Developmental Stages of Brain Maturity
Birth to 12 Years Old

By Jim Myers

From birth, children rapidly develop their abilities to experience and express different emotions, as well as their capacity to cope with and manage a variety of feelings.1,2,3 The development of these capabilities occurs at the same time as a wide range of highly visible skills in mobility (motor control), thinking (cognition), and communication (language).

Yet, emotional development often receives relatively less recognition as a core emerging capacity in the early childhood years. The foundations of social competence that are developed in the first five years are linked to emotional well-being and affect a child's later ability to functionally adapt in school and to form successful relationships throughout life.

As a person develops into adulthood, these same social skills are essential for the formation of lasting friendships and intimate relationships, effective parenting, the ability to hold a job and work well with others, and for becoming a contributing member of a community.

Disregarding this critical aspect of the developing child can lead parents and policymakers to underestimate its importance and to ignore the foundation that emotions establish for later growth and development. Thus, it is essential that young children's feelings get the same level of attention as their thinking. Indeed, learning to manage emotions is more difficult for some children than learning to count or read and may, in some cases, be an early warning sign of future psychological problems.

The failure to address difficulties in this equally important domain can result in missed opportunities for interventions. Had they been initiated early, these interventions could have yielded tremendous benefits for large numbers of children and for society.

A child's brain undergoes 90% of its development by age 5, with, astonishingly, over 1 million new neural connections formed every second.

Key Factors Shaping Development

- **"Serve and Return" Interactions**: **Responsive, two-way communication** (smiling, talking, playing) between caregivers and children builds the strongest brain architecture.

- **Experience-Driven Wiring**: The brain's **neural pathways are shaped by a child's environment, including people, languages, and surroundings**. Experiences strengthen frequently used connections while others are pruned.

- **Nutrition and Environment**: **Proper nutrition, safety, and stimulation** are critical, as chronic stress or lack of stimulation can hinder development.

Developmental Stages

- **Birth to 2 Years (Sensorimotor Stage)**: The brain doubles in size in the first year. Infants develop **core cognitive abilities through sensory experiences and motor actions**. Significant myelination occurs, speeding up neural communication.

- **2 to 7 Years (Preoperational Stage)**: The brain reaches 90% of its adult size by age 5. This period is critical for **rapid language development** and, according to research, the brain is most flexible and adaptable during these early years.

- **7 to 12 Years (Concrete Operational Stage)**: Children develop logical, systematic thinking. The brain begins to prune unused connections to become more efficient, and the prefrontal cortex—**responsible for impulse control and decision-making**—undergoes significant maturation.

- **12 Years (Transition to Adolescence)**: By age 12, the brain starts **transitioning toward more abstract, complex thinking** (formal operational stage).

- The brain reaches maturity.