

EMOTIONAL BRAIN TRAINING AND SUBSTANCE USE DISORDERS

Presented by:
**Laurel M. Mellin, PhD
Dikla Blumberg, PhD**
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Learning Objectives

- *Define emotional brain training and discuss the science behind it.*
- *Explain implications of EBT on addiction and extreme behaviors.*
- *Discuss EBT methods used in healthcare settings.*

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Poll Question


How many participants are familiar with Emotional Brain Training personally, professionally, or otherwise?

3



The History of EBT

- ◆ 1980 – Not treating the root cause
- ◆ 1986 – Train families in emotional tools
- ◆ 1998 – Use tools to treat adult problems
- ◆ 2007 – Method neuroscience-based
- ◆ 2014 – Evidence based (10 studies)
UCSF, Weill-Cornell Medical College, U Kentucky
- ◆ 2015 – Tech-assisted EBT Community



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EMOTIONAL BRAIN TRAINING SCIENCE



Self-regulation

- Most problems are symptoms of failure of self-regulation.
- Failure of self-regulation encoded in circuits that promote stress reactivity and reward center dysregulation.
- Dominance of these circuits causes 80% of health problems, including substance use disorders.



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Self-regulatory Circuits



- Integrate emotions, expectations and responses.
- Are sub-cortical, stored in implicit memory systems of the emotional brain, activated in 3/10,000th of a second with no source attribution.
- Can be homeostatic (effective and flickering) or allostatic (ineffective and stuck).

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Homeostatic Self-regulatory Circuits



Repeated experiences of effective emotional processing encodes homeostatic circuits:

- ◆ Effective emotional response
- ◆ Reasonable expectations
- ◆ Effective corrective response

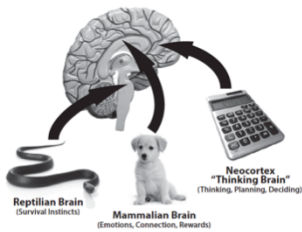


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Circuits Traverse the Whole Brain



The Emotional Brain:
Mammalian Brain + Reptilian Brain



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Integrate stress and reward response systems

1 Emotions
A stimulus enters the mammalian brain and triggers an effective emotional response, neither overreacting or underreacting.

2 Expectations
The thinking brain and the emotional brain stay connected and we become aware of reasonable expectations for our response to the stressor.

3 Response
We spiral up and respond effectively to the stressor. We feel more connected to ourselves and feel good or great. We experience positive, productive stress.

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Effective Emotional Processing

<p>Perceived State</p> <ol style="list-style-type: none"> 1. Feeling Great 2. Feeling Good 3. A Little Stressed 4. Definitely Stressed 5. Stress Overload 	<p>Dominant Area</p>
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Mellin, L. (2010) *Wired for Joy: A Revolutionary Method for Creating Happiness Within* (Hay House).

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5 States & 5 Processes

<p>Dyadic Regulation</p> <ol style="list-style-type: none"> 1. Positive emotions 2. Check feelings and needs 3. Express feelings 4. Feelings & Expectations 5. Reassurance 	<p>Dominant Area</p>
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Mellin, L. (2010) *Wired for Joy: A Revolutionary Method for Creating Happiness Within* (Hay House).

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**Core Circuits Are Adaptive:
Promote Resilience**



- ◆ I do exist.
- ◆ I am not bad.
- ◆ I do have power.
- ◆ I can do good.
- ◆ I can love.
- ◆ I am worthy.
- ◆ I can have joy.

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Survival Circuits are Adaptive




- ◆ **Stress:**
I get my safety from emotionally connecting to myself.
- ◆ **Reward:**
I am motivated by eudonic rewards.

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Allostatic Self-regulatory Circuits

Repeated experiences of ineffective emotional processing encodes allostatic circuits:

- ◆ Ineffective emotional response
- ◆ Unreasonable expectations
- ◆ Ineffective corrective response



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Promote Stress Reactivity and Reward Center Dysregulation

1 Emotions
A stimulus enters the mammalian brain and triggers an ineffective emotional response, either overreacting or underreacting.

2 Expectations
The thinking brain and the emotional brain disconnect and we have unreasonable expectations for our response to the stressor.

3 Response
We spiral down, responding ineffectively to the stressor. We feel more disconnected from ourselves and feel numb or bad. We experience negative, unproductive stress.

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Core Circuits Are Maladaptive: Promoting Stress Reactivity

- ◆ I do not exist.
- ◆ I am bad.
- ◆ I do not have power.
- ◆ I cannot do good.
- ◆ I cannot love.
- ◆ I am not worthy.
- ◆ I cannot have joy.

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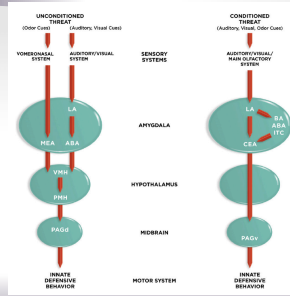
Survival Circuits are Maladaptive

- ◆ **Stress:**
I get my safety from emotionally connecting to behaviors, emotions & relationships.
- ◆ **Reward:**
I am motivated by hedonic rewards.

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Learned Trigger of Survival Drives

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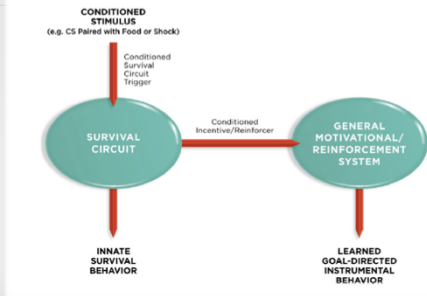


Neuron 73, February 23, 2012 ©2012 Elsevier Inc.

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Learned Response to Trigger

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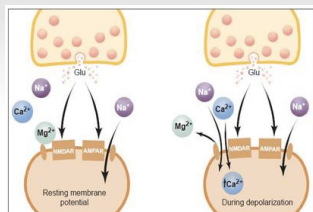


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Long-term Potentiation: Over-remembered by the Brain

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A simple model of NMDA Receptors (Image from: Robert C. Malenka, et al. Long-Term Potentiation: A Decade of Progress? Science. 285, 1870 (1999).)

Locked in until strong emotional experience rewires it.

A simple model of NMDA Receptors (Image from: Robert C. Malenka, et al. Long-Term Potentiation: A Decade of Progress? Science. 285, 1870 (1999).)

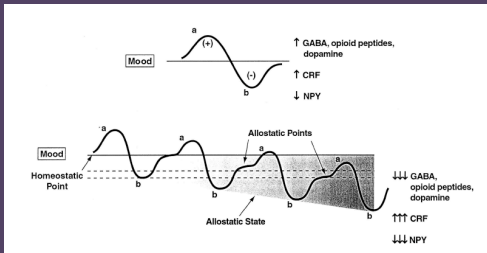
Promotes Lower Brain States

Brain State	Perception
1	Feel great
2	Feel good
3	A little stressed
4	Definitely stressed
5	Stressed out!

Negative Emotional Plasticity

Homeostasis	Allostasis
1	2 3 4 5
Stressor	Negative Emotions
Moving Away from Brain State 1	Survival Circuit Activated
	Common Excesses
	Stuck in Stress
	Afterburn
	<ul style="list-style-type: none"> core circuits weakened survival circuits strengthened brain set point goes down

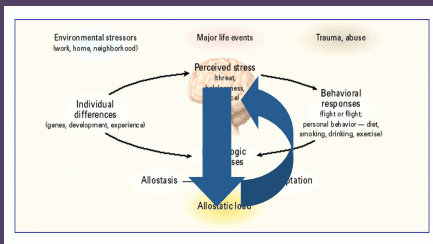
Emotional set point declines.



Koob, G. Alcoholism: Allostasis and Beyond. *Alcoholism: Clinical & Experimental Research*. Vol 27, No 2 (2003): 232-243.

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The brain adopts an allostatic set point.



McEwen, B. S. (1998). Protective and Damaging Effects of Stress Mediators. *New England Journal of Medicine*. 338:171-179.

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Emotional Brain Training



Trains individuals in brain-based self-regulatory tools to:

- ◆ Strengthen homeostatic circuits.
- ◆ Reconsolidate allostatic circuits as homeostatic circuits.
- ◆ Promote a homeostatic set point.


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We can rewire Survival Circuits.

Rewiring requires stress-activated emotional processing.

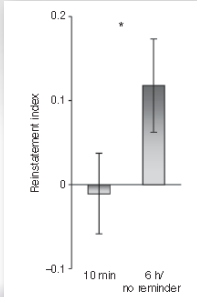
Cognitive training does not rewire them.

D Schiller et al. (2010) Nature 463, 45-53.



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Reconsolidation Requires Stress



Reinstatement Index

0.2
0.1
0
-0.1

10 min 6 hr no reminder

← Only with stress activation was memory erased.

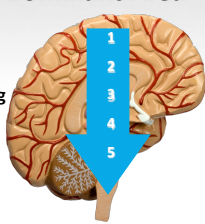
D Schiller et al. (2010) Nature 463, 45-53.

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5 States & 5 Processes

Self Regulation **Dominant Area**

1. Sanctuary Tool
2. Feelings Check
3. Emotional Housekeeping
4. Cycle Tool
5. Damage Control Tool



Mellin, L. (2010) Wired for Joy: A Revolutionary Method for Creating Happiness Within (Hay House).

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Self-directed Rewiring

Self Regulation Dominant Area

1. Sanctuary Tool
2. Feelings Check
3. Emotional Housekeeping
4. Cycle Tool
5. Damage Control Tool

Mellin, L. (2010) *Wired for Joy: A Revolutionary Method for Creating Happiness Within (Hay House)*.

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Positive Emotional Plasticity

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**Core Circuits Are Adaptive:
Promote Resilience**

- ◆ I do exist.
- ◆ I am not bad.
- ◆ I do have power.
- ◆ I can do good.
- ◆ I can love.
- ◆ I am worthy.
- ◆ I can have joy.

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Survival Circuits are Adaptive

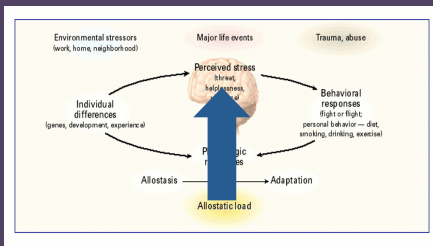


- ◆ **Stress:**
I get my safety from emotionally connecting to myself.
- ◆ **Reward:**
I am motivated by eudonic rewards.

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Goal: homeostatic set point



McEwen, B. S. (1998). Protective and Damaging Effects of Stress Mediators. *New England Journal of Medicine*. 338:171-179.



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Break for Questions...




Use the chat

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IMPLICATIONS OF EBT FOR SUBSTANCE USE DISORDERS



Substance Abuse Disorders

- It's the circuit, not the tail end (behavior)
- Know the set point to plan management.
- Rewire the circuit to turn off the emotional drive.
- Rewiring only occurs with repeated emotional experiences (cannot cognate out of this!)
- EBT Dose = # Check Ins, # Cycles, # Community Connections, and # minutes e-learning.

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Homeostatic Set Point: What do you most want?

The 7 Rewards

Sanctuary
Peace and power from within

Authenticity
Feeling whole and being genuine

Vibrancy
Healthy with a zest for life

Integrity
Doing the right thing

Intimacy
Giving and receiving love

Spirituality
Aware of the grace, beauty, and mystery of life

Freedom
Common excesses fade; we move forward in life

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Make a community connection & use the tools. Rewire!

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It's Just a Wire!

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EBT Brain Map

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The EBT Brain Map

- ▶ Core Circuits – Basic Expectations
- ▶ Survival Circuits – Escapes and Excesses
- ▶ Set Point – Brain's Stress Habit

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Strengthen the Core!

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WRITE


Identify Your Core Circuits

Check off the expectations that seem true to you when you are highly stressed. They are the core circuits of disconnection to rewire into circuits of connection through EBT.

Core Circuits

- I do not exist.
- I am bad.
- I do not have power.
- I cannot do good.
- I cannot love.
- I am not worthy.
- I cannot have joy.

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Erase the Escapes: Behavioral Survival Circuits


Identify Your Behavioral Survival Circuits

Check off your responses when highly stressed. Those are your survival circuits. You can rewrite them in EBT.

I get my safety from:

<input type="checkbox"/> Food	<input type="checkbox"/> Sleeping too much
<input type="checkbox"/> Cigarettes	<input type="checkbox"/> Recreational drugs
<input type="checkbox"/> Alcohol	<input type="checkbox"/> Video games
<input type="checkbox"/> Spending	<input type="checkbox"/> Clutter
<input type="checkbox"/> Gambling	<input type="checkbox"/> Overexercise
<input type="checkbox"/> Hoarding	<input type="checkbox"/> Other _____
<input type="checkbox"/> Technology	<input type="checkbox"/> None

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Erase the Escapes: Emotional Survival Circuits


Identify Your Emotional Survival Circuits

Check off your responses when highly stressed. Those are your survival circuits. You can rewrite them in EBT.

I get my safety from:

<input type="checkbox"/> Hostility	<input type="checkbox"/> Numbness (no feelings)
<input type="checkbox"/> Depression	<input type="checkbox"/> Thinking too much
<input type="checkbox"/> Self-pity	<input type="checkbox"/> False highs
<input type="checkbox"/> Anxiety	<input type="checkbox"/> Other _____
<input type="checkbox"/> Panic	<input type="checkbox"/> None
<input type="checkbox"/> Shame	

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Erase the Escapes: Relational Survival Circuits

Identify Your Relational Survival Circuits

Check off your responses when highly stressed. Those are your survival circuits. You can rewrite them in EBT.

Merging Survival Circuits


<input type="checkbox"/> People-pleasing	<input type="checkbox"/> Fixing others
<input type="checkbox"/> Rescuing	<input type="checkbox"/> Other _____

Distancing Survival Circuits

<input type="checkbox"/> Isolating	<input type="checkbox"/> Persecuting
<input type="checkbox"/> Judging	<input type="checkbox"/> Other _____

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Move Up Your Set Point!




Set Point

My set point is:

1 2 3 4 5

WRITE



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Participants learn how to identify their brain state.

How do you feel?

- 1 Feeling Great!
- 2 Feeling Good
- 3 A Little Stressed
- 4 Definitely Stressed
- 5 Stressed Out!

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The EBT Brain State Characteristics

State	Thoughts	Feelings	Relationships	Spirituality	Behavior
1	Abstract	Joyous	Intimate	Connected	Optimal
2	Concrete	Balanced	Companionable	Aware	Healthy
3	Rigid	Mixed	Social	Unaware	Moderate
4	Reactive	Unbalanced	Needy/	Disconnected Distant	Unhealthy
5	Irrational	Overwhelmed	Merged/ Disengaged	Lost/ Obsessed	Destructive

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Then use the EBT tools to spiral up!

How do you feel?

- 1 Feeling Great!
- 2 Feeling Good
- 3 A Little Stressed
- 4 Definitely Stressed
- 5 Stressed Out!

Tool to turn negative emotions into positive emotions.

How do you feel?

- 1 Feeling Great!
- 2 Feeling Good
- 3 A Little Stressed
- 4 Definitely Stressed
- 5 Stressed Out!



Emotional Housekeeping

Rewire core circuits and survival circuits.

How do you feel?


- 1 Feeling Great!
- 2 Feeling Good
- 3 A Little Stressed
- 4 Definitely Stressed
- 5 Stressed Out!




Cycle Tool



EBT METHODS IN HEALTHCARE SETTINGS


Set Point Impacts Treatment



Set Point	Duration	Coaching	Medical
1			
2			
3			
4			
5			

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"EBT Basics" Telegroup



Learn the Tools "EBT BASICS"

- Learn how to rewire!
- 8 one-hour weekly telegroup sessions
- EBT Connect App
- Private, confidential telephone system
- Community Connections

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Advanced EBT

Advanced EBT Membership

Includes these additional benefits at *no added cost*:

- EBT Connect App
- 7 Advanced Courses
- Private confidential telephone system
- Add more Connection Buddies

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EBT Basics to learn the tools and 7 Advanced Courses: move up the set point.

- 1 Sanctuary
- 2 Authenticity
- 3 Vibrancy
- 4 Integrity
- 5 Intimacy
- 6 Spirituality
- 7 Freedom

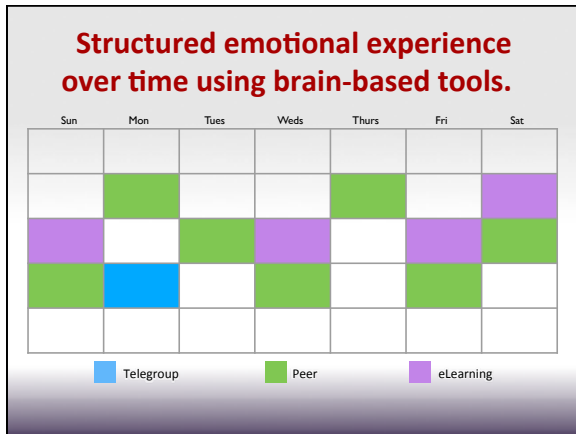
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Implicit memory systems only change by repeated emotional contact over time.

Sun	Mon	Tues	Weds	Thurs	Fri	Sat

Professional Individual or Group Session



Daily Peer-to-Peer Skills Practice


- ▶ Peer-to-peer contact by EBT telephone platform
- ▶ 5 min (10 max) to use tools, feel better, get results
- ▶ Private, confidential, instant access



Technology Platform for Privacy, Confidentiality and Convenience

- ▶ EBT app
- ▶ EBT website
- ▶ Private telephone system





Feasibility


Satisfaction
78% of participants reported would be "very disappointed" if they could not use EBT

Retention
76% of participants continue after basic 8-week course

Engagement
Of participants who continue, duration of participation:

- ◆ 23% 3 to 5 months
- ◆ 54% 6 to 12 months
- ◆ 23% 12 to 36 months

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Effectiveness

10 Studies
All have shown continued improvements in stress-related variables after treatment ends:


- Depression
- Perceived Stress
- Self-efficacy
- Obesity
- Food Addiction
- Blood Pressure

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Short-term EBT Intervention Decreases Stress, Weight, and Blood Pressure

Kelly Webber, PhD, MPH, RD, LD
Department of Dietetics and Human Nutrition
University of Kentucky

Theresa Barry-Greb, MS, PT, EBT Provider and
Clinical Researcher
Lexington, KY



Baseline Characteristics

Completers Baseline Characteristics, N=26

Gender	69.2% female
Age	53.8 ± 9.8 years
Race	92.3% Caucasian
Education	26.9% high school 30.8% undergraduate 42.3% graduate/professional
Blood pressure	141.4/87.7 mm Hg
BMI	35.8 ± 4.1 kg/m ²

Results

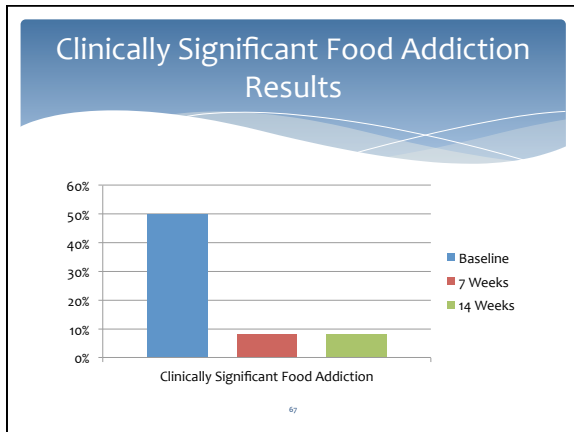
- ◆ The EBT Basics program (EBT) was compared to a mindfulness program in a 7-week trial with a 7-week follow-up with 33 participants.
- ◆ EBT produced significant changes in weight (-2.9 lb.; p=0.05), blood pressure (systolic, p=0.005; diastolic, p=0.05), perceived stress (-6.2 pts.; p=0.04), and food addiction (p=0.02) at 7 weeks.
- ◆ No changes were observed in any variables in the mindfulness group (Webber et al., 2014).

Food Addiction Results

Yale Food Addiction Scale

* Decrease in clinically significant diagnosis of food addiction at 7 weeks; change maintained at 14 weeks.

Baseline	Seven Weeks	Fourteen Weeks
50% clinically significant	8% clinically significant	8% clinically significant



EBT Professional Certification

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Pre-application Experiential Learning
Complete 8 1-hour weekly EBT Basics Telegroup

Basic Certification for EBT Provider
Provisional certification:
8 weeks -1 hour telegroup/week + e-learning
Full certification:
8 weeks – 1 hour/week deliver program with mentoring + case management consultation.

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Summary

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- Emotional brain training is a neuroscience-based intervention for stress-related health problems, including substance use disorders and extreme behaviors.
- Participants learn brain-based tools for effective self-regulation and allostatic circuit reconsolidation, with the goal establishing a homeostatic set point.
- Health professionals become certified in EBT and deliver technology-assisted telegroups and coaching.

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Selected References



- ◆ LeDoux, J. (2012b). Rethinking the emotional brain. *Neuron*, 73(4), 653-676. doi:10.1016/j.neuron.2012.02.004.
- ◆ McEwen, B. S., & Gianaros, P. J. (2011). Stress- and allostasis-induced brain plasticity. *Annual Review of Medicine*, 62, 431-445. doi:10.1146/annurev-med-052209-100430.
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- ◆ Schiller, D., Monfils, M. H., Raio, C. M., Johnson, D. C., Ledoux, J. E., & Phelps, E. A. (2010). Preventing the return of fear in humans using reconsolidation update mechanisms. *Nature*, 463(7277), 49-53. doi:10.1038/nature08637.

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Research and Training



- ◆ Professional Certification: Description of professional certification as an EBT Provider www.ebtconnect.org
- ◆ Experiential Training: Take the EBT Basics Telegroup. Learn the tools for your own well-being and to determine if certification in EBT is right for you: www.ebtconnect.net
- ◆ EBT Practice-Based Research Network:
 Laurel Mellin, PhD
 Founder, Emotional Brain Training
 Associate Professor of Family and Community Medicine
 and Pediatrics, School of Medicine
 University of California San Francisco
laurel@ebt.org

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Questions / Comments



Alternatively, questions can be directed to the presenter(s) by sending an email to CTNtraining@emmes.com.

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