## The Developing Brain

Wendy Shima, M.Ed.



This is a picture of a brain cell, called a neuron. At birth, we have 100 billion brain cells. This is a lot - more than we actually need. However, they are floating around by themselves, mostly unconnected.

This is like having 100 billion cell phones and no network. You have all the phones, but no way to call each other....



We are all born with the ability to form our brains. Our brains have a basic structure, but are very *plastic*, meaning that they have the ability to adapt.

There is a good reason for this - take language, for example. A child's brain is set up to learn the language s/he hears. The only way the brain can do this is to have a basic structure and then the ability to continue to grow. The child's innate job in life, for the first 6 years, is to connect all these brain cells up into a web.

The only way to connect brain cells is to have experiences of movement within the environment. The more times an activity is repeated by the child, the stronger the brain connections regarding that specific activity. Each new experience - opening the kitchen cupboard and exploring the pots and pans, singing with their mom, reading a story with their dad, crawling in the dirt, walking over uneven

surfaces, stirring a bowl of pudding, helping to put their laundry in a basket, carrying a plate - every activity is developing their brain.



However, the brain *also* has a use-it-or-lose-it function. From the time we are born, we begin losing brain cells.

By the age of 8, we lose 50% (50 billion) of the brain cells we were born with. This allows the brain to function in a more streamlined way.

How does the brain decide? Whichever cells have remained unconnected, meaning unused, are dropped. The piece of music we didn't listen to, the language we didn't hear, the type of activity we didn't try, the ability to develop those areas easily is gone.



In extreme examples, for instance, if a mouse loses a whisker at birth, the brain cells which receive information from that whisker never develop. A cat (this was a real experiment), who was raised from birth in a room that had only horizontal surfaces, did not develop the cells for seeing vertical lines and ran into vertical objects such as table legs. They leave an empty area in our brain!

Think about the baby who is always in a crib or a car seat and carried around. What are they missing out on? What are their limitations? A tiny newborn baby can actual wriggle around and move several feet. If they are confined to a crib or a playpen, they not only feel the sense of limitation, but they are not experiencing the world outside of the crib.

What if we thought of our babies and toddlers as needing freedom of movement and choice? What if they could have a bed that was a mattress on the floor and their room was completely baby-proofed with a baby gate at their bedroom door? We would be giving the child the opportunity to wake up and get up out of bed when they were ready. I have seen many a household that was able to create much more peaceful mornings for their whole family by using this arrangement - the parents would wake up to a toddler who had woken up, gotten out of bed and was happily playing with the things in their bedroom.

How about a toddler who only goes outside in a stroller, but not for long walks. A child is actually capable of walking their age - for a 1 year old, they can walk 1 mile, 2 years, 2 miles. However, we need to understand that the definition of walking is, at their own pace, not at ours! What experience is the child having in the stroller? We are strengthening their brain cells that accept lack of movement and stimulation - going to sleep or checking out when they can't do anything else. Look at how many children are 'checked out' in elementary classrooms. I wonder how many of them learned this behavior as a necessary technique early on?

How about a toddler or preschooler who doesn't have a consistent schedule at home? The order of events changes every day, meal times are inconsistent, nothing in their home can be found in the same place each time - in the world of the child, this feels like desperate chaos! How do they survive? Again, they start checking out, because the chaos is overwhelming to their brain. The brain cells that are looking for order and understanding don't get used and are dropped.

When we create an environment for a young child, we want to think about preparing it for the greatest amount of brain activity possible. What can we set up in the child's environment that maximizes their experience of the first plane of development - learning, exploration, motor skills, making choices, developing a sense of order, creating, loving, communicating?