

# Early brain development and learning

[Health & Medicine](#), [Body](#)



It is not commonly known that the brain is 90% developed by age five. Most people believe that at age five children are just starting to learn. In fact, the brain absorbs more from birth to age five rather than from age five on.

Parents and family can do many things to aid in the development of a baby's brain, ultimately assisting in their learning. The sequence and rate at which the brain develops predicts the optimal times for a baby to learn. Sequence and rate is measured by milestones that a baby may reach by a certain age. Experiences are one thing that helps promote brain development.

Our five senses give us these experiences. How in the first few years of life do we develop into the complex people we are today? We will look at how nature versus nurture; sensory perception; positive and negative experiences and both our social and physical environment contribute to and develop everything about whom we are as individuals. The brain is influenced in many different ways. The most important factors in brain development start with genetics, nutrition, and responsiveness from parents, daily experiences, and physical interactions.

Parents need to know that children are learning and accepting more information than a fully grown adult. Children need positive and sensitive feedback from family. In the past, scientists believed that the human brain's development was determined by a biologically determined path (Brotherson, 2005). This means that the brain would develop genetically through family, but leading technology and science proved that the brain is not predetermined genetically by family. The brain matures through the five senses: smell, touch, vision, taste, and hearing.

The experiences that the five senses bring are very crucial to help build the connections that guide brain development. The importance of the parents understanding of the first few years of his or her child's life is extremely important. As Titzer, P. H. D, (2008) uses a computer metaphor to explain brain development he put it this way " Your baby's brain could be thought of as a highly responsive, self-programming computer. For the first few years, the hardware is still coming together - a baby is not a finished product, but a growing, developing individual, complete with organic " circuitry" - the central nervous system" (p. ). The brain will absorb more with more stimulation. At an earlier age stimulation for the brain circuitry is at its best. This will cause the brain circuitry to develop more effectively. The main function of the brain in the first three years of life is to create and support connections between neurons. The connections are referred to as synapses. Synapses could be envisioned as the limbs on the tree. Imagine a large family tree with its trunk as the original lineage. Then the main branches are the families as they grow and have children. Neurons are like the trunk and the main branches of the tree.

The number of neurons a baby is born with remains constant in the first three years of life. Synapses (all those years of lineage on the family tree) are all the little twigs and branches that come off the main trunk. In the first three years of life our brains synapses increase to a number in the hundreds of trillions. However, after age three the number of synapses begins to slow until age 10. During this period there are more synapses created than needed. A person creates more synapses than needed and the " use it or lose it" theory applies to all the unused synapses.

The synapses being used the most, meaning the circuits that transfer information the most become permanent to the brain. The synapses not used are lost in a process called pruning. In fact, the ability to see light is lost if the eyes are not exposed to light within the first three weeks of life, hence “use it or lose it” theory (Hawley, 2003). This will happen because the synapses that can see light will be lost because they will not have been used. That is why we want to give our children as much experience socially and with learning as possible.

With this kind of experience these synapses will become permanent. Brotherson (2005) describes a baby’s brain at this point like a “super sponge” absorbing everything given to it (para. 4) The first three years are the most sensitive for learning and development (Gable & Huntington, 2001). The brain takes in these experiences through our five senses. According to Gable & Huntington (2001) “an infant’s social, emotional, cognitive, physical and language development are stimulated during multisensory experiences” (para. 12) During these first few years of life is most rapid growth period for the brain.

At birth the brain is 25% developed, at six months it is 50% developed, at 30 months 75% developed and at age five it is already 90% developed. There have been many optimal opportunities for parents to teach their children many things from birth to this point already. Children at the age of two have been known to read at the reading level of a fifth grader because they were taught at the “prime time.” Acquiring the knowledge of how a baby’s brain

develops and what can be done to influence it in a positive way can make a world of difference for a child.

A positive influence during this critical period is very crucial. Let us take a look at nature versus nurture; sensory perception; positive and negative experiences and both our social and physical environment contribute to and develop everything about who we are as individuals. Take the study of nature, for example, our individual innate qualities versus nurture, and our personal experiences. As evidences by the recent Human Genome Project, it is currently believed that there is much more nurture than nature in the result of each of us.

With this, how does nurture become nature? Let us look at the example of ‘perfect pitch’ to show the relationship between genetics and environment. This is an example of how” heredity and environment can interact” (Davies, 2001, para. 3). Davies (2003) describes perfect pitch as “ The ability to recognize the absolute pitch of musical tone without any reference note. People with perfect pitch often have relatives with the same gift and research show this is a highly inherited gift, possibly the result of a single gene.

However, studies also demonstrate a requirement for early musical training (before age 6) to manifest perfect pitch. Many personality and behavioral traits will not be exclusively the result of nature or nurture, but rather an inextricable combination of both” (para. 5). \_ Nature versus nurture and the role that heredity and environment have in human development indicates that with almost all biological and psychological traits genes and

environment work together in communication back and forth to create us as individuals. No one questions it; this is the ying and the yang, the Adam and Eve, the Mom and Pop of pop psychology and genealogy. Nature and Nurture is what made us what we are today and will determine what our children will be tomorrow. I have heard the expression that life is all about perception. We all know people who are positive and those who are negative. And each of us has either an optimistic or pessimistic personality. How we perceive the world around us is inherently a matter of our sensory perception of the world and largely that done in the first several years of life.

We have many senses but we most often refer to the five senses of sight, hearing, smell, touch and taste. We are born with the need for a multisensory environment. Research shows that interactions that are associated with many of emotion are more “readily remembered and recalled” (Gable & Huntington, 2001, para. 17). With this, it is proven that with a multisensory environment we develop out temperament and emotions during an early the early stages of life. Developmental milestones are certain things that a child should be able to do by a certain age range.

A child's doctor will use these milestones to assess the development of a child in the area of his/her gross motor, fine motor, language, cognitive, and social skills. Even though each milestone has an age range, each child is different and unique so the age can vary significantly. One child may start to walk as early as seven months old and another child may not begin to walk until 16 months old and both would be considered normal. They both would be within the normal age range.

In conclusion, we have looked at how genetics and environment in early brain development occurs as well as the importance of multiple sensory experiences, positive interactions, and social and physical stimulation in early development of a variety of cognitive and behavioral skills. It was briefly discussed that there are many interventions and treatments for improvement in many areas of interrupted brain development due to early childhood trauma, stress, and neglect with appropriate intervention.

Many agencies today focus on education for parents and caregivers to ensure a more positive and educational experience for the early brain development.

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