Hunger Motivation

Module 38 (Myers for AP 2nd Edition)
Describe the role of glucose in triggering hunger.

- Glucose is a blood sugar that is a major source of energy. When you are low on glucose, your stomach, intestines, and liver will signal your brain to motivate eating, which then triggers your hunger.
Explain the effects on hunger and eating behavior when stimulating or destroying the appetite suppression areas of the hypothalamus?

• When an appetite-enhancing center of the hypothalamus is stimulated electrically, well-fed animals begin to eat. If the area is destroyed, even starving animals have no interest in food.

• The opposite occurs when an appetite-suppressing area is stimulated: Animals will stop eating. Destroy this area and animals will eat and eat and become extremely fat.
Explain the impact of the set point on hunger and energy output?

• When the body falls below the set point—or the point at which an individual’s “weight thermostat” is supposedly set—an increase in hunger and a lowered metabolic rate may act to restore the lost weight.
Why might the term set point be too limiting in explaining weight gain and loss? How might a person attempt to increase his or her basal metabolic rate?

• A biologically fixed set point, according to some researchers, doesn’t address slow sustained changes in body weight that can alter a person’s set point.

• To increase the basal metabolic rate, become more active.
- **Insulin** – secreted by pancreas, controls blood sugar
- **Leptin** – secreted by fat cells, increases metabolism, reduces appetite
- **Orexin** – secreted by hypothalamus, triggers hunger
- **Ghrelin** – secreted by empty stomach, tells brain “I’m hungry”
- **Obestatin** – secreted by stomach, tells brain, “I’m full.”
- **PPY** – secreted by digestive tract, tells brain, “I’m not hungry.”
- **Hypoglycemia** – lack of food, low blood sugar
- **Hyperglycemia** – high blood sugar, also known as diabetes
<table>
<thead>
<tr>
<th>Memory</th>
<th>Cultural Influence</th>
<th>Geography and Environment</th>
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<tbody>
<tr>
<td>As time passes, we think about eating again, and those thoughts trigger feelings of hunger.</td>
<td>Our preferences for sweet or salty foods are genetic, but our culture teaches us that some foods are acceptable while others are not—for example, camel, horse, dog, rat—all animals Americans and Europeans may shun but that are prized elsewhere.</td>
<td>In places where agriculture has produced milk, survival patterns favor those with lactose tolerance, while in hot climates where food spoils readily, recipes often include spices that inhibit the growth of bacteria (India averages nearly 10 spices per meat recipe, Finland only 2).</td>
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<td><strong>Group Size</strong></td>
<td><strong>Portion Size</strong></td>
<td><strong>Food Variety</strong></td>
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<td>The presence of others tends to amplify our natural behavior tendencies, such as eating.</td>
<td>When given a larger portion, we consume far more calories.</td>
<td>When presented with many different kinds of foods or desserts, we tend to eat more than when we have to take a portion from just one option.</td>
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List one social and one physiological / health consequence of being overweight or obese.

• Social—lower psychological well-being, increased risk of depression, higher likelihood of being bullied, etc.

• Physiological—increased risk of diabetes, high blood pressure, heart disease, gallstones, arthritis, certain types of cancer, late-life cognitive decline in women, etc.
What role do each of the following play in obesity?

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<th>Set/Settling Point and Metabolism</th>
<th>Genetics</th>
<th>Environmental Factors</th>
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<td>Once we become fat, we require less food to maintain our weight than we did to attain it. When an overweight person’s body drops below the set point, the person’s hunger increases and metabolism decreases.</td>
<td>Genes do play a role in our body weight. People’s weights resemble those of their biological parents (even when they live with adoptive parents), and identical twins have closely similar weights.</td>
<td>Environmental factors play a pretty important role: Those who suffer from sleep loss are more vulnerable to obesity, and we are more likely to become obese when a friend is obese, and/or we are eating more and moving less.</td>
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