Eat, Sleep, Bipolar Disorder:
The Impact of Dysregulated Eating and Sleeping on Mood

CABS Conference 2024

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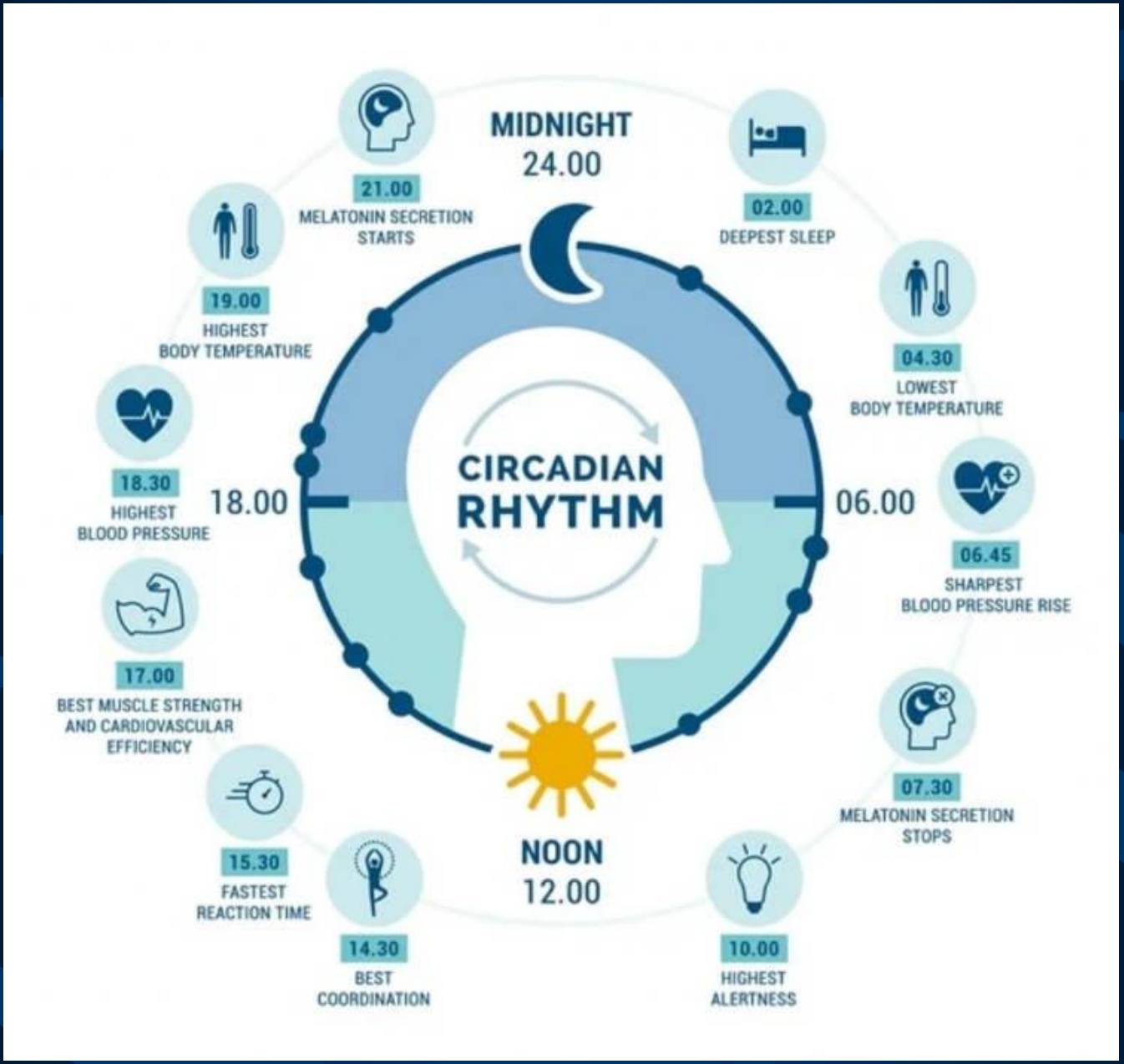
Agenda

1. Circadian Rhythms: What are they? How are they related to mood?
2. Dysregulated Sleep and Mood
3. Dysregulated Eating and Mood
4. How to Intervene (Behaviorally) on Sleep and Eating to Improve Mood

Circadian Rhythms: What are they? How are they related to mood?



www.barbrothersgroningen.com/calisthenics-warm-up/

What are Circadian Rhythms?

- Physical, mental and behavioral changes that follow a roughly 24-hour cycle, responding primarily to light and darkness in an organism's environment.

https://publications.nigms.nih.gov/syndication/factsheet_circadianrhythms.htm

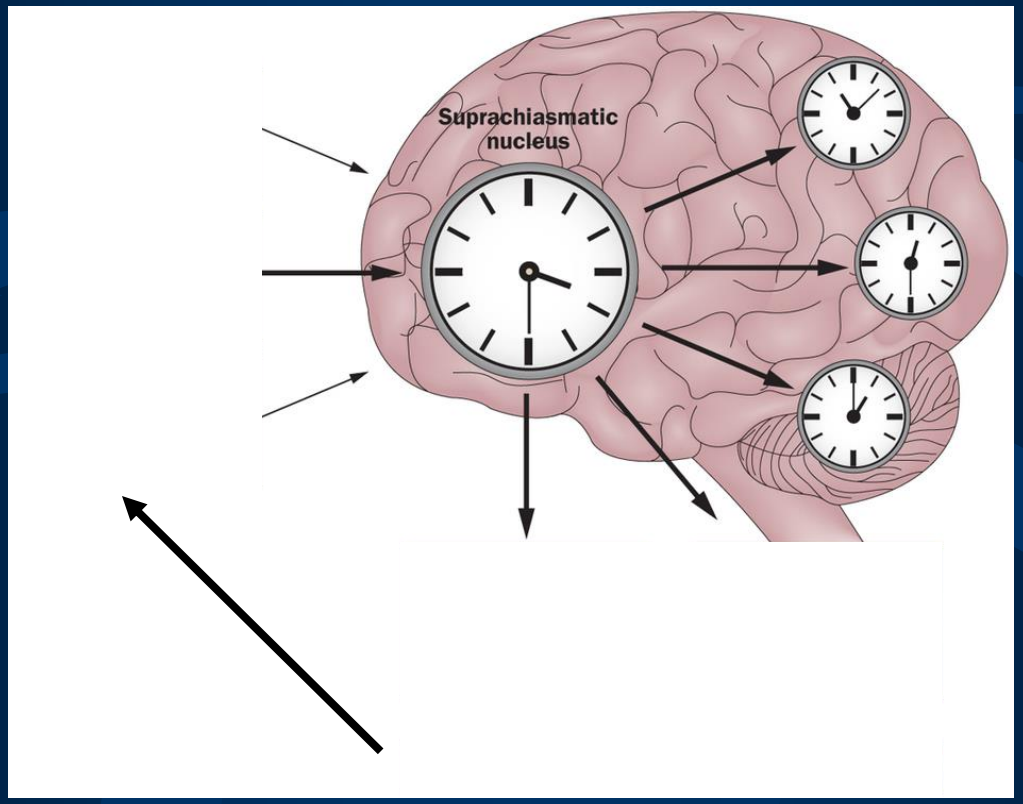
What are Circadian Rhythms?

- Can be synchronized by time cues in the environment
- Light is the strongest cue
- Influenced by other environmental factors

Physiological Rhythms
Behavioral Rhythms

https://publications.nigms.nih.gov/syndication/factsheet_circadianrhythms.htm

24-Hour (circadian) Rhythms are Part of our Biology



Videnovic, *Nat Rev Neurol*, 2014. 10:683-693

Slide courtesy of Dr. Daniel Buysse

How are Altered Rhythms Connected to Mood?

"Rhythm disruption is a core feature of bipolar disorder[…] it has been hypothesized that disturbances of the circadian timing system play a fundamental role in the etiology of the disorder"

"Disruption of biological rhythms may lead to worsening clinical symptoms and negatively impact the course of illness"

-Gonzalez 2014

How are Altered Rhythms Connected to Mood?

- Delayed sleep-wake phase
- Eveningness chronotype
- Abnormal melatonin secretion
- Association of clock genes
- Irregularities in social zeitgebers

Takaesu, 2018, Psych & Clin Neuro

Social Zeitgebers

Social cues that set the circadian clock

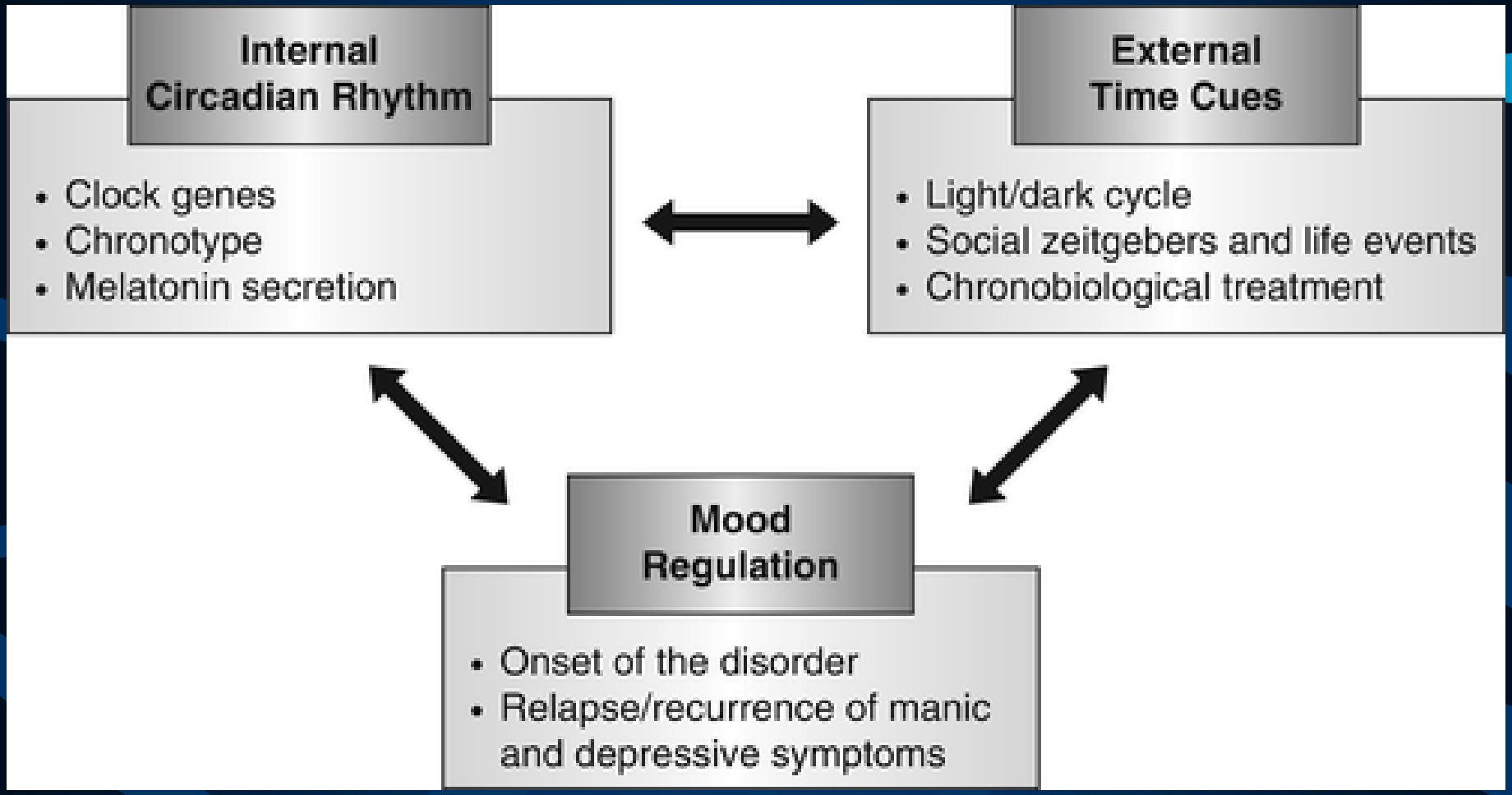
Ehlers et al 1988, *Arch Gen Psych*

Hunger and Eating as Zeitgebers

- We rely on CR to provide us predictability and temporality in our physiology and behavior
- We are genetically and biologically wired to follow schedules, routines and patterns
- Food intake is an external zeitgeber
- Consistency and content of food intake can significantly impact functioning (good and bad!)
    - Hormone dysregulation
    - Hunger cues
    - Metabolism

Schema for Social *Zeitgeber* Theory of Mood Episodes

Adapted from: Ehlers CL, et al. *Arch Gen Psychiatry* 1988;45:948-952.

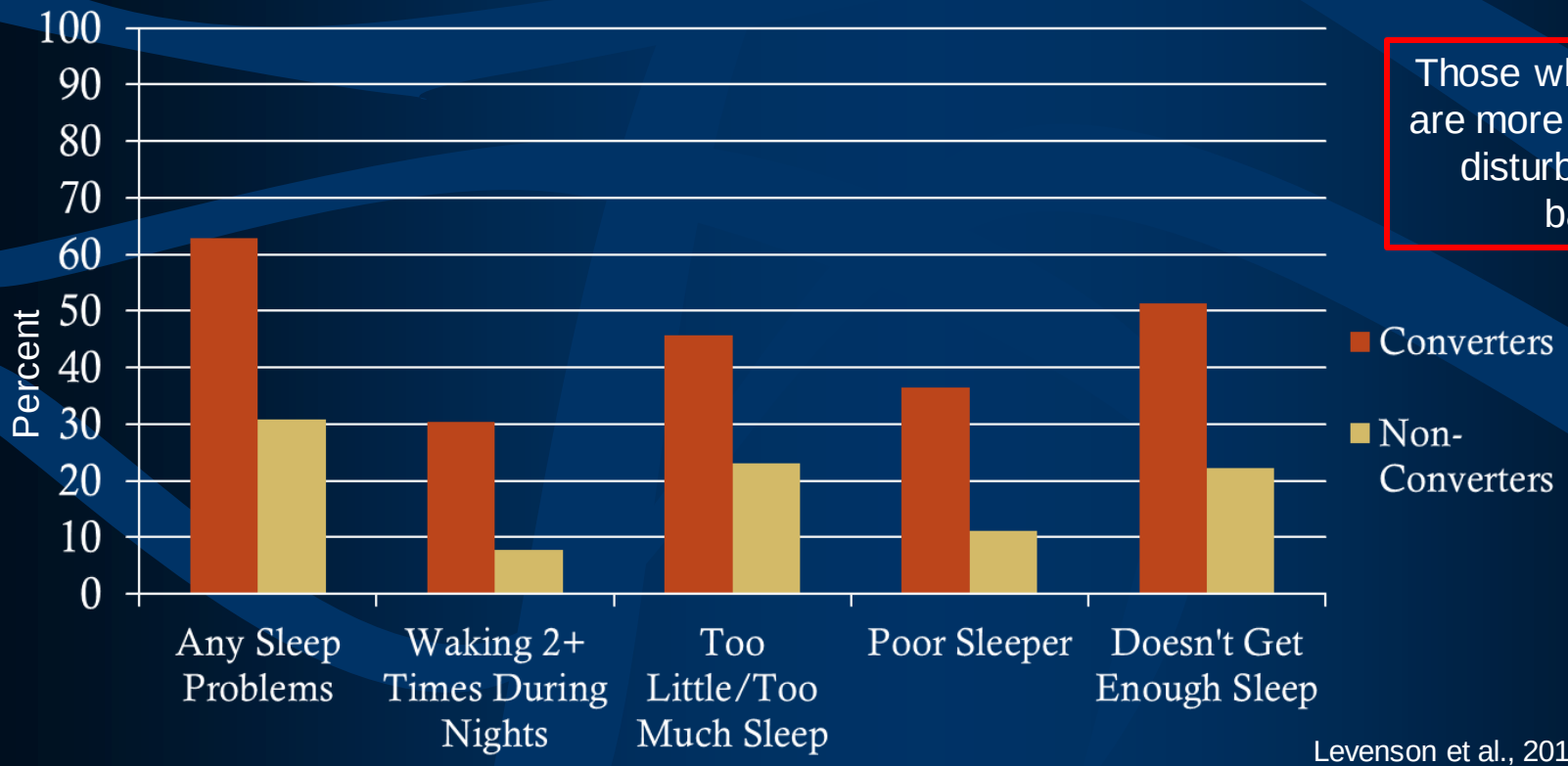


Takaesu, 2018, Psych & Clin Neuro

Dysregulated Sleep and Mood

Sleep and the Development of Bipolar Disorder

- Pittsburgh Bipolar Offspring Study (BIOS)
- N=340 Offspring of BP parents (6-18y)
- N=35 Developed BP over follow-up



Those who develop BP are more likely to report disturbed sleep at baseline

Levenson et al., 2015, *Bipolar Disorders*

Dysregulated Eating and Mood

What does eating have to do with mood?

- Eating is something very natural to humans, we don't eat, we don't have energy!
- Neurotransmitter theories

  Studies suggests that some nutrient deficiencies the production Of certain neurotransmitters associated with mood
- Our brain uses about 20-30% of the total caloric energy we take in in a day
- Causes feelings like hangry, brain fog, fatigue etc.
- Certain nutrient deficiencies are associated with mood symptoms

Emotions and eating

- Emotions induce changes in eating
- Emotional eating and mood alterations can lead to changes in eating behaviors and reinforce unhelpful eating habits

  CBT model:

  Thought → Feeling → Behavior
- Emotional eating can serve as an emotion regulator
- Emotions associated with eating: stress, anxiety, depression, and boredom!

Disordered Eating Behaviors

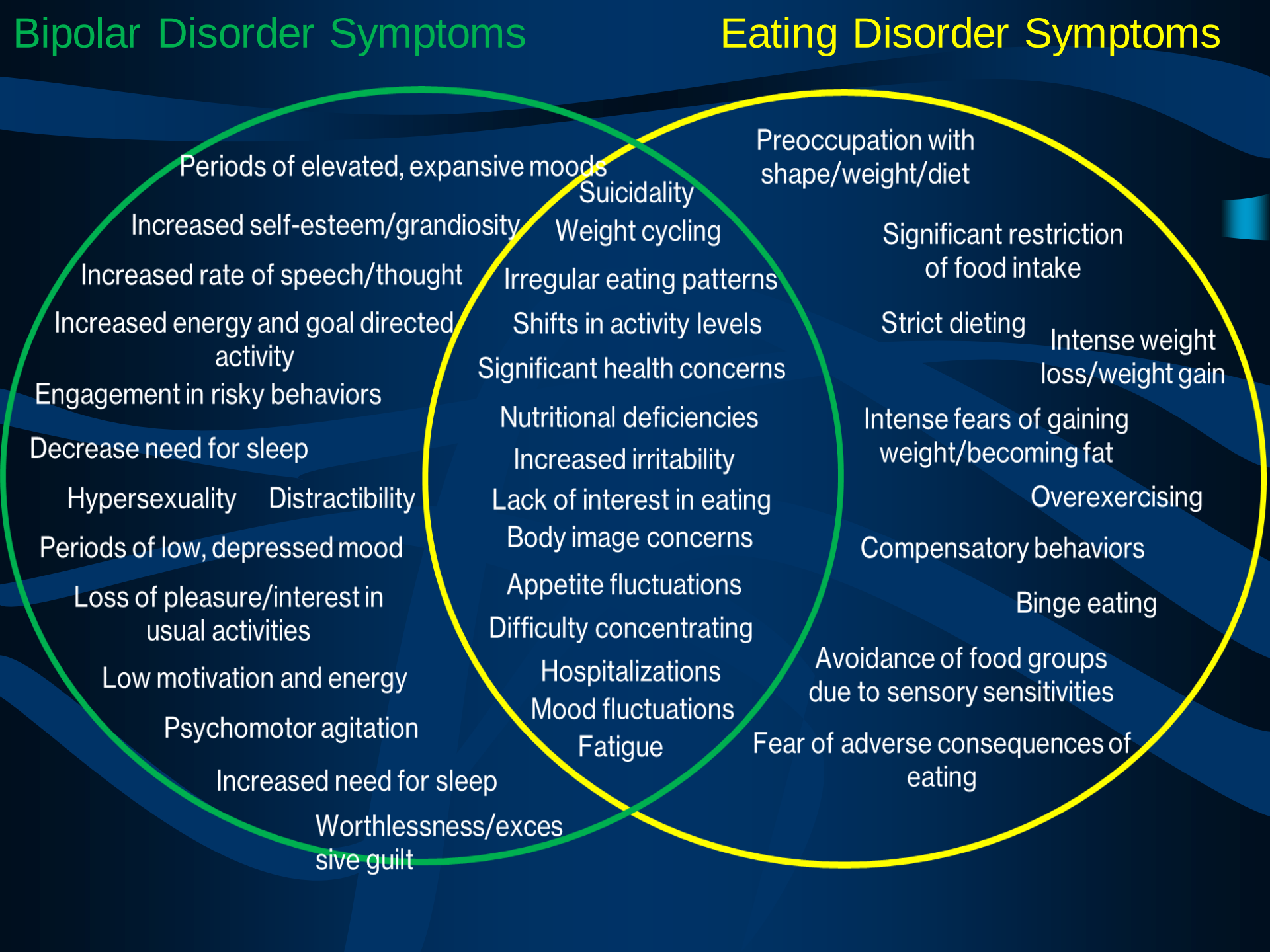
- Dietary restriction
- Dietary restraint
- Strict dieting/yo-yo dieting
- Binge eating vs overeating
- Disordered eating is a prevalent behavior in our society due to:
  - Diet culture
  - Ideal beauty standards
  - Food insecurity
  - Lack of understanding/management of intense emotional states
  - Increased life stress
  - Mental health concerns

Dietary Content and Mood

- Sweets and high fat foods tend to light up the reward regions in our brain and elicits a positive mood
- Specific diet patterns are strongly correlated with increased risk of developing depression and ADHD
- Studies have found specific diets have effects on our mood
- Nutritional needs can vary day to day and are dependent on the individual

Bipolar Disorder and Eating Disorders

- Prevalence of BD combined is 1.8%
  - BP1- 0.6% (US), 0.0 - 0.6% (Intl.)
  - BP2 - 0.8% (US), 0.3% (Intl.)
- Prevalence of ED
  - AN – 0.3%
  - BN – 1-1.5% (especially YA)
  - BED – 0.8 % (males), 1.6% (females)
- Comorbidity prevalence


Bipolar Disorder Symptoms
Eating Disorder Symptoms
Periods of elevated, expansive moods
Increased self-esteem/grandiosity
Increased rate of speech/thought
Increased energy and goal directed activity
Engagement in risky behaviors
Decrease need for sleep
Hypersexuality
Distractibility
Periods of low, depressed mood
Loss of pleasure/interest in usual activities
Low motivation and energy
Psychomotor agitation
Increased need for sleep
Worthlessness/excessive guilt
Suicidality
Weight cycling
Irregular eating patterns
Shifts in activity levels
Significant health concerns
Nutritional deficiencies
Increased irritability
Lack of interest in eating
Body image concerns
Appetite fluctuations
Difficulty concentrating
Hospitalizations
Mood fluctuations
Fatigue
Preoccupation with shape/weight/diet
Significant restriction of food intake
Strict dieting
Intense weight loss/weight gain
Intense fears of gaining weight/becoming fat
Overexercising
Compensatory behaviors
Binge eating
Avoidance of food groups due to sensory sensitivities
Fear of adverse consequences of eating

A comment on medications

- Types of medications used to treat BD:
  - SSRIs
  - Mood stabilizers
  - Antipsychotics (atypical and conventional)
  - Stimulants
- Metabolic side effects require tests for some medications
- Many of the medications have an obesogenic effect
- Symptoms associated:
  - Weight gain
  - Increased appetite
  - Fatigue/drowsiness
  - Dizziness

How to Intervene (Behaviorally) on Sleep and Eating to Improve Mood

Goal: Regulate Social Rhythms

Develop more regular routine of sleep and daily activities to help set the circadian system

Interpersonal and Social Rhythm Therapy

“A therapeutic intervention for bipolar disorder that sought to prevent the recurrence of new affective episodes through indirect regulation of the endogenous circadian system. The idea behind this approach, which we called interpersonal and social rhythm therapy (IPSRT), was that if we could somehow increase the regularity of patients' daily routines (specifically, their often erratic sleep/wake cycles, meal times, and times of rest versus activity) we could thereby help strengthen their otherwise vulnerable circadian systems. ”

Frank et al 2007

Interpersonal and Social Rhythm Therapy (IPSRT): Goals

- Stabilize daily routines and sleep/wake cycles
- Gain insight into the bi-directional relationship between moods and interpersonal events
- Ameliorate interpersonal problems
- → Reduce the frequency of episode recurrence

Frank E, et al. 2000 *Biol Psychiatry*

Social Rhythm Metric – Adolescent Version

- Primary method for assessing and stabilizing social rhythms
- A “teen friendly” SRM (the SRM-A)
- Based on original 5-item SRM
- Added 3 items:
  - Exercise
  - Homework
  - Extracurricular activity

Social Rhythm Metric for Adolescents (SRM-A)

	Activity	Target Time	Mon	Tues	Wed	Thur	Fri	Sat	Sun
	Out of bed								
	First contact with another person								
	Start school/ main activity of the day								
	Physical exercise								
	Have dinner								
	Homework								
	Other activity:								
	Go to bed								
	Rate your mood *(-10 to +10)*								

Hlastala & Frank, 2006

Social Rhythm Regularization

- First, review a few days together to model
- Next, teen will track routines over the week with the tool (and rate mood)
- Teen is not to make changes or set target times (yet)
- Then, review SRM-A together, look for unstable rhythms
- Discuss the nature of the teen's activities and rhythms, how regularity could be increased

Social Rhythm Metric Regularization

- Find the most unstable rhythms
- Set goals, reasonable expectations for change
- Search for triggers to rhythm disruption (planned and unplanned)

- Focus on minimizing changes in sleep on the weekends
  - Consider one night (Friday) of later bedtime and sleeping in
  - Limit Sunday night/Monday morning problems
- School breaks
- Vacation

Sleep

- Discuss normative sleep patterns for adolescents
- Discuss impact of sleep and sleep disturbances on mood
- Provide relevant sleep hygiene interventions

The normative sleep deficits and sleep disturbance that commonly characterize adolescence suggests that **stabilizing sleep and improving sleep quality is highly indicated**

Healthy Sleep Habits

Change Your Routine!

- Get up and go to bed at the same time every day. Stick to these times regardless of how much sleep you actually got
- Don't take naps
- If you don't fall asleep after about 30 minutes:
- Get up (get out of bed AND out of your room)
- Do something BORING until you feel sleepy (No TV or computer)
- Return to bed when you are sleepy
- Repeat this process as need throughout the night
- Use your bed for sleeping only

What else can I do?

- Make sure your bedroom is quiet, dark, comfortable and COOL
- Take a hot bath or shower an hour before bedtime
- Have a light snack before bed
- Develop a few sleep rituals

Is there anything I shouldn't do?

- Avoid big meals before bedtime
- Avoid exercise before bedtime
- Avoid from caffeine, nicotine and alcohol before bedtime
- Don't repeatedly look at the clock

Screen Use

Cain & Gradisar 2011, *Sleep Medicine*
K-State Research and Extension CC BY 2.0
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Eating and Diet Related Interventions

- Adopt a regular eating schedule
- Check in with PCP to rule out nutritional/health concerns
- Consult a dietician
- Mindful eating
- Emotion education and regulation strategies
    - Emotion regulation skills
    - Mindfulness
    - Problem solving

Regular Eating Schedule

9 am: Breakfast

10:30am: morning snack

12:00 pm: Lunch

3:30 pm: afternoon snack

6:30 pm: Dinner

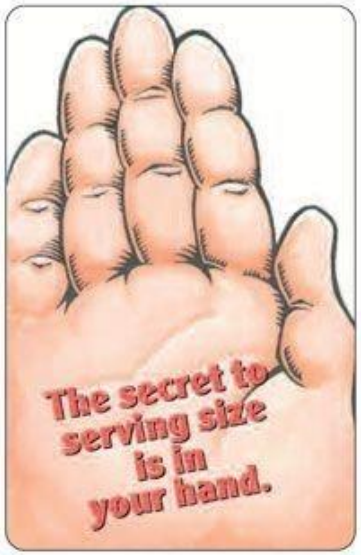
9 pm: evening snack

TABLE 5. Approximate calorie needs per day (plus or minus 100 calories).

Age (years)	Activity level: Inactive	Somewhat active	Active
		Women	
18–50	1,900	2,100	2,400
Over 50	1,600	1,800	2,100
		Men	
18–50	2,500	2,700	3,000
Over 50	2,100	2,300	2,600

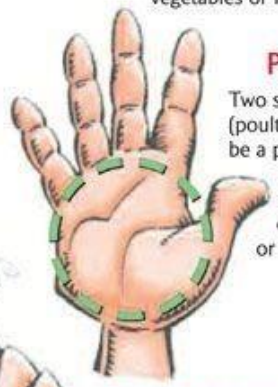
Fairburn, Christopher G. *Overcoming Binge Eating*. Guilford, 1995.

THE SECRET TO SERVING SIZE IS IN YOUR HAND



A fist or cupped hand = 1 cup

1 serving = 1/2 cup cereal, cooked pasta or rice
or 1 cup of raw, leafy green vegetables
or 1/2 cup of cooked or raw, chopped vegetables or fruit



Palm = 3 oz.of meat

Two servings, or 6 oz., of lean meat (poultry, fish, shellfish, beef) should be a part of a daily diet. Measure the right amount with your palm. One palm size portion equals 3 oz., or one serving.

A thumb = 1 oz. of cheese

Consuming low-fat cheese is a good way to help you meet the required servings from the milk, yogurt and cheese group. 1 1/2 - 2 oz. of low-fat cheese counts as 1 of the 2-3 daily recommended servings.

Thumb tip = 1 teaspoon

Keep high-fat foods, such as peanut butter and mayonnaise, at a minimum by measuring the serving with your thumb. One teaspoon is equal to the end of your thumb, from the knuckle up. Three teaspoons equals 1 tablespoon.

Handful = 1-2 oz.of snack food

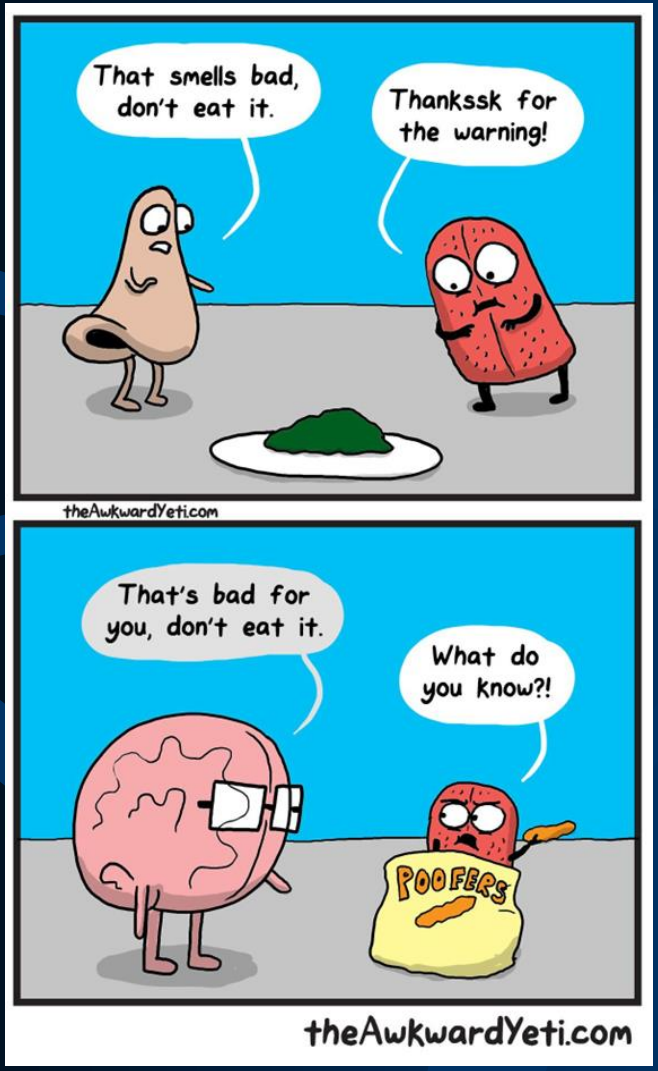
Snacking can add up. Remember, 1 handful equals 1 oz. of nuts and small candies. For chips and pretzels, 2 handfuls equals 1 oz.

1 tennis ball = 1 serving of fruit

Healthy diets include 2-4 servings of fruit a day.

Because hand sizes vary, compare your fist size to an actual measuring cup.

Good reminders about diets/dieting



- There's no single "healthy diet"
- There's no "perfect" way to eat or to be healthy
- A healthy diet involves eating a wide variety of foods
- Try your best to avoid strict/extreme diets

Conclusions & Questions

- Circadian rhythms are a key part of eating and sleeping behaviors
- Regularity is a key to maintaining stable mood!
- Starting with small goals sets patients up for the most success

Acknowledgments & Resources

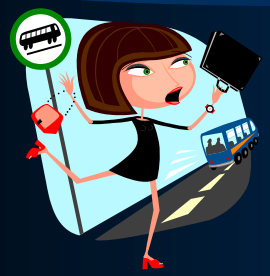
- Child and Adolescent Bipolar Spectrum Services (CABS)
- CABS Faculty and Staff

Resources

CABS: www.pediatricbipolar.pitt.edu
National Sleep Foundation: www.thensf.org
CHP Pediatric Sleep Program:
www.chp.edu/our-services/pulmonology/services/sleep
Helpful factsheets on sleep:
https://Kidshealth.org/en/parents/growth/sleep

The Biggest Challenge: Getting the Teen "On Board" for the SRM-A

- Try a 1-week experiment
- Problem solve obstacles
- Consider use of technology



The Biggest Challenge: Getting the Teen "On Board" for the SRM-A

- Find a buy-in for the teen: What do they want?
- Tie their goals back to the rationale for the SRM-A
- It is the therapist's responsibility to help the teen see the SRM-A as useful