

# Environment and Interactions: Brain Development and Quality Interactions



Parents as Teachers®

Provider Educator: \_\_\_\_\_

Care Provider: \_\_\_\_\_

Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

Date of Visit: \_\_\_\_\_ Time: \_\_\_\_\_

Number of children in day care: \_\_\_\_\_ Age range of children: \_\_\_\_\_

## Preparation for visit

- Review the notes from the previous visit

## Provider Educator Resources

- [\*The Amazing Brain of a Child\*](#)
- [\*Responsive Caregiving\*](#)

## Care Provider Handouts

- [\*The Important Role of Care Providers in Children's Brain Development\*](#)

## Parent Pages

- [\*Your Child's Amazing Brain\*](#)

## Activity Pages

- [\*Play to Learn: Observing and Responding During Floor Time\*](#)

## Materials for Activity

- Drop cloth or Blanket
- Favorite Toys
- Blocks
- Basket of books – including a book without words

## Opening: Activate & Connect

- > Connect around observations from last visit.
- > Reflect on what has happened with families and children since the last visit.
- > Agree on what will happen during this visit.

## Explore/Discover

### Intent:

- > Deepen the care provider's understanding of brain development in young children.
- > Explore how care providers can support brain development through quality interactions, focusing on responsive interactions as the framework.

### Introduce the topic

The development of a young child's brain is heavily influenced by the quality of interactions in which they are engaged. In this visit, support care providers in recognizing that:

- > A baby's brain grows more during the first few years of life than in any other time.
- > Positive and negative experiences have a profound impact on early learning, social skills, and structural development of the brain.
- > Care providers play a key role in each child's brain development.

**Prompts/questions to understand the care provider's experiences, perspectives, and practice of the topic**

- > What are some things that you have heard about brain development in very young children?
- > How do you think your interactions with children effects their development? What kinds of positive experiences do you provide for the children in your care?
- > In what ways do you feel like you are naturally responsive to children in your care?

**Prompts/questions to learn more about the care provider's understanding of families' practice and experiences as related to the topic**

- > What types of interactions do you think the parents of the children in your care value the most? Why?
- > How do parents communicate with you about what is most important to them in how you interact with their child throughout the day?

**Share information and strategies from the care provider handouts and other materials**

Recognize gaps in knowledge, make connections to key points in the resources and to children's development:

- > If time permits, share the video *Your Child's Brain and Its Amazing Potential* with the care provider. After watching the video together, ask the provider to share key takeaways. Highlight the concept that repetition is key to optimal brain development in children.
- > Share the care provider handout, [\*The Important Role of Care Providers in Children's Brain Development\*](#)
  - A baby's brain grows more during the first few years of life than in any other time. Parents and care providers play a crucial role during that key developmental time.
  - Quality interactions with parents, teachers, and caregivers are the primary way that children learn.
  - A child's behavior can show us what their brain is ready to learn. When a child is repeating an activity over and over, they may be showing us that they are in a sensitive period, or an ideal window to learn or develop a certain skill.
  - Responsive interactions, like serve and return, promote optimal brain development for children. By practicing responsive caregiving, providers can have a positive impact on children's brain development and development across all domains.

**Notes**



## Interact

### Intent:

- > Provide an opportunity to gain hands-on, real-time experience practicing responsive interactions with children.

### Share the Activity Page

#### Play to Learn: Observing and Responding During Floor Time

- > Talk about the diverse ways to practice responding with children. If there are infants under the age of 6 months, read the “Birth to 5 Months” section, and discuss the steps with the provider. For children 6 months and older, review the steps under “6 months and older”.

### Describe and explain the rationale for this activity

- > Experience is more meaningful than theory. After reviewing the importance of responsive caregiving, this activity offers the opportunity to practice responsive interactions and experiment with how it feels to respond to children in a practical setting.

### Group Management

- > Ask the care provider to practice the suggestions one by one with the infant(s). Share observations in the moment about how the behavior feels for the provider and what you both see in the infants. For older children, support the care provider by reading through the steps then offering reminders and suggestions to try once they are engaging with children.

### Shared Observation

- > Offer observations you are noticing during the activity and encourage them to reflect on their experience, feelings, and observations throughout the activity and after each step of the interaction. How are the children responding in turn to the provider’s engagement with them? How do the children respond to the provider during play?

## Reflect/Synthesize

### Acknowledge strengths that you observed in care provider

- > I noticed that when you....., you.....
- > I noticed when you say..... That demonstrates \_\_\_\_ skill in \_\_\_\_ area

### Notes



**Generate prompts or questions to facilitate the care provider's plan to practice behaviors, develop skills, address a development domain, or a developmental topic**

- > What seemed to work well? What did not work well?
- > How did practicing responsive interactions feel familiar? How or when did it feel more awkward?
- > What did you notice children doing over and over again? How could you arrange the environment or your routine in a way that would allow for children to repeat something over and over?

**How might you incorporate information from today into your routine?**

- > Did the activity generate any ideas for strategies you could use to improve the overall quality of your interactions with children?
- > Which routines are applicable to the practice of responsive behaviors? For example, outside of play, how might you practice engaging in responsive interactions during meal time, etc.?

**Ask questions about key takeaways**

- > What are some takeaways that you gained from our conversation around brain development and responsive caregiving?

**Short Term/Long Term Goals**

- > How do your short term or long term goals align with the information that you received today?
- > How would you like to grow and develop your skills as a responsive caregiver?

**Resourcing/Resource Networking**

- > Think about what resources can support the care provider to learn more about this topic.
- > The Center for the Developing Child has many free resources, including videos and briefs: <https://developingchild.harvard.edu/resourcetag/serve-and-return/>
- > The Alberta Family Wellness Initiative also offers free resources: [https://www.albertafamilywellness.org/resources/results?search-term=&topic\\_filter=serve-and-return](https://www.albertafamilywellness.org/resources/results?search-term=&topic_filter=serve-and-return)

**Notes**



## Closing

### Looking forward

- > How will you introduce the new ideas into your daily routine?
- > What do you foresee as a challenge?
- > What strategies may prevent those challenges?

### Plan for sharing information with parents/parent page

- > Think about how you might share some of the information you learned today with parents.
- > Use the handout [Your Child's Amazing Brain](#) to show the parents how their child's brain is developing and what they can do to support their child's optimal growth.
- > How could we leverage technology to support our learning about responsive interactions with families?

### Generate prompts or questions to gain current knowledge and viewpoint on family engagement strategies

- > Ask the care provider what role they can play in supporting parents' quality interactions with their children. How can the care provider learn more about how parents engage in responsive interactions at home?

### Discuss next steps and plan for the next visit

- > Next visit we will be discussing care routines.

## Notes





# The Amazing Brain of a Child

*The first years of life are a time of amazing growth and change in the brain. A baby will learn more during the first 3 years of life than in any other time period in their life. By their third birthday, a child's brain will reach 80 percent of its adult volume; by age 5, it will be nearly full grown (First Things First, 2022).*

Starting three weeks after conception and continuing throughout pregnancy, the baby's body begins to make billions of brain cells. These cells begin making connections with one another even before the baby is born. During the first two years of life, up to 2 million new connections are formed every minute (Public Broadcasting Service, 2015).

Most connections are related to the child's experiences. These connections determine everything about how a child functions in the world. Parents, as designers of their child's world and supporters of their learning, play the most important role in helping their baby's brain make and maintain the right connections. They provide the kinds of experiences that lay the groundwork for their child's abilities in learning, relationships, motor functions, and emotions.

## Nature and nurture

Genetics play a big role in early brain development. In the past, some experts claimed babies' genes alone determined how they interact with their environment as well as their cognitive and emotional potential. Others argued babies' experiences determined important outcomes. Neuroscientists now know that the combination of genetic and environmental influences – nature and nurture – ultimately determines babies' physical, social, emotional, and cognitive makeup.



Everything in babies' environments – from the food and substances their mothers consume while pregnant to the love, toys, and social interactions around them – is influential. Babies' early experiences cause physical changes to their brains that will tremendously impact them later in life.

## The biology of the nervous system

The brain and nervous system are made up of billions of complex cells called neurons (or neuron cell bodies or nerve cells). Understanding these basic units of the brain will help clarify how nature and nurture interact to stimulate brain development.

By about 18 weeks after conception, a fetus has virtually completed the process of neurogenesis, the creation of neurons through cell division (e.g., Rakic, 1995; Stiles, 2008, as cited in Siegler, DeLoache, & Eisenberg, 2011).

They now have more neurons than they will need. By comparison, very few additional neurons will be made later on, even in the two areas of the adult brain where neurogenesis is known to happen (Ming & Song, 2011).

Neurons, the building blocks of the brain, communicate with each other through electrical signals — they are the pathways that enable all brain processes to occur. Neurons





have four parts: dendrites, cell body, axons, and synapses.

1. **Dendrites** are like tree branches that extend from the cell body of the neuron. They “hear” messages being sent from other neurons. A single neuron can have hundreds of dendrites which fan out over large areas to receive input from other neurons. Some neurons have as many as 15,000 connections with other neurons (Siegler, DeLoache, & Eisenberg, 2011). Dendrites send the information they receive to the cell body as an electrical signal.
2. The **cell body** is the control center of the neuron. This is where the information, in the form of a small electrical signal coming into the dendrites, is collected, and the decision is made whether to send it on to other cells.
3. **Axons** are like another branch coming out of the cell body. These are the output cables of a neuron, just as dendrites are the input mechanisms.
4. A **synapse** is the place where an axon of one neuron and dendrite of the next neuron connect across a microscopic gap between the neurons. The dendrites of one neuron can receive thousands of connections from the axons of other neurons. In the first decade of life, a child’s brain may form trillions of synapses.

## Connections and Pathways

As baby’s social emotional, sensory, language, and higher cognitive function develop, the connections between the neurons are reorganized. As individual neurons connect and disconnect with other neurons, a complex network of neural pathways forms.

Neuroscientists tell us that with each repetition of an experience, connections become better organized. The brain’s ability to change in response to repeated stimulation is called **plasticity**. In the early years, neurons form connections with more neurons than

they will eventually need. Connections that are used repeatedly in a child’s day-to-day life are reinforced and become part of the brain’s permanent circuitry. Connections that are not used repeatedly, or often enough, may be eliminated or “pruned.” In this way, experience plays a crucial role in structuring a young child’s brain. Connections become a more or less permanent part of the brain due to repeated use.

## Sensitive periods

The brain is remarkably plastic. It is changed by input and experience. However, scientists believe that there are periods of time – “sensitive” or “critical” periods – during development when the brain is especially ready to receive and learn certain kinds of information, and neurons can modify connections most easily and efficiently.

In other words, there are windows during which the particular experiences a baby has will have a lasting impact on their brain development.

Each of the brain’s systems (vision, hearing, language, emotions, and motor) has its own sensitive periods during which it is essentially waiting for the right stimuli to make the proper connections.

For instance, synapse production in the visual system peaks toward the end of the first year, except for the prefrontal cortex which governs higher-order that promote synaptic development.

The brain’s plasticity also means that there are times when negative experiences or the absence of appropriate stimulation are more likely to have serious and sustained effects. For instance, “while brain development is a natural and sturdy process for many children, early adverse experiences – such as toxic stress or trauma – can slow or derail this critical process” (Gruendel, 2015, p. 5). The connections in the brain are altered by such experiences.



Sensitive periods for most abilities never completely close, and learning is a lifelong endeavor. However, during these times when the brain is primed for making connections in certain areas, abilities develop more easily and quickly.

The growth of dendrites and the establishment of synapses make the brain bigger. At 6 months, the brain is 50 percent of its adult size; by 3 years it is 80 percent of its adult size. This growth occurs, in part, because of the growing number and density of dendrites. As the child grows, there are periods of spontaneous growth when the number of dendrites increases dramatically. This maximizes a child's cognitive, social, physical, and emotional potential.

## How the brain works

The job of the neuron is to send messages to other neurons. Constant electrical and chemical signaling, or “talking,” between neurons in different parts of the brain and the body enables the body to work the way it does. When an electrical impulse arrives at the end of the axon, it must cross the synapse. The electrical signal causes chemicals called neurotransmitters to be released. These neurotransmitters then cause changes in the action potential of the next neuron, and the signal is passed on. This process is repeated as the signal is passed through every neuron in the pathway (Eliot, 2000).

Learning, thinking, remembering, and making decisions are all the result of neurons communicating with each other in the brain and the body.

The brain learns throughout life by constantly building and adapting its network of trillions of connections as a result of stimuli from the environment.

At the same time that synapses form and dendrites branch, a fatty coating called myelin begins to cover the axons. Myelin acts like insulation – it keeps the electrical signals from “leaking out.” Axons that are covered by myelin send information faster and more efficiently.

Myelination begins before birth but takes many years to complete. A well-balanced diet, including fat, is important to the formation of myelin.

## Implications for Early Care and Education

**When caring for infants and toddlers, it is important that care providers:**

- Provide a care environment that is bright and interesting, but orderly. Young brains need stimulation, but overstimulation does not support efficient brain organization.
- Plan daily routines so that babies and toddlers can nap as much as they require. Healthy brain development relies on adequate sleep to integrate new information and reinforce connections.
- Learn what to expect from typically developing infants and toddlers. Early intervention, while the brain is still plastic and easily changed, is important to help a child with delays to reach their potential.
- Take advantage of windows of opportunity to provide experiences that encourage particular abilities. For instance, when toddlers are interested in walking more than anything else, provide lots of space and opportunities to be on the move.
- Serve healthy meals and snacks. Make sure infants under 12 months receive breast milk or properly prepared formula. Children up to 24 months old should drink whole milk. Remind parents about the importance of dietary fat, protein, and minerals for myelination.

**When caring for or teaching preschool-age children, it is important that care providers:**

- Provide time for children to repeat activities. Repetition reinforces neural pathways. Preschoolers need opportunities to practice skills over and over. Don't worry about boredom; children need the feelings of competence that come from repeating an activity.





- Offer choices to preschool children. As the frontal lobes of the brain myelinate, children are developing intellectual abilities to understand differences and solve problems. Provide learning stations and allow children free play opportunities to explore them.
- Use music in your center or classroom to entertain, ease transitions, and support brain development. Include opportunities to play musical instruments as well as to sing and listen to music.
- Involve preschoolers in activities that encourage them to stretch their attention span such as pretend play opportunities and unstructured time for looking through books. The prefrontal cortex develops during the preschool years and is responsible for increases in attention span.
- Prevent children from watching TV and video tapes for long periods of time, as children become dependent on a higher level of visual and auditory stimulation found in electronic media to help them focus.
- Encourage preschoolers to use their language and listening skills. Play listening games that involve sound discrimination. Teach simple rhymes and fingerplays to stimulate language centers of the brain.

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## Responsive Caregiving

*The brain's basic structure is formed through a process that starts before birth and continues throughout adulthood. Early experiences have a direct impact on how the brain is shaped, the quality of the brain's development, and the child's long term developmental trajectory. Although there are multiple influences on a child's healthy brain development, including environmental and genetic, research shows that positive interactions are essential to children's healthy growth and development (Zero to Three, 2010). This type of interaction forms the foundation of brain architecture upon which almost all brain development will be built (NSCDC, 2011b, 0:48).*

Along with a child's primary caregivers, childcare providers play a crucial role in children's brain development. Approximately 59 percent of children aged 5 and younger are in at least one nonparental care arrangement during the week. Amongst children in a nonparental care arrangement, 62 percent are attending a day care center, preschool, or prekindergarten, 38 percent are cared for by a relative, and 20 percent are cared for in a private home by someone not related to them (NCES, 2019).

It is important to support the care provider in understanding their importance and the ways in which their interactions with the children in their care have an enormous impact on the children's brain development, which is essential to their overall well-being and growth — now and in the future.

**Ideal relationships and interactions between child and caregiver are characterized as responsive.**

Responsive caregiving, in the most basic sense, happens when a caregiver pays close attention to a child, and then chooses the best response or way to interact with the child based on what they noticed or how they understood

the child's cues (Lally, 2011). "When an infant or young child babbles, gestures, or cries, and an adult responds appropriately with eye contact, words, or a hug, neural connections are built and strengthened in the child's brain. Given the foundational importance of the first few years of life, the need for responsive relationships in a variety of settings, starting in infancy, cannot be overstated" (Center on the Developing Child, 2022a, para 1).

Responsive care is sensitive and adaptive. It is consistent based on each child's temperament and approaches to learning, but it also changes depending on her current state, recent interactions, and cues indicating what she may need or want at that moment. Finally, it depends on providers own state, their thoughts about the current situation, and their ability (or, sometimes, their intent) to act. Child psychiatrist Daniel Siegel labels our focused attention on the internal state of another person attunement (2014).

*"Because early experiences have such a profound impact on brain architecture, responsive, high-quality infant care has great potential for a positive effect" (WestEd, 2019, para. 2).*





## Responsivity in action

Lally (2011) describes a three-step responsive process that care providers can use to become attuned to the internal states of the children in their care as “Watch, Ask, Adapt”:

1. **Watch:** refers to observing a child’s actions, cues, and behaviors with interest and curiosity.
2. **Ask:** refers to the provider asking themselves what they might do to support the child, or how to interpret the cues of the child.
3. **Adapt:** refers to the ways the provider is able respond to those interpretations of the child’s cues, or desires.

It’s worth noting that this kind of responsiveness grows as the provider and child deepen their relationship and familiarity with each other. Caregivers learn to follow the child’s lead and consider the focus of the child (Zero to Three, 2010).

Another well-researched type of responsive interaction is “**Serve and Return.**”

Serve and Return helps babies form new neural connections as they “serve” through babbling, facial expressions, and gestures, while adults “return” the serve by responding to those gestures in a meaningful way. These interactions establish connections between all neural networks in the brain and are the foundation for more complex learning patterns throughout all developmental stages of life.

Without these types of interactions, stress systems will activate causing stress hormones to be released. When a baby is not attended to, that is a sign of danger causing the stress systems to activate. A brain that is constantly bathed in stress hormones will cause certain key synapses to fail to form in critical regions of the brain (Center for the Developing Child, 2013).

Harvard researchers have identified 5 steps involved in Serve and Return interactions:

1. **Notice and share:** Pay attention to what the child is noticing. Let the child see you sharing their attention.
2. **Support and encourage:** Return the serve by acknowledging the child’s serve. This can be nodding, smiling, hugging, making a noise.
3. **Name it:** Label an activity, object, feeling, etc., for the child.
4. **Take turns:** Engage in back-and-forth interaction, pausing to allow the child time to respond.
5. **Notice endings and beginnings:** Pay attention to when the child lets you know they are ready to begin something new (Center for the Developing Child, 2022a).

Serve and Return interactions help children develop learning abilities. When a child sees an object, the adult says the name of the object and its function. This helps the baby connect sounds with objects. Later the adult shows how those sounds also correspond with marks on a page, thus starting the child’s journey with reading and writing.

### Temperament and Interaction

Some children will more actively seek interactions with their primary caregivers or care providers due to their past experiences or their temperament.

It’s important to share with caregivers about the need to balance attention and provide responsive interaction equally among the children in their care, even if a child does seek out interactions as frequently as others may (Zero to Three, 2010).



## Ways to support care providers in delivering consistent, responsive care:

- Discuss the ways that healthy interactions build those synapses and connections in the brain.
- Discuss strategies for integrating intentional, responsive care into everyday routines
- Practice and roleplay with the provider using the steps outlined in Serve and Return interactions, or the “Wait, Ask, Adapt” method
- Ask for examples of the ways the care provider is engaging in high-quality and responsive interactions with the children in their care.
- Reinforce the positive interactions you notice between the children and the care provider.
- Offer examples of strategies for talking with and interacting with children.
- Follow up. A key factor with this one-on-one personalized professional development opportunity is that there is follow-up learning. Step one is the initial discussion of the topic and the practice of the activity or experience with the children in this care setting. Step two is encouraging the care provider to repeat the activity or experience often between visits. Step three is observing the activity the next time you visit. Discuss the activity and help them evaluate the experience and the learning opportunity.

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*“Responsive relationships early in life are the most important factor in building sturdy brain architecture” (Center for the Developing Child, 2022b, para. 8).*



# The Important Role of Care Providers in Children's Brain Development

Neuroscientists have concluded that parents and care providers play a vital role in fostering a baby's healthy brain development. The way a child's talents and abilities develop depends largely on the opportunities they encounter. Children's amazing brains, given opportunities for stimulation and nurturing from you and other people who love them, will grow at an incredible rate during the first years of life.

## How the brain works

To understand how to help a children's brains develop, it is helpful to understand how the brain functions. The basic building block of the brain is the neuron. Neurons must connect with other neurons in order to work. A connection is called a synapse. Babies form trillions of these synapses before birth and in the early years of life. One neuron can have thousands of connections with other neurons. At birth, babies are able to breathe, hear, suck, and startle because the connections among the brain cells responsible for those newborn reflexes are already set. Other abilities, like talking and walking, depend on patterns of connections which need the right kind of stimulation from you to develop over time.

## Sending and receiving messages

Neurons work by sending information throughout the body in the form of electrical signals. Information is sent through one neuron and passed on to the next. As you feed, hold, touch, and talk to the children in your care, you are sending messages to their brains. You play an important role in creating a healthy environment for the children for whom you care.

## Early experiences affect the brain

The brain not only forms synapses, it also eliminates ones that aren't used in order to perform more efficiently. Neurons that are repeatedly stimulated form pathways which allow impulses to travel faster. For example, young children often like to repeat certain actions, like climbing up steps. The more they practice, the better they can climb, and the stronger the brain connections involved will become.

## Critical periods

There are critical periods during which a child's brain develops abilities. These periods are sometimes called "windows of opportunity". You can often see a child in a sensitive or critical period when they are repeating an activity over and over. You can promote healthy brain development by making sure that the children in your care have the chance to repeat activities they are interested in, and that they have a stimulating, responsive, and non-stressful environment.







## Care Providers and Brain Development

Research shows that prime brain development happens through healthy relationships and interactions. A key marker of positive interactions between care providers and children is the presence of responsive care.

### Responsive caregiving:

- Happens when caregivers are observing children and responding to children's cues.
- Is flexible and adapts to the child. It is a type of interaction children can begin to count on.
- Is based on each child's temperament and approaches to learning.
- Changes depending on the child's current state, recent interactions, and cues indicating what she may need or want at that moment.

### Some examples of responsive caregiving include practices such as:

#### 1. "Watch, Ask, Adapt"

- **Watch** for verbal or nonverbal cues like facial expressions, gestures, etc.
- **Ask** yourself what the cues mean-Does the child want to be comforted? Does that child have a need to be met, like a diaper change, or hunger.
- **Adapt** by responding to the child based on the cue and interpretation.

#### 2. "Serve and Return" is another way of practicing responsive care. Its steps include:

- **Notice and share:** Pay attention to what the child is noticing. Let the child see you sharing their attention.
- **Encourage:** Return the attention by acknowledging the serve through a laugh, smile, or nod.
- **Name it:** Label an activity, object, feeling etc. for the child.

- **Take turns:** Engage in back and forth interaction, pausing to allow the child time to respond.
- **Notice endings and beginnings:** Pay attention to when the child lets you know they are ready to begin something new.

### When caring for infants and toddlers, it is important that care providers:

- Provide a care environment that is bright and interesting, but orderly. Young brains need stimulation, but overstimulation does not support efficient brain organization.
- Plan daily routines so that babies and toddlers can nap as much as they require. Healthy brain development relies on adequate sleep.
- Learn what to expect from typically developing infants and toddlers.
- Take advantage of windows of opportunity to provide experiences that encourage particular abilities.
- Serve healthy meals and snacks.

### When caring for or teaching preschool-age children, it is important that care providers:

- Provide time for children to repeat activities. Repetition reinforces neural pathways.
- Offer choices to preschool children. Provide learning stations and allow children free play opportunities to explore them.
- Use music in your center or classroom to entertain, ease transitions, and support brain development.
- Involve preschoolers in activities that encourage them to stretch their attention span such as pretend play opportunities and unstructured time for looking through books.
- Encourage preschoolers to use their language and listening skills.



## Your Child's Amazing Brain

Scientists have many tools that can see brain activity in children. They understand how your child's brain grows during their first years of life. They also know that you play a key role in that growth.

### How the brain works

The brain is built by a cell called a **neuron**. These cells connect with other neurons to work. A connection is called a **synapse**. One neuron can have thousands of connections with other neurons. Your child forms trillions of these synapses before birth and in their early years.

Your baby could breathe, hear, and suck when they were born because they already formed those connections before birth.

### Sending and receiving messages

Neurons work by sending information throughout the body. Information travels through electrical signals which are sent through one neuron and passed on to the next neuron, and so on.

The messages come from experiences. As you feed, hold, touch, and talk to your child, you are sending messages to their brain.

The brain also gets rid of connections that are not used. This helps our brains work efficiently.

Neurons that are used over and over form a pathway. This lets signals travel faster. For

example, your child may like to repeat things like climbing up steps.

The more they practice, the better they will climb. The brain's connection for climbing becomes stronger.

### Why your baby needs fat

A fatty layer called **myelin** develops in your child's brain to cover the neurons so that the electric signals do not get off track while traveling. Think of myelin as the plastic on the outside of an electrical cord that holds the wires.

Myelin makes it possible for nerve pathways to move quickly and efficiently. At birth, only some neurons are myelinated. It takes many years for myelination to be complete. Your child's brain needs a well-balanced diet, including the fat found in breast milk or properly prepared formula, for myelin to form. You help their brain develop when you feed them these.



*Because your baby's brain is so changeable now, negative experiences — or a lack of appropriate stimulation — can have serious and lasting effects. Give your baby a responsive and stress-free environment. They depend on you to provide a safe place for them to grow, things to spark their curiosity, and a warm, nurturing relationship.*



## Nature and nurture

Genes play a role in your child's potential. But so do the experiences you give them. Your child's amazing brain will grow at an incredible rate during their first years. And you will help it happen!

Your baby is eager for the experiences you give them. They are curious about the world. You are learning to read your child's signals. Notice what they are curious about. Help them explore.

### How you can help:

- Hold, touch, and talk to your baby lovingly every day.
- Feed your baby healthy fats and other nutrients in breast milk or properly prepared formula.
- Protect your baby against brain damage from head injuries and lead poisoning.
- Read and sing with your baby. Play with them.
- Practice new sounds, words, and body movements over and over.
- Meet your baby's needs quickly and warmly. They will feel happy, loved, and safe.
- Look for your baby to do new things. Give them the chance to practice them.

## Executive function

Your baby's brain is made to handle multiple tasks like focusing and storing information. This is called executive functioning. Researchers say it is like air traffic controllers managing airplanes. Around age 3, these skills will start to develop quickly. They will help your baby control their emotions, plan ahead, and apply new things they have learned later on.



# Play to Learn: Observing and Responding During Floor Time

## Rationale

- By actively responding to and engaging with children during play, you are supporting their brain development.
- By following children's play, you give them opportunities to make decisions.
- Play helps children develop across all domains.
- As children explore, they learn how to make objects do what they want. They are beginning to imagine and plan what they will play.

## Materials

- Drop cloth or blanket
- Favorite toys
- Blocks
- Basket of books - 3 or 4 age-appropriate books, including 1 wordless book

## Activity

- Spread the drop cloth or blanket on the floor.
- Sit at the same level as the children.

### Birth to 5 months

1. Place the baby on their back. Talk to them. Repeat the sounds they make back to them.
2. Turn the baby onto their belly and encourage them to push up on their arms. Give them things to look at such as your face, a block, or one of their toys. (The baby may be more interested in you than toys.)
3. Talk about what they are doing or what they see.
4. Hold the baby in your lap and offer them small, safe things to reach for and hold. Encourage their interest by smiling and making eye contact with them.
5. Watch the baby's eyes and body language. When they turn away, they are telling you they need to rest for a while. They will play again when they are ready.

## Questions to remember

- What nonverbal cues can I use in responding to children?
- What are some of the different ways children try to engage with me during play?
- How can I sustain and keep interaction going?
- How can I stay present and focused with the children in my care?



## 6 months and older

1. Let the children choose what to play with and how to play.
2. Imitate them. If they fill a container with blocks, do the same.
3. Closely observe what the children are saying and doing. They may be trying to direct you.
4. Talk about what they are doing. Talk about what you are doing as you follow their lead.
5. Take turns and wait for them to respond.
6. To stretch their attention, ask questions: “What do you want to do next?” or “Where should we put this block?” Add a new idea or item to the play.
7. Keep playing as long as the children are interested. Pay attention for cues that tell you they are ready to begin a different activity.

## Extend the learning by

- Sharing this type of activity with their parents. Encourage them to do the same. They may like to try this when they come to pick up their child and watch them play with their friends.

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**How did children respond to your “returns” or responses?**

**What are the cues that tell you a child is ready to move on?**