

Brain Enhancement for Infants and Toddlers

KidBuilders is a comprehensive, yearlong motor skills program written by Marilyn Bitsis and Margaret Schafer. It is designed to meet the needs of the motor skills teacher of young children. **KidBuilders** can be customized to meet the needs of its audience—from sampler settings to 12-hour continuing education workshops. **KidBuilders** can train *your* motor skills teacher. Movement Experiences for Infants and Toddlers is just a small sampling of some of our sequential skills, activities, suggested music and equipment. We also have a program for ages 2 ½ to kindergarten. For more information please go to www.houstonkidbuilders.com or call Marilyn Bitsis at 713 306-9875. Today's session is prepared especially for participants in the Presbytery Weekday Ministries Conference August 3 –5, 2010

Early Brain Development

By the time a child is three, the brain has formed 1000 trillion connections – about twice as many as adults have. All these brain connections are not meant to push early learning but rather to develop the potential for future learning. Babies are born with 100 billion nerve cells called neurons. Through experiences and interactions with others the brain will forge 1,000 trillion synapses (connections). Synapses form pathways between neurological communities. **Experience** wires the brain and repetition of experiences strengthens the wiring. The brain begins its job of wiring for emotional intelligence (well being) soon after birth. The aspect of emotional intelligence that is wired during the first year of life is trust. The foundation for later motor development is laid in very early sensory motor experiences that include **auditory, visual, olfactory, tactile, and muscle & movement**. The following traces the development of those experiences through the infant and toddler months:

Birth to 3 months: The more gentle the stimulation you give an infant, the greater the number of brain synapses and connections that are formed.

Auditory activities: * Move from side to side of the crib and call out her name; go to the foot of the crib and do the same; gently massage her body as you smile into her eyes and say her name. * When you speak “parentese” to infants, you are communicating with them and encouraging vocal responses, which develop *language skills*. Start early on baby's auditory acuity by placing her in her car seat or infant seat in the middle of the room. Go all around her saying her name and making silly sounds to get her to alert to your voice and responsive to sound.

Visual activities: The first colors the infant will recognize are black and white – the contrast. After the third month the baby will recognize the color red; then comes blue and green. Always tell them what color they are seeing.

* Hold a brightly colored scarf in front of your baby and slowly move it around and talk about how bright it is. When the baby is looking slowly move it to one side and then the other. * When the baby is lying on their backs have them track with their eyes. Tracking is when they try to follow objects with their eyes. Take a toy or interesting object and move it from side to side slowly so they can track it. Tracking helps the baby to learn where an object is in space and how it differs from its background so he can reach for it.

* By two months babies can distinguish features on a face. Make sure you spend a lot of time talking with the baby with your face close enough for the baby to touch. * Hold black or brightly colored objects within baby's reach to encourage her to reach and touch them. Reaching for an object helps the brain develop *hand-eye coordination*. * Draw pattern pictures for the baby to look at. Use checkerboards, spirals, and snowflakes or make up some of your own. Place these around the room so that they can easily be seen.

Olfactory activities: * Stimulate your baby by allowing them to smell different smells. What babies see and smell cause brain connections to be made. Give them many opportunities to experience smells.

* Use pleasantly scented soaps and lotions, making a point of holding it under his nose to let him smell them. Make an exaggerated smelling noise and motion to indicate you smell something nice. Talk to him about the smell and smile. Repeat with all pleasant smells he encounters.

Tactile Activities: * The right side of the body sends messages to the brain faster than the left and is initially quite sensitive to touch soft sounds, and visual objects. When you present something to the baby start on the right and they will be more likely to not turn away. Take the object or toy and present it to the baby on her right side and then go to the left. When you talk to the baby always start on the right side and then move to the left. Make sure you do both sides so they will develop *bilateralism* or sensitivity on both sides. * Expose them to many different textures of fabric and other safe objects. Gently rub a soft brush or comb on their feet. Use their feet also to touch objects like a rattle or a ball. * As you are getting the baby diapered or dressed, playfully touch each finger or toes and count them to her.

Muscle and movement activities: * Do cross lateral movements every day. These require the baby to reach across the midline of the body. This movement helps develop the cells between the hemispheres of the brain. * Put your baby on her back and move her legs like she is riding a bicycle. Slowly bend her knees and straighten her legs, gently stretching the legs. Hold her hands over her chest and then slowly open her arms to touch the floor to the side, and then repeat. * Turning your infant in different directions will help her develop an *awareness of space* and a sense of *balance*, which are prerequisites for *crawling and walking*. * When you put her in the bed have her face different directions and even sideways. When you place them on the floor have them face different areas of the room.

Three to 6 months: A neuron is assigned to every sound they hear between the 4th and 8th month of life. The more we read to them, talk to them and sing to them, the more exact their language maps will be.

Auditory activities: * The more words the baby hears, the more parts of the brain will develop. Sing songs and play music. Exposure to music rewires neural circuits in the brain. Music will enhance the ability to reason abstractly especially in spatial domains. * Record a message from home for the baby to hear during the day. * Continue using music if all sorts. Sing simple songs with her and let her hear your voice inflection and watch your facial movements. * Use a musical mobile over her crib or play area and let her listen as she watches.

Visual Activities: * Sit the baby in front of a mirror and ask who that baby is. * Name the different body parts as you touch them. * Use a soft paintbrush, cotton ball or a makeup brush to touch each body part. Touch noses. * Put colorful socks on an infant's hands when they have learned to watch their hands. Play simple games to get the baby to laugh. * Draw a happy face on a paper plate and tape plastic straws to the plates to make puppets. * Make family rollovers by gluing family pictures on an empty oatmeal container. Talk about the people in the pictures and what they are doing. Display pictures of each family member at the infant's eye level. When the baby starts missing their family take them to the display to see their family members. * Place photos of the baby in their crib. Babies love to look at faces. * Paste pictures of flowers on cardboard and cover with clear contact paper. Show them to the baby and when you take them on a walk you can show them real flowers. * Put colorful items on your baby's ankles and watch them kick. * Hold your baby in your arms and dangle a rattle of bells in front of her feet.

Olfactory activities: Add to the baby's repertoire of familiar smells. * Notice the smell of foods as he begins eating more and more. Always give him the name of what he smells to help with language development.

Tactile activities: * Play "pat-a-cake" with the baby's hands and feet. Foot-on-foot play is important for a baby's proprioceptive development and helps them understand where his feet are in relation to the rest of this body. This promotes good *motor planning*. * Again, use colorful socks on her hands and feet and point out the texture. Help them rub the socks all over their body. * Use bath time to talk about the sensations of the water, bubbles, etc.

Muscle and movement activities: * Please don't forget belly play, or "Tummy Time". This is critical for development of their posture and core strength needed in childhood for desk tasks and athleticism and as an adult. To develop *trunk strength needed later for stability*, help the baby use their trunk to roll from front to back. * Put a teddy bear on the floor in front of him and have him see the bear do it. Be sure to support his head while he is learning to roll over. *Early trunk strength promotes better balance. The infant's motor development proceeds from the head on down.* This is accomplished when he lies on his abdomen. * During his tummy time put stimulating pillows, fabric swatches and stuffed animals within his view. This will motivate him to lift his head. * Each day spend some time rocking each baby. Rocking stimulates the vestibular system which determines both *balance and coordination*. * By gently bouncing them on your knees you are encouraging *balance* and development of trunk muscles. * Put the infant on his stomach. Place your hands on the soles of his feet and push. This is a preparation exercise for *crawling*. * Continue to exercise their arms and legs. * Encourage the baby to bring his hands to his feet. This helps the brain for *motor skill development*. * Take the baby for strolls in the carriage. The movement and bouncing in the stroller provides vestibular input that contributes to good balance. * Humor stimulates regions of the brain known as reward centers. The more we laugh the healthier we stay. Giggle with your baby as he moves his arms and legs in silly ways. * Inflate a large beach ball. Place the baby on the ball on her stomach and gently roll the ball forward and backward. After she is accustomed to that experience try it with her on her back, making sure to move very slowly.

Six to 9 months:

Auditory activities: * Crunch different kinds of paper. Cellophane and tissue paper have interesting sounds. When the baby is sitting on the floor crumple a clean sheet of newsprint or gift-wrap. Talk about what you are doing and the sound it makes. Then help the baby crumple his own paper and make the same sound. Then drop the paper on the floor and see if the baby hears the paper dropping and look where it landed. * Take a wind up toy wound up and put it out of the baby's

sight. Ask where is the music? When they find it praise them. * Make shakers out of a metal container. Tape the top carefully so it cannot be opened. Put buttons in them. You can also put objects in a plastic bottle.

Visual activities: * Take the baby's hands and have them touch different parts of their body and identify where they are touching. * To help them with body parts sing a song to the tune of "The Farmer in the Dell" Say my chin, my cheek, my chair. When you do this touch your chin etc. Then go to head, heel, and hair. * Roll balls to them as soon as they can sit up and a dark colored ball is easiest for them to see. Have them learn to catch it. * With a permanent marker make a large dot on the ball so the child can follow the ball and look for the dot. * When you play peek-a-boo thousands of connections among brain cells are formed or strengthened. You can play with your hands, their hands, puppets or scarves.

Olfactory activities: *Expand their smelling experiences to include unpleasant smells. This can be easily done while you are changing their diaper!

Tactile activities: * Five parts of the baby's body are especially sensitive to touch. They are his face, palms, backbone, genital area, and the soles of his feet. Knowing this, touch each part (except the genitals) with a soft piece of fabric starting on the right side of his body (skip the genital area as it is usually covered with the diaper). Use soft fabrics and then go to rougher ones. Talk about the difference of the fabrics and how they should feel. * Gather different types of fabric and have the baby feel each one. Tell them the name of it and describe how it feels. * Make textured bottle wraps or make feely cylinders. * Take cushions and pillows and pile them on the floor. Have them crawl on top of the mountain. A favorite toy might encourage them. Have them crawl around the cushions.

Muscle and movement activities: * Rocking stimulates the vestibular system, which determines balance and coordination. Rock them or sway them while in your arms. * Have them learn to squeeze. The rubbery kind of squeeze toys is the easiest to use. This exercises their small muscles, which are necessary for handwriting. * Sit the baby on the floor with a ball between their legs. Have the baby move the ball between their legs. You may need to do this with them sitting between your legs. * If they haven't been already, introduce them to the feeling of being upside-down. Using a large ball or by sitting on your lap facing you, slowly lean the baby back first to a flat position on their back, then to a slightly inverted position.

Nine to 12 months:

Auditory activities: * Put a wind up clock and wind it up and sing about tick tock. Take the clock and put it under a pillow and ask where is the tick tock. Guide them to the clock. You can also hide a musical toy. * Use the sound a baby likes to make like BA, BA, BA or MA, MA, MA. When he is quiet say the sound to the baby. See if he will answer you with the same sound. Change the sound a little by making it quiet or loud, slow or fast, high or low. Watch the baby and see what he thinks of the changes.

Visual activities: * To help them learn the spatial concepts of inside and outside put a toy in a large paper sack, then help the baby find the toy and take it out. Put it in again and have them take it out.

* Encourage babies to put a small object in a bucket and to dump the objects out of the bucket. * Place a photo of an object and the real object side by side for the baby to look at. Talk about the object and have them touch the picture and the real object.

Olfactory activities: * Place a familiar smell (such as a favorite food) under her nose and watch her response. Help her with the proper language for that smell and encourage her to say it.

Tactile activities: * Put different types of textures in the bottom of an egg carton. Encourage the baby to feel them and talk to them about what they are feeling. * Give the infant paper to crunch and tear. * Make a sticky ball of masking tape. Then stick it on the baby and have them try to get it off.

Muscle and movement activities: * Sit on the floor facing the baby. Give the baby one end of a long scarf. Start gently pulling the scarf and show the baby how to pull back. * Sew scarves together and put them in an oatmeal box with one part sticking out. Have the baby pull out the scarf. * Put a small inflatable ball on the floor. Show the baby how to push the ball with their head when they crawl. * Tie a string to the infant's spoon and the other end to the baby's feeding table. When he tosses his spoon over the side of the high chair show your baby how to retrieve it for himself by pulling on the string. * With infants that are not walking hold them in your lap facing you. Say, "stand up" and pull upward to help the baby stand. Say "sit down" and release your pull so that it cues the baby to sit. * Do cross lateral movements every day. Some ways are moving the baby's arms and legs across his body. * At lunchtime arrange cups for older children so that reaching for the cup requires teaching across their midlines. This helps develop the cells between the hemispheres of the brain. * Playing on a gymnastics ball is good for joint proprioception, movement, balance, postural alignment, and muscle tone. With baby on her stomach move the ball in different directions and different speeds. Repeat with her on her back.

Twelve to 18 months

Auditory activities: * Continue to teach simple songs and encourage him to sing along. Make the songs slow enough that he can follow. “Twinkle, Twinkle Little Star” and “The Itsy-Bitsy Spider” have movements that go with them—just make sure you simplify the movements as much as possible. You can introduce the ACB Song, too. * Be sure to point out the written letters as you sing them. * Accentuate the positive. Use positive words. Keep laughing as much as you can! * Have the children sit in a circle. Play some music and have the children pass a beanbag around the circle. When the music stops the beanbag stops. * Encourage dancing to fun, upbeat music. * Make a tape of familiar sounds the babies hear like water running, a toilet flushing, clock ticking, or toys banging. See if they can identify the sounds when you play the tape.

Visual activities: * Start sign language. Communication helps a child be more self-regulated. Make smooth transitions. * Always let the child know you are getting ready to change activities by giving visual and auditory clues (example: Show or jingle your car keys to indicate you are preparing to get in the car). * Put a few familiar things in a dishpan for baby to see. Ask baby where one of the things is, then pick up the item to show him. * Place friends’ photos in magnetic picture holders. Give the baby the photos and a large cookie sheet. Show them how to stick the photos to the cookie sheet. Can they name their friends? * Play follow the leader or “copy cat”. You do an action and have the baby mimic your actions, and then the children can take the lead. Clap hands, stomp feet, and wiggle your fingers. Do different body parts actions for them to repeat. * Show your baby the eyes, nose and mouth on a doll. Then touch the same part on yourself and on the baby. Take the baby’s hand and have her touch the eyes, nose, and mouth of the doll, you, and herself.

Olfactory activities: Put a variety of fragrant things in small bowls or in cylinders and have the child guess the smell. Make sure you do not create a choking hazard.

Tactile activities: * Make a line on the floor with masking tape. Have them walk on it barefoot. They can also crawl on it and feel it. * Place familiar objects in a bag and have the child reach in without looking and name the object by the way it feels (example: brush, cotton ball, toothbrush, comb, etc.). * Make a ball of masking tape sticky side out. Place it onto baby’s hand or clothes. See if she can pull it off or move it.

Olfactory activities: * Continue to add to the child’s vocabulary for smells by identifying more complicated smells like paint or play dough or rubbing alcohol. * Help him learn that certain smells indicate they are NOT good to put in your mouth (like rubbing alcohol or household cleaners). * Teach the “yucky face” for yucky things.

Muscle and movement activities: *Place sheets of construction paper or strips of colored tape on the floor. Encourage babies to step with one foot and then the other on the sheets. * Set up an obstacle course for the baby to climb on and play in. * Use a hula hoop to crawl through, a pillow to crawl over, beach balls to push and blocks to pile up. A course can even be set up underneath cribs and other furniture that is tall enough and has no unsafe features. Place an unbreakable mirror in the obstacle course. *Use small push vehicles for her to sit on or walk behind. * Use lots of manipulatives of appropriate sizes to strengthen her hands. *Have her stand and “bounce” as she bends her knees. * Let them practice walking up and down low steps while you hold their hands. * Create an incline plane. Give the babies a small car to run up and down the “hill”. Talk about how fast the cars go down and how when they push the car it goes slower to introduce the slow and fast concept. * Cut a 1 ½” inch slot in the lid of an empty coffee can. Replace the lid. Put poker chips or very large buttons for the children to push through the slot drop can. This is great practice for buttoning.

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