Welcome

Rogers treats children, adolescents and adults with:
- Anxiety disorders
- Mood disorders
- Eating disorders
- Substance-use disorders

800-767-4411
rogershospital.org

Optimizing Outcomes in Eating Disorders

Theodore Weltzin, MD
Medical Director
Eating Disorder Services at
Rogers Memorial Hospital
Belief and Eating Disorders

- “My weight and shape determine my worth and/or social acceptability”
- “I will look ugly if I gain much more weight”
- “the only thing I can control in life is my weight”
- “if I let go and eat, there will be no stopping and I will become obese”
Fitness Instructor Claims Weight Discrimination

• Class attended by people who feel more comfortable with her
• "I especially, personally, don't exercise in an environment where I am expected to hate my body," student Marilyn Wan said. "I don't enjoy that, and I don't think it does me any good."

Mechanism of Change

• You need an approach (or framework) to understand these symptoms that is understandable and consistent with belief systems
• Patients need to affectively be engaged in applying this framework
• Reality testing in the problematic situations
Optimizing Outcomes in Eating Disorders

Theodore E. Weltzin, MD, FAED

Eating Disorders: Cycle of change

Outcomes

- AN: mortality 5-6% per decade of follow-up; SMR 9.6 in studies with 6-12 years of follow-up, 3.7 when 20-40 years of follow-up
- Causes of death: suicide, starvation, cardiac events
- Risk factors for death: BMI<13, body weight <60%, low serum albumin
- Suicides do not occur exclusively during significant underweight
- Purging behaviors are worse prognostic sign than restricting alone
Outcomes of Anorexia Nervosa in 119 Patient Series by Duration of Follow-Up and Age at Onset

A total of 577 patients had less than 4 years of follow-up, 2,132 had 4–10 years of follow-up, and 438 had more than 10 years of follow-up.

Figure Legend:
Outcome of Anorexia Nervosa in 119 Patient Series by Duration of Follow-Up and Age at Onset

The Time Course of Improvement for Six Clients With Bulimia Nervosa Who Recovered With Cognitive-Behavioral Therapy

Figure 11.3
**Causes:** Multiple factors are involved, such as genetics and metabolism; psychological issues – such as control, coping skills, trauma, personality factors, family issues; and social issues, such as a culture that promotes thinness and media that transmits this message.

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**Eating Disorder pathogenesis**

- Fear of getting fat
- Striving to lose weight
- Diet and physical exertion
- Weight loss
- Hormonal and physiological changes (amenorrhea)
- Depression, cognitive disorders

Theodore Weltzin, MD, Rogers Memorial Hospital
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Change in Depression By Site

Comparison to male college students

Rogers Memorial Hospital
Evolution of symptoms severity in bulimic males (n=12)

- **Genetics**

  The role of genetics on eating disorders is of particular interest to researchers. Our knowledge at this point indicates that genes load the gun and the environment pulls the trigger. We are far from knowing specific genes that cause eating disorders. There are a number of genes that work with environmental triggers. Dieting and loss of weight may influence the development of anorexia by turning on a gene that may influence an eating disorder. There are many cases of transgenerational eating disorder and twin studies which make this connection. There is probably a 5-6 greater chance of developing an eating disorder if an immediate relative has an eating disorder.
Heritability Estimates

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Heritability Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autism</td>
<td>0.8 – 1.0</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>0.5 – 0.9</td>
</tr>
<tr>
<td>Bipolar Disorder</td>
<td>0.3 – 0.8</td>
</tr>
<tr>
<td>Anorexia, Bulimia</td>
<td>0.5 – 0.8</td>
</tr>
<tr>
<td>Mood Disorders</td>
<td>0.5 – 0.75</td>
</tr>
<tr>
<td>OCD</td>
<td>0.5 – 0.70</td>
</tr>
<tr>
<td>Obesity</td>
<td>0.4 – 0.70</td>
</tr>
</tbody>
</table>

Depression and Anxiety

Looking at depression and anxiety disorders as psychiatric illnesses which are biological in nature, we see that they commonly co-exist in the eating disorder patient and their families.

**Thought:** Did you know that rats who were put on a restrictive diet spent increasing amounts of time running on their activity wheel? They lost a great deal of weight. If the researchers had let them continue to do this, the animal would have died.
Co-morbid disorders

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affective Disorders</td>
<td>70% lifetime</td>
</tr>
<tr>
<td>Anxiety Disorders</td>
<td>63% lifetime</td>
</tr>
<tr>
<td>OCD</td>
<td>40%</td>
</tr>
<tr>
<td>Social phobia</td>
<td>20%</td>
</tr>
<tr>
<td>Alcohol abuse and/or dependence</td>
<td>AN 17%</td>
</tr>
<tr>
<td>BN 46%</td>
<td>Post-traumatic stress disorder</td>
</tr>
</tbody>
</table>

Social-Cultural Causes

- Emphasis on thinness as the ideal for beauty
- Availability and indulgence of food
- Role of the media
- Obesity and reaction to the larger body size

Thought: If we took an average 5’ 2” woman, age 22 and normal weight of 125 lbs. and expected her to fit the Barbie image, she would have to be 7’ 2” tall.
### Psychological Factors

<table>
<thead>
<tr>
<th>Anorexia Nervosa</th>
<th>Bulimia Nervosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fear of growing up</td>
<td>• Difficulty regulating mood</td>
</tr>
<tr>
<td>• Inability to separate from the family</td>
<td>• More impulsive – sometimes with shoplifting, substance abuse, etc.</td>
</tr>
<tr>
<td>• Need to please or be liked</td>
<td>• Sexual abuse</td>
</tr>
<tr>
<td>• Perfectionism</td>
<td>• Family dysfunction</td>
</tr>
<tr>
<td>• Need to control</td>
<td></td>
</tr>
<tr>
<td>• Need for attention</td>
<td></td>
</tr>
<tr>
<td>• Lack of self esteem</td>
<td></td>
</tr>
<tr>
<td>• High family expectations</td>
<td></td>
</tr>
<tr>
<td>• Parental dieting</td>
<td></td>
</tr>
<tr>
<td>• Family discord</td>
<td></td>
</tr>
<tr>
<td>• Temperament – often described as the “perfect child”</td>
<td></td>
</tr>
<tr>
<td>• Teasing about weight and body shape</td>
<td></td>
</tr>
</tbody>
</table>

**CSF 5-HIAA in Ill AN**  
Major Brain Serotonin Metabolite

![Graph showing CSF 5-HIAA levels in Ill AN and CW](image)

- **CSF 5-HIAA (ng/mL)**
  - Ill AN
  - CW

*P < .01

5-HIAA = 5-hydroxyindole acetic acid  
CSF = cerebrospinal fluid  
CW = control women
Hypogonadism

Amenorrhea (and low testosterone in males)
Hypothalamic in origin representing the impact of malnutrition on neurotransmitter activity.

FIGURE 1. Lumbar spine Z-score of inpatient males and females with eating disorders. (a) Significant gender effect ($t = 2.21, p = .03$); (b) significant gender effect ($t = 2.32, p = .02$); (c) nonsignificant gender effect ($t = 1.99, p = .05$); (d) nonsignificant gender effect ($t = 0.33, p = .84$). [Color figure can be viewed in the online issue, which is available at www.interscience.wiley.com.]
Change in Brain Volume with Anorexia Nervosa

Table 6. Change in global volumetric measurements from initial to follow-up patient scans (n = 13)

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total intracranial</td>
<td>1,393.77 ± 110.23</td>
<td>1,397.88 ± 111.63</td>
</tr>
<tr>
<td>Total brain**</td>
<td>1,204.58 ± 103.97</td>
<td>1,267.13 ± 112.94</td>
</tr>
<tr>
<td>Total gray matter*</td>
<td>752.82 ± 63.16</td>
<td>778.70 ± 63.74</td>
</tr>
<tr>
<td>Total white matter*****</td>
<td>451.77 ± 45.29</td>
<td>488.44 ± 54.05</td>
</tr>
<tr>
<td>Total CSF****</td>
<td>189.19 ± 64.67</td>
<td>130.75 ± 38.50</td>
</tr>
<tr>
<td>Total external CSF***</td>
<td>131.49 ± 53.47</td>
<td>86.72 ± 32.77</td>
</tr>
<tr>
<td>Ventricle***</td>
<td>19.84 ± 7.29</td>
<td>14.52 ± 5.41</td>
</tr>
</tbody>
</table>

Note: CSF = cerebrospinal fluid.
*p < .01. **p < .005. ***p = .001. ****p < .001. *****p < .0005.

Biological abnormalities bulimia

<table>
<thead>
<tr>
<th>Physiologic change</th>
<th>Role of substance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diminished release of cholecystokinin</td>
<td>Peptide that transmits satiety signals to the brain</td>
</tr>
<tr>
<td>Increased ghrelin production</td>
<td>Stomach hormone that acts to increase food intake</td>
</tr>
<tr>
<td>Leptin deficiency</td>
<td>CNS protein that acts to decrease food intake</td>
</tr>
<tr>
<td>Increased release of opioids in the brain</td>
<td>Naturally occurring peptide that creates a feeling of pleasure and lowers anxiety, fostering the addictive cycle</td>
</tr>
<tr>
<td>Reduced serotonin uptake</td>
<td>Enzyme that regulates appetite and impulsivity</td>
</tr>
</tbody>
</table>

Data from Foster T et al. and ECRH-Health Technology, Assessment Information Services.
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An important part of an individual’s self-concept is “body image.”

- **Visual Component:** How you “see” yourself when you look in the mirror.
  - With poor body image, you might have a distorted, unrealistic perception of your shape. You might perceive parts of your body as larger or smaller than they actually are.

- **Mental Component:** What you believe and think about your appearance.
  - With poor body image, you might believe yourself to be ugly or unattractive because you are convinced that only certain types of features are attractive. Or you believe that what you like is irrelevant, and all that matters are the characteristics of which others approve.

- **Emotional Component:** How you feel about your body, including your height, weight, and shape.
  - With poor body image, the combination of your distorted perceptions and your self-rejecting ideals leads you to feel ashamed, self-conscious, and anxious about your body.

- **Kinesthetic Component:** How you feel in your body, not just about your body.
  - With poor body image, you might not feel comfortable in your body. You do not express yourself with and through your body, for example in sports or dance.

An fMRI investigation of emotional processing of body shape in bulimia nervosa
Bulimia nervosa women

Significant activation for the contrast fat > thin for patients with bulimia nervosa showing peaks in inferior parietal and precentral gyrus (left panel), precuneus (middle panel), and pregenual anterior cingulate (right panel). Activation displayed on parasagittal planes of the single-subject MNI template brain. Sagittal plane coordinates are (from left to right) $x = -52$, $x = -11$, $x = +3$. Yellow indicates significant activation threshold $t > 5.40$.

Control Women; BN vs. control women

Significant activation for control participants for the contrast fat > thin showing (left) right inferior frontal gyrus (middle) medial frontal cortex. Activation for the between-group comparison BN Patients > Control participants for the contrast fat > thin showing (right) pregenual anterior cingulate. Activation displayed on parasagittal planes of the single-subject MNI template brain. Sagittal plane coordinates are (from left to right) $x = +53$, $x = -10$, $x = +3$. Yellow indicates significant activation threshold $t > 5.40$. Red indicates significant activation threshold $t > 4.40$. 
Conclusions

- BN patients have a stronger emotional and self-referent component to body shape- and weight-related stimuli in response to fat images as compared to controls.

- These findings are consistent with cognitive models of eating disorders which posit that body-related stimuli are more central to self-schemas and more emotionally provocative in persons with eating disorders, and that those with eating disorders are particularly hypervigilant toward and sensitive to cues of fatness.

- As such, these findings lend further support to empirically-based, eating disorder treatment and prevention interventions that emphasize body overvaluation as a primary target for change.

What is good outcome?

- Normal weight and reduction/absent ED behaviors
  - Nutrition, CBT, FBT

- Reduced medical and psychiatric co-morbidity
  - CBT, IPT, DBT, medication

- Improved quality of life
  - Effectiveness in work, family, school, relationships, productivity, spirituality, community involvement, etc.
What is Healthy Eating?

- **Mindful**: Know the difference between physical and emotional cues and needs. Eat when you are hungry; stop when you are full. Meet your body’s needs.
- **Enjoyable**: Eat pleasurable foods without guilt or anxiety.
- **Flexible**: Be able to eat needed amount in available time. No calorie counting. Eat a variety of foods. Don’t avoid any food group. Try new things without knowing all ingredients.

Nutritional rehabilitation

**Definition**: to attain and maintain a health weight by employing a balanced meal plan with at least 3 meals a day and one snack, at least 25-30% fat, 15% protein, and 55-60% protein with the absence of purging.
Nutritional therapy

- Identify weight goal
- Develop a healthy meal plan
- Develop realistic expectations
- Meal prep and shopping
- Exercise and activity
  - Improves self esteem
  - Increases muscle mass
  - Increases socialization
Optimizing Outcomes in Eating Disorders

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From: A Randomized Controlled Trial of Family Therapy and Cognitive Behavior Therapy Guided Self-Care for Adolescents With Bulimia Nervosa and Related Disorders


Date of download: 1/29/2012
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Figure Legend:
Longitudinal Assessment of Binge-Eating and Vomiting From Baseline to Month 10 in a Trial of Family Therapy and Cognitive Behavior Therapy Guided Self-Care for Adolescents With Bulimia Nervosa and Eating Disorder Not Otherwise Specified

CBT Phase I of Treatment

- Intensive treatment
  - Rapid start and initiate relationship

- Use self monitoring
  - Clarify symptoms
  - Talk about CBT model

- At the end of phase I
  - Eat regularly, reduce dietary restriction, reduced compensatory behavior.
Phase II CBT

- Understand trigger – ED behaviors relative to the CONTEXT in which they occur:
  - External environment
  - Social environment
  - Internal environment
- Problem solving/cognitive restructuring
- Behavioral tasks are used
- Identify interpersonal triggers of negative mood
External Environment

- Where were you when you binged?
- What was the time of day?
- What foods were available?
- How much food was available?

Social Environment

- Were you alone or with others?
- Who was present and what is the character of your relationship with that person?
- What type of interaction took place?
- Was conflict involved?
Internal Environment

- Internal:
  - How hungry were you at the time of the binge?
  - Had you restricted your diet prior to the binge?
- Feelings:
  - Anxiety, depression, loneliness, boredom?
- Thoughts:
  - Not perfect
  - Ate too much, ate the wrong thing?

Types of Interpretive Errors

- Probability overestimate
  “My weight went up 1 lb to day, at this rate I will gain 365 lbs in a year”

- Catastrophic thinking
  “I had a bad weekend so I should just quit treatment”
Challenging Problem Thoughts

• Identify the underlying problem thought
• Gather objective evidence to support the thought
• Gather evidence to dispute the thought
• Based on the list of data pro and con come up with a reasonable conclusion that counters the original problem thought
• Determine a course of behavior based on your logical conclusion

Figure 1

Differences in LOS in patients with and without OCB

<table>
<thead>
<tr>
<th>Days in treatment</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
<th>Group 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63</td>
<td>71</td>
<td>67</td>
<td>108</td>
</tr>
</tbody>
</table>
Reducing Fear

- Successive approach of a threatening situation
- Accompanied by muscle relaxation
- Leads to neutralizing the feared situation
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Feared and Problem Foods List

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
<th>Category 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>French fries, hamburger, mayonnaise, pizza, sugary drinks, canned pastas, e.g., manicotti, spaghetti, chili, salami, whipped cream, rich cookies, i.e., cream-filled, chocolate-covered</td>
<td>corn dogs, white milk, chocolate milk, cheese, sour cream, nuts, fried, frozen, battered foods, bologna, cake and frostings, ham</td>
<td>all pastries, chocolate syrups, mousses, creampuffs, cream soups</td>
<td>all candy bars, all ice cream, all rich desserts, e.g., crème pies, éclairs, bacon, butter, liver sausage</td>
</tr>
</tbody>
</table>

Habituation

![Graph showing habituation over trials]

- 1st trial
- 5th trial
- 10th trial
George Sheehan (1979)

“I have learned there is no need for haste, no need to worry, no need to agonize over the future. The world will wait. Job, family, friends will wait; in fact, they must wait on the outcome. And that outcome depends upon the lifetime that is in every day of running … Can anything have a higher priority than running? It defines me, adds to me, makes me whole. I have a job and family and friends that can attest to that.”

Characteristics of compulsive exercise

- Rigid exercise schedule typically daily
- Negative mood state if not able to exercise
- Exercise take place of other priorities
- Incorrect expectation of exercise
- Exercise while hurt
- See not exercising as negative vs exercise as positive
Phase III CBT for Eating Disorders

- Review of positive changes
- Residual problems are defined and plan of action made
- Relapse prevention
  - What aspects of your treatment were most helpful
  - Current and anticipated problem area in the near future
  - Examples of how you may solve those problems should they arise

Thank you

“Coming to Rogers has drastically changed me for the better — I feel that you’ve assisted me in my journey to get my life back.”

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