

Neurobiology of Eating Disorders  
with Clinical & Family Applications

Eating Disorder Task Force: IN  
September 5, 2014

By Laura Hill, PhD  
President & CEO/CCO

The Center for Balanced Living  
[www.TheCenterforBalancedLiving.org](http://www.TheCenterforBalancedLiving.org)

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
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IF YOUR LOVED ONE HAD  
DIABETES,  
HOW WOULD YOU DEFINE  
THE ILLNESS?

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
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IF YOUR LOVED ONE HAD  
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HOW WOULD YOU  
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
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## EATING DISORDERS ARE BIOLOGICALLY BASED, SERIOUS MENTAL ILLNESSES

KLUMP, BULIC, KAYE, TREASURE, TYSON, (2009) ACADEMY FOR EATING  
DISORDERS POSITION PAPER: EATING DISORDERS ARE SERIOUS MENTAL  
ILLNESSES. INTERNATIONAL JOURNAL OF EATING DISORDERS, 37-103

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
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## HOW CAN NEUROBIOLOGICAL RESEARCH FINDINGS INFORM TREATMENT?

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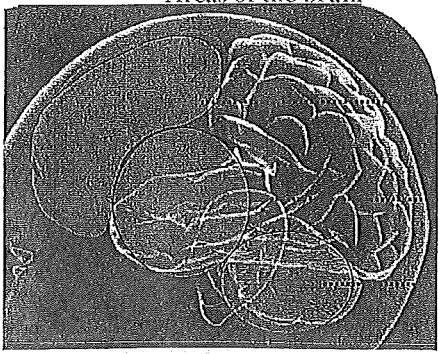
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
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### Areas of the brain



➤ Thoughts  
 ➤ Feelings  
 ➤ Actions

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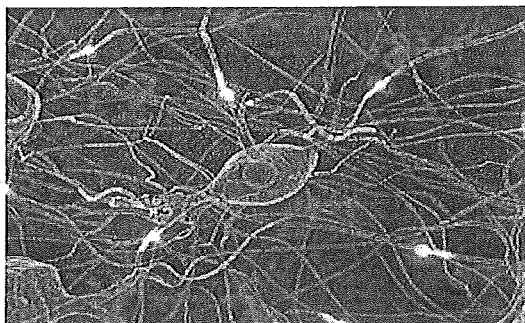
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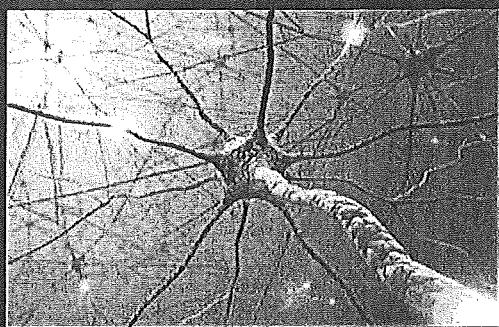
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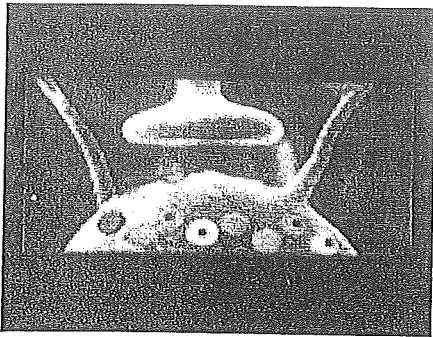
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<http://www.google.com/imgres?imgrefurl=http%3A%2F%2Fwww.sciencedaily.com%2Fnews%2F2010%2F08%2F100801190251.htm&ibid=nJ-XwEINHxXRm&docid=ziDB9s8BxeFMM&h=450&w=600>



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<http://www.youtube.com/watch?v=LT3VKAr4roo>

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## "Brain Wave"

by Laura Hill PhD

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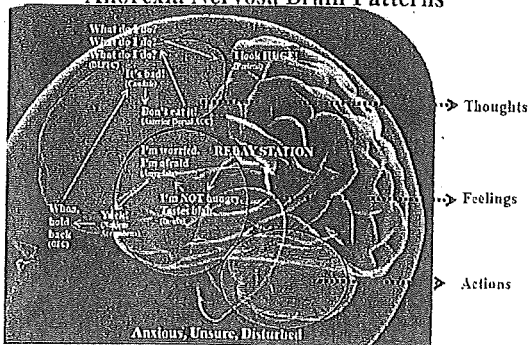
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## Anorexia Nervosa Brain Patterns



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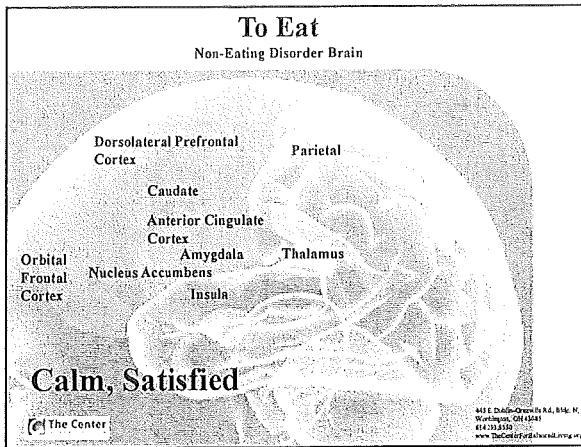
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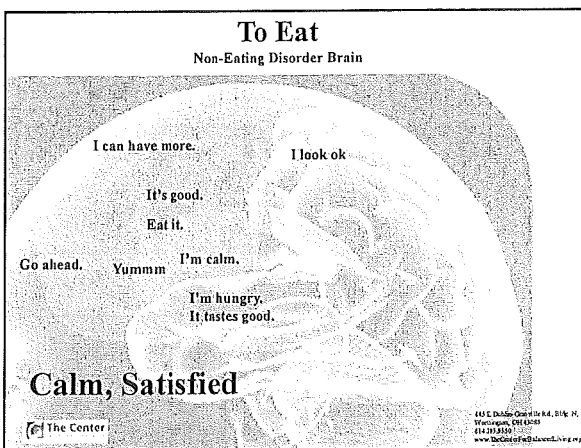
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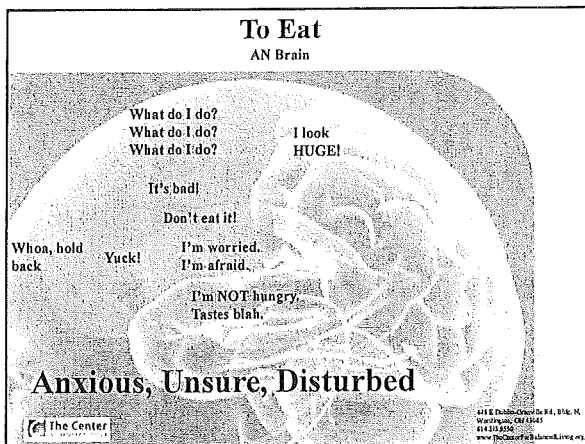
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Area of brain	Identified functions of brain area	Possible brain responses for Anorexia Nervosa
Insula	Hunger, pain, taste signals	I'm not hungry. Tastes blah.
Amygdala	Fear, emotional responses	I'm worried. I'm afraid.
Nucleus Accumbens or Ventral Striatum	Pleasure/reward: "Is this better. Yuck! than my expectation" less than expectation: punishment	
Orbitofrontal Cortex	Avoidance/ inhibition or Impulsion to not hold back	Whoa, hold back
Caudate area	Weights pros and cons	It's bad!
Anterior Cingulate Cortex	Weights emotions with thoughts for decision	Don't eat!!!
Dorsolateral Pre-frontal Cortex	Anticipation	What do I do? What do I do?
Parietal	How see one's body within surrounding space	I look HUGE!

\*Each area of the brain is not discrete, it takes all areas to communicate a part of the message to help it come together in the brain. This exercise exaggerates each area to make a point of how areas in the brain have a function to contribute to the whole.

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Area of brain	Identified functions of brain area	Possible brain responses for Anorexia Nervosa	What is true for me
Insula	Hunger, pain, taste signals	I'm not hungry. Tastes blah.	
Amygdala	Fear, emotional responses	I'm worried. I'm afraid.	
Nucleus Accumbens or Ventral Striatum	Pleasure/reward: "Is this better. Yuck! than my expectation" less than expectation: punishment		
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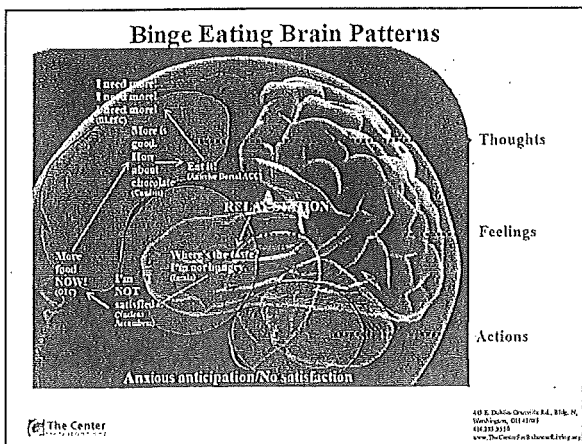
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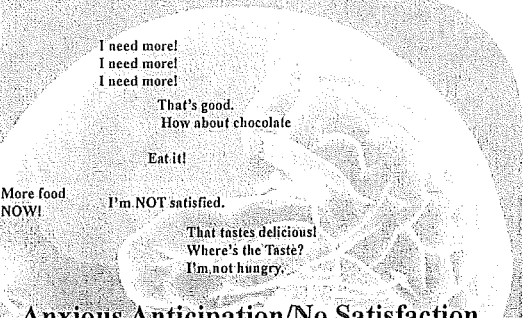
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**BE Brain**



I need more!  
I need more!  
I need more!

That's good.  
How about chocolate


Eat it!

More food  
NOW!

I'm NOT satisfied.

That tastes delicious!  
Where's the Taste?  
I'm not hungry.

**Anxious Anticipation/No Satisfaction**

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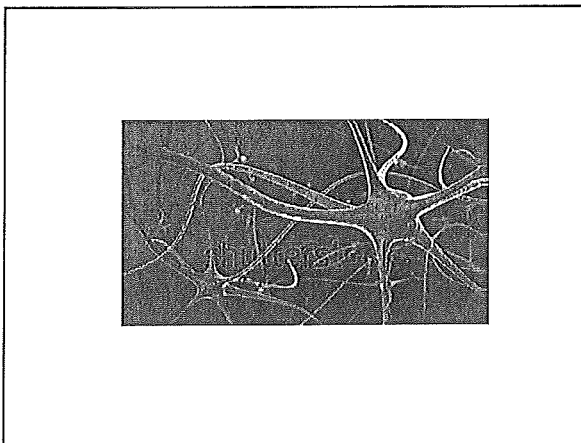
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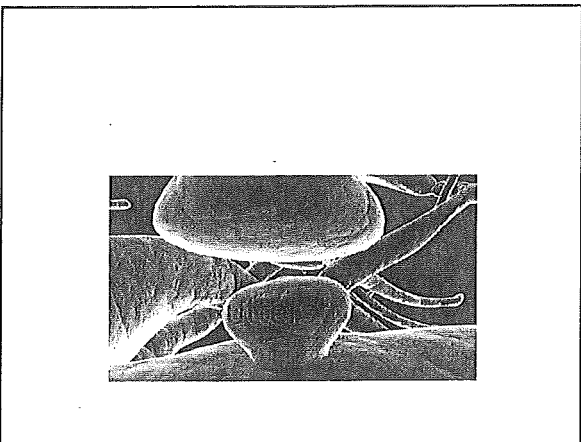
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### TREATMENT NEEDED IN LIGHT OF NEW HEALTHCARE REALITY

- Structured multidisciplinary treatment that practice skills and integrates brain based research
- Family
- Friends
- Technical and medication support
- Planning & Practice
- CBT: Enhanced
- DBT

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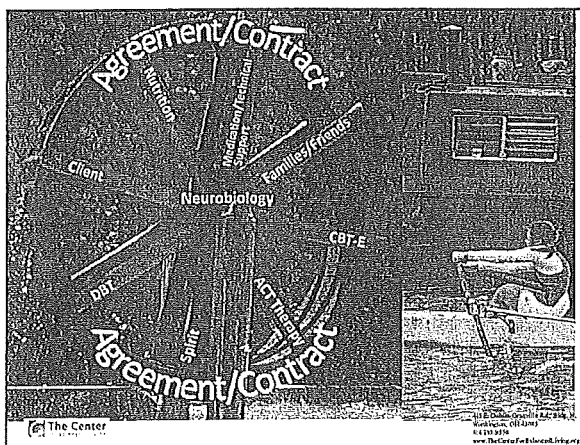
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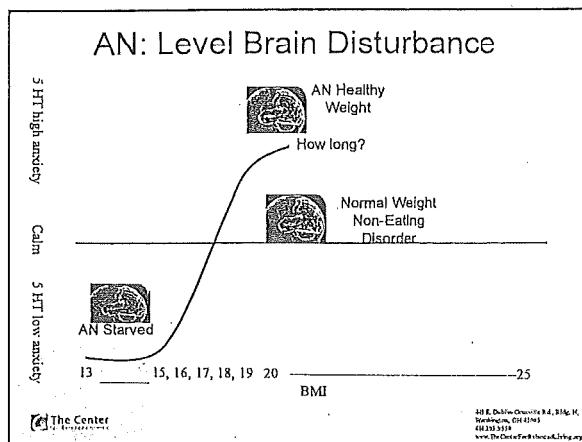
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
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HOW LONG DOES IT TAKE TO  
CHANGE?

Wire Rewire Activity

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
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"I think I will get to happiness if I  
binge, but I can never get  
there."

> 20 year old client with BED

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
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"I did not will this and make this  
happen. I can't stop the  
thoughts."

Adult with eating disorder

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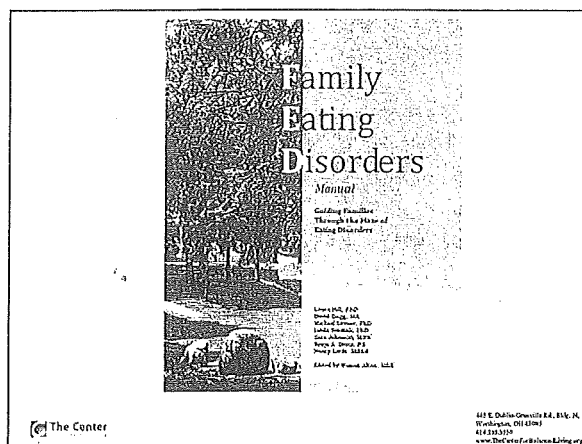
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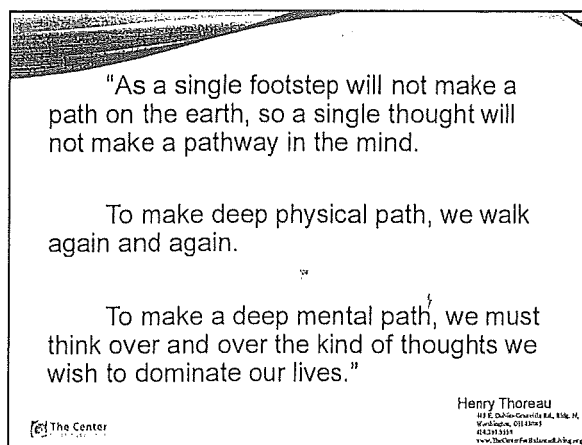
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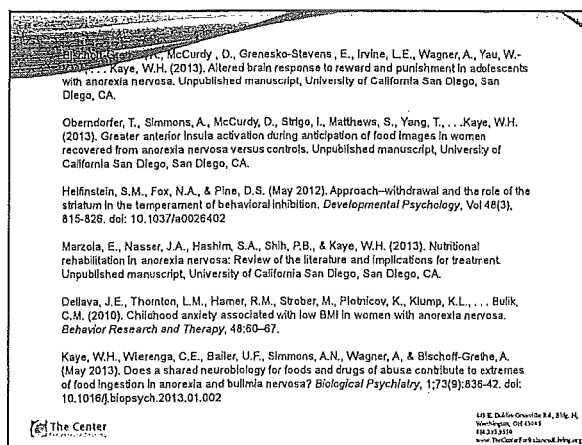
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