

# Early Childhood: Biosocial Development

## Chapter Preview

Chapter 8 introduces the developing person between the ages of 2 and 6. During this period, children grow steadily taller and slimmer, with ethnicity, socioeconomic status, and nutrition influencing the variation seen in children.

Perhaps the most significant growth during early childhood is the continued maturation of the brain. As the brain matures, children experience important gains in reflective, coordinated thought and memory, as well as quicker responses. The maturation of the prefrontal cortex increases focus, which helps the child to control impulsiveness and perseveration. The expression and regulation of emotions continue to develop as the amygdala, hippocampus, and hypothalamus mature. Furthermore, with brain maturation comes greater control and coordination of the extremities, leading to dramatic improvements in gross and fine motor skills and the blossoming of artistic expression.

With their greater activity, children are more likely to have accidents, which remain the leading cause of childhood death. Injury control is presented as an approach designed to contain or prevent these accidents.

The chapter concludes with an in-depth exploration of child maltreatment, including its prevalence, warning signs, consequences for future development, treatment, and prevention.

## Chapter Guide

### I. Body Changes

1. Between 2 and 6 years of age, children grow almost 3 inches (about 7 centimeters) and gain about 4½ pounds (2 kilograms) per year. The body mass index is the lowest of the life span at ages 5 and 6.
2. By age 6, the average child in a developed nation weighs between 40 and 50 pounds (between 18 and 22 kilograms) and measures at least 3½ feet (more than 100 centimeters).
3. In multiethnic countries, children of African descent tend to be tallest, followed by those of European descent, then Asians, and then Latinos. Height differences within groups are greater than average differences between groups.
4. Whereas low income once correlated with undernourishment in many parts of the world, today it also correlates with overweight and obesity. Overfeeding of children is the major cause of the global epidemic of adult heart disease and diabetes. Overweight children tend to become overweight adults.
5. Because growth is slower during early childhood, children need fewer calories per pound of body weight; consequently, their appetites are smaller, a fact that causes many parents some concern. A

calcium, and zinc. Children who eat more dark-green and orange vegetables and less fried food gain bone mass but not fat. An estimated 3 to 8 percent of young children are allergic to a specific food, usually a food that is both healthy and common.

7. A common problem among American families of all social classes is children's overindulgence in sweets, which spoil their appetite for good foods and cause tooth decay.

8. Another common problem is the phenomenon called "just right" or "just so," in which children are rigid about their daily routines, including their food preferences and rituals.

## II. Brain Development

1. During childhood, the brain develops faster than any other part of the body. This maturation underlies children's rapidly expanding cognitive and motor abilities. By age 2, most pruning of the brain's dendrites has occurred. Between ages 2 and 6, the brain grows from 75 percent to 90 percent of its adult weight.

2. The continued proliferation of communication pathways, along with *myelination*, a process that insulates the axons of neurons and speeds transmission of neural impulses, accounts for part of this rapid brain growth. Myelination enables the child to think and react much quicker than the toddler can.

3. The *corpus callosum*, the long, thick band of nerve fibers that connects the two sides of the brain, grows and myelinates rapidly during early childhood. It allows children to better coordinate functions that involve both sides of the brain and body, which are not identical. The specialization of the two sides of the body and brain is called *lateralization* (prompted by genes, prenatal hormones, and early experiences). This process is apparent in handedness and in the feet, eyes, ears, and the brain itself. Throughout the world, societies are organized to favor right-handedness. Experts advise against trying to switch a child's handedness. About 1 out of 10 people is left handed.

4. The left hemisphere of the brain controls the right side of the body and contains areas dedicated to logical reasoning, detailed analysis, and the basics of language. The right hemisphere controls the left side of the body and contains brain areas dedicated to generalized emotional and creative impulses.

5. The final part of the brain to reach maturity is the *prefrontal cortex*, which specializes in the executive functions of planning, prioritizing, and reflection. Development of this brain area is not completed until emerging adulthood.

6. The prefrontal cortex assists in impulse control and emotional regulation. Two signs of an undeveloped prefrontal cortex are impulsiveness and *perseveration*, the tendency to stick to a thought or action for a long time.

7. The brain's limbic system plays a crucial role in the expression and regulation of emotions. Within this system is the *amygdala*, which registers emotions, both positive and negative, especially fear. Next to this area is the *hippocampus*, which is a central processor of memory, especially for locations. Another limbic structure, the *hypothalamus*, produces hormones that activate parts of the brain and body.

8. In the hormonal feedback loop called the hypothalamus-pituitary-adrenal axis (HPA), the hippocampus and the amygdala stimulate the hypothalamus to produce the hormone CRH, which signals the pituitary gland to produce ACTH, which then triggers the production of glucocorticoids (CORT) by the adrenal glands.

9. Excessive cortisol, the primary stress hormone, may destroy part of the brain's hippocampus. Excessive stress hormones in early childhood may permanently damage the limbic system and influence emotional responses throughout life.

## III. Improved Motor Skills

1. Maturation of the prefrontal cortex improves impulse control, while myelination of the corpus callosum and lateralization of the brain permit better physical coordination.

2. Gross motor skills (large body movements such as running, climbing, jumping, and throwing) improve dramatically between ages 2 and 6. According to sociocultural theory, children learn these skills best from other children.

3. Pollutants, such as lead in the water and air, pesticides in the soil or on clothing, and BPA in plastic, can harm young, growing brains. Pollutants are of particular concern for urban young children. Children from low-SES families are more likely to live in areas with high levels of pollution.

4. Fine motor skills (small body movements such as pouring without spilling and using a knife and fork) are much harder for preschoolers to master. Fine motor skills typically mature about 6 months

immature corpus callosum (many fine motor skills need two hands, incorporating both sides of the brain) and prefrontal cortex and having short, fat fingers that are unsuited for many utensils, toys, and clothes.

6. During early childhood, children are imaginative, creative, and not very self-critical. Their artwork reflects their unique perception and cognition.

7. The developmental progress in children's drawings of the human figure reveal the gradual maturation of brain and body. However, psychologists disagree as to whether children's drawings reflect their emotions.

#### IV. Injuries and Abuse

1. In developed nations, more children die of violence—either accidental or deliberate—than from any other cause. Immaturity of the prefrontal cortex makes children unlikely to think things through, so they plunge into dangerous places and activities.

2. The best approaches to safety education may be those that emphasize *injury control/harm reduction*.

3. Preventive community actions that reduce everyone's chance of injury are called *primary prevention*. Preventive actions that avert harm in the immediate situation constitute *secondary prevention*. Actions aimed at minimizing the impact of an adverse event that has already occurred constitute *tertiary prevention*.

4. *Child maltreatment* includes all intentional harm to or avoidable endangerment of someone under age 18. Maltreatment falls into one of two broad categories: *child abuse*, which includes all actions that are deliberately harmful to a child's physical, emotional, or sexual well-being, and *child neglect*, which refers to failures to act appropriately to meet a child's basic physical, educational, or emotional needs.

5. Although it is difficult to estimate the prevalence of maltreatment, since 1993, the number of *reported maltreatment* cases has ranged from about 2.7 million to 3.5 million per year. The number of *substantiated maltreatment* cases in the United States in 2009 was about 1 maltreated child in every 80.

6. Often, the first sign of maltreatment is delayed development. Maltreated children may also exhibit symptoms of *post-traumatic stress disorder (PTSD)*, which was first described in combat victims.

7. (A View from Science) Abused children tend to regard others as hostile and exploitive, and hence they are less friendly, more aggressive, and more isolated than other children. As adolescents and adults, they are more likely to engage in self-destructive and/or other destructive behaviors.

8. Once maltreatment has been substantiated, the first priority is *permanency planning* for the child's long-term care. One long-term solution to the care of a child who has been abused is *foster care*, a paid option in which the child is removed from parental custody and placed in the care of another adult.

9. In another type of foster care, called *kinship care*, a relative of the maltreated child becomes the approved caregiver. A final option is *adoption*, which is the preferred permanent option.