

## Understanding Brain Development by Ruth Beaglehole

### Overview

We need a driver's license to drive a car, a fly-fisherman's license to go fly-fishing, but no kind of license to do one of life's most important tasks – to raise a child! Many parents come to a parenting class stating, "I had no idea what it meant to have a child- I really had no idea!" Attending birthing classes was part of many parents' preparations for having a child, but beyond knowing something about labor and delivery and bringing home a newborn infant, they had no idea about what to expect in terms of their child's development or their own transformation into a parent.

Recognizing that parenting is a science puts the job of "people making" into a more understandable context. There are many aspects to this scientific knowledge – nutrition, health and hygiene, and child development. Child development includes ages and stages of development and the science of brain development, as well as knowledge of universal human needs and the feelings that arise from those needs.

Understanding the human brain is a complex task. There has been an explosion of information about the brain in the last ten years. There is so much to know. In these parenting classes, the goal is not to present all the complexities of the brain or to describe the multitude of its different regions. Our goal is to help parents learn a few basic facts about brain science that will help them as they develop their awareness about nonviolent parenting. We want them to have some simple knowledge about the way that their brains function, as well as to understand their children's brains. We therefore greatly simplify the vast information about brain science. We suggest that you offer some additional resources to parents who want more complex information. For instance, *Parenting from the Inside Out* by Daniel Siegel and Mary Hartsell contains detailed yet clear information about brain science.

The brain is an organ about the size of a coconut. It has the shape of a walnut and the consistency of a ripe peach. A child is born with 25 percent of his brain developed. Brain growth in babies and children is simply incredible. 90 percent of the growth of the brain happens in the first five years of life. A profound fact about brain development is that it happens within the context of the relationship connection between the parent and the child. The brain is social organ. Parents could be called 'brain sculptors' – the nature and strength of the emotional bond between the parent and child actually sculpts the brain pathways that remain with the child all his life.

A baby is born with hundreds of billions of brain cells, but with very few existing connections between these cells. In the early years of a child's life, these connections are formed by the child's genes and by the child's experiences, particularly from how he is parented. The brain is an extremely adaptable organ. For example, if a parent gives her child empathy for his feelings and needs, over time his brain will develop pathways that connect to the higher area of the brain (which houses the capacity for empathy) . A child not exposed to empathy will likely have these cells pruned away from lack of use.

This will greatly affect the child's ability to give empathy to himself and others. Brain function therefore, is use-dependent.

The brain has many specialized areas which all work together in complex ways. One way to simplify the teaching of the brain is to think about the brain having three areas – the lower area of the brain, the middle area of the brain, and the higher area of the brain. Each of these, in turn, contains different sections. Teaching parents about these basic three areas helps them understand the profound influence they have over their child's development. We also use metaphors to describe the different areas of the brain. We call the lower area of the brain the alarm center, the middle area the emotional center, and the higher area the decision making center. Although different areas of the brain are developing from infancy onward, we can generalize by saying that the human brain develops in a progression from the alarm center (lower area) to the emotional center (middle area) to the decision making center (higher area). The development of the brain happens in the context of the attachment between the child and the parent; the primary indicator of optimal brain growth is that a child is attached to at least one loving, connected parent or caregiver.

The lower area of the brain, which includes the brain stem and the cerebellum, is the area of the brain that is most developed when a baby is born. We call this area of the brain the alarm center because it ensures survival (hunger, breathing, circulation) and responds to danger with the fight, flight, or freeze instinct. The next area of the brain is the middle area of the brain, or emotional brain. It includes the limbic system, involved in active growth. This is the emotional center of the brain- this is the place for feelings, feelings, and more feelings! It also houses memory and a sense of self. The third area of the brain, the higher area of the brain, is also known as the neocortex, or frontal lobes. This is the area that manages reason and rational thought, problem solving, creativity and imagination, kindness, empathy, and concern.

Each area of the brain builds upon the development that precedes it. There is a significant spurt in the development of the higher area of the brain around age six. There are additional bursts of brain growth between the ages of eleven and twelve, and again around the age of fifteen. Although these are periods of rapid growth, the brain is a living organ and can grow, change, become impaired, and heal at any age. A clear example of this incredible regenerative power is in the case of a stroke. The brain becomes impaired and then has the capacity to heal and recover functioning. This is also true in the case of emotional trauma. Parents listening to the information on the development of the brain may experience guilt about mistakes they feel they make when parenting. They may be concerned about their own brains because of their childhood experiences. It is often helpful to repeat the statement, 'The brain can grow, change, and heal at any time' throughout the class.

When a child or an adult has any experience, the emotional center (the middle area of the brain) takes in the information and imbues the incident with meaning. The information then travels down the lower area of the brain, or up to the higher area of the brain. If the situation is interpreted as dangerous, the alarm center of the brain (lower area of the brain) will be engaged. This interpretation of danger is

influenced by the range or limitations of a child's emotional experiences. There are many adults through the filter of the emotional center of their brain, which was not fully nurtured and developed as a child. If the incoming information is not seen as dangerous, it is an incredibly important area of the brain. It is the only area of the brain that is only one synapse away from all the other regions of the brain. The OFC integrates all the different players on the team of the brain and helps them work together. It allows for flexibility, increased choices, and problem solving. It is crucial for mental and emotional functioning. The OFC becomes functional at the age of ten to twelve months and matures during toddlerhood. When a child is given the opportunity to practice empathy and problem solving with a compassionate adult, he develops the pathways that connect to the higher area of his brain, including his OFC. This development allows him to be empathetic and understanding, leading to what we call moral and ethical behavior.

Researchers are finding that adults and young people who are prone to hostile outbursts of aggression and violence are those who have some dysfunction in the orbital-frontal cortex. In addition to the functions of reflecting and problem solving, the OFC plays a significant role in inhibition. The OFC is crucial for self-regulating and inhibiting violent and aggressive behavior. Again, the key to developing the OFC is attention and the emotionally consistent presence of a loving caregiver for infants and children.

Parents can understand the importance of brain science by thinking about their role as nurturers and sculptors of their children's brains. Optimal development of the brain is dependent on the connection between the child and his parents. Many children experience trauma in some form before they become adults. Parents need to know that children can heal from trauma by surrounding them with nurturing empathetic relationships.

To better understand brain development, it is important to make a connection to child development. For a child to grow into the adult that the parent envisions, there are many years of passage through different developmental stages. During each stage, children are seeking to satisfy their core human needs. The strategies they use to do this depend on their developmental level. Learning about child development helps parents understand children's needs. Parents can put observations about their own children into the greater framework of the ages and stages of child development and brain development.

Every child is born with an internal clock; all aspects of his development unfold in a highly individualized way. It is not possible to name exact ages at which development unfolds for any given child, but it is helpful for the parent coach to paint the picture of the successive steps of development that occur as children grow. In every stage of development, there is interplay between periods of independence and dependence.

A four-year-old may have many self-care skills, even to the point of knowing how to make his own breakfast, but he may also need the comfort of a knee to sit on with his special blanket, storing up warmth and nurturing connection. In fact, in children of all ages there is often a period of regression before a spurt in their motor, cognitive, or emotional development. Dr. T. Berry Brazelton, the

renowned pediatrician and child development specialist, calls these periods of regression “touchpoints.” They are a perfect time to learn about how a child is growing. Viewing these periods as touchpoints allows parents to shift their perspective on these potentially frustrating moments to “excitement and appreciation of their child’s effort to move forward.”

As children get older, struggles may arise concerning school and homework. It may help parents to know that the seat of learning lies in the emotional center of the brain~ This knowledge emphasizes the importance of a child’s emotional state when he is in a learning situation. The anxiety that arises around homework, for instance, can create a stress response that leads to the shutting down of the pathways to the higher area of the child’s brain. Stress sabotages a child’s ability to learn. This is a neurobiological process, not a stubborn child!

With an older child, there is also the complicating factor of the onset of puberty. In puberty, the brain and the endocrine system undergo incredible changes, affecting many areas of development. The child is in a stage of growth where he needs clear information and support, as well as increased privacy as he comes to terms with this changing self. For many parents, this is a time when their connection with their children becomes strained. Many parents do not feel that they have the language to communicate about the physical and social changes that are occurring. Parents may have embarrassing and shaming memories of this period in their own development, which block them from connecting with their children. It is helpful to support parents to explore and heal their past hurts, and to encourage them to learn about the physiological changes that take place during puberty, so that they can provide accurate and supportive information.

In this discussion of child development, the question of “nature versus nurture” often arises. It is thought that temperament is genetically passed to a child, but how it is supported and understood by parents affects the child’s expression of his temperament. There are parents who struggle because they feel mismatched with their child. For example, an outgoing parent who has an observant, reflective child may find it difficult to be empathetic.

Most parents experience a great sense of relief when they have some knowledge of child development. It is comforting to know that newborns often sleep a lot during the day and are awake at night, that babies go through periodic growth spurts that affect their sleeping, that holding a baby close for a large part of the day is of crucial importance to meeting his need for nurturing and connection, as well as feeding early brain development. Young children throw their food while sitting in their high chairs: “Wow! Look what happens with gravity!” Learning to share takes time. It is a complex concept that requires a certain level of brain development to understand. Children four years old and even younger are curious about their bodies and masturbation is normal. They ask questions such as : “Where do babies come from?” “What does it mean to die?” “Why is that person in a wheelchair?” “Why does the sun come up and go down each day?” The questions go on until adulthood! Eight-year-olds are filled with evaluative thoughts that can lead them to being hard on themselves. When they are struggling with homework they might say, “I can’t do it! I never get anything right. I always do things wrong.” Sixteen-year-olds are engrossed in their own peer network. The opinions and experiences of their friends become a highly valued and private part of their lives.

The importance of understanding a child's needs continues throughout life into adulthood. How does one learn about child development? It is important to help parents identify ways of learning the ages and stages. The parent coach can suggest books that outline developmental growth, as well as talking to friends, teachers and pediatricians who have a nonviolent parenting philosophy.

As the nonviolent parenting class evolves, it is critical that brain development as well as the age and developmental needs of the child be considered in every discussion. What is the first question we need to know before we can talk about any situation? "How old is the child?" This becomes a mantra at the beginning of any parent sharing, and allows the educator to ask the parent what she knows about the age of the child being discussed, and then to add additional information.

It is important to remember that the dominant paradigm evaluates and judges children's development in terms of behavior that is manifested at each age. For instance, two-year-olds have "earned" the phrase "terrible twos" This is a powerful judgment being made about a two-year-old who is seeking autonomy and individuation. Tantrums are seen as a negative display of feelings and an indication that the child must be disciplined in some way. "When your two-year-old has a tantrum, tell him that he must stop screaming and kicking right now or he will be spanked. Then he'll have something to cry about!" We need to validate the importance of knowing the developmental stages, and challenge the evaluations of behavior. We do this by putting behavior in the context of understanding the child's feelings and needs. In the nonviolent paradigm, two-year-old tantrums become a flooding of big feelings, and the parent's role is to be a connected emotional coach, giving appropriate empathy.

Judgment also surrounds children as they reach adolescence. For example, one hears that it is a time when "you can't talk to your child" and that "all he wants is to be out of the house with his friends." The message to parents is that they should expect disconnection and a break in communication. It is important to remember the idea of interplay between a yearning for independence and dependence. In this way, we can redefine how we think about adolescence. It is a time where the need for autonomy and exploration of peer relationships are a priority, but it is also a time when youth long for a secure home base with their parents. They long for comfort, connection, support, and most importantly, nonjudgmental communication. In adolescence, there is a spurt in brain development with an increase in the functioning of the higher area of the brain and its complex processes. Just as we need to support our children's brain development in early childhood, we also need to do so in adolescence. How? By staying in connection with their feelings and needs.

An important piece of this discussion pertains to the connection between child development and cultural norms and expectations. Child raising practices are culture specific. The anthropologist Meredith Small explores cross-cultural child raising practices. Her books expose the cultural assumptions underlying many accepted practices in the United States, and the stunning differences compared with practices in many other parts of the world. How we see children is colored by terms like the 'frustrating fours,' and by perceptions such as that of adolescents being out of control. These assumptions also include cultural views on gender, race, and sexuality. For example, in our culture, boys are told to "stop crying and act like a man." This shuts down their feelings and needs, negatively affects their brain development, and forces them to conform to what the society around them says they are

supposed to do. Embracing the nonviolent parenting philosophy of child raising has large implications for how we view the world around us. Many parents have well-defined ideas about child rearing, which for them are mandates dictated by cultural norms and/or religion. A parent may find it difficult or scary to embrace the nonviolent parenting philosophy because it feels like it is at odds with her cultural heritage and/or religious teaching.

Parents have been taught to accept a cultural defense for their dominant paradigm practices. These practices, learned in childhood, are deeply rooted. For a parent to let go of what has been accepted as a cultural mandate can arouse deep fears, including the profound fear of being alienated from one's family and peers. As a parent coach, it is important to validate the parents' difficulties in accepting the nonviolent paradigm. The class or coaching session can be a safe place for questioning and can offer an open forum for sharing and building on the depth of the nonviolent paradigm. Through all the discussions, the parent coach should stay focused on the concept of needs and feelings, and support each parent to make conscious decisions about how she wants to raise her child.

## **For the Parenting Coach**

### **Key Points**

- A child is born with only 25 percent of his brain developed.
- 90 percent of the growth of the brain happens in the first five years of life.
- Parents could be called "brain sculptors" because the nature and strength of the emotional bond between the parent and child actually form the brain pathways that remain with the child for his lifetime.
- There are three areas of the brain: the lower area, the middle area, and the higher area.
- The lower area of the brain is the alarm center, the middle area of the brain is the emotional center, and the higher area of the brain is the decision making center.
- During each stage of development, children are seeking to satisfy their core human needs. Their strategies depend on their developmental level.
- Every child is born with an internal clock; all aspects of his development unfold in a highly individualized way.
- In every stage of development there is interplay between periods of independence and dependence.
- The dominant paradigm is filled with evaluation, judgment, stereotypes, and assumptions about each stage of child development.
- It is important to name the assumptions and judgments of the dominant paradigm and focus on the universality of needs and feelings.