation training alters stress-related amygdala resting state functional connectivity: a randomized controlled trial. *Social Cognitive and Affective Neuroscience*, nsv066.

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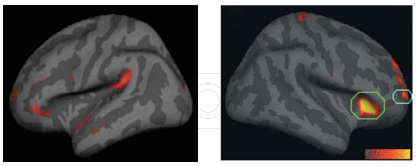
Meditation Changes Our Brain Anatomy



Areas of increased thickness in red: insula, Brodmann area (BA) 9/10, somatosensory cortex, auditory cortex.

Lazar, S.W., Kerr, C.E., Wasserman, R.H., Gray, J.R., Greve, D.N., Treadway, M.T., McGarvey, M., Quinn, B.T., Dusek, J.A., Benson, H., Rauch, S.L., Moore, C.I., Fischl, B. Meditation experience is associated with increased cortical thickness. *Neuroreport*. 2005 Nov; 16(17): 1893-97

34

Meditation – cortical thickness

- The brains of typical western meditation practitioners (about 2-6 hours weekly) were compared to those with no experience of meditation
- Brain regions associated with attention, interoception (perception of internal sensation) and sensory processing were thicker in the meditation group
- Among those who meditate cortical thickness increased with years of meditation

Lazar, S.W., Kerr, C.E., Wasserman, R.H., Gray, J.R., Greve, D.N., Treadway, M.T., McGarvey, M., Quinn, B.T., Dusek, J.A., Benson, H., Rauch, S.L., Moore, C.I., Fischl, B. Meditation experience is associated with increased cortical thickness. *Neuroreport*. 2005 Nov; 16(17): 1893-97

35

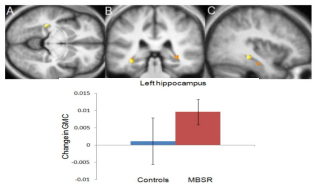
Meditation increases brain matter

- A longitudinal study analyzed the brains of meditation-naive participants before and after an 8-week Mindfulness-Based Stress Reduction course
- Results showed significantly increased gray matter concentration in regions involved in learning and memory processes, emotion regulation, self-referential processing, and perspective taking:
  - Left Hippocampus
  - Posterior Cingulate Cortex
  - Temporo-parietal Junction
  - Cerebellum

Hölzel, B.K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S.M., Gard, T., Lazar, S.W. Mindfulness practice leads to increases in regional brain gray matter density. Psychiatry Res. 2011 Jan;191(1):36-43.

36

Meditation Increases Brain Matter Density in Specific Regions



Gray matter concentration in the left hippocampus.

Hölzel, B.K., Carmody, J., Vangel, M., Congleton, C., Yerramsetti, S.M., Gard, T., Lazar, S.W. Mindfulness practice leads to increases in regional brain gray matter density. Psychiatry Res. 2011 Jan;191(1):36-43.

37

We Can Induce Neuroplasticity and Neurogenesis

Other natural, non-pharmacological techniques including psychotherapy, meditation, and exercise can produce these positive changes.

Goldapple, K., et al. Modulation of cortical-limbic pathways in major depression: treatment – specific effects of cognitive behavior therapy. *Arch Gen Psychiatry.* 2004. 61(1):34-41.

Rhodes, J.S., et al., Exercise increases hippocampal neurogenesis to high levels but does not improve spatial learning in mice bred for increased voluntary wheel running. *Behav Neurosci.*2003.117(5):1006-16.

van Praag, H., G. Kempermann, and F.H. Gage, Running increases cell proliferation and neurogenesis in the adult mouse dentate gyrus. *Nat Neurosci.* 1999. 2(3):266-70.

van Praag, H., et al., Exercise enhances learning and hippocampal neurogenesis in aged mice. *J Neurosci.* 2005. 25(38):8680-5.

Lazar, S.W., et al., Meditation experience is associated with increased cortical thickness. *Neuroreport.* 2005.16(17):1893-7.

38

Meditation Increases Telomerase Activity

Intensive meditation practice promotes increase in telomerase activity and may well enhance telomere length, the lifespan of cells and, indeed, human longevity

Jacobs, T. L., Epel, E. S., Lin, J., Blackburn, E. H., Wolkowitz, O. M., Bridwell, D. A., ... & King, B. G. (2011). Intensive meditation training, immune cell telomerase activity, and psychological mediators. *Psychoneuroendocrinology*, *36*(5), 664-681.

39

Shaking and Dancing: An Expressive Meditation that Helps us Move Through and Beyond Trauma

- Stress reducing physical activity
- Breaks up physical tension and mental rumination
- Energizes trauma-depleted (frozen) bodies
- Encourages emotional awareness and expression

40

Guided Imagery

Imagery is the language of the unconscious

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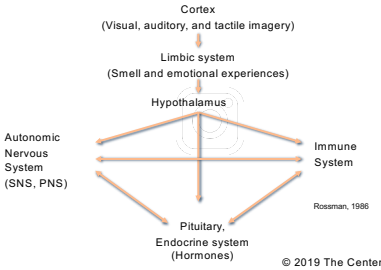
Imagery and the Brain



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Positron Emission Tomography (PET Scan)

PET Scans indicate section of brain that is *active*

Picturing Visual Image	ACTIVATES	Optic Cortex
Imagining Listening	ACTIVATES	Auditory Cortex
Imagining Touch	ACTIVATES	Sensory Cortex

Rossman, 1986

43

Imagine a Lemon

44

Physiological Functions Potentially Affected by Imagery

- Heart rate
- Breathing
- Blood flow
- Blood pressure
- Immune function
- Temperature
- Waking/ sleeping rhythms
- Digestion
- Sexual function

Crowther J. (1983). Stress management training and relaxation imagery in the treatment of essential hypertension. J Behavioral Medicine. Jun 6(2) 169-187. Disbrow, E.A., Bennett, H.L., Owings, J.T. (1993). Effect of preoperative suggestion on postoperative gastrointestinal motility. West J. Med 158(5)488-492. Louie SW. (2004). The effects of guided imagery relaxation in people with COPD. Occup Ther Int. 11(3):145-59.

45

Clinical Applications

- Physiological Relaxation
  Stress Management
- Pain Reduction and Relief
- Modulation of Mood
- Stimulating Immune Response
- Tolerating Difficult Procedures
- Discovering Meaning/ Insight into Illness
  Enhancing Self Awareness
- Encouraging Active Participation in Self Care/ Empowering Patient

46

The body doesn't discriminate between real crisis and imagined one so, both cause alarm and fear to flood the nervous system and stimulate adrenal response and prepare for "fight or flight"

This is good in a real emergency, but if worry becomes a way of life, a habit, then we are vulnerable to illness

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Guided Imagery

Safe Place and Wise Guide

48

Group Support

A universally applicable approach;
the research is as good as that for many standard treatments.

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Our Model

- Mind-Body Skills Groups
  - 8-10 people
  - 10 sessions - 2 hours each
- Small group format - highly structured
- Integrates well with existing systems
- Mind-body approaches - experiential
  - biofeedback, meditation
  - guided imagery, yoga
  - words, drawings, movement

Educational vs. Medical

Group Support

Psychological Self-Care

Self-Expression

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Mind Body Skills Groups

Principles

- Meditative
- Safe Place
- Respect
- Educational
- Staying in the moment
- Leader as teacher and real person
- Power of each person to know him/herself
- Power of each person to care for him/herself
- Mutual—we are all mirrors for one another
- Group as growth organism
- Balance of structure and flexibility

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CMBM Model

- Scientifically validated approach
- Practical
- Learn techniques in small groups as students, not patients
- A new skill taught in each group
- Safe place with organized and consistent structure based on clear ground rules
- Helps people share without forcing
- MEDITATIVE: Each person becomes aware of his/her thoughts, feelings, and sensations; no analyzing, interpreting, advising, or interrupting

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CMBM Model

- Engages people in actively helping themselves
- Focuses on strengths and capacity for self-reliance rather than psychopathology
- Optimism rather than past trauma
- Builds resiliency and recovery
- Group format naturally reproduces aboriginal models of help and healing
- Interfaces well with therapeutic and educational approaches
- Integrates well within existing structures: clinics, hospitals, community group

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Trauma

Trauma means “injury”—
to our mind, body, and spirit

It will come to all of us

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Where Does Trauma Come From?

Causes of Trauma
War
Torture
Natural disasters
Violence in the Community
Racism and Historical Trauma
Loss and Separation
Child Abuse
Spousal Abuse
Rape and other violent crimes
Health crisis—life threatening illness
Health care itself
Old Age

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Overview of Physiological Basis of Trauma

Trauma causes changes above and beyond that of stress in the following:

- Brain Structure
- Neurological Functioning
- Cellular Performance
- Hormone Secretion

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Biological Structure of Traumatic Stress

Structural changes to the brain have been identified in trauma-exposed people in three key areas:

1. Hyperactivation of the Amygdala
2. Alteration in Hippocampal Functioning and Volume
3. Hypoactivation of the Medial Prefrontal Cortex (encompassing the Anterior Cingulate Cortex, ACC), Ventromedial Prefrontal Cortex, Subcallosal Cortex, and Orbitofrontal Cortex) produce hypersensitivity to potential trauma and decreased ability to mobilize judgment, make decisions, feel grounded in body and have empathy for others

Patel R, Spreng RN, Shin LM, Girard TA. Neurocircuitry models of posttraumatic stress disorder and beyond: A meta-analysis of functional neuroimaging studies. *Neuroscience & Biobehavioral Reviews*. 2012 Oct; 36(9):2130-42.

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Hormonal Changes

- Increased levels of Catecholamine, CRF, ACTH, cortisol, opioids
- Elevated levels of cortisol and other stress hormones interrupt circadian cycles
- When the level of stress is very high and hormone secretion (particularly norepinephrine and epinephrine) is in excess, there will be inhibition of conscious memory (amnesia) and dissociation
- Prolonged arousal in animals may cause permanent change
- If more aggressive, then aggression
- If defensive, then become more inhibited
- Also, physiological arousal may trigger memories and memories trigger physiological arousal
- More evidence of a Feedback Process

Bremner JD, Narayan M. The effects of stress on memory and the hippocampus throughout the life cycle: implications for childhood development and aging. *Development Psychopathology*. 1998; 10(4):871-885.

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Hormonal Changes

The HPA axis has been implicated as playing a fundamental role in the psychobiology of trauma

- The HPA axis provides a feedback loop of hormones to regulate stress
- Extreme stress sensitizes the HPA feedback process
- "An inverse relation has been found between HPA activity and months since onset of chronic stress, such that morning cortisol levels, daily cortisol volume, and post-DEX cortisol levels decrease over time (Miller et al., 2007)."
- **Overall daily cortisol levels are significantly lower in those diagnosed with PTSD** (though they were likely higher in the period immediately after the trauma)

Morris MC, Compas BE, Garber J. Relations among posttraumatic stress disorder, comorbid major depression, and HPA function: a systematic review and meta-analysis. *Clin Psychol Rev*. 2012 Jun;32(4):301-15.

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Childhood Trauma

The brain and the entire organism are particularly vulnerable in childhood during development; particularly brain development is still incomplete.

- The corpus callosum, which joins the two cerebral hemispheres develops at an accelerated rate between 6 months and 3 years, with development continuing into the 20s
- Development of limbic system (emotions), prefrontal cortex (planned behavior, memory, etc.) also continues into 20s and beyond

Debellis, M et al. Developmental traumatology part II: brain development. *Biological Psychiatry*. 1999l 45:1271-84.

60

Adverse Childhood Experiences (ACE) Study

9,508 survey respondents in San Diego who had experienced 4+ categories of exposure to child abuse had:

- 12 times the rate of alcoholism, drug abuse, depression, suicide attempts
- 2- to 4-fold increase in smoking, poor self-rated health, ≥50 sexual partners, and STDs
- 1.4-1.6 times the rate of physical inactivity and severe obesity
- Dose-response relationship between abuse and rates of: ischemic heart disease, cancer, chronic bronchitis or emphysema, hepatitis or jaundice, skeletal fractures, and poor self-rated health

Felitti VJ, et al. Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults. The Adverse Childhood Experiences (ACE) Study. *Am J Prev Med*. 1998 May;14(4):245-58.

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Epigenetics and Trauma

Epigenetics

- Which genes are turned on/off, when and where
- Ecology (environment/experiences)
- Stress-induced changes in gene expression

Parental Stress and Children's Genes

- Parents' stress leaves lasting marks on children's genes
- Higher stress levels reported by mothers during their child's first year correlated with methylation on 139 DNA sites in adolescents

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The Epigenetics of Trauma

- Researchers observed the effect of childhood abuse on the gene expression profiles
- Sixty-one individuals met criteria for current PTSD, of which 32 reported a history of childhood maltreatment and 29 did not report childhood abuse
- All individuals reported trauma in adulthood
- Gene expression profiles of PTSD patients with childhood abuse compared to non-childhood abuse were almost completely non-overlapping (98%)
- Childhood abuse has an influence on biological processes via epigenetic modifications

Mehta, D., Klengel, T., Conneely, K. N., Smith, A. K., Altmann, A., Pace, T. W., ... Binder, E. B. (2013). Childhood maltreatment is associated with distinct genomic and epigenetic profiles in posttraumatic stress disorder.*Proceedings of the National Academy of Sciences of the United States of America*, *110*(20), 8302–8307. doi:10.1073/pnas.1217750110

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Mind-Body Approaches

Balance the Autonomic Nervous System

- Directly address issues of hyper-arousal by promoting physiological relaxation response
- Balance of the sympathetic fight or flight with the parasympathetic relaxation response

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Mind-Body Approaches

Freezing and Avoidance

- Remedy the freeze response by using active techniques
- Offer, through meditative practice and a meditative approach, a more relaxed perspective on trauma, traumatic memories, flashbacks, dreams, etc.
- Use activities that are both left and right brain and may therefore encourage reintegration of traumatic experience and the emotional reaction it produces

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Mind-Body Approaches

Open Up Options

- Stimulate imaginative and cognitive integration through the use of drawings, imagery—possibly promoting integration across the corpus callosum and among ANS, limbic system and both hemispheres of cortex

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Mind-Body Groups and Trauma

- Provide a safe place, which permits those who are avoidant to come easily into contact with others
- This may evoke the "tend and befriend" response of bonding under stress, a process in which cortisol and catecholamines decrease and oxytocin and opioids increase

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Mind-Body Skills Groups & PTSD in Postwar Kosovar Adolescents

- 82 high school students met criteria for PTSD measured by Harvard Trauma Questionnaire
- Program conducted by teachers in an educational, supportive small group setting and included meditation, guided imagery, breathing techniques, biofeedback, and self-expression through words, drawings, and movement
- **Results:** Students having symptoms indicating PTSD was significantly reduced from 100% to 18%; reduction in symptoms maintained at 3-month follow-up

Gordon JS, Staples JK, Blyta A, Bytyqi M, Wilson AT. Treatment of Posttraumatic Stress Disorder in Postwar Kosovar Adolescents Using Mind-Body Skills Groups: A Randomized Controlled Trial. *Journal of Clinical Psychiatry*. 2006. 69(9):1469-76.

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Mind-Body Skills Groups & PTSD in Gaza's Children

- 500 children participated in mind-body skills groups
- Prior to program, 26% of children had PTSD symptoms
- 56% of those qualifying as having PTSD also qualified as having depression using Children's Depression Inventory
- PTSD symptom scores were significantly decreased following the program (by 56%); improvement partially maintained at 7-month follow-up with a 39% decrease in scores compared to baseline
- Depression scores significantly decreased following program (29%); improvement partially maintained at 7-month follow-up with a 20% decrease in scores compared to baseline
- Children felt more hopeful about their future and their lives –statistically significant decrease in hopelessness scores (28% decrease); improvement fully maintained at follow-up

Staples JK, Abdel Atti JA, Gordon JS. Mind-body skills groups for posttraumatic stress disorder and depression symptoms in Palestinian children and adolescents in Gaza. *International Journal of Stress Management*. 2011;18(3):246-62.

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"Stress Biomarkers in Medical Students Participating in a Mind-Body Medicine Skills Program"

Georgetown University Medical Students enrolled in Mind Body Skills Group were tested for biomarkers of stress. Compared to control, they displayed:

- Significant reduction in Salivary Cortisol Levels
- Lower levels of exam-time stress measures
- Decreased dehydroepiandrosterone-sulfate levels (DHEA-S)
- Decreased testosterone levels

Maclaughlin, B.W., Wang, D., Noone, A.M., Liu, N., Harazduk, N., Lumpkin, M., Haramati, A., Saunders, P., Dutton, M., Amri, H. Stress biomarkers in medical students participating in a mind body medicine skills program. *Evid Based Complement Alternat Med*. 2011;2011:950461

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Mind-Body Skills Groups for Medical Students

- Paper describes the Mind-Body Skills Groups model designed by CMBM and surveys its use in 15 medical schools
- Published research demonstrates Mind-Body Skills groups model's effectiveness in reducing stress in medical students, enhancing students' experience of medical education, and in helping them look forward more confidently and hopefully to becoming physicians

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Gaza

- Represents ***the largest and most effective program for healing population-wide trauma in the world***.
- 900 health and mental health professionals trained
- More being trained
- There are as many as 100-300 mind-body skills groups meeting every week; each group lasts 10 weeks
- One group ends, the next one begins

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Gaza (cont.)

- 50,000+ people total have participated in a group
- 120,000 additional individuals using Mind-Body approaches
- Over 170,000 total individuals using Mind-Body Medicine
- Supervision groups have been meeting weekly for 8 years
- Partnerships with the Ministry of Health, Education, Social Welfare, with United Nations Relief and Works Agency and over 200 local and international non-governmental agencies

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The Center for Mind-Body Medicine

The Center for Mind-Body Medicine's program…is the most comprehensive of all of them, giving participants a variety of different strategies to choose from: breathing, meditation, guided visual imagery, biofeedback, self-awareness, dance, self-expression, drawing. And it is the one with the strongest evidence that it works to cure PTSD."

The New York Times
"For Veterans, a Surge of New Treatments for Trauma" by Tina Rosenberg (September 26, 2012)

- Founded in 1991 by James S Gordon M.D., Professor of Psychiatry and Family Medicine at Georgetown Medical School and Chairman of the White House Commission on Complementary and Alternative Medicine Policy under Presidents Clinton and G.W. Bush
- Our mission: to make self-awareness, self-care, and group support central to all health care, to the training of all health professionals, and the education of our children.

  To create a healing community and a community of healers.
- 10,000 health professionals, educators, and community leaders trained in CMBM's pioneering models of mind-body medicine (self-care, self- awareness, group support) and nutrition
- An international faculty of more than 160
- Programs for healing population wide trauma and stress in:
  - Kosovo
  - Israel
  - Gaza
  - Haiti
  - Southern Louisiana after Hurricane Katrina
  - South Dakota on the Pine Ridge Indian Reservation
  - Houston after Hurricane Harvey
  - Jordan with Syrian refugees
  - With 800,000 US Veterans in VISN-8 and in 30 other military bases and VA facilities
  - In Broward County, Florida after the shootings at Marjory Stoneman Douglas High School
  - In Puerto Rico following Hurricane Maria
  - With opioid addiction in Allegany County, Maryland
  - Programs in development: South Sudan, Somaliland, and The Democratic Republic of Congo

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Healing Population-Wide Trauma

Administered by CMBM staff and faculty:
Outreach
PTP - Initial training
ATP - Advanced training

Transfer leadership to Supervisory local faculty
Leadership training
Local faculty-led training

Provide support to local faculty
Ongoing supervision, consultation and training
Program evaluation

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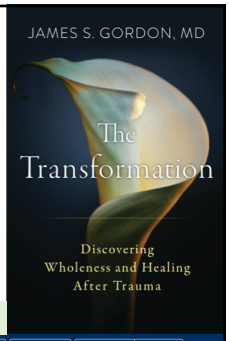
The Transformation
Discovering Wholeness and Healing After Trauma
By: James S. Gordon, MD

A world-recognized authority in integrative medicine presents the most comprehensive evidence-based program to reverse the psychological and biological damage caused by trauma and transform its pain and loss into opportunities for finding growth in love and compassion, and finding meaning and purpose.

Scan here for more information
or visit **cmbm.org/thetransformation**



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Please note: The information provided on this program is intended for educational purposes only.

If you or a loved one needs professional support, please contact TAPS 24/7 at 800-959-TAPS (8277).

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About the TAPS Institute for Hope and Healing®

Launched in March 2018 through an alliance with HFA, the TAPS Institute for Hope and Healing® serves as a resource and training center, providing programs for both professionals working in the field of grief and loss and the public.

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Upcoming TAPS Institute Programs

November 12 — **Rebuilding Faith and Hope After Loss**
Live Webinar, Noon-1:30 pm ET
With **Kevin Quiles**, MDiv, LPC, RYT, Counselor, Body Mind Metaphor

November 14 — **Collage Therapy: Grief, Loss, and the Expressive Arts**
In-person workshop at TAPS Institute 10am-4pm, 5 CEs available
With **Sharon Strouse**, MA, ATR-BC, LCPAT, Art Therapist at the Kristen Rita Strouse Foundation/ Artful Grief, TAPS Advisory Board Member

November 20 — **So Much Has Changed: Managing Secondary Loss During the Holidays**
Live Webinar, Noon-1:00 pm ET
With **Ken Doka**, PhD, MDiv, TAPS Advisory Board Member

Visit ***taps.org/institute*** to learn more and RSVP!

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