Hunger and Weight Regulation

Many Americans are obsessed with achieving, or at least getting closer to, the socially desirable goal of thinness. Approximately one-third of all American women and one-fourth of all American males are trying to lose weight, and the weight-loss industry is a $33 billion a year enterprise.

- Based on what you have read in your text, what advice would you give to a friend who is trying to lose weight?
- A recent finding indicates that 64% of American adults (115 million adults) are overweight or obese. This is a large increase in the last 50 years. Based on what you have learned on intelligence, explain why this gain in weight is not a genetic change in the American population, but most likely an environmental change?
- What factors lead a person to become overweight and obese?

*(from Study Guide for Psychology by Cornelius Rea to Accompany Psychology by Hockenbury and Hockenbury, page 130):*
Hunger and Weight Regulation

With an obsession with losing weight, consumers are easier to become persuaded by easy remedies such as:

- Weight-loss products such as “Slimming Insoles” that supposedly help you lose weight with every step
- The Svelt-Patch that “melts away fat as you sleep”
- Absorb-it-ALL Plus supplements promise you will lose three inches from your thighs.
- A book, Dr. Hirsch’s Guide to Scentsational Weight Loss, claims that inhaling certain odors will reduce hunger; a one-month supply of aroma “pens” (banana, green apple, and peppermint) sells for $45.
- Subliminal tapes to decrease the motivation to eat.

What motivates us to eat?
Why do we eat when we aren’t hungry?
Motivation to Eat

There are both biological factors and psychological factors that influence our eating behavior.

**Biological factors**

- One of the known factors is the hormone ghrelin (sort of sounds like growling). The presence of ghrelin increases the motivation to eat.
- Another factor is a chemical called leptin that is released by fat cells. When there is a lot of leptin in the bloodstream released by the fat cells, the desire to eat slows down.
- Damage to the ventromedial hypothalamus increases the eating behavior of rats. They will gorge themselves on “the good food” and continue eating beyond what most of us would eat.
- Damage to the lateral hypothalamus decreases the desire to eat (and other behaviors).
Hunger and Weight Regulation

Food intake: Does energy in = energy out?

Energy Balance

Weight

Gain(+)  Loss(−)

Energy intake

Fat
Carb.
Protein

Energy expenditure

Physical activity and exercise

BMR

Digestion
There are many biological, psychological and environmental factors that regulate our food intake.
The physiology of hunger

Metabolism: The body’s rate of energy (or caloric) utilization.

- **Age**: BMR slows down with increased age, especially during the first two decades of life
- **Gender**: Males tend to have higher metabolic rates than women
- **Body size**: Heavy people tend to have a higher metabolic rate than slender people*
- **Genetics**: Evidence strongly suggests that the BMR is influenced by heredity
- **Diet**: Restricted food intake lowers BMR; excess food intake increases BMR
Set-Point Theory / Settling Point Theory

Many researchers believe that there is a set point—a biologically determined “standard” around which body weight (fat mass) is regulated.

For example,
- As you eat fewer calories, your BMR decreases
- As you eat more calories, your BMR increases

When rats are
- overfed, (metabolism increases)
- then put on diets, (metabolism slows—slower weight loss)
- then overfed again, (metabolism increases—faster weight gain)
they gain weight faster and lose it more slowly the second time around (page 333).
Psychological Aspects of Eating

Often people eat when they aren’t hungry. Factors other than biology are at work that affect eating behavior. Attitudes, habits, and psychological needs regulate food intake.

• “Don’t leave food on your plate” attitude increases the likelihood that we will finish what is on our plate despite feeling full
• “autopilot snacking” while watching TV may lead us to eat even when we don’t feel hungry, thus eating more
• Social expectations—especially for women pressure women to conform to an idealized norm.
Environmental and Cultural Factors

Food availability
- Too little
- Too much

Food taste and food variety
- Good tasting food increases consumption
- Food variety increases consumption (eg. buffets)
Factors the Influence Eating Behavior

**Biological**
- Basil Metabolic Rate (BMR)
- CCK—a hormone that helps produce feelings of satiation (released by small intestines when food arrives)
- Glucose levels (low levels associated with hunger)
- Leptin (secreted by fat cells)
- Abnormal hypothalamus activity

**Psychological**
- Attitudes
- Habits (automatic eating when watching TV)
- We learn to finish what is on our plate even though we may not be hungry
- Classical conditioning (associate McDonalds with fun, not eating)
- Modeling good and bad habits
Environmental factors

- Stress
- Food availability
  - Too little
  - Too much
- Food taste and food variety
  - Good tasting food increases consumption
  - Food variety increases consumption (e.g. buffets)
Why is it Hard to Lose Weight?

When we gain weight, we increase the size and number of fat cells. When we lose weight, we only decrease the size of the fat cells.

Our metabolism decreases when we reduce our caloric intake. This has advantages for survival when food is scarce.