

Sign
to
Speak 

Babies *Can Talk*

Marilyn Daniels, PhD

Georgia Frawley, MA

Ken Frawley



Chapter 2

How Babies Learn

Humanity has known for thousands of years that the more involved someone is in the learning process, the better the information learned is retained and the more available it is for future use. Signing is a rich learning activity for children. If you study the works of modern theorists such as Howard Gardner, Erik Erikson, and Abraham Maslow, you will come to the same conclusion as millions of other parents: developmentally, signing with a baby makes sense.

A Baby's Brain

Let's begin by looking at your baby. What do you notice? Perhaps first you see that your baby's head is pretty big in comparison to the size of the body. The neck is undoubtedly short, as are the arms and legs, with little curled-up hands and feet. The baby appears to be aware of hands, which are almost always moving. The face is often animated with eyes wide open, already starting to meet your gaze. The baby's mouth moves and will turn toward the breast or bottle if offered. The infant reacts to sounds and will sometimes jump if startled when resting or sleeping. The baby also cries at times, often very loudly.

What do we understand about babies? Our ideas about their abilities are constantly evolving. For instance, today we know that babies are more aware of the world than most psychologists once thought.

Brain Cells and Synapses

A baby's large head houses an equally large brain with 10 billion cells, or neurons, at birth—nearly twice as many cells as that of an adult brain. What are not developed in an infant's brain at birth are the synapses, connections between the various brain cells. These connections are formed and shaped by early experiences. It is through these pathways that learning occurs.

The areas in a baby's brain that process sensory information are the first to fully develop. Surely this is not by accident. If you observe how infants gather knowledge by using their senses, you can see why the ability to use these regions of the brain early in their lives is essential and significant.

With this in mind, let's consider the way an infant learns. Looking at the diagram (figure 1) of the immature neuron, we can see how the brain works. For example, a message (which is a pattern of electrical impulses) is received by a neuron in the eyes when the baby sees something. The message travels along the axon (a hairlike fiber that extends from a nerve cell) into the cell body and, in very simple terms, is stored in a dendrite spine. Dendrites are the branchlike processes that extend from the cell body in all directions, increasing its ability to form synapses. As you look at the immature neuron, you will see that there are very few dendrite spines; this is because there has not been very much input yet. But as input increases and a neuron matures, more dendrite spines are formed. These spines are the places where other neurons make connections, or synapses, with this neuron. The basic reason for all of these dendrites is to furnish enough room for the thousands of synapses typically found on a neuron.

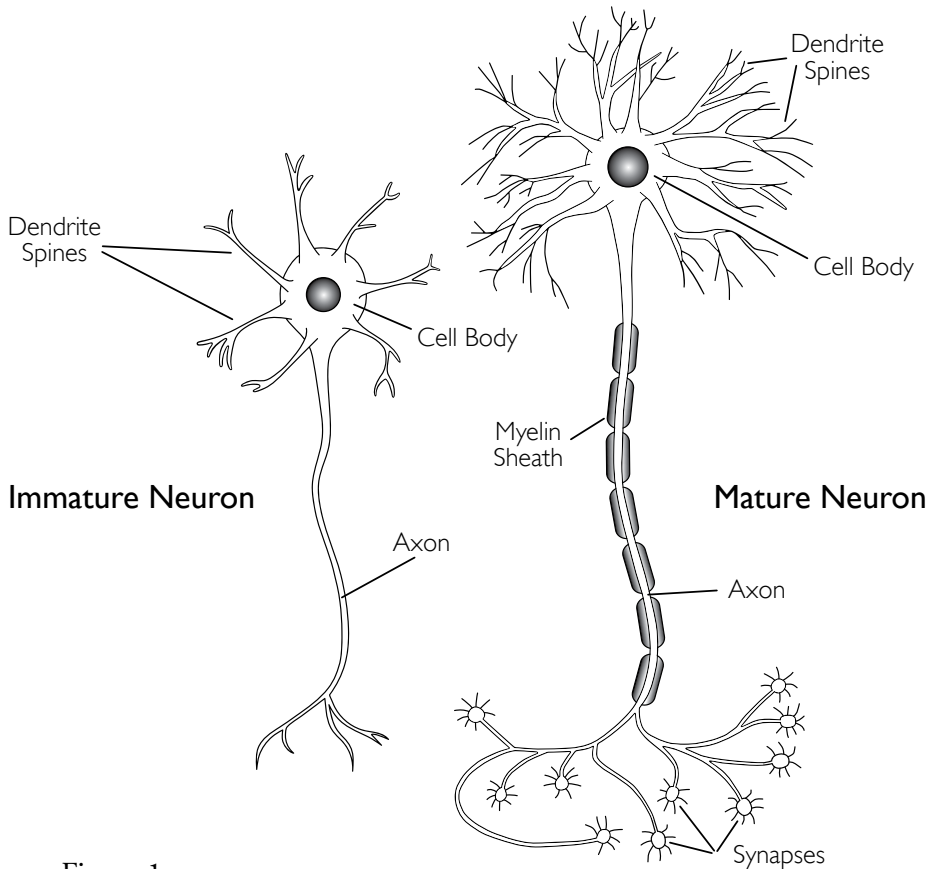


Figure 1

In simplistic terms, every time we learn something, a dendrite spine is formed and the information is stored in this dendrite as a memory. A newborn has virtually no memories, but as the senses start to process sights, smells, touch, tastes, and sounds, information gets processed and memories begin to be stored. It is probably safe to say that one of an infant's first memories is of the mother. But in the brain of the infant, many different dendrites are forming with very specific information about Mom—the sound of her voice, her smell, her smile, her face, the way she picks up the child, and how being held by her feels.

The brain is a mass of neural networks where one memory can trigger another. For example, suppose a good friend calls you on the phone. As soon

as you hear her voice, you know who it is. Why? Because you've heard it before and you have this voice stored in your brain, in a dendrite. As you talk, you can visualize her face (stored in another dendrite in a different part of your brain) and then remember various events that you have shared with her (using still other dendrites in completely different parts of your brain). As you talk about what you are having for dinner tonight, you can imagine how it will taste, what it will look like, and so on. Your brain has an infinite capacity to store information and make these neural connections.

Your baby's brain is constantly working to store new information. As neurons are repeatedly used and as they mature, the information travels faster and reactions accelerate. Looking at the mature neuron in the diagram, note the myelin sheath around the axon. This enables messages to travel faster—much as if they were driving on a freeway rather than a dirt road full of potholes. The more ways and opportunities a child has to experience things, the more dendrites will be formed in various parts of the brain, and the chances for more neural connections will increase. When your baby cries or fusses, you ask the question, “Do you want to EAT?” signing the word EAT as you say it. You then offer food. Through the repetition of this simple, everyday event, babies learn that when Mom says EAT and makes that funny hand sign to her mouth, they get food and they get happy. They are able to retrieve this stored information and the neural connection is made. It is just a matter of time.

So what does this mean to the parents of a beautiful, new infant? Generally speaking, the more dendrites there are, the more possible synaptic connections, and the more synaptic connections there are, the better able the neurological system is to process information. Dendrites and synapses are therefore the building blocks of the growth and development of a baby's brain. When activities and experiences are repeated often enough, the dendrites that are used in processing information become permanent and encourage more synaptic growth.

When a baby's knowledge is obtained through the use of multiple senses, even more extensive networks of synapses are formed. The same holds true when particular areas of the brain are actively engaged. For instance, if the language centers are actively involved, more complex patterns of synapses will form in the language region. Such complexity increases the baby's ability to acquire and use language.

Your baby's brain grows fastest during the first two years of life, and your interaction and encouragement will make the most of this window of opportunity. So when you show affection for, talk to, sign with, play with, sing

to, laugh with, hold, and touch your baby, know that through your good care and involvement you are helping your child to support and build millions of synapses and dendrites.

Memory

Babies need memory to learn and recall everything around them, from the faces of their family members to the sound of their father's footfall on the steps. As we have seen, the formation of synapses influences and increases memory. Memory is there at birth, and some research indicates that babies can identify their mother's voice through their memory of the prebirth experience in the womb. Memory becomes fully developed by the time they reach school age.

Baby Thoughts

Researchers in the United States and in the United Kingdom have recently disproven the long-held belief that babies do not understand "object permanence"—that is, that a baby's awareness of objects ceases to exist after the object is no longer visible. The U.S. research was conducted at the University of California, Santa Cruz. There, researchers working with 2- and 3-month-old babies discovered that babies as young as 10 weeks old understand object permanence: the babies in the study knew objects continued to exist even when they could no longer see them.

In the United Kingdom study, which took place at Birkbeck College and University College of London, the researchers worked with brain scans to dispel the belief that as far as babies' level of understanding is concerned, when objects are hidden from view they are "out of sight, out of mind." They discovered bursts of brain activity when an object was hidden and again at the time when the baby might expect it to reappear. The researchers believe these activity bursts indicate the baby is thinking about the object when it is not in view.

Both of these studies demonstrate the advanced mental development of very young babies. It is quite amazing to consider the amount and level of comprehension possible in children so early in life. What a wonderful opportunity this offers parents who begin to talk with their babies before they have grown old enough to produce oral speech! With sign language, objects can be identified, people can be named, and ideas can be exchanged.

How Babies Develop

Each baby is unique, a special treasure for us to nurture, guide, support, nourish, and keep safe. All children develop the same and yet differently, as parents of multiple children will tell you. They start to walk and talk at different times and they have different interests and abilities. Yet studies have shown that children develop in many of the same ways and at roughly the same time. Here are some basics on a baby's development.

Visual Input

Vision is perhaps the most critical sense area of a child's development. When you observe an infant, you can see how the eyes are used to explore and examine the surrounding world. More than half of a baby's brain is devoted to visual processing. An interesting new discovery is that babies have a natural ability to notice small differences in intricate visual patterns. Before 3 months of age, infants can recognize a scrambled photograph of their mother just as quickly as a photo in which everything is in the right place.

Eye Gaze

Researcher Andrew Meltzoff, a professor at the University of Washington, has studied the "gaze following" of thousands of babies. He believes that babies learn a good deal about what people are interested in and what they plan to do next by simply watching their eyes. Babies absorb the culture of their community through their eyes.

Eye gaze is an important indicator of a baby's emotional and social growth. It has even been used to predict a child's language development. In Meltzoff's studies, babies who were not proficient at gaze following by their first birthday had much less language development than other children by their second birthday.

You can help your child become more proficient at using eye gaze. By regularly interacting with your infant, pointing out objects, talking, and signing, you will be offering additional gazing opportunities. It is best to do this when the child appears to be settled, quiet, and alert. The baby will be more attentive and responsive to you during such times, and more aware and interested in the surroundings.

Signs for Feelings

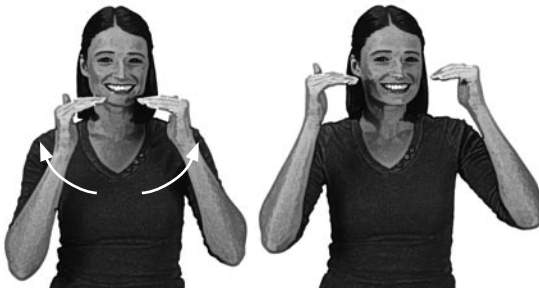
The signs that represent the basic emotions all human beings experience are another category of words that are helpful for a baby to learn and begin to comprehend. The emotions happy, sad, and mad often engender actions such as crying or smiling. Learning the ASL signs for these words and actions can help you communicate emotions to your baby.

HAPPY and SMILE

HAPPY is a sign babies can learn when they are quite young. It is a sign that expresses a good feeling. Using this sign can encourage an infant to SMILE more and attempt to mimic the happy face you offer as you make the sign and say the word.



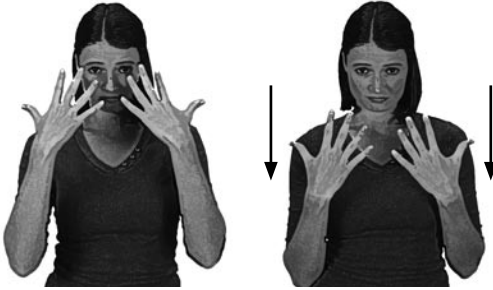
HAPPY—Hold your hands flat, palms in and thumbs up. Brush your chest in a circular motion. Use with a happy facial expression. Repeat.



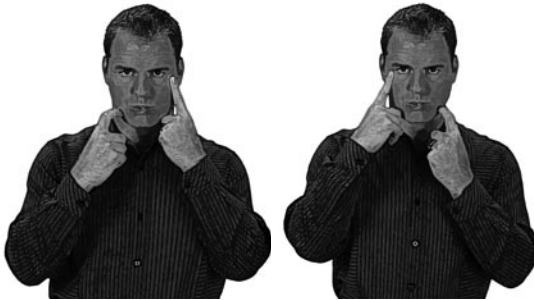
SMILE—Hold flat hands slightly bent, with your fingertips near the sides of your mouth. Then move your hands up each side of your cheeks (as if you are drawing a smile).

SAD and CRY

Another feeling sign is SAD. Because of what the word connotes, this may not be a favorite sign to teach your child. However, babies do feel sad and out of sorts sometimes, and it is helpful to identify this emotion and label it. SAD usually comes with crying.



SAD—Hold your hands flat, fingers spread and palms facing in, at eye level and then move them down a little. Use with a sad facial expression.



CRY—Bring both extended index fingers up to your face, palms facing in, and then move them down your cheeks, alternating sides, as if tears are rolling down your cheeks.

MAD / ANGRY

A baby feels mad or angry at an early age. When you know your child is mad, this sign offers you a way to get the child's attention, make eye contact, and begin the process of calming the child down.



MAD / ANGRY—Hold your hands up with the fingertips curved, palms in front of your chin. Then squeeze your fingers together just a little and move hand slightly toward your chin. Use an angry facial expression.

Name Signs

Name signs have been used for many years. They are the signs people use to signify each other. Typically people do not make up their own name signs; the signs are given to them by others.

For example, when Deaf children were educated in residential schools, their school would often bestow a name sign on them. Sometimes the name

sign included a sign or manual letter that stood for the school. Many name signs are the first initial of a person's name signed at the shoulder, or the initial combined with a word sign that illustrates a specific characteristic. For instance, Marilyn's name sign, given to her by a Deaf ASL teacher, is the manual letter M sweeping across the palm in the sign for NICE. Georgia was given the name sign of GIRL at the School for the Deaf where she worked because she was the only "girl" counselor.

Following this example, you can give the people in your family or other persons important in your child's life name signs to indicate or signify them when you are referring to them. Try to maintain the historical pattern for establishing these name signs. For Mommy and Daddy, use the signs for MOTHER and FATHER.



FATHER / DADDY—Tap the thumb of your flat hand, fingers spread and pointing up, on your forehead. Repeat.



MOTHER / MOMMY—Tap the thumb of your flat hand, fingers spread, on your chin. Repeat.

You can use the sign for BABY to indicate your baby. Depending on the infant's name and those who would use the sign, you may want to confer a name sign on the child. This is a lovely opportunity to involve the entire family in observing their newest member and creating a name sign that will express one of the baby's discernible attributes.

The manual letter S is often used for sister and the manual letter B for brother. The ASL signs for brother and sister are fairly complicated for a small baby to form. Sometimes the manual letter is combined with a sign like NICE,

but many times it stands alone to represent the sibling. It is often the first letter of the child's name.

For pets, you can either use the animal signs—DOG, CAT, BIRD, FISH, and so on or give them name signs. When you give name signs to your pets, you enable your baby to identify the pets and actually “call” them well before your child acquires any verbal speech.

These name signs can aid your child's comprehension and will allow an infant to more fully be part of the family. In most instances, your baby will quite quickly be able to understand to whom you are referring when you indicate the person with a name sign as well as a spoken word.

Growing Your Signs

As you and your baby grow with signing, you will find that you want to add other signs. Part 3 of this book offers a variety of signing activities that you can begin to do with your baby. These activities will not only help you expand your signing vocabulary, but they also will provide interactive fun for you and your baby all the way through childhood. We believe that babies, toddlers, preschoolers, and beyond will benefit from interactive signing activities.

A reminder may be in order at this point: you do not need to learn and teach your child every sign in this book. Select the ones that fit your and your baby's lives. For example, your child may love trains and want to sign TRAIN often but show very little interest in signing BIRD. If this happens, focus on what your child enjoys and keep offering other signs you think will be of interest. For example, if you know you are going to the zoo, learn a few of the signs for the animals you may be seeing; or if you're going to the park, learn some signs you can use there. If you live in an apartment house, you may want to teach your child the sign for ELEVATOR; if you live on a farm, you might want to teach your child the sign for COW. If you have a dog in your home, you may want to use the sign for DOG. If your child enjoys jumping in a Jolly Jumper or similar device, try signing JUMP the way Noah's parents did in the upcoming story.



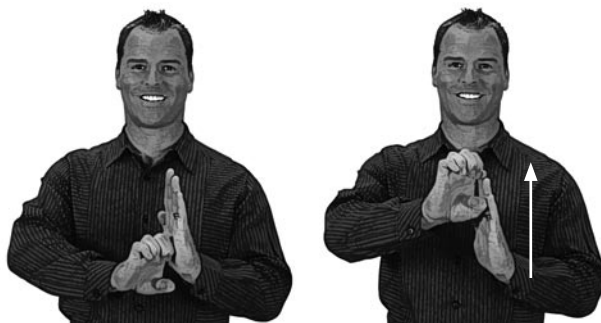
BIRD—Hold your right hand by your mouth, with your index finger and thumb pointed out. Open and close these fingers, imitating the movement of a bird's beak.



DOG / PUPPY—With a flat hand, tap the side of your hip. Then bring your hand up and snap your fingers.



COW—Make the sign for Y with your hand. Hold your thumb on the side of your head and rotate your little finger forward with a twist of your hand (representing the horn on a cow).

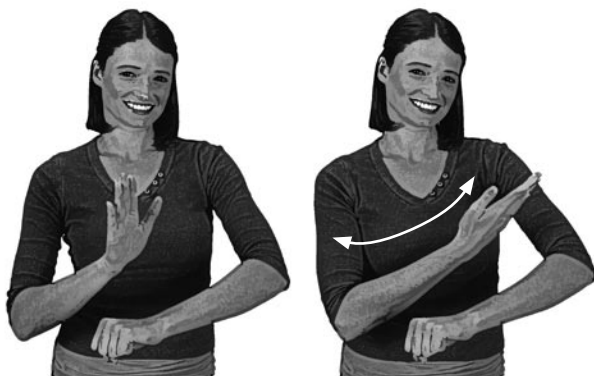


ELEVATOR—Hold up your flat left hand with the palm facing right. Then make an E (see glossary) with your right hand, and move it up and down on your left hand so it looks like an elevator.

were changed to create a new song in “Sleep Little Baby.” Take a look at these two songs for an example of how to change words to fit your circumstances.

A Dozen Songs and Rhymes for Singing

Let’s get started singing and signing. The songs and rhymes we have assembled for you are both new and traditional. We have capitalized the words we are suggesting that you sign in each of the rhymes and songs. You can add more words as you become more proficient at singing and signing. It’s also fine to reduce the number of signs you use in any of the songs we are providing. Choose what works for you and your baby. More detailed descriptions of each sign used in this section can be found in the Glossary of Signs. To view a demonstration of each of the songs on-line or to download our songs for FREE, go to www.signtospeak.com and use the access code STSB109A. Remember that you can choose to sing, chant or just recite any of the songs. Finally, the sign for SING is the same for SONG. It is a fun sign to learn and use when you are involved in SINGING SONGS with your baby.



SING/SONG—Extend your left arm with your hand turned downward. Swing your flat right hand back and forth on the left arm in a sweeping motion. Repeat.

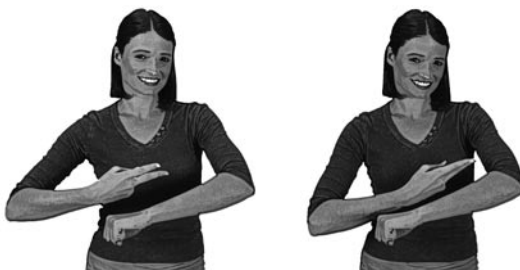
Mary Had a Little Lamb

Be Creative: Substitute your baby's name for Mary, and if you've given your baby a name sign, use it here. You can also change the animal to a different one. When you sign LAMB one-handed, move your fingers up your baby's arm, adding touch to the activity.

Mary had a little LAMB,
Little LAMB, little LAMB,
Mary had a little LAMB,
Its FLEECE was white as SNOW.



LAMB

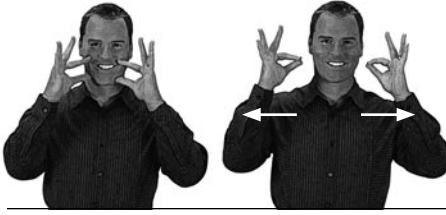


FLEECE



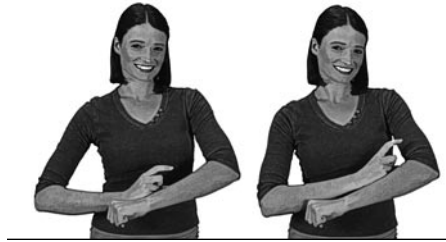
SNOW





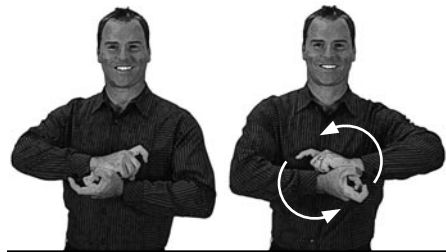
Cat / Kitty

Make the letter F using both hands, palms facing each other; hold them near the sides of your mouth, and pull outward as if you are tugging on the whiskers of a cat. Repeat.



Caterpillar

Hold one arm out horizontally, and hold the other hand in a fist with your index finger out. Wiggle your index finger as you move your hand up your arm so it looks like a caterpillar crawling along.



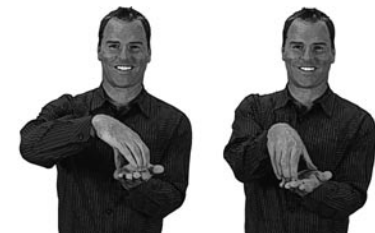
Change

Make the letter X with both hands, one on top of the other, with your palms facing each other. Twist your hands so that they switch position. The opposite hand is now on top.



Cold

Make the letter S with both hands and hold them at chest level, palms facing each other. Shake them from side to side with hunched shoulders (as if you are cold).



Cookie

Hold your left hand flat, palm up. Curve the fingers of your right hand so your fingers form a circle (as if holding onto the edges of a round cookie). Then touch your left palm twice, once directly on it and the second twisted slightly so it looks as if you are using a cookie cutter.



Cow

Make the sign for Y with your hand. Hold your thumb on the side of your head and rotate your little finger forward with a twist of your hand (representing the horn on a cow).



Cry

Bring both extended index fingers up to your face, palms facing in, and then move them down your cheeks, alternating sides, as if tears are rolling down your cheeks.



Cup

Hold your left hand flat. Shape your right hand as if you are holding a cup, and then lift it. Repeat.

Daddy *See FATHER*



Diaper

Hold your index and middle fingers out and together with your thumb pointing down, near your waist, and open and close your fingers (as if you are opening and closing a pin on a diaper).



Dog / Puppy

With a flat hand, tap the side of your hip. Then bring your hand up and snap your fingers.



Toolbox Handouts

Included in this Toolbox are pages that you can use for quick reference. We have provided you with 12 tips for successful signing with a baby along with 12 tips for signing and singing songs. We also compiled a list of 12 useful signs as a quick reference page for you to photocopy, for personal use only, and place around the house or to offer to other family members and caregivers in order to help them become involved in the signing process.

12 Tips for Successful Signing with Babies



1. Have your baby's attention.
2. Place signs near your face.
3. Enunciate words clearly, and sign correct ASL signs.
4. Incorporate signing into your everyday life.
5. Consistently sign the word every time you say it.
6. Use strong and exaggerated voice and facial expressions.
7. Relate your signs to the words or objects you are using.
8. Keep signing a simple, fun, and playful activity.
9. Be creative and create lots of signing opportunities.
10. Get everyone involved in signing.
11. Give lots of positive reinforcement.
12. Be patient. Generally babies will sign back to you between 9 and 14 months old.

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