Neuroplasticity is the ability of the brain to form new neural connections or pathways throughout the lifespan. Early findings on brain development stated these pathways were fixed and absolute. Current research, especially in the area of early child development, has challenged this notion and proven the greatest period of neuroplasticity occurs between 0-3 years of age. The number of synapses in a child’s brain increases at a remarkable rate during the first three years of life. During the first year of life, the human brain doubles in size and develops 700-1000 neural connections every second. By age 3, the brain reaches 80% of its adult volume. Research conducted with adult stroke and brain injury patients has demonstrated neuroplasticity is a lifelong, although slowed process. Therefore, maximizing neuroplasticity and brain development during the first three years of life is critical to assuring every individual reaches their true maximum potential. Ways to maximize a child’s early development include infant massage, exposure to language, and play. Infants who received massage therapy demonstrated a reduction in anxiety and pain, as well as improved circulation and enhanced organization skills. Additionally, Research conducted with pre-term infants receiving massage interventions have found decreased maternal stress, improved infant weight gain, and earlier hospital discharge. Exposure to language, the number of words a child hears early in their life, is another way to improve developmental outcomes in the area of language development and has shown to have a lasting impact on cognitive development. Interventions such as the Thirty Million Words Project are working to encourage early language exposure and improve cognitive outcomes, especially in children of low socioeconomic status. Play is another important activity for infants and children. Research has shown play enhances learning readiness and problem-solving skills. Play is the main building block of child development. Children use play to learn about the world around them and develop crucial life skills. All three of the interventions: infant massage, language exposure, and play offer opportunities for parents to engage with their child and promote healthy development. More information on using these interventions to foster cognitive brain development and improve children’s future well being is listed below. In order to foster cognitive brain development and improve overall well being, healthcare providers should be encouraged to educate parents about the importance of play, direct parent-child communication focusing on the use of descriptive words, and soothing massage techniques; as well as promoting Tummy Time for infants. A powerful tool in helping parents learn about the best ways to care for their child can be videos. Pathways.org, a not-for-profit organization provides free brochures, videos, tools, a growth and development calendar with games, and links to other organizations to help foster children’s motor, sensory, and communication development.

Question:
- How would you show parents/caregivers how to implement these interventions?

Authors:
Felicia Kurkowski, BA, Director of Project Development, Pathways.org, Chicago, Illinois
Amy Manion, PhD, RN, PNP, Rush university, College of Nursing and Pathways.org Medical Roundtable, Chicago, Illinois
Neuroplasticity is the ability of the brain to form new neural connections or pathways throughout the lifespan. Early findings on brain development showed these pathways were fixed in infancy. However, recent findings have indicated that early development includes infant massage, exposure to language, and play. Infants who have received massage therapy demonstrated a reduction in anxiety and pain as well as improved circulation and enhanced organization potential. Ways to maximize a child’s early development include infant massage, exposure to language, and play.

Language and Communication

Infants communicate through their cries, cooing, facial expressions, and body language, long before they say their first words. From birth, infants begin to develop two sets of communication skills: receptive skills and expressive skills. Building these skills in the first year strengthens the pathways that make up the essential language environment and sets the stage for success in reading, writing, and social skills later in life.**

**Receptive Communication** is the ability to receive and understand a message from another person. This intervention engages the infant’s sense of hearing, touch, sight, and motion. Touching has health and therapeutic results (touch, caress, pat, cuddle and gently rock back and forth). Soft talk: Light circular massage: Slow talk: Tummy massage:

**Expressive Communication** is the ability to convey a message to another person through sounds, speech, sign, or writing. Crying, babbling, using body language, are examples of an infant’s early expressive skills.

Pathways.org has short films and corresponding handouts for parents.

ATVV, also known as Massage + 30, 10, 5; is a procedure designed to help parents build their child’s brain and shape their future by talking with them, Curriculum is parent-developed, parent-directed, and parent-tested. The intervention involves 15 minutes of massage twice daily, two times per week. In each massage, parents foster a loving bond and provide support for the child’s development. The Thirty Million Words Initiative increases parent language exposure and improves early cognitive outcomes, especially in children of low socioeconomic status.

Play is the main building block of a child’s development. Play is critical for children’s development because it provides time and space for children to explore and gain social, emotional, motor, and cognitive skills needed in early childhood for life.** Play through children build a foundation for learning.** Play can be defined as “any spontaneous or organized activity that provides enjoyment, entertainment, amusement or diversion.” Children enhance their problem-solving skills and develop fine and gross motor skills in an effort to process and display emotions, manage their fears, and interact with others.**

Patty-cake, peek-a-boo, and sing-song rhythms are games for programming the brain for language, art, music, math, science, kinesthetic and interpersonal abilities and intelligence.** Parents of all income levels should engage in both free and structured play with their children to foster development and promote essential bonds.** Children benefit most by playing their play activities, sometimes alone and sometimes with others, and in different situations such as quietly on the floor or through outdoor activities.** Providing blocks, beads, sand, water, simple tools, pots and pans, dress-up clothes and other simple age appropriate materials helps children incorporate different types of play.

Pathways.org created a brochure and blogs for parents on the importance of children’s play.

**ATVV**

Thirty Million Words Initiative

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** Massage + 30, 10, 5 – ATVV FOR PARENTS**

**Soft talk:** 30 seconds

**Head massage:** Light touch on forehead to heart, then to head

**Arm massage:** Light strokes to shoulders, 3 times

**Leg massage:** Light strokes up to ankles, 3 times

**Back massage:** 2 times

**Ranch:** 3 times

**Chew massage:** Long smooth strokes down to the shoulder, 3 times

**Tummy massage:** Light circular motion, 3 times

**Back massage:** 2 times

**Chest massage:** 3 times

**Floor massage:** 3 times

**Digest:** 3 times

**• Thirty Million Words Tool Kit**

- 30 words
- 10 words
- 5 words
- 1 word

- Corresponding handouts for parents

**Language and Communication**

- Infants communicate through their cries, cooing, facial expressions, and body language, long before they say their first words.
- From birth, infants begin to develop two sets of communication skills: receptive skills and expressive skills.
- Building these skills in the first year strengthens the pathways that make up the essential language environment and sets the stage for success in reading, writing, and social skills later in life.
- **Receptive Communication** is the ability to receive and understand a message from another person.
- This intervention engages the infant’s sense of hearing, touch, sight, and motion.
- Touching has health and therapeutic results (touch, caress, pat, cuddle, and gently rock back and forth).
- Soft talk:
- Light circular massage:
- Slow talk:
- **Expressive Communication** is the ability to convey a message to another person through sounds, speech, sign, or writing.
- Crying, babbling, using body language, are examples of an infant’s early expressive skills.

**Pathways.org has short films and corresponding handouts for parents.**

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