Teaching Our Children to Read, Write, and Spell—At the Right Time

BY SUSAN R. JOHNSON, MD, FAAP

In mainstream education today, children in kindergarten and even in preschool are made to sit at desks and learn to read, write, and spell. The belief is that an early start will lead to later academic success. However, young children who have not yet fully developed a sense of balance and/or proprioception—the sense of self in three-dimensional space—are ill-suited to sit still and concentrate for long periods. Besides, their developing brains are not yet ready to acquire academic skills in an efficient way. Thus many developmental specialists, occupational therapists, physicians, and teachers are concerned that early academics is causing children, particularly boys, to develop Attention Deficit Hyperactivity Disorder (ADHD), behavior problems, as well as challenges in visual and auditory processing. My experiences as a pediatrician lead me to share this concern. I believe that children should start to read, write, and spell only when they are physically and neurologically ready to do so, which is typically about seven years of age.

Before a child can sit still and learn, he needs a strong sense of balance, both when his body is moving and when his body is still. The process of developing this sense begins in utero and continues during the first five or six years of life through the interaction of the three semicircular canals in the ear and the brain. Only when a child is able to maintain uprightness without thinking about it is he able to retain verbal information. This is why a six-and-a-half-year-old child may be able to remember a sequence of four verbal requests while lying flat on the floor or snuggling in a parent’s lap but not when sitting still in a chair, and certainly not when standing up without moving.

Also, the young child needs to have accurate proprioception, a clear sense of what her body is doing at a given moment—how it is located in space, and whether it is moving, and how. The development of proprioception, begun in utero, continues when the child is born into gravity. Movements of the trunk and extremities activate proprioceptive receptor sites within the muscles, joints, tendons, and ligaments. This sensory information goes to the cerebellum and thence to all parts of the brain.

If the young child has adequate opportunities for physical movement, these proprioceptive pathways are developed by age seven or eight, with girls generally completing the process somewhat earlier than boys. The child then has an accurate sense of her body in three-dimensional space. She is able to locate her trunk, arms, hands, fingers, legs, and feet even when she is sitting still, standing still, or lying in bed with her eyes closed.

This level of proprioception frees the child’s mind, allows her to sit still, pay attention, and visually remember the shapes of letters and numbers. Her mind is no longer preoccupied with keeping her body in position and with gauging distances in space. Her mind is free to pay attention, focus, and learn, and to notice the nonverbal social cues given by other children and adults.
In my clinical practice, I have seen that a child who has not had this normal, healthy development usually exhibits specific symptoms. Unable to perceive his own body, the child has a hard time remaining upright in a chair. He wiggles in his chair—sometimes falling off—leans on his desk, sits on his legs and feet when in chairs, and/or wraps his feet around the leg of the chair, all to help his brain perceive the position of his trunk and extremities. Such a child also typically has difficulty standing on one foot for ten seconds with eyes closed.

A child with inadequate proprioception will have difficulty holding a crayon or pencil and copying forms, especially those involving diagonal lines. In addition, her drawings of a person will reflect the lagging level of proprioception. A child of five or six should have a sense of three-dimensionality and should be drawing figures that contain diagonal lines (for example, a triangular skirt), as well as tubular arms and legs. If the child is drawing stick figures, typical for three-year-olds, that is a clear sign of delayed proprioceptive development.

The social and emotional behaviors of these children parallel the development of their proprioceptive systems. If a six-year-old draws at the level of a three-year-old, he likely has the emotional development of a three-year-old. With the mind occupied with maintaining uprightness and perceiving spatial relations, such a child tends to miss nonverbal social cues, cannot concentrate or pay attention, and tires quickly in new environments and unfamiliar social situations. He is, in effect, in a perpetual stage of “fight or flight,” may exhibit explosive behavior, and is likely to be diagnosed with ADHD, dyslexia, or other learning challenges. He certainly is not ready to learn how to read and write.

The proprioceptive system is developed and strengthened in children by large and small physical movements. Activities that involve the entire body—the fingers, hands, arms, trunks, legs, and feet—and that involve the experience of pressure against the body are especially effective.

These include digging with a shovel, pushing a wheelbarrow, carrying groceries, moving rocks, pulling weeds, hanging from the monkey bars, and taking part in circle games that involve clapping, stamping, jumping, hopping, skipping, and galloping.

Myelin is the insulating sheath that forms around the axons of nerve cells and brings the cell into full, efficient function. In children between the ages of three and seven, myelination of the neurons in the right hemisphere of the brain is taking place. The myelination of the left brain begins in girls around the age of six-and-a-half and for boys a year or two later.

Children learn to read most efficiently when both hemispheres are in full function. The left hemisphere enables the child to hear the separate sounds within a given word—phonemic awareness—and string the individual sounds together to sound out and recognize words phonetically. The true and very important function of the right hemisphere, particularly the frontal area, is to create the mental images and pictures associated with the words read. These mental pictures enable the child to fully understand what he has read and to remember it. They also help the child form her own thoughts about what she has read and to express them.

The healthy, normal, picture-creating function of the right brain is the basis for comprehension and enjoyment in reading. Later on, it will allow the child to make sense of, to experience, and to recall what she reads about mathematics, algebra, biology, chemistry, and physics. And it will help her to understand and appropriate as part of her own human experience what she reads in literature, poetry, and history.

A child learning to read at four or five has access only to the right hemisphere. The right brain can only read individual words by sight recognition or sight memory. So the child has to use the right frontal brain to decode or guess at the words on the
page. That part of the brain, then, is not free to do its own very important job of creating accurate pictures and images of the meaning of the words. Thus premature reading may in fact lame, perhaps even for the long term, the child’s ability to understand, experience, and remember what she has read.

**Waiting for the brain—for spelling**

In the past, children had to learn only a few hundred words by right-brain sight recognition. Most of these words are short (i.e., is, a, and, at, the, are) and do not have an associated mental picture. Today, children starting to read at four or five must memorize and learn to recognize by sight hundreds, even thousands, of words. They do not have mental pictures for these words, and thus spelling them correctly is difficult.

Children taught to read (and spell) at an early age typically use their right-brain, sight memory to try to identify a word. They tend to focus on the first and last letters of the word, its overall shape, and its length. They often are oblivious to the sequence of letters within the word. Therefore, these children do not usually notice any differences when shown the sentences, “GAOTS LKIE GARSS” versus “GOATS LIKE GRASS,” or “CTAS HVAE TIALS” versus “CATS HAVE TAILS,” or “BAERS LVOE HNOEY” versus “BEARS LOVE HONEY.” In contrast, a child who is reading phonetically, because he is sounding out the words, immediately notices all the misspelled words and even tries to phonetically sound out the nonsense words.

A child taught to read (and spell) starting at age seven can sound out a word, that is, decode it phonetically, using the left brain. Having identified the word, he can access the image or picture of that word with its correct spelling in the right hemisphere. Spelling words correctly and identifying misspelled words will be relatively easier for this child.

Children typically become capable of phonetic reading, using the left hemisphere of the brain, about the same time that the bilateral neural pathways integrating the right and left hemispheres of the brain have developed. An indication of this is the child’s ability to do cross-lateral skipping (opposite leg and arm extending at the same time) without having to think about it. The right arm and leg are controlled by the left frontal area and the left arm and leg by the right frontal area. Thus, the child’s ability to move an opposite arm and leg at the same time indicates the right and left hemispheres of their brains are “talking with” or connected to each other. A child able to skip only using his feet or skip extending the same arm with the same leg (the homolateral skip) is not yet ready to read, since he cannot access both sides of the brain simultaneously.

The bilateral integrating pathways can be strengthened by activities that involve cross-lateral movements, in which the opposite limbs move simultaneously. In Waldorf schools, circle time in kindergarten and the early grades includes a variety of games and activities that involve cross-lateral movement. Eurhythmy, especially if done with conscious therapeutic intent, is a very effective means of developing cross-lateral coordination, as is work in The Extra Lesson™ remedial therapy. Also helpful are form drawing (a subject unique to Waldorf schools), jumping rope by oneself, swimming, hiking with poles, snowshoeing with poles, cross-country skiing with poles, contra dancing, square dancing, and ballroom dancing. At the website bal-a-vis-x.com, there are many exercises with balls and balance boards that involve cross-lateral movement. Cursive writing, in danger of extinction in many schools, but involving both brain hemispheres, is also recommended.
Dealing with the damage

In my medical practice, I see many older children (fourth through eighth grade) who are reading mostly by sight—by right-brain memory word recognition. They typically do not have the ability to create mental pictures, internal imaginations of scenes and events based on what they are reading. If the child has no obvious problem with balance, eye tracking, eye convergence, proprioception, and bilateral integration, I recommend a phonetic-based reading program. This switches their reading activity to the left hemisphere and frees the right hemisphere for its image-creating work.

However, if the child has challenges with sensory processing and integration, balance, proprioception, bilateral integration, and especially with eye movements, then there may be a more serious underlying cause. The inability to create images may be due to a cranial compression affecting the cerebellum and brain stem areas at the back of the head and base of the skull. Cranial compressions usually occur at birth, when the cranial plates overlap and are easily shifted. C-section births, prolonged labor (more than twelve hours), a very fast delivery, a labor induced by the drug pitocin, and the use of vacuum suction forceps at delivery can cause a cranial compression.

In such cases, I first recommend treatments by a Biodynamic Cranial therapist or by a chiropractor or osteopath, board-certified and specializing both in atlas orthognost and functional neurology. Such treatments help gently, and often non-manipulatively, to resolve the cranial compression. I then recommend that the child do a specific movement therapy such as therapeutic eurythmy, Extra Lesson, Parelli horseback riding lessons (especially bareback), Bal-A-Vis-X, Brain Gym, HANDLE, or sensory integration therapy with an occupational therapist who specializes in work with children. Once the vestibular–balance, eye tracking, eye convergence, proprioceptive, and bilateral integration pathways are more formed and strengthened, the child will still probably benefit from a phonetic-based reading course.

The development of young children unfolds according to a clear pattern. If we ignore that pattern and try to impose activities, such as reading and writing, on the children when they are not ready, we endanger them and their future healthy development. However, if we recognize and honor the stages of their development and bring academic work in a timely and appropriate way, we are laying the foundation for a lifetime of enthusiastic and efficient learning.

SUSAN R. JOHNSON, MD, FAAP, is a behavioral and developmental pediatrician. After completing a three-year pediatric residency and a three-year fellowship in behavioral and developmental pediatrics, Susan worked for seven years as the physician director for the School Health Center in San Francisco. After the birth of her son, she was introduced to Waldorf Education and became a certified Waldorf teacher. Susan spent an additional year of training in the Extra Lesson/sensory integration program at Rudolf Steiner College with Ingun Schneider. She also attended a special training course in anthroposophically extended medicine at the Lukas Clinic in Arlesheim, Switzerland.

Dr. Johnson makes visits to Waldorf schools in the Sacramento area and has a private practice in Colfax, California.

For further information and to obtain for free the numerous articles she has written, visit Dr. Johnson’s website: www.youandyourchildshealth.org