

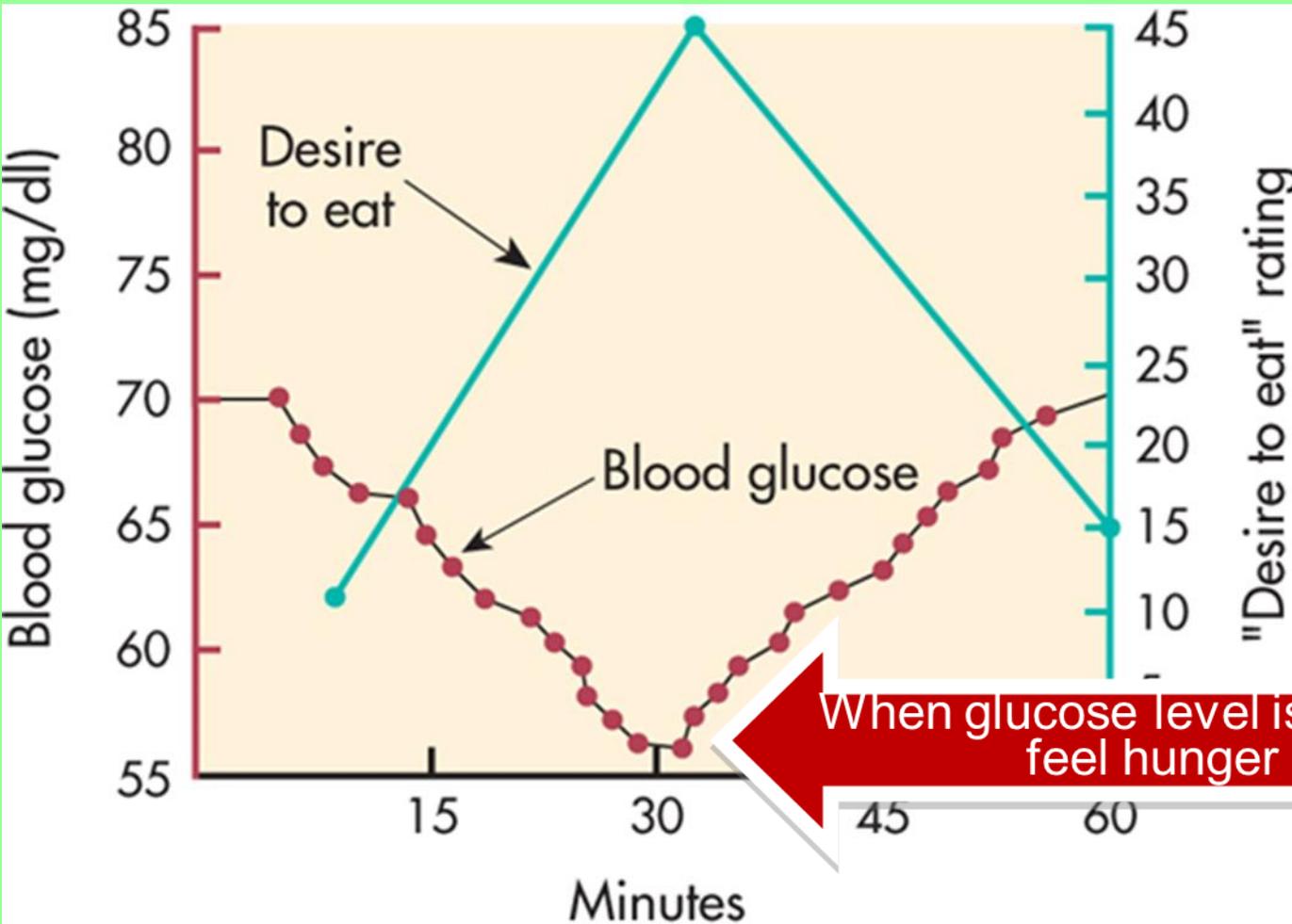
What is the relationship between glucose and hunger?

- What does glucose do?

Body Chemistry

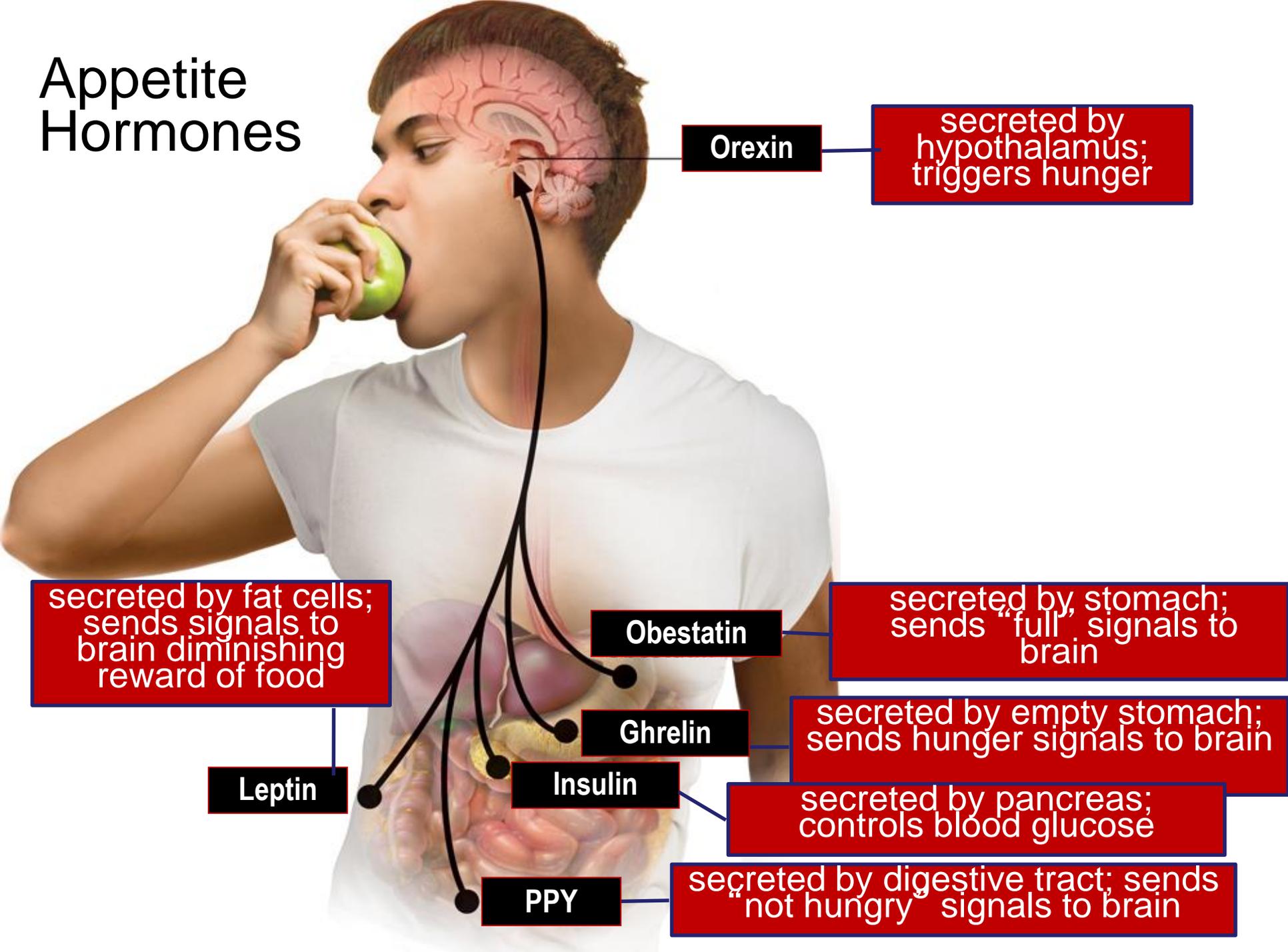
- Glucose

The hormone *insulin* converts glucose to fat.



When glucose level is low, we feel hunger

Appetite Hormones



Orexin

secreted by hypothalamus; triggers hunger

secreted by fat cells; sends signals to brain diminishing reward of food

Leptin

Obestatin

secreted by stomach; sends "full" signals to brain

Ghrelin

secreted by empty stomach; sends hunger signals to brain

Insulin

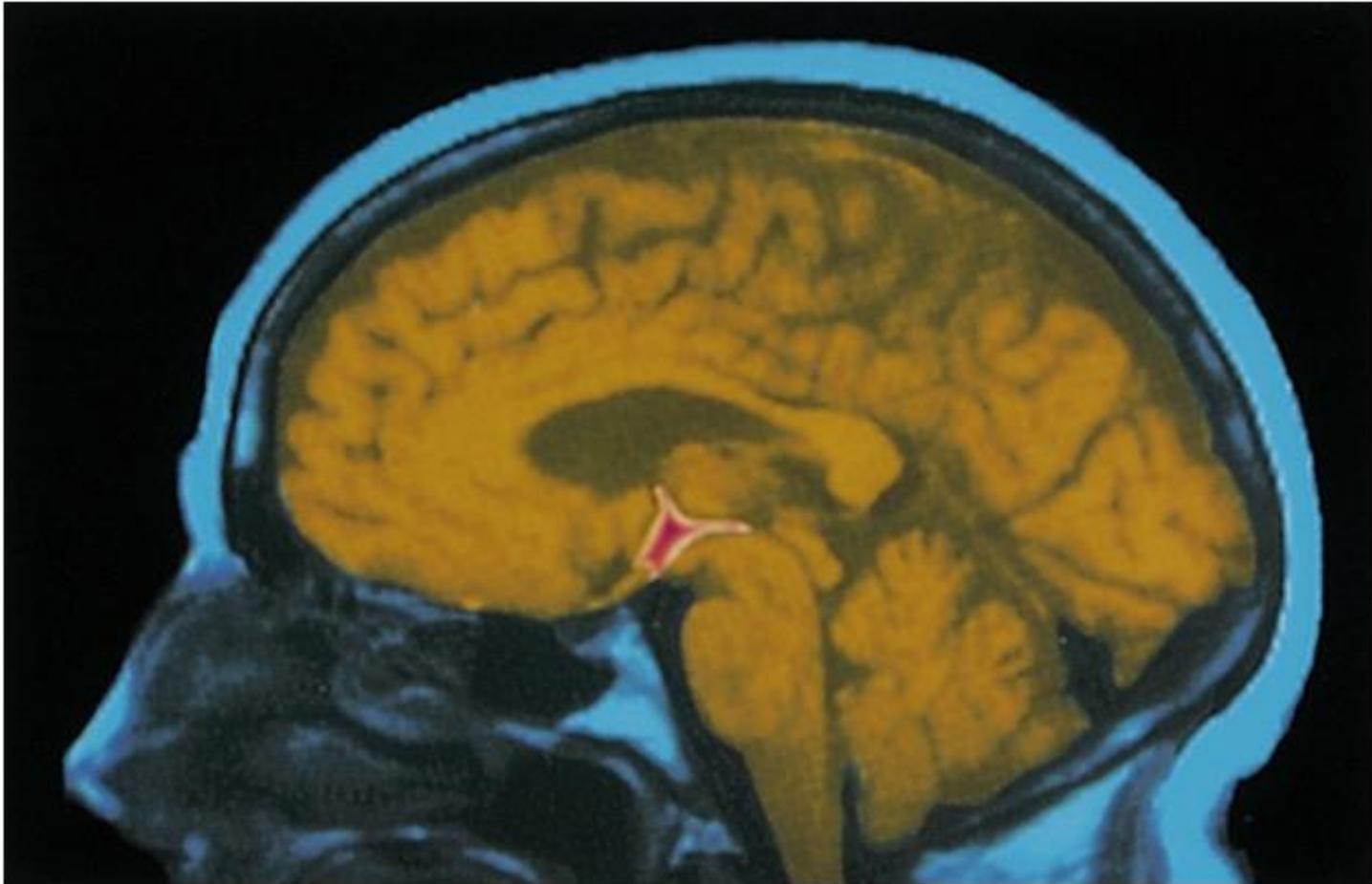
secreted by pancreas; controls blood glucose

PPY

secreted by digestive tract; sends "not hungry" signals to brain

The Brain

In the 1960's it was discovered that hunger comes from.....



The Hypothalamus

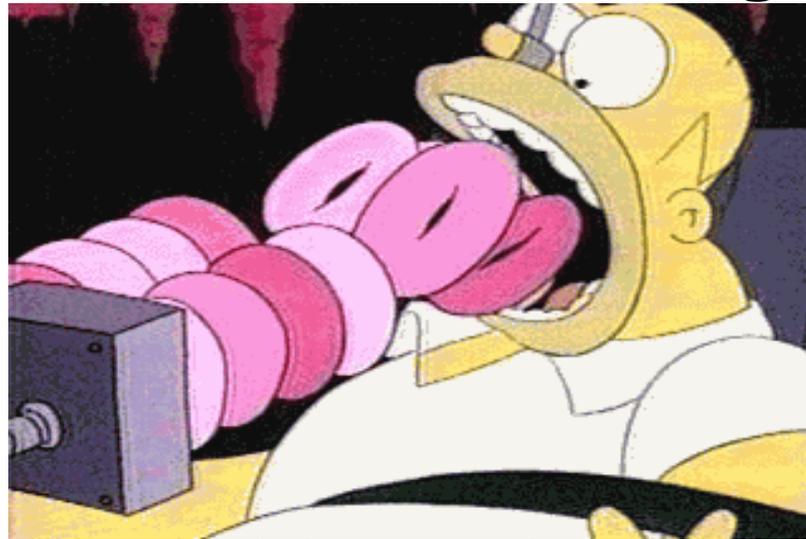
What are the names of the two areas of the hypothalamus that help to control hunger?

- What is the function of the lateral hypothalamus?
- What is the function of the ventromedial hypothalamus?

The Hypothalamus & Hunger

- Along the sides of the hypothalamus is the *lateral hypothalamus*: which brings on hunger.

Stimulate the *lateral hypothalamus* and even a well fed animal will begin to eat.



Lesion the *lateral hypothalamus* and a starving animal will have no interest in food.

The Hypothalamus and Hunger

- Along the lower middle section of the hypothalamus is the *ventromedial hypothalamus*: which depresses hunger.

Stimulate the *ventromedial hypothalamus* and the animal will stop eating

Lesion the *ventromedial hypothalamus* the animal will continuously want to eat.



What is set point?

How does the hypothalamus work?

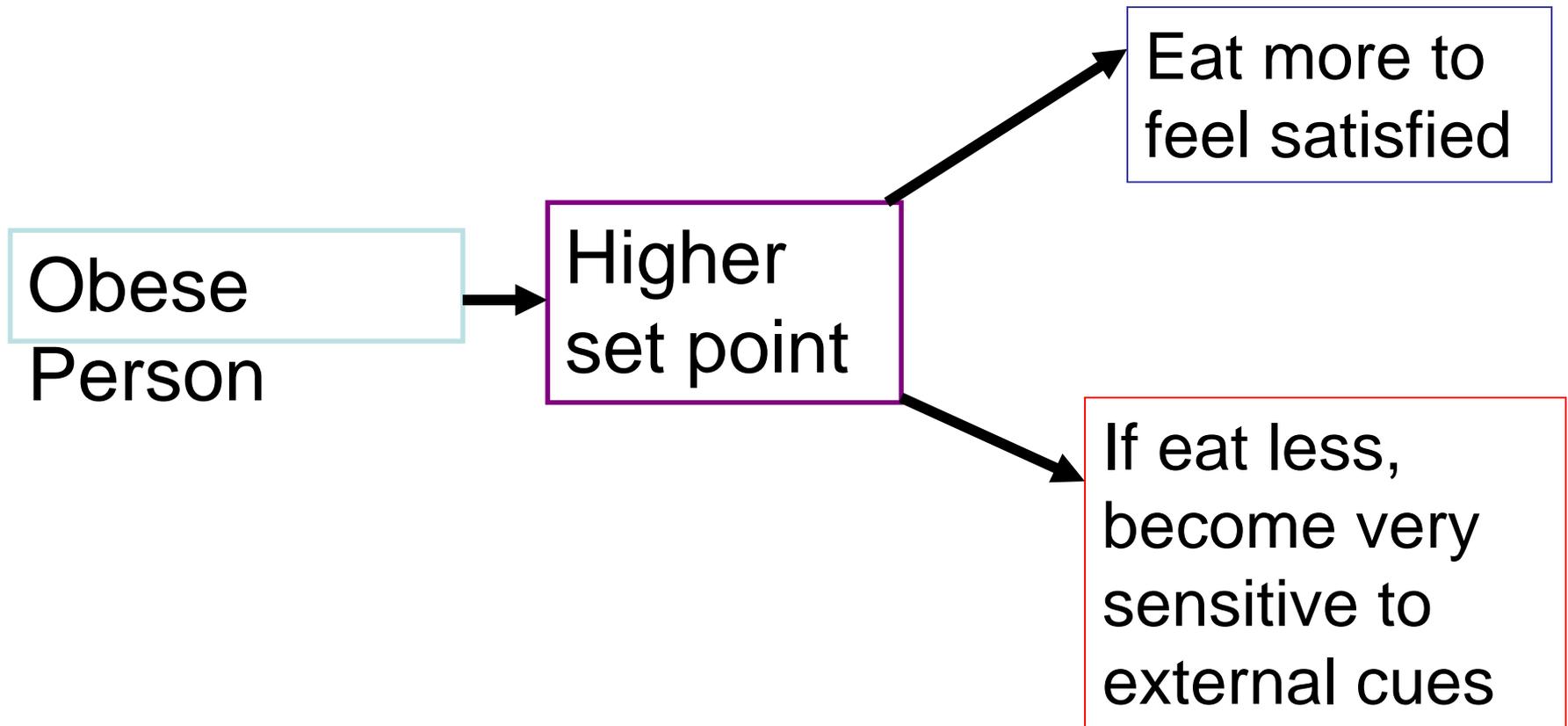
Two Theories

Leptin

Set Point

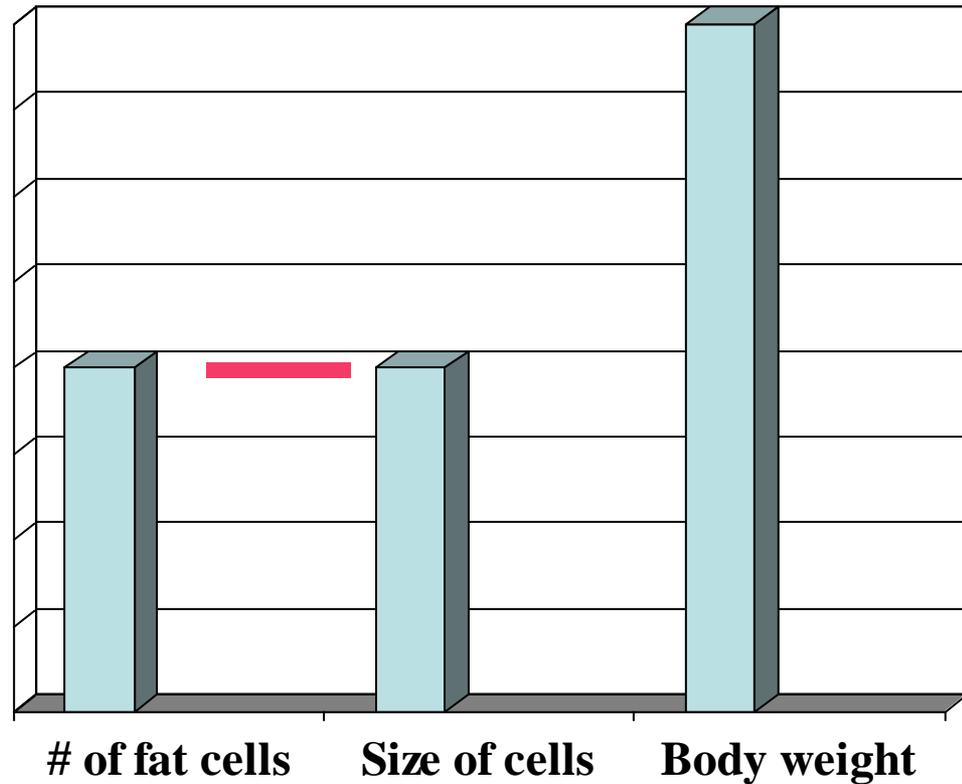
- Leptin is a protein produced by bloated fat cells, designed to reduce eating.
- Hypothalamus senses rises in leptin and should curb eating and increase activity.
- Those who eat a lot of sugar may become "leptin resistant" so the messages go unheeded.
- Hypothalamus acts like a thermostat.
- We are meant to be in a certain weight range.
- When we fall below weight our body will increase hunger and decrease energy expenditure (Basic Metabolic Rate).
- What happens if we go above our **set point**?

Set point



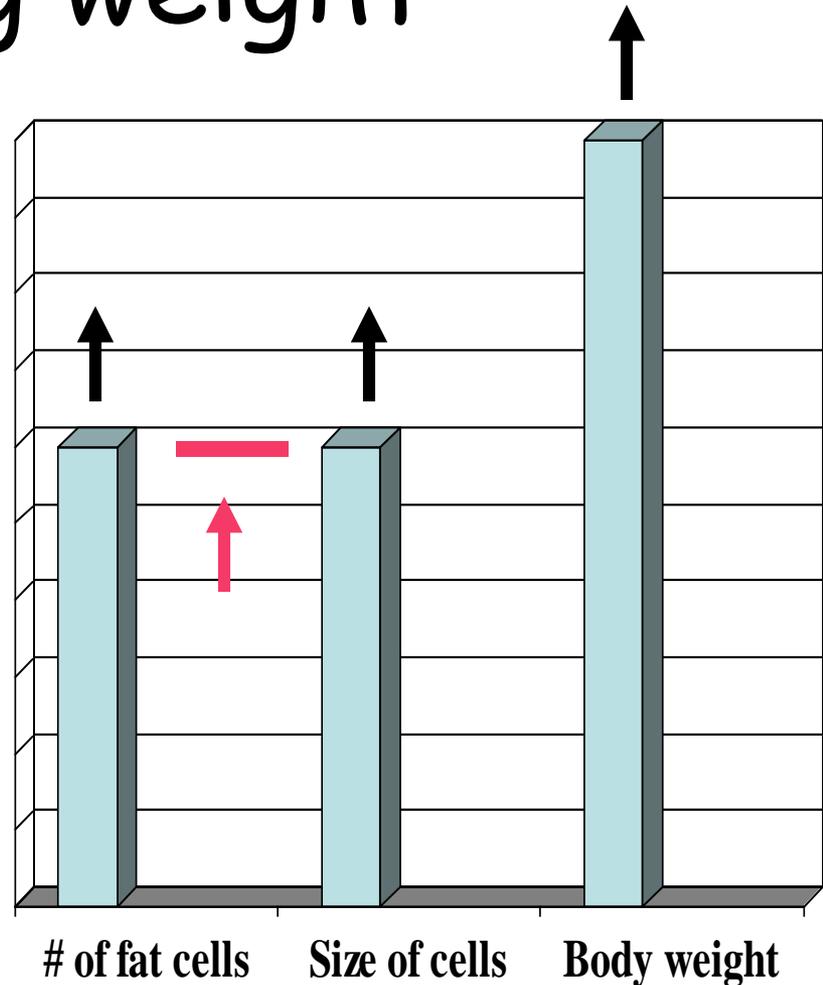
Set Point theory

- Set Point -----



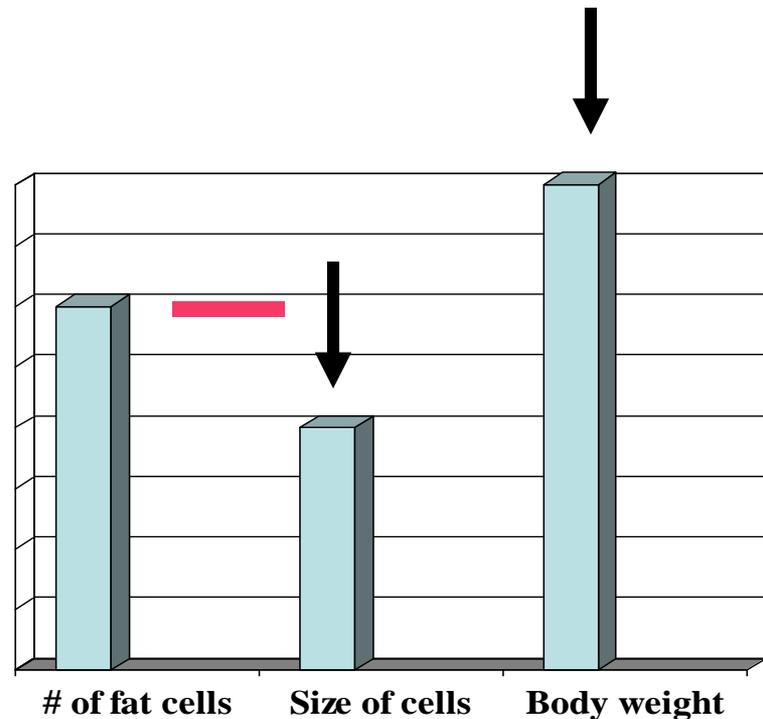
Gaining weight

- Increase in body weight
- Increase in # and size of fat cells
- Raises **set point**



Losing weight

- Any loss of weight after age of two
- No decrease in # of fat cells
- Decrease in size
- Weight **set point** doesn't drop
- Lowest possible weight gets "stuck"

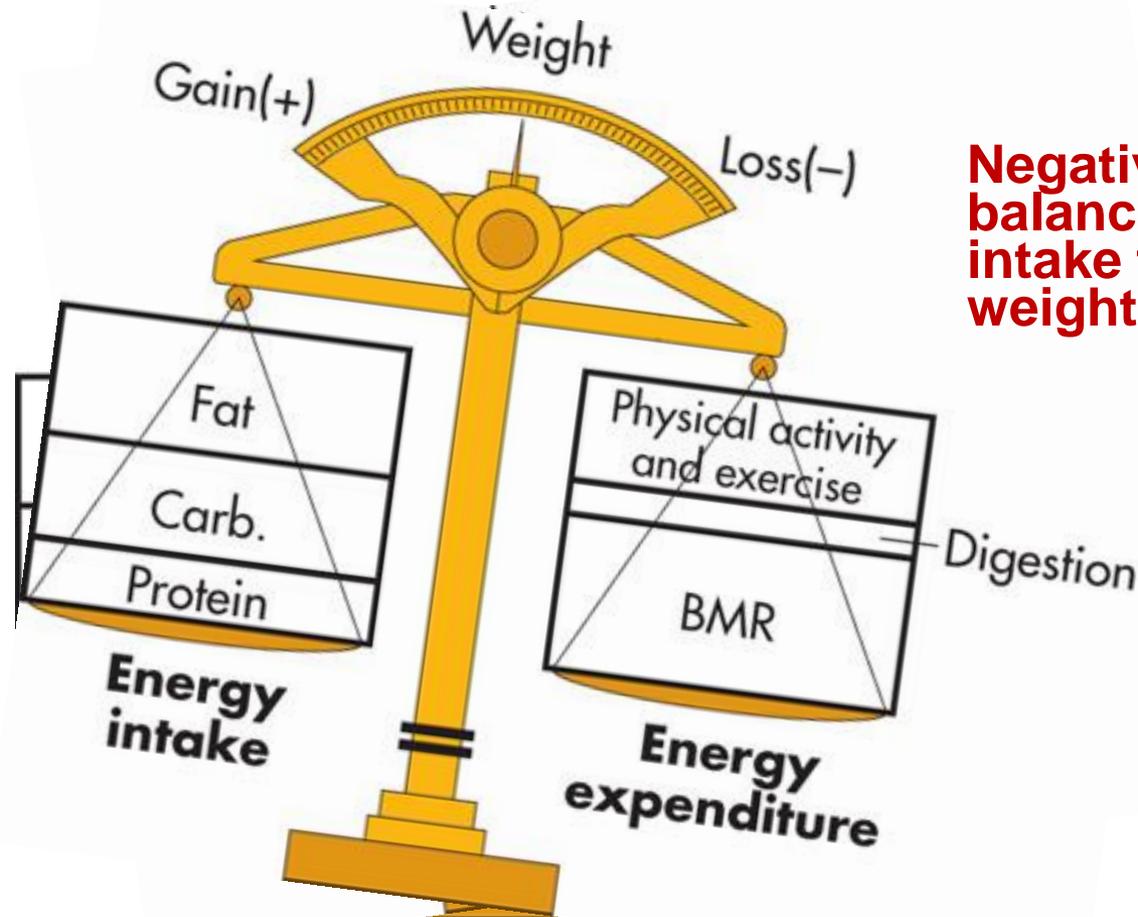


Hunger and Energy Balance

- **Energy homeostasis**—Long-term matching of food intake to energy expenditure
- **Baseline metabolic rate (BMR)**—The body's resting rate of energy expenditure

Energy balance:
calories consumed
match calories
expended

Positive energy balance: calorie intake exceeds expenditure:
weight gain



Negative energy balance: calorie intake falls short:
weight loss

Yo-Yo effect

- 95 % of wt lost is regained within a year
- Some dieters put on more wt than lost
- **Famine hypothesis**
 - Fat cells "think" there must be a famine while dieting
 - Rebound when person stops diet to help body survive the next "famine"

Set point and genetics

- IF...High metabolic rate
- THEN...Eat without gaining weight
- IF...Low metabolic rate
- THEN...Gain wt easily



The Psychology of Hunger

- *Externals:*
people whose eating is triggered more by the presence of food than internal factors.



Other factors which affect eating



- Meals by the clock
- Meal size unrelated to energy expended
- Highly palatable foods may be high in calories
- Eat for emotional or social reasons

Taste Preferences

Food taste better and we chew less when we are hungry (beginning of a meal).

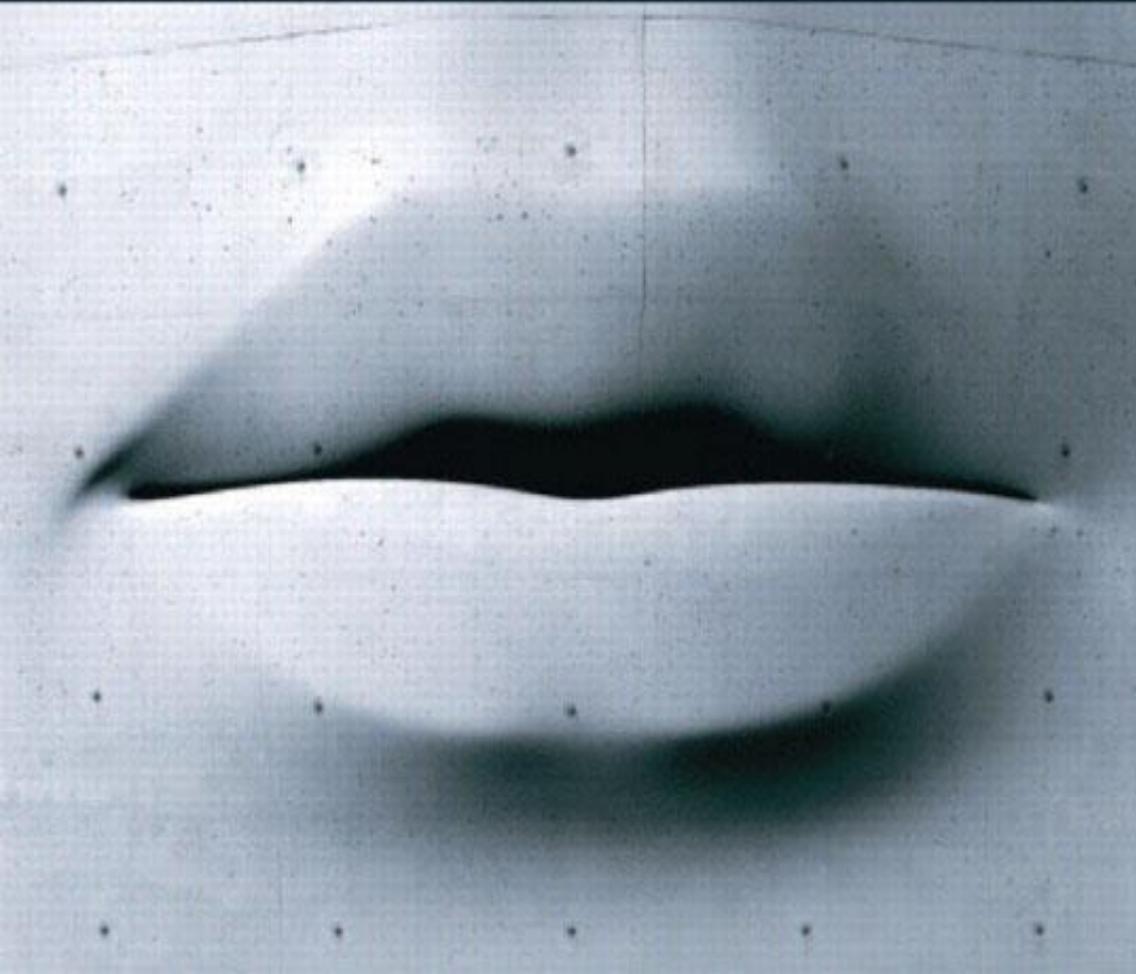
Food tastes worse and we chew more when we are not hungry (at the end of the meal).



Its weird, the better the food tastes, the less time we leave it in our mouths.



EATING DISORDERS



You Can't Weigh
Your Self-Esteem
or Self-Image; It's
What's Inside That
Carries The Most Weight

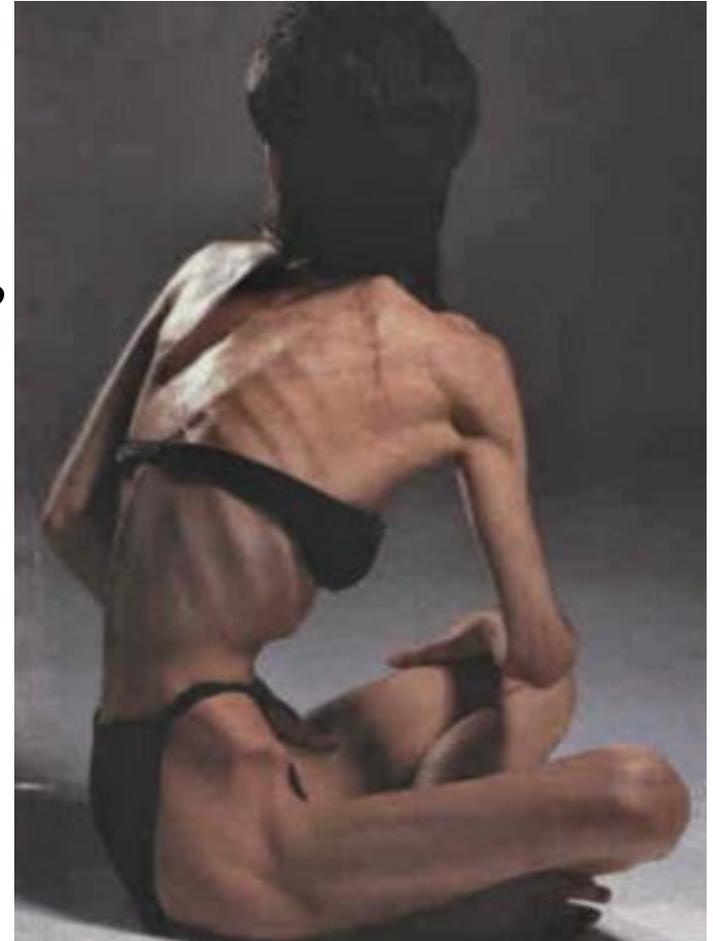




Overcoming Anorexia

Eating Disorder information:

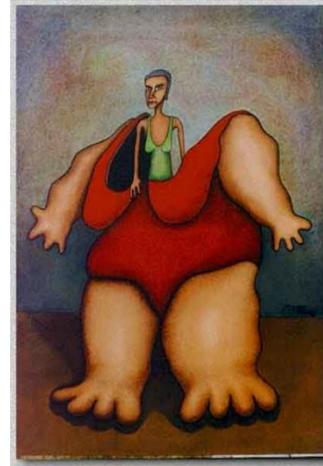
- The most common behavior that will lead to an eating disorder is dieting.
- Body shape and weight overly influence self-image
- It is estimated that currently 11% of high school students have been diagnosed with an eating disorder.
- Up to 19% of college aged women in America are bulimic.



- What are the differences between Anorexia and Bulimia?

What is Anorexia Nervosa?

- Anorexia Nervosa - normal weight person has distorted self-perception of being "fat"
 - Self-starvation regimens
 - Become dangerously underweight
 - Considered 15% or more underweight
 - 9 out of 10 times = adolescent female
 - Often can display characteristics of bulimia
 - Starts as a diet
 - Recovery rate is 70%



Ana Carolina Reston, 21



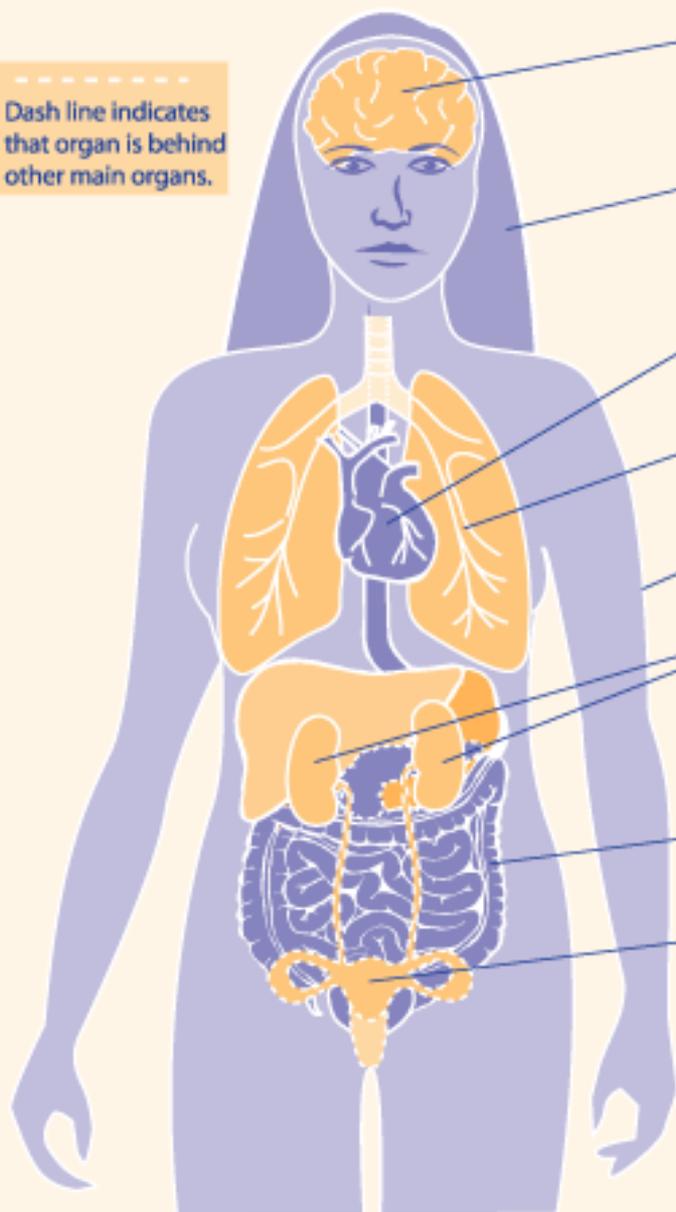
She had been modeling since she was 13 and she was keeping her family afloat with the money she got from her contracts.



When she died, the big-eyed Ana weighed only 88 lbs, and was 5'8". She had the body of a 12-year-old girl. She was 21.

Anorexia affects your whole body

Dash line indicates
that organ is behind
other main organs.



Brain and Nerves

can't think right, fear of gaining weight, sad, moody, irritable, bad memory, fainting, changes in brain chemistry

Hair

hair thins and gets brittle

Heart

low blood pressure, slow heart rate, fluttering of the heart (palpitations), heart failure

Blood

anemia and other blood problems

Muscles and Joints

weak muscles, swollen joints, fractures, osteoporosis

Kidneys

kidney stones, kidney failure

Body Fluids

low potassium, magnesium, and sodium

Intestines

constipation, bloating

Hormones

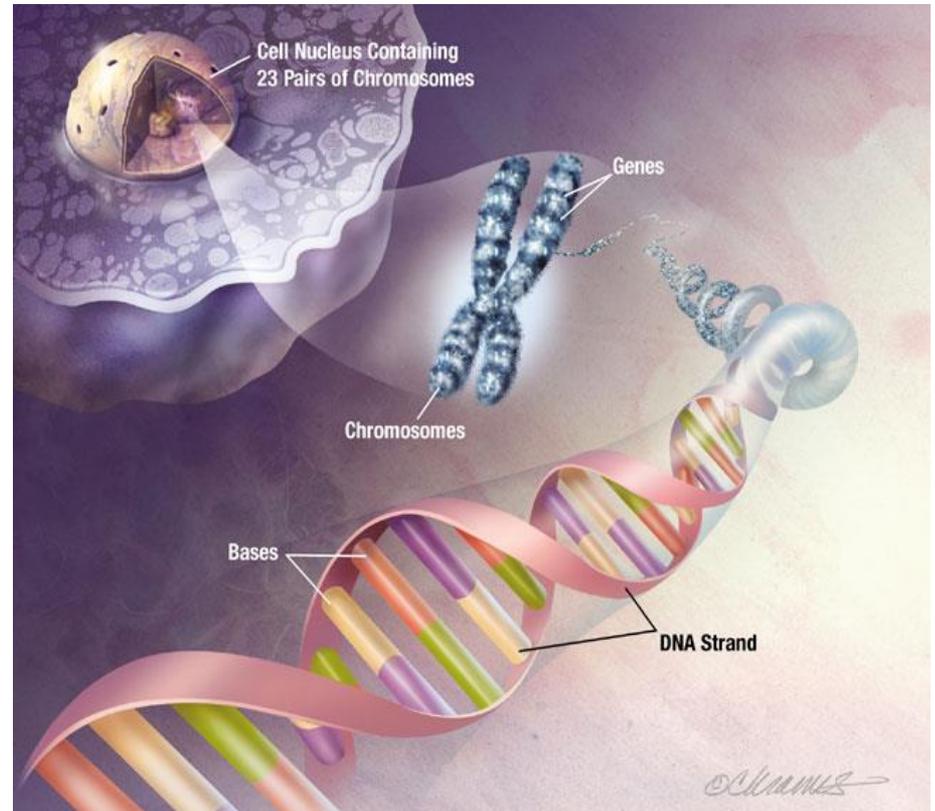
periods stop, bone loss, problems growing, trouble getting pregnant. If pregnant, higher risk for miscarriage, having a C-section, baby with low birthweight, and post partum depression.

Skin

bruise easily, dry skin, growth of fine hair all over body, get cold easily, yellow skin, nails get brittle

Genetic Factors

- Anorexia nervosa occurs eight times more often in people who have relatives with the disorder. However, experts do not know exactly what the inherited factor may be.
- In addition, anorexia nervosa occurs more often in families with a history of depression or alcohol abuse.

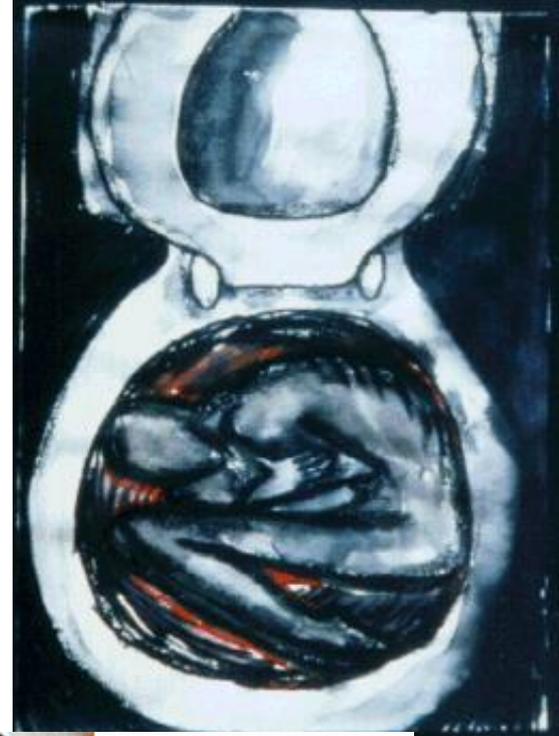


Eating Disorders

- Bulimia nervosa
 - Binge eating followed by purging
 - Recurrent behaviors to prevent weight gain, such as self-induced vomiting, laxative use, excessive exercising

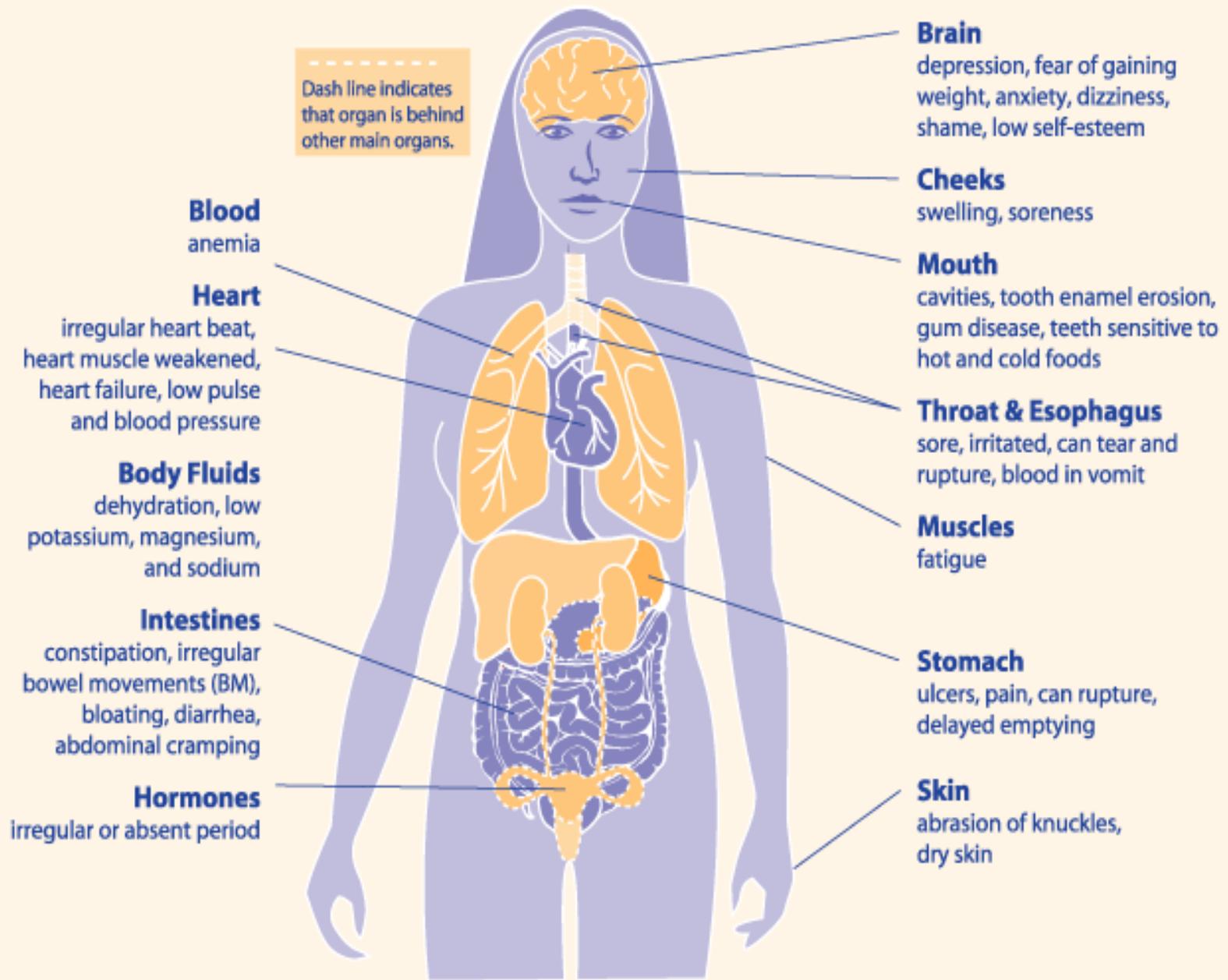
Characterized by

- Fear of gaining weight
 - Preoccupation with food
 - Suffering from depression and/or anxiety
- About 1-2% of female adolescents afflicted



How bulimia affects your body

Dash line indicates that organ is behind other main organs.



Blood
anemia

Heart
irregular heart beat,
heart muscle weakened,
heart failure, low pulse
and blood pressure

Body Fluids
dehydration, low
potassium, magnesium,
and sodium

Intestines
constipation, irregular
bowel movements (BM),
bloating, diarrhea,
abdominal cramping

Hormones
irregular or absent period

Brain
depression, fear of gaining
weight, anxiety, dizziness,
shame, low self-esteem

Cheeks
swelling, soreness

Mouth
cavities, tooth enamel erosion,
gum disease, teeth sensitive to
hot and cold foods

Throat & Esophagus
sore, irritated, can tear and
rupture, blood in vomit

Muscles
fatigue

Stomach
ulcers, pain, can rupture,
delayed emptying

Skin
abrasion of knuckles,
dry skin

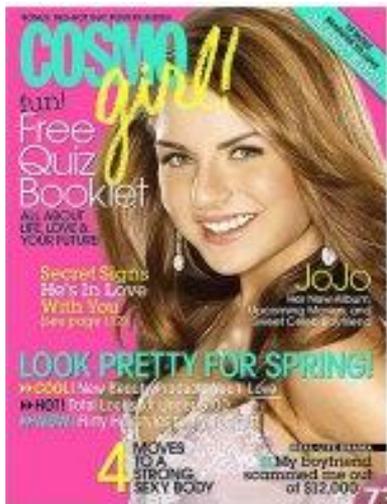
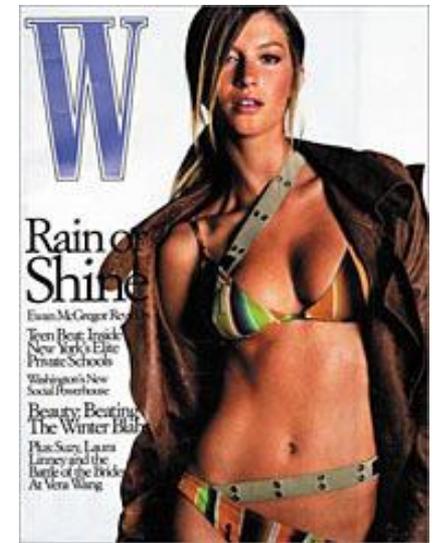
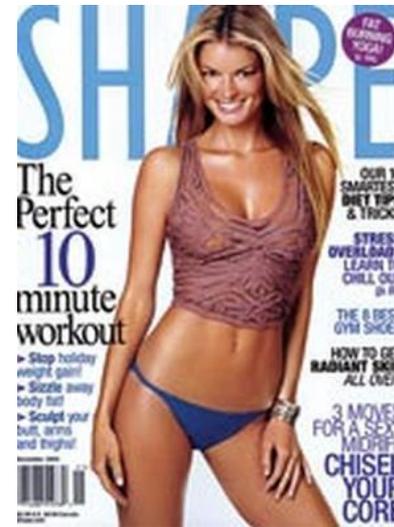
What causes Eating Disorders?

- **Media & Advertising**
- **Cultural Pressures**
- **Psychological Issues**
- **Low Self-Esteem, and Poor Self-Image**
- **Genetic factors**
- **Life Transitions**
- **Family Problems**
- **Peer & Social Pressure**

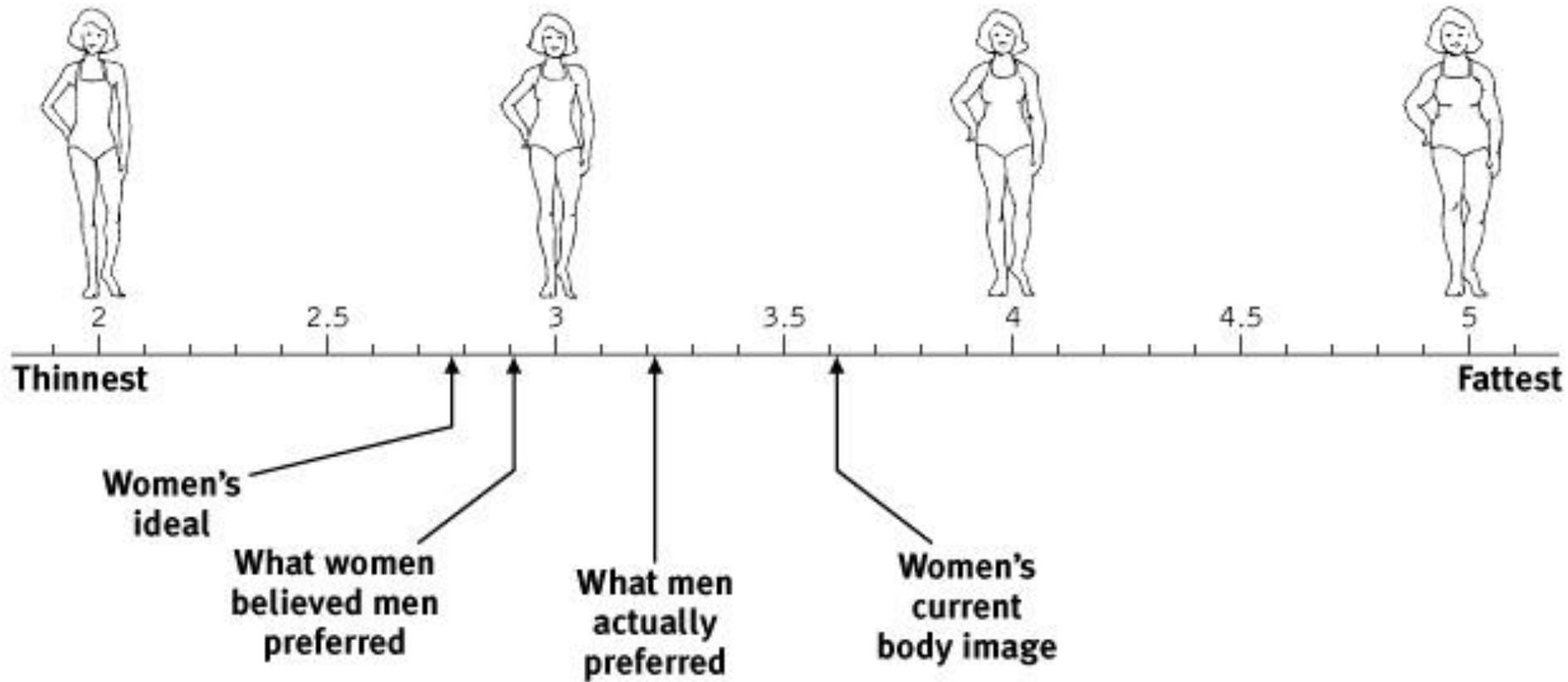


Media Influence on Teens

This idealized ultra-thin body shape is almost impossible for most women to achieve since it does not fit with the biological and inherited factors that determine natural body weight.

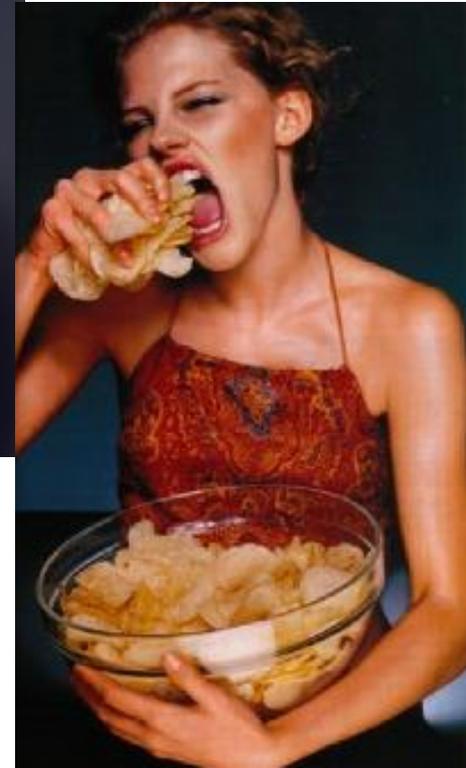
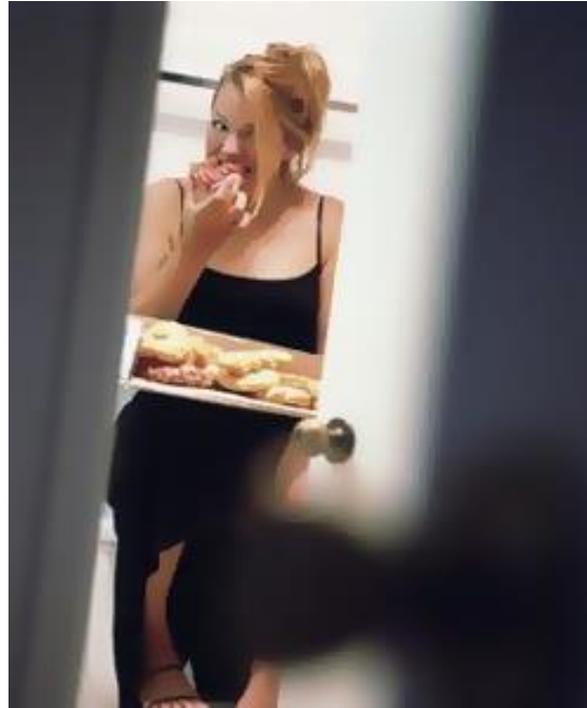


Body Image



Compulsive Overeating Disorder

- Characterized by an addiction to food.
- Episodes of uncontrolled eating or binging, during which he or she may have a pressured, frenzied feeling.
- The person may continue to eat even after becoming uncomfortably full.
- The binge is typically followed by a period of intense guilt and/or depression.



Do You Have An Eating Disorder?

- Are you constantly thinking about, planning, worrying, or changing your daily life plans in order to achieve weight loss?
- Are you already considerably underweight? People tell you that you are too thin, yet you continue to see yourself as fat.
- Are you exercising excessively, using purgatives, or going on severely restrictive diets—all to lose more weight?
- Are your eating habits, weight loss, and negative attitude toward your body beginning to impact your ability to function or enjoy life?



Self-Evaluation Quiz:

- Are you constantly thinking about your weight and food?
 - Are you dieting strictly and/or have you lost a lot of weight?
 - Are you more than 10% below your healthy weight?
 - Are people concerned about your weight?
 - Is your energy level down?
 - Do you constantly feel cold?
 - Are your periods abnormal or have your periods stopped?
 - Are you overeating and feeling out of control?
 - Are you vomiting, using laxatives or water pills, herbal agents, or trying to fast as a way to control your weight?
 - Are you over exercising or do others consider your exercise excessive?
 - Does your weight drastically fluctuate?
 - Do any of the above interfere with your enjoyment of life, relationships, or everyday functioning?
-
- If you answered yes to more than 5 of these questions, we would encourage you to get a professional evaluation.
 - National Eating Disorders Hotline: 1-800-931-2237

Obesity

A disorder characterized by being excessively overweight. Obesity increases the risk for health issues like cardiovascular diseases, diabetes, hypertension, arthritis, and back problems.



<http://www.cvberdiet.com>

Less at Risk

More at Risk

search.Dirennn

st
C

Tying it all together

- Explain with details how our motivation to eat is a combination of both internal and external factors....

Hormones and Sexual Motivation

Sexual motivation may have evolved to enable creatures to pass on their genes. Sexual desire and response is not as tied to hormone levels in humans as it is in animals.

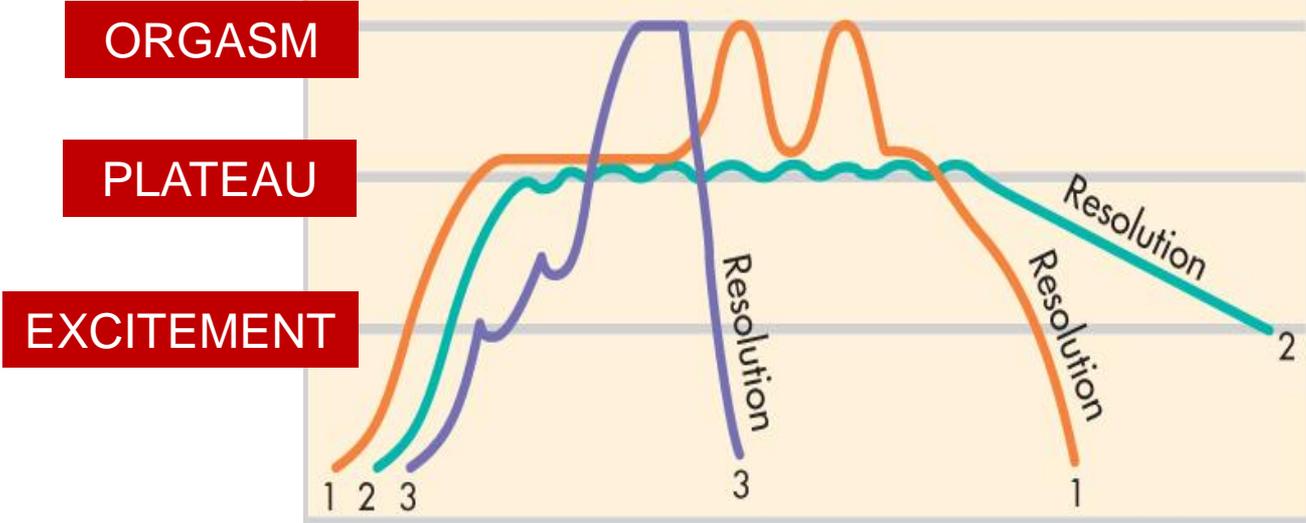
- During ovulation, women show a rise in **estrogen** and also in **testosterone**.
- As this happens, sexual desire rises in women *and also in the men around them* (whose testosterone level rises).
- Low levels of testosterone can reduce sexual motivation.



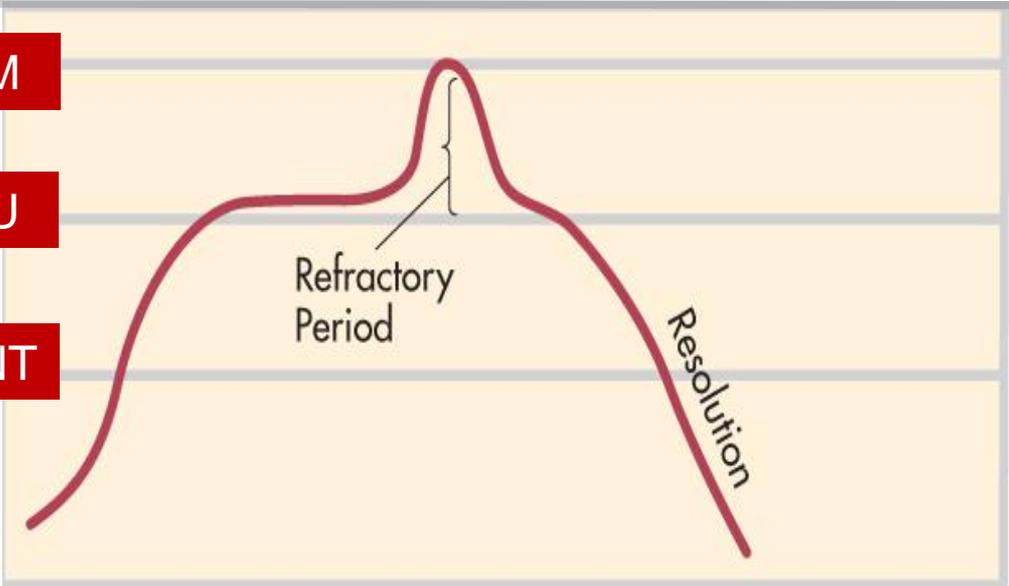
Sexual Motivation

Physiology: The Sexual Response Cycle

Female Sexual Responses: Three basic variations



ORGASM
PLATEAU
EXCITEMENT



Typical Male Sexual Response

The Effect of External Stimuli

All effects of external stimuli on sexual behavior are more common in men than in women.

The short-term effect of exposure to images of nudity and sexuality increases sexual arousal and desire.

Possible dangers include:

- the distortion of our ideas of what is appropriate and effective for mutual sexual satisfaction.
- the habit of finding sexual response through idealized images may lead to decreased sexual response to real-life sexual partners.



Imagined Stimuli

- The brain is involved in sexuality; people with no genital sensation (e.g. spinal cord injuries) can feel sexual desire.
- The brain also contains dreams, memories, and fantasies that stimulate sexual desire.
- Fantasies are not just a replacement for sexual activity; they often accompany sex.

What motivates sexual behavior?

Biological influences:

- sexual maturity
- sex hormones, especially testosterone
- sexual orientation

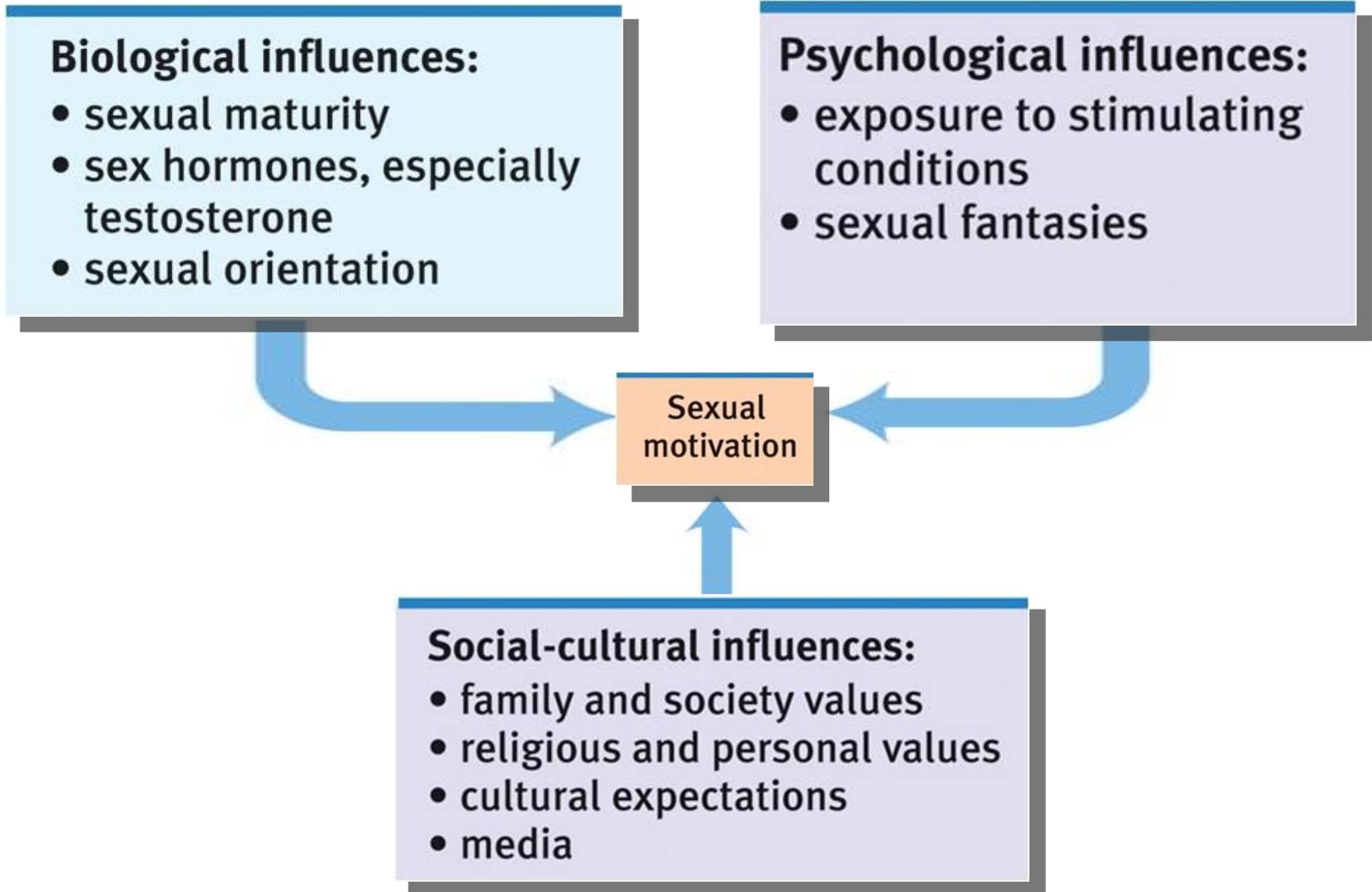
Psychological influences:

- exposure to stimulating conditions
- sexual fantasies

Sexual
motivation

Social-cultural influences:

- family and society values
- religious and personal values
- cultural expectations
- media



Adolescent Sexuality

A Snapshot of Teenage Sexuality in the United States

Proportion of teens aged 15 to 17 who have had intercourse

1995

2006-2008

Proportion of sexually active female (and male) teens who reported using contraception at last sex

1995 female

1995 male

2006 female

2006 male

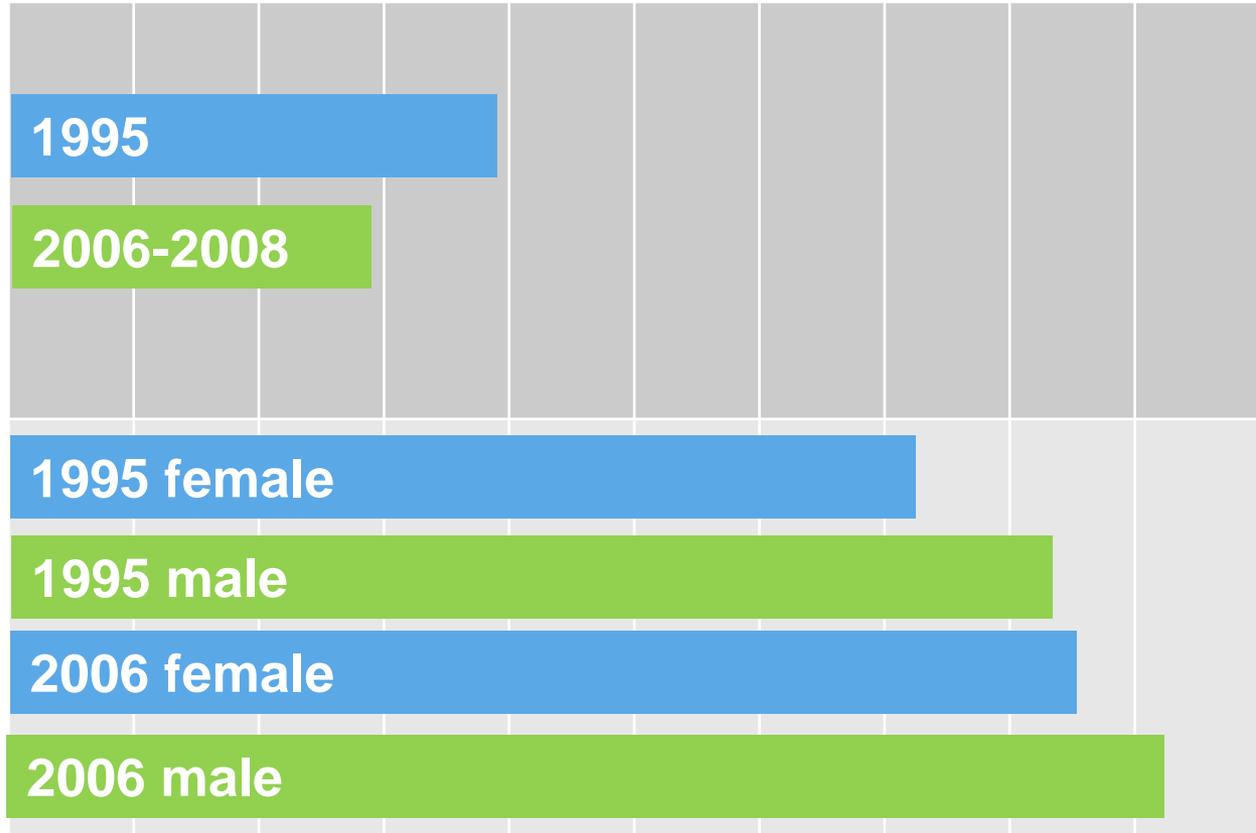
10 20 30 40 50 60 70 80 90

PERCENT

The teenage pregnancy rate

2006 41.9 per 1000

1996 53.5 per 1000



2006 41.9 per 1000

1996 53.5 per 1000

Origins of Sexual Orientation

- Theories suggesting that sexual preference is related to parenting behaviors or childhood abuse are not supported by evidence.
- Differences appear to begin at birth. This could be genetic, or it could be caused by exposure to hormones or antigens in the womb.
- The fraternal birth order effect: being born after a brother increases the likelihood of being gay.

Cause or Effect? The brain and other differences in sexual orientation

- Heterosexual men have a certain cell cluster in the hypothalamus that, on average, is larger than in gay men and in women.
- Gay men are more likely than straight men to be poets, fiction writers, artists, and musicians.

Sexual Orientation: Current Views

1

**Possible
causes of
same-sex
sexual
orientation**

2

3

Genetics and Homosexuality



- In fruit flies, a difference in one gene determined sexual orientation and behavior.
- Homosexuality seems to run in families and among identical twins, but still emerges spontaneously, even in one of a pair of twins.
- Genes related to homosexuality could be passed on by siblings or by people not living exclusively according to their sexual orientation.

Homosexuality and Gender

- Hormones that affect gender may also affect sexual orientation.
- In mammals, female fetuses exposed to extra testosterone, and male fetuses exposed to low levels of testosterone, often grow up with:
 - bodies, brains, and faces with traits of the opposite sex.
 - the sexual attraction expected of the opposite sex to one's own sex.