



by Karen Stephens

Brain Power: Music Builds It One Tune At a Time

Songs from childhood are inscribed in my heart. I was bundled in lullabies. I bounced on mom's knee as we sang "Ride a horse to Bombay to buy a stick of candy." And what baby boomer didn't embrace Peter, Paul and Mary's magic dragon? I took the music for granted. But research reveals that musical encounters can physically change a child's brain structure, especially before age ten. Early childhood songs were inscribed on my brain as well as my heart!

Advanced medical technology such as MRI, magnetic resonance imaging, has revealed that, at birth, an infant's brain is equipped with hard wiring for high-level thinking. To network that hardwiring into intricate neural circuitry, children need a wide variety of experiences, especially those dealing with sound and language. The circuits are like highways for information to speed along. To make sense of increasing amounts of stimulation, a child's brain must process rapid-fire electrical impulses that make connections, called synapses. Successful synapses allow humans to comprehend and communicate sensation, emotion, and experience. The more elaborate the circuitry, the greater our ability to learn and apply knowledge. Once our mental information highways are established in early childhood, they serve us for life!

Humans' unique adaptation for survival, literally our saving grace, is our ability to communicate complex ideas in infinite ways. It allows us to cooperatively plan, organize, create, invent, adapt, problem solve, and learn from our mistakes. No other species can analyze the present with such objectivity and depth; no other can benefit so quickly from the past to improve its own future. Our capacity for expression through language, music, science, and arts makes it all possible. But the gift of elaborate gray matter doesn't guarantee children will reach learning potential. Nurtured experience must fine-tune their brains before they can sing the praises of a fully-lived human adventure.

It turns out, music is a vital form of language the human brain is programmed to recognize and respond to. It's far more than an emotional response; it's intellectual, too. But there's a hitch; if brain circuitry isn't developed early, AND put to consistent use, humans fall short of learning potential.

In research experiments where music enjoyment and education is consistently paired, all kinds of school kids, across all boundaries, have shown amazingly increased intellect. Consider this. For one year, 3 year olds received one 20-minute piano (or keyboard) lesson a week and sang daily. On tests related to spatial and temporal reasoning, the children with music training scored higher than kids without it — up to 80% higher! (Such reasoning is used when learning physics, architecture, engineering, and mathematics. It's also applied with puzzles, chess, dance, tennis, and basketball!)

Second graders with musical instruction scored higher on reading comprehension, math concepts, and math problem solving. And in 1995 the College Entrance Examination Board revealed that students who studied music performance or music appreciation scored higher on verbal and math portions of the Scholastic Aptitude Test (SAT).

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See the common thread? Music education started early, by age 5 in most cases, and it continued on a regular basis. In all the research, piano or keyboard playing was the starting point for formal music education. String lessons, such as violin, typically began between ages 8 and 10. It's important to note that music appreciation alone didn't build brainpower: it was appreciation coupled with formal lessons that did the trick. That means my mom instilled a life-long love and appreciation of music in me. I'm grateful; it enriches my life immensely. But I'm still left with my lousy spatial reasoning skills. (A car trip navigator, I'm not!) Research suggests that I would have a more fully developed brain if I had received some formal music instruction to follow up my mom's musical tour of Bombay.

You, too, can guide your child to a love of music in many different ways. Once that love flourishes, children are more likely to become interested in playing an instrument and reading music. If that happens, do your best to capitalize on their interest. Following are ways to introduce music into your child's life.

- Incorporate music into your child's daily routines — diapering, bathing, or soothing into sleep.
- Enjoy rhyming and finger play songs together, such as the ever popular Mother Goose verses. They teach beat, rhythm, and tone.
- Move to music. Pick up your baby or preschooler and dance around the room just for the fun of it.
- Teach your child new types of dances — ballet, tap, or square dancing.
- Enjoy a variety of music as background sound during meals or naptime.
- Let toddlers and preschoolers explore making their own music with homemade music toys, such as oatmeal boxes for drums or aluminum pie tins for cymbals.
- Play games with homemade instruments; add a musical twist to traditional games, such as "Follow the Leader" or "Simon Says." (For instance, Simon says, "Pound your drum softly, loudly, quickly.")
- If you or a child's older sibling plays an instrument, let younger children hear and watch during instrument practice.
- Attend local children's concerts together.
- If you have a symphony in town, ask if you and your child can sit in on part of a rehearsal. Once your child's attention span and social manners develop well enough, go to an actual performance together.
- Check out your yellow pages to see if there is a parent-child music program in your area, such as the programs KinderMusik or Growing Together. If so, attend. (Some have scholarships for low-income families, so don't be shy about inquiring.)

And there's even more you can do. The next time someone talks about cutting music education from your neighborhood school's curriculum, suggest they tighten the belt in other ways instead. And you could vote for a referendum if that means music can be kept at your school. Take it a step further and become an advocate for music education. Encourage schools to explore weekly keyboard instruction from kindergarten on up. One keyboard per ten children once a week doesn't sound pie-in-the-sky to me!

If the brain soaks up music best in the early years, why hold off instruction until junior high or high school? Brain research has revealed windows of opportunity offer unique teachable moments. We educators and parents are fools if we don't put those research findings to wise use.

About the Author — Karen Stephens is director of Illinois State University Child Care Center and instructor in child development for the ISU Family and Consumer Sciences Department. For nine years she wrote a weekly parenting column in her local newspaper. Karen has authored early care and education books and is a frequent contributor to *Exchange*.