



## What's New for Baby Brains?

Understanding your baby's brain will open new ways to enjoy and interact with your little one. The study of brain development and function as it relates to the emerging mind is the new frontier in science and education. The neurosciences are uncovering many new understandings concerning early brain development that are nothing short of astonishing. While research and debate have been raging in the 'Lab' for decades it is only recently that information is finally reaching the 'Living Room'. Recent research has put a new spin on the old 'nature vs. nurture' debate. On the nurture side it was once thought that an infant was a blank slate, that only through experience would a child's mind emerge. On the nature side it was thought that we are born with innate templates of knowledge that predetermine how we receive and interpret experience. Nobel Prize winning Neuroscientist Dr. Eric Kandel in his recent book, "In Search of Memory – The Emergence of a New Science of Mind" eloquently uncovers the intertwined truth to both sides of the argument through his renowned memory research. He found that indeed the anatomy of a neural circuit is predetermined, however changes in the neural strength of a circuit, what it remembers - is largely determined by experience. Basically, our babies are born with certain hardwired templates for receiving, processing and interpreting information designed to propel their ability to learn. The type and quality of information learned is determined by the experiences they have.

In 1997 Hillary Clinton convened a scientific panel discussing the findings that a child's ability to acquire language and thinking skills is an active process that could be largely completed by age 3. A later government funded, scientific panel published a book entitled, "From Neurons to Neighborhoods" which clearly states that all children are born ready to learn and that early environments matter and nurturing relationships are essential to early brain development. Neurobiologist Lise Eliot in her groundbreaking book, "What's Going on in there? The First Five Years of Brain Development" and Harvard Neuropsychiatrist Dr. John J. Ratey in his recent book, "A User's Guide To The Brain - Perception, Attention and the Four Theaters of the Brain" take the importance of early brain development a step further when they state that the types of early experiences, relationships and environment your child receives in the earliest years actually changes the structure of your baby's brain. The quality of neural networks developed during this critical wiring period propels the quality of all future learning. So what is a parent to do?

Educators are concerned that once parents fully realize the critical nature of early brain development they will try to teach their children at earlier and earlier ages to read, write and do arithmetic. But not so fast, the research is clear that traditional structured learning can be stressful and is even detrimental to early brain development. Babies are not suited to structured learning environments and more importantly learn through play and one on one interaction with parents and caregivers. The neurosciences are beginning to uncover that early learning is not what we recognize as traditional learning. It is not about you're A,B,C's and 1,2,3's, recognizing colors, shapes and categories per se - it is about wiring the neurosensory skills that will allow these skills to be learned efficiently. These neurosensory skills include: signal detection (the ability to attend to one piece of data to the exclusion of other competing sensory stimuli enhancing the quality of attention and recognition skills), pattern recognition (the ability to organize data and detect meaning from various environmental stimuli – realizing that letters form patterns that represent words that have meanings), sensory properties

coordination (recognizing that motion, sounds and sights are intimately linked allowing us to create expectations and understandings regarding the objects and actions of our world), brain interconnectivity (intertwining the specialties of brain areas to process certain attributes that together enhance interpretation of our world – for instance, ‘cat’ can be one (#), big (size), soft (feeling), grey (color), meowing(sound) animal (category)).

Developing the quality of neurosensory skills – those skills that allow us to learn efficiently can enhance the brain’s information processing ability which is key to propelling the quality of all future learning. Learning from birth to three is not about reading, writing and arithmetic. Learning at this age is priming the neural pathways of the brain to function efficiently so later when it is time to learn those skills they will be able to do so with ease. Turning on, tuning in and exercising coordination of the neurosensory pathways is the kind of learning the young brain needs. But how can parents capitalize on these new understandings? For all the fancy ‘neuro’ terminology parents have long been doing a lot of the most important things naturally. Patty Hannan, creator of PlayWisely™ a neuroscience based developmental play system receiving professional and international attention for her groundbreaking approach offers some suggestions, “Research has shown that the most important factor in early learning is providing a safe, secure environment where the baby feels loved. The next most important thing to do is have plenty of one on one time with your baby. Play, sing, hi read and talk to them often even when you know they can’t respond. Provide an inviting environment that is not too noisy or filled with too many visual distractions. TV should never be the primary baby sitting or learning tool for your baby. Provide only a single toy at a time. Observe your child closely as they play, notice all the ways they are trying to develop their skills of observation and recognition. If you notice for instance that they are intrigued by the sound a toy makes provide other opportunities to develop sound recognition such as calling baby from different locations and seeing if they can find you. Play different types of music from classical to jazz and rock (never loudly). Another simple thing to do for developing visual skills is to offer a cheerio for nibbling from different locations. Offer the tiny snack from above, to their right, to their left, by their side etc.. helping them navigate precise location and direction in their visual field. Provide lots of ball time. Observing balls rolling, swinging, dropping and bouncing all help the brain wire recognition of the natural physics of motion necessary for clearly perceiving the accurate action of objects. Provide opportunities for grasping different size, weight and shaped objects to enhance finger dexterity and hand strength. Provide fun crawling courses over pillows, through boxes up and down a cushion. Show baby a rubber duck (for example) let them observe it and feel it, turn it around in different orientations as they watch, then place it on a shelf, then on the floor, then on top of the refrigerator and finally floating in the bath tub. All of these ideas help baby wire the neurosensory pathways for efficiently interpreting their world. Oh, and don’t forget all the fun jostling, bouncing and dancing together helping to wire their motion detection systems!”

If you are looking for a more focused developmental experience look into PlayWisely™ baby and toddler classes. PlayWisely™ is a developmental play system based on the latest neuroscience information. The 30 minute, once a week class combines age-appropriate, skill building experiences designed to enhance natural brain wiring for learning and movement through each stage of development for kids from 4 months to 3 years (for more info and locations check out [playwisely.com](http://playwisely.com)) “We rely on the brain to define the foundations of our program”, says Patty Hannan, former national champion and Collegiate All American gymnast who created the PlayWisely™ program. “We start by examining the recognized hardwired cognitive instincts, motor reflexes and innate drives that propel natural learning. Next, we define all the recognized developmental milestones for learning and movement and the windows of opportunity set for optimally learning these skills. Then we designed a system of creative play techniques referred to as ‘The Directionality Method™’ based on the profound effect gravity has on the form and function of human performance,” continued Hannan. Ms. Hannan added, “The activities are designed to match some of the brains natural

hardwiring so learning seems familiar and fun.” Ms. Hannan’s interest in neuroscience began when working with NASA’s Space Biomedical Research Institute and participating in a research project studying the unique Human Performance capabilities of the World Class gymnast. “NASA was interested in us (gymnasts) because we must intimately know the neurosensory capabilities of the brain. If we make a mistake in interpreting data it can cause catastrophic injury, even death” said Hannan. Upon completion of the study, NASA scientist Dr. Jerry Homick challenged her to further define what it is gymnasts understood about harnessing the brains neurosensory systems for excelling performance. She tutored under Dr. Robert Moss at UT Southwest Medical Center to learn the language of neuroscience. From this pursuit she published her first book, “Teaching Your Child Basic Body Confidence” and ultimately created PlayWisely™. Ms. Hannan considers her flash card system for stimulating cognitive development as the most unique aspect of her program, “Without too much heavy science explanation, it is basically gymnastics on a card. I choreograph the rhythm and motion of the card system in such a way as to extend attention time while exercising coordination of the visual, auditory and motor pathways of the brain. The clear data placed strategically on the card is designed to develop signal detection, pattern recognition and brain region interconnectivity. Our goal is to enhance efficient information processing skills that will enhance the essential foundation learning skills of attention, recognition and memory. Most importantly the kids love it. They are very focused and intrigued. It seems to be the brain food kids love to devour!” The classes provide parents quality play time while giving them a lot of new ideas about ways to play with their babies through each stage of development.

PlayWisely™ is receiving Professional and international recognition for it’s innovative concept. Children’s Progress, a portfolio company between MIT and Columbia University developed a cutting edge learning assessment tool that provides parents, teachers and administrators concurrently a ‘real time’ look at each child’s learning progress in the pre-K to 3<sup>rd</sup> grade levels. They also provide specific intervention techniques to help a child stay on track. Dr. Eugene Galanter, Chairman of the Board and Professor Emeritus from Columbia University(also recognized as a father of the field of cognitive science coauthoring the book, “Plans and The Structure of Behavior”, with George Miller) has met with Hannan and is collaborating on ways to work together. Dr. Chris Comacho, Director of Research for Children’s Progress has stated that the PlayWisely™ method could ultimately transform the field of early learning. Ms. Hannan has presented her work at Oxford University at a forum on early learning trends. Most recently she is collaborating with the Autistic Treatment Center in Dallas on a feasibility trial to determine if the approach can help individuals in the Autistic Spectrum. Ms. Hannan is currently working on a book, baby tools and a DVD to provide parents, professionals and schools the opportunity to incorporate this new method into existing play times and/or therapeutic sessions and classes. An entertainment DVD based on the flash card system for cognitive development is set for release this summer.