
MODULE 13

Prenatal Development and the Newborn

Module Preview

Developmental psychologists study the life cycle, from conception to death, examining how we develop physically, cognitively, and socially. Three issues pervade this study: (1) the relative impact of genes and experience on behavior, (2) whether development is best described as gradual and continuous or as a sequence of predetermined stages, and (3) whether the individual's personality remains stable or changes over the life span.

The life cycle begins when one sperm unites with a mature egg to form a zygote. Attached to the uterine wall, the developing embryo begins to form body organs and by 9 weeks, the fetus becomes recognizably human. With the aid of new methods of studying babies, researchers have discovered that newborns are surprisingly competent.

Module Guide

- ▶ Introductory Exercise: Fact or Falsehood?

Introduction to Developing Through the Life Span

- ▶ Exercises: Introducing Central Issues in Developmental Psychology; Life-Span Development
- ▶ Exercises/Projects: Generating Lifelines; What Is the Ideal Age?
- ▶ Projects: Your Lot in Life; Newspaper Advice Column Letters as Case Studies in Developmental Psychology; Writing Letters to Parent and Child; Essay Exchange
- ▶ Videos: Program 5 of *Moving Images: Exploring Psychology Through Film: The Nature-Nurture Issue: Sex Reassignment*; *Discovering Psychology, Updated Edition: The Developing Child*; *Transitions Throughout the Life Span* (series)

- 13-1. *State three areas of change that developmental psychologists study, and identify the three major issues in developmental psychology.*

Developmental psychologists study physical, cognitive, and social changes throughout the life span. Three issues pervade this study: (1) the relative impact of genes and experience on development, (2) whether development is best described as gradual and continuous or as a sequence of separate stages, and (3) whether personality traits remain stable or change over the life span.

Conception and Prenatal Development

- ▶ Lecture: Prenatal Sensory Development
- ▶ PsychSim 5: Conception to Birth
- ▶ ActivePsych: *Digital Media Archive*, 2nd ed.: *Prenatal Animation: Fetal Development and Prenatal Brain Development: From Conception to Birth*
- ▶ Video: Life's Greatest Miracle; Module 12 of *The Mind* series, 2nd ed.: *Teratogens and Their Effects on the Developing Brain and Mind*

13-2. Discuss the course of prenatal development and the destructive impact of teratogens.

A total of 200 million or more sperm deposited during intercourse approach an egg 85,000 times their own size. The few that make it to the egg release digestive enzymes that eat away the egg's protective coating, allowing a sperm to penetrate. The egg's surface blocks out all others and within a half day, the egg nucleus and the sperm nucleus fuse.

Fewer than half of all fertilized eggs, called **zygotes**, survive. In the first week, cell division produces a zygote of some 100 cells. Then the cells begin to differentiate, that is, to specialize in structure and function. About 10 days after conception, the zygote's outer cells attach to the mother's uterine wall. The inner cells become the **embryo**.

By 9 weeks after conception, the embryo looks unmistakably human and is now a **fetus**. During the sixth month, internal organs such as the stomach have become sufficiently formed and functional to allow a prematurely born fetus a chance of survival. At each prenatal stage, genetic and environmental factors affect development. The *placenta*, which formed as the zygote's outer cells attached to the uterine wall, transfers nutrients and oxygen from mother to fetus. Along with nutrients, **teratogens** ingested by the mother can reach the developing child and place it at risk. If the mother drinks heavily, the effects may be visible as **fetal alcohol syndrome (FAS)**.

The Competent Newborn

- ▶ Videos: Module 13 of *The Mind* series, 2nd ed.: *Capabilities of the Newborn*; Video Clips 13 and 14 of *Digital Media Archive: Psychology*, 1st ed.: *Testing Competency in the Newborn and Reflexes in the Newborn*

13-3. Describe some abilities of the newborn.

Newborns are surprisingly competent. They are born with sensory equipment and reflexes that facilitate their interacting with adults and securing nourishment. Touched on its cheek, a baby opens its mouth and roots for a nipple. Newborns turn their heads in the direction of human voices and gaze longer at a drawing of a facelike image than at a bull's-eye pattern. They prefer to look at objects 8 to 12 inches away, the approximate distance between a nursing infant's eyes and the mother's. Within days of birth, the newborn distinguishes its mother's odor, and at 3 weeks, the newborn prefers its mother's voice.

A simple form of learning called **habituation**, a decrease in responding with repeated stimulation, enables researchers to assess what infants see and remember. Using a *novelty-preference procedure*, researchers have learned that infants, like adults, focus first on the face not the body.