

# DEVELOPMENTAL AND BEHAVIORAL SCIENCES

Mary Jo Gilmer, PhD, MBA, RN-BC, FAAN, and  
Paula Chiplis, PhD, RN, CPNP

Children have unique minds, bodies, and needs. Careful attention to these differences and consideration of psychosocial and physical growth are essential in assessing, analyzing, and planning care for children. In addition, family context and cultural and spiritual dimensions of care affect a child in a multitude of ways; family dynamics, roles, and values should be a part of each plan of care.

## PSYCHOSOCIAL, COGNITIVE, AND ETHICAL-MORAL DEVELOPMENT

Psychosocial theorists whose frameworks are useful in pediatric health care are presented below.

### **Erikson's Life Stages**

Erik Erikson, a developmental psychologist and psychoanalyst, presented a now widely accepted theory of personality development in 1963. His theory of psychosocial development emphasizes healthy growth through 8 stages, 5 of which occur in childhood. Through identification of key conflicts or critical periods in personality development, Erikson described a favorable and unfavorable aspect of each psychosocial stage (Table 2-1).

**TABLE 2-1.**  
**ERIKSON'S LIFE STAGES**

AGE	PSYCHOSOCIAL STAGE
Infant (0–12 months)	Trust vs. mistrust
Toddler (1–3 years)	Autonomy vs. shame, doubt
Preschooler (4–6 years)	Initiative vs. guilt
School age (7–12 years)	Industry vs. inferiority
Adolescent (13–18 years)	Identity vs. role confusion

### Piaget's Levels of Cognitive Development

A well-known theory of cognitive development was described by the Swiss developmental psychologist Jean Piaget. According to Piaget, cognitive development consists of age-related changes that occur in an orderly and sequential manner (Table 2–2).

**TABLE 2-2.**  
**PIAGET'S LEVELS OF COGNITIVE DEVELOPMENT**

AGE	COGNITIVE STAGE	CHARACTERISTICS
0–2 years	Sensorimotor	Learns through senses and motor activity. Object permanence (something exists even when out of sight) develops and is a basis for stranger anxiety.
2–7 years	Preoperational	Egocentrism shifts to social awareness, magical thinking, and animism. Play is essential as a way of understanding the world and working out experiences.
7–11 years	Concrete	Understands cause and effect and conservation of matter.
11–15 years	Formal	Achieves intellectual thought with abstract thinking and ability to consider different outcomes.

Through assimilation, children incorporate new knowledge, skills, ideas, and insights into their familiar cognitive schemas. Through accommodation, children change and organize existing schemas to solve increasingly difficult tasks.

### Maslow's Hierarchy of Needs

Abraham Maslow theorized that human needs are hierarchical and range from fundamental physiological needs to higher levels of self-actualization. In prioritizing ways to address child and family needs, ensure the fundamental needs are met before attempting to address higher-level needs. The first four needs are basic or “deficiency needs.” Self-actualization is a growth need.

1. Physiological needs include breathing, food, water, sex, sleep, homeostasis, excretion.
2. Safety needs include security of body, employment, resources, morality, family, health, property.

3. Love and belongingness needs include friendship, family, sexual intimacy.
4. Ego and esteem needs include self-esteem, confidence, achievement, respect for others, respect by others.
5. Self-actualization needs include morality, creativity, spontaneity, problem-solving, lack of prejudice, acceptance of facts.

### Kohlberg's Moral Development

Lawrence Kohlberg's moral development theory consists of three major levels. The theory allows for prediction of behavior, is principally concerned with justice, and postulates that development continues throughout the individual's lifetime.

- ▶ Preconventional (4–7 years): Decisions are based on obedience and avoiding punishment. Morality is external; children conform to rules imposed by authority figures. Present in children and adults.
- ▶ Conventional (7–11 years): Children are concerned with conformity and being loyal. Rules are to be followed to “be good.” Present in teens and adults as well as children.
- ▶ Postconventional ( $\geq 12$  years): Internalized standards and social responsibility are formed. Decisions can be made in conflicting ethical situations. Present in teens and adults.

## BEHAVIOR MODIFICATION

The philosophy and techniques of behavior modification are designed to increase adaptive behavior through positive reinforcement and decrease maladaptive behavior by punishing or ignoring the behavior. For example, a toddler refusing food can learn to eat when the behavior is reinforced with minutes of playtime for bites of food. Behavior modification is based on the “operant conditioning” principle of learning, also known as Pavlovian or classical conditioning. Basic assumptions include:

- ▶ Problems are defined in terms of measurable behavior.
- ▶ Treatment is aimed at altering a person's current environment to help the person function in the desired manner.
- ▶ Outcome behaviors are specified.
- ▶ Methods of treatment and rationale are precisely described.
- ▶ Techniques are applied to behaviors of everyday life: toilet training, eating, and accepting responsibility for self-care.

Expected behaviors must be clearly explained, and rewards must be attractive enough to reinforce desired behavior.

## PHYSICAL DEVELOPMENT: NORMAL GROWTH EXPECTATIONS AND DEVELOPMENTAL MILESTONES

Growth is defined as an increase in physical size. Development is an orderly series of events and behaviors that lead to new patterns of behavior. Primary factors influencing growth and development include:

- ▶ Genetics
- ▶ Nutrition
- ▶ Prenatal and environmental factors
- ▶ Family and community
- ▶ Culture

### Preterm (gestational age < 37 weeks)

- ▶ Minimal subcutaneous fat
- ▶ Relaxed posture with limbs extended
- ▶ Proportionately large head, reflecting cephalocaudal development
- ▶ Smooth and shiny skin with visible blood vessels
- ▶ Abundant fine lanugo on body
- ▶ Soft, pliable ear cartilage (pinnae)
- ▶ Palms and soles have minimal creases
- ▶ Skull and ribs feel soft
- ▶ Head is subject to “preemie head,” positional molding that can be minimized by frequent repositioning and use of a gel mattress
- ▶ Scarf sign—preterm elbow is easily brought across chest

### Newborn (neonate, birth to 28 days)

- ▶ **Respiratory system:** Chemical and thermal stimuli initiate respirations. Surface tension of fluid is reduced by surfactant, which facilitates breathing. Respirations are shallow and irregular, with typical rate of 40–60/min.
- ▶ **Circulatory system:** Inspired oxygen dilates pulmonary vessels, which decreases pulmonary vascular resistance and increases pulmonary blood flow. Ductus arteriosus closes as a result of increased oxygen and decreased prostaglandins. Foramen ovale closes with compression of two portions of atrial septum.
- ▶ **Thermoregulation:** Heat regulation is important because of the neonate’s large body surface area, thin layer of subcutaneous fat, and lack of shivering.
- ▶ **Fluid and electrolytes:** Rapid metabolism can lead to acidosis. Immature kidneys cannot concentrate urine well.
- ▶ **Gastrointestinal (GI) system:** Deficiency of lipase limits ability to absorb fats. Immature liver decreases storage of glycogen and makes the newborn prone to hypoglycemia. Regurgitation and frequent stooling are common.

- ▶ **Renal:** Decreased ability to concentrate urine, voids ~200–300 cc/day
- ▶ **Integumentary:** Plugging of sebaceous glands causes milia. Low melanin causes light skin.
- ▶ **Musculoskeletal:** Mostly cartilage rather than bone

### Infant (1 to 12 months)

- ▶ Period of most rapid growth of a person. Typically, an infant:
  - ▶ Doubles birth weight by 6 months
  - ▶ Triples weight by 12 months
  - ▶ Grows approximately 9–11 inches in first year
  - ▶ Erupts first tooth at ~6 months
  - ▶ Needs breastmilk or formula for first year of life
  - ▶ Begins solid foods at 4–6 months, starting with rice cereal
- ▶ Posterior fontanelle closes at 6–8 weeks.
- ▶ Milestones of development typically occur in order:
  - ▶ 1 month: Head lag, grasp reflex strong, hands closed, quiets when hears a voice, fixes on an object at 8–10 inches away, cries and watches faces intently
  - ▶ 2 months: Posterior fontanel fuses, lifts head when prone, visually searches for sounds, cries are differentiated, social smile
  - ▶ 3 months: Focuses on an object with both eyes (binocular vision), regards own hand, hands loosely open, squeals to show pleasure, coos, babbles, shows interest in surroundings, is aware of strange surroundings
  - ▶ 4 months: Holds head erect in vertical position, rolls from back to side, grasps objects with both hands, makes consonant sounds (n, k, g, p, b), recognizes familiar faces and objects
  - ▶ 4–6 months: Sits with support, grasps objects with palm, rolls from stomach to back, plays with toes, grasps and manipulates small objects, prefers complex visual stimuli
  - ▶ 6 months: Rolls from back to stomach, may chew and bite, begins to imitate sounds, begins to fear strangers, searches for dropped object (concept of object permanence begins), laughs when head is hidden
  - ▶ 7–8 months: Sits erect momentarily, beginning pincer grasp, reaches for toys out of reach, responds to “no,” bears weight on feet with support
  - ▶ 8–9 months: Crawls on hands and knees, pulls self to standing, hand dominance evident, responds to simple commands, beginning of fears of going to bed and being left alone
  - ▶ 10 months: Says “dada”
  - ▶ 12 months: Walks, drinks from cup
- ▶ Infant’s play is solitary and favorite toys are mobiles, teething toys, plastic blocks, rattles, unbreakable mirror

### Toddler (1 to 3 years)

Physical development slows as the toddler's appetite decreases, but he or she needs a diet high in protein for brain development. Typically:

- ▶ Drinks whole milk until the age of 2 years, when 2% milk is recommended
- ▶ Toddlers gain ~3–5 inches and 5 pounds per year.
- ▶ The anterior fontanelle fuses between 12 and 18 months.
- ▶ Birth weight quadruples by 24 months.
- ▶ Height at 2 years is approximately half adult height.

Psychosocial development includes curiosity, gaining sense of autonomy. A toddler typically:

- ▶ Generalizes concepts
- ▶ Learns to differentiate self from others
- ▶ Learns to tolerate separation from primary caregiver
- ▶ Engages in parallel play; favorite toys are manipulation toys, blocks, shapes, telephones, kitchens (imitative play)

### Preschooler (3 to 6 years)

Growth continues at about 5 pounds and 3 inches per year.

- ▶ Appetite decreases
- ▶ Needs ~1,800 calories per day
- ▶ Has strong food preferences
- ▶ Respiratory movement is principally abdominal or diaphragmatic (as opposed to thoracic) in children younger than 6–7 years old.

Development is more refined with increased strength and agility.

- ▶ Likes to explore
- ▶ 3 years: Rides tricycle, copies circle
- ▶ 4 years: Throws ball overhand and catches ball; copies a square
- ▶ 5 years: Jumps rope, balances on one foot, ties shoes, uses scissors
- ▶ Uses associative and cooperative play; favorite toys are creative, educational

### School Age (6 to 12 years)

During the school-age years, growth in height and weight are slower and steadier than in earlier years.

- ▶ Gains ~2 inches and 4–5 pounds per year
- ▶ Loses deciduous teeth beginning at 6 years, with 26 of the 32 permanent teeth erupting by age 12
- ▶ Moves gracefully and is steadier than earlier
- ▶ Has more mature GI system, so fewer stomach upsets and better maintenance of blood sugar levels
- ▶ Prepubescence occurs at ~9 years in girls and ~10 years in boys

This time is often called the *latency period*; the school-age child is typically in a period of relative tranquility.

- ▶ Engages in cooperative play
- ▶ Has a sense of industry
- ▶ Maintains relationships with same-sex peers

### Adolescent (12 to 18 years)

The teen years are a period of profound biologic, intellectual, psychosocial, and economic change.

- ▶ Goes through puberty (growth spurt, sexual maturation with secondary sex characteristics)
- ▶ Refines motor skills
- ▶ Blood volume and systolic blood pressure increase
- ▶ Lung size increases
- ▶ Respiratory rate decreases to adult rate
- ▶ Neural system is fine-tuned as support cells brace and nourish the neurons.

Adolescent development brings advances in cognition with abstract thinking and increasing emotional independence from parents.

- ▶ Engages in increasingly competitive play
- ▶ Goes through a period of identity formation
- ▶ Uses formal operational thought with abstract reasoning
- ▶ Is preoccupied with body image
- ▶ Generally conforms to group norms
- ▶ Has wide mood swings
- ▶ Uses principled moral reasoning

## FAMILY CONCEPTS AND ISSUES

Families have been defined in many different ways for many different purposes. A family is the mainstay of society and is described as what an individual considers the family to be. This may, but does not necessarily, include relationships between dependent children and one or more protective adults. Healthcare personnel and services support the family's strength and competence with family-centered philosophy in caring for the child, recognizing that the family is the constant in the child's life.

Five major family structures exist, according to the U.S. Census Bureau:

- ▶ Traditional nuclear family, which includes a married couple and biological children
- ▶ Nuclear family, which includes two parents who may or may not be married, with their children who may be biological, adopted, step, or foster
- ▶ Blended family or household, which includes at least one stepparent, stepsibling, or half-sibling
- ▶ Extended family or household, which includes at least one parent, one child, and one or more related or unrelated members. Parent-child and sibling relationships may be biologic, step, adoptive, or foster.
- ▶ Single-parent family, which is increasingly common and usually headed by a single mother, although fathers may also head single-parent families
- ▶ Same gender parents, who may be male or female, are also becoming increasingly common.

Family theories are used to describe how families respond to events both within and outside the family. Combinations of theories have relevance for nursing practice because each theory has strengths and limitations.

- ▶ **Family systems theory:** A change in one part of the family system affects all other parts of the family; families have periods of rapid changes and growth as well as periods of relative stability.
- ▶ **Family stress theory:** Families encounter normative, expected, and unexpected stressors and cope with a range of responses and effectiveness. Coping is using learned cognitive or behavioral strategies, or both, to relieve stress, and families cope and respond to stressors with great variability.
- ▶ **Family developmental theory:** Families change over time in similar and consistent ways. There are eight developmental stages of the family throughout the life span:
  1. Beginning family that is a newly married or formed couple
  2. Child-bearing family with infant
  3. Family with preschoolers
  4. Family with school-age children
  5. Family with teenagers
  6. Family launching young adults

7. Middle-aged family—empty nest
8. Family in retirement and old age

The age of the oldest child indicates the stage. Each stage helps identify transitions and potential stressors. Blended (step), low-income, single-parent, dual-career, and divorcing families also have typical developmental stages.

- ▶ **Structural-functional theory:** The family's major goal is socialization of the child. Family serves to
  - ▶ Meet psychological needs of members
  - ▶ Socialize and help children become productive members of society
  - ▶ Perpetuate the species through reproduction
  - ▶ Work as an economic unit
  - ▶ Provide for physical necessities

Families play a vital role in society as they produce and consume goods and services; replace dying members of society; and transmit knowledge, customs, values, and beliefs to the young. In working with children, nurses must include family members in the plan of care; the family is the patient.

## FAMILY-CENTERED CARE

For effective family-centered care, it is essential to

- ▶ Assess individual and family health needs and strengths
- ▶ Identify problems influencing health of the family as a whole
- ▶ Identify problems influencing individual family members
- ▶ Use family resources, teaching, counseling, and evaluating of progress toward goals

## CULTURAL AND SPIRITUAL DIVERSITY

*Culture* is the totality of socially transmitted values, behavior patterns, institutions, arts, and other products of human work characteristic of a society that organize the society's childrearing system and are transmitted to the next generation by family. Culture provides the context in which families experience health and illness. To provide holistic care, nurses must be culturally sensitive and develop some understanding and appreciation for the ways culture influences childrearing practices and attitudes toward health.

- ▶ **Demographic changes:** More than 1 in 5 U.S. children are foreign born or the child of foreign-born parents because of immigration (Mather, 2007). The migration of people requires nurses to be transcultural in their approach to caring for diverse populations. By 5 years old, children can identify persons belonging to their cultural background. Cultures vary in the extent to which they tolerate divergence from the norm.
- ▶ **Ethnicity:** A population differentiated from others by customs, characteristics, language, or similar factors. Differences may also include family structure, language, food preferences, moral codes, and expression of emotion.
- ▶ **Gender,** or the characteristics describing masculinity or femininity, may influence the family's perception of the implication of illness or disability. Male children are valued more than female children in some cultures.
- ▶ Nurses need to adapt practices to the health needs of families rather than attempt to change longstanding beliefs.
- ▶ Nurses need to listen with the goal of understanding rather than agreement.
- ▶ Beliefs about health and illness in many cultures vary from the values of Western healthcare professionals and healthcare institutions.

*Religion* and *spirituality* are often used interchangeably, but spirituality is broader than religion. An individual's orientation dictates a code of morality and influences the family's attitude towards education and male/female role identity. Religion may influence choice of life companion(s), profession, diet, acceptability of healthcare options, and rites at birth, transition to adulthood, illness, and death.

- ▶ Religion is an integrated system of beliefs that is associated with a code of morality and often influences the family's attitude toward education, gender role identity, professional aspirations, and food choices.
- ▶ Spirituality is often defined as an individual's sense of peace, purpose, and connection to others, and beliefs about the meaning of life. While spirituality may be found and expressed through organized religion, many people find meaning in nature or in relationships.

## SUMMARY

Psychosocial, cognitive, moral, and physical development occur within a social context typically consisting of one or two parents and their children. Genetic traits and the family environment play a large role in shaping the physical make-up and identity of children as they grow into adolescence and become adults. Family interactions and modeling can shape a child's self-esteem, socialization, and cultural identity.

## REFERENCES

- Ball, J. W., Bindler, R. C., & Cowen, K. J. (2010). *Child health nursing: Partnering with children and families* (2nd ed.). East Rutherford, NJ: Prentice Hall.
- Bowden, V. R., & Greenberg, C. S. (2010). *Children and their families: The continuum of care* (2nd ed.). Philadelphia: Lippincott Williams & Wilkins.
- Hagan, J. F., Shaw, J. S., & Duncan, P. M. (Eds.). (2007). *Bright futures: Guidelines for health supervision of infants, children, and adolescents* (3rd ed.). Elk Grove Village, IL: American Academy of Pediatrics.
- Hockenberry, M. J., & Wilson, D. (2011). *Wong's nursing care of infants and children* (9th ed.). St. Louis, MO: Elsevier/Mosby.
- Mather, M. (2007). *U.S. racial/ethnic and regional poverty rates converge but kids are still left behind*. Retrieved from [www.prb.org/Articles/2007/USRacialEthnicAndRegionalPoverty.aspx](http://www.prb.org/Articles/2007/USRacialEthnicAndRegionalPoverty.aspx)
- National Association of Pediatric Nurse Practitioners, Society of Pediatric Nurses, American Nurses Association. (2008). *Pediatric nursing: Scope and standards of practice*. Silver Spring, MD: Nursesbooks.org.
- Pillitteri, A. (2010). *Maternal & child health nursing: Care of the childbearing and childrearing family* (6th ed.). Philadelphia: Lippincott Williams & Wilkins.