

Chapter 10

- Normative development: a pattern of development that is typical or average
- Physical Growth and Development
 - o With advances in health and nutrition, children are taller and heavier than kids 100 years ago
 - o Almost 40% are overweight or at risk
 - o Sexual maturity is occurring earlier
 - o Normative Growth
 - On average, school aged children in the US gain 5-7 pounds and grow 2-3 inches each year
 - Earlier onset of puberty in girls
 - Puberty: physical changes, including sexual maturation, that occur as children pass from childhood into adulthood
 - Girls have more body fat, while boys have more lean body mass per inch of height
 - Earliest outward signs of puberty are the development of breast buds("larche") around age 10.5in girls and testicular enlargement in boys around age 11.5
 - Age of menstruation in girls ("menarche") has dropped over time in a secular trend (changes over generations)
 - Growth occurs in spurts rather than gradually
 - Growth is most rapid at night while the child is lying down
 - Lower half of the body grows fastest
 - Body proportions changing
 - Torso becomes slimmer
 - Bones, especially in arms and legs, become longer and broader
 - Center of gravity shifts to pelvis
 - Children very flexible because ligaments not firmly attached to the bones
 - Children lose their primary (baby) teeth
 - Permanent teeth come in at about 4 per year
 - Children's eyes are maturing in size and function
 - Myopia, or nearsightedness, often develops between age 6 and adolescence
 - More than 1 in 5 children has some kind of vision problem between ages 6 and 11
 - Hormonal changes begin in the adrenal glands (two small organs that sit on top of the kidneys)
 - Hormones send signals to the hypothalamus (a small cone-like structure in the brain) and the pituitary gland (one of the chief glands responsible for regulating hormones in the body)which are then sent to the gonads (primary reproductive organs)
 - System of signaling takes about two years to become fully established
 - o Obesity
 - In 40 years, the % of 6-11 year olds who are overweight increased from 4% to 19%

- An additional 18% are at risk for being overweight
- In the US, almost 40% (25 million) of children are either overweight or at risk
- The epidemic of being overweight can be traced to lifestyle changes
 - Fast Food
 - Families today often rely on processed convenience foods
 - High-fat snacks are everyday fare
 - In low income neighborhoods, fresh fruits/veggies and low fat dairy is rare
 - Advertising
 - Average child sees 25,600 TV commercials each year
 - 22% of ads are for food, primarily snacks, breakfast foods, and restaurants
 - 43% of ads are for sedentary activities, such as TV shows, movies, games, toys, and hobbies
 - School
 - Public schools provide breakfast and lunch to low income children with support from the USDA
 - Schools must meet minimal federal standards for nutrition AND serve food that children will eat
 - Healthier alternatives are expensive
 - Many schools have vending machines allowing students to buy food not on the school menu
 - Neighborhoods and Communities
 - Children are transported to school, they no longer walk or bike
 - Outdoor play is limited
 - Alternatives: TV and video games
 - Physical Inactivity
 - Children who were less physically active between ages 9 and 12 were more likely to be overweight by the age of 12
 - Two main difference between overweight and “never overweight” children:
 - Home environment
 - Afterschool activities
 - TV encourages sitting and eating
- Physical and Mental Health Consequences of Being Overweight
 - Health problems once seen only in adults are becoming more common in children, such as diabetes, high blood pressure, and high cholesterol
 - Overweight children are more likely to suffer from sleep apnea and asthma
 - Overweight and risk for overweight increases with age
 - Most overweight children remain that way into adulthood, causing it to be seen as a chronic problem
 - Extra pounds are a social and emotional hazard
 - Children subject to teasing and more likely to be excluded from friendship groups
 - Less self confidence in their athletic competency, social skills, and appearance

- Prone to internalizing problems, such as depression and anxiety
 - Promising Interventions
 - Programs to help children lose weight have not been very successful, but several interventions have slowed the increase in BMI typically seen in middle childhood
 - In one, a nurse taught a curriculum focused on reducing consumption of soft drinks to elementary school kids
 - Another intervention was designed to reduce the amount of time 3rd and 4th graders spent watching TV and playing video games
 - After school programs that include opportunities for outdoor free play along with structured physical activities are another promising strategy
- Brain Development
 - The brain has reached 90% of its adult size by the time the child is 8 years old
 - Normative Changes
 - Dendrites and axons (the specialized connections between neurons) are still growing, branching, and establishing new synapses in response to new experiences
 - Myelin (white, fatty substance encasing axons) also increases
 - Competitive elimination: process that strengthens synapses that are used regularly, and prunes unused synapses to eliminate clutter; accelerates the speed with which children can process information
 - Synaptic pruning leads to increased lateralization (the localization of function in one of the hemispheres of the brain)
 - Corpus callosum thickens, improving communication between hemispheres
 - Brain development typically follows a cyclical process that systematically moves around the cortex
 - Starts with the longest neural connections in the prefrontal cortex
 - Moves to the occipital lobe
 - Gradually shifts to shorter and shorter connections in the prefrontal, parietal, and temporal areas
 - After finishing in one hemisphere, growth moves to the other hemisphere and works in reverse order
 - Then, it restarts, wiring and rewiring networks to promote new learning
 - MRI studies support this view of brain growth
 - Brain growth in early childhood is concentrated in the front of the brain
 - Move further back in middle childhood
 - Growth of gray matter resembles a \cap shape
 - Although apoptosis (the programmed dying of cells) occurs in early childhood, it plays no role in the thinning of gray matter
 - Reductions of neurons in middle childhood are a result of competitive elimination
 - Areas of change in middle childhood are those related to higher level thinking
 - Frontal lobes involved in recognizing future consequences, overriding unacceptable social responses, and remembering emotional experiences
 - Prefrontal cortex involved in higher-order cognitive skills