

An Introductory Case for Starting a Suzuki Strings Program in Preschool

By Sharon Neufeld

It has been thought for centuries that one only begins musical instrument study in the adolescent or early adult years, and that any child who showed musical ability at a younger age was considered to be a Mozart-type of prodigy. In the American educational systems of the last several decades, it has become widely accepted for the starting age to be several years younger, typically between ages 9-11, and in the context of a school orchestra or band ensemble. This essay will give strong, scientifically-based evidence for beginning musical instrument study as soon as the child is old enough to physically handle the instrument (age 3-5), and will even make a case for the importance of including an Early Childhood Education program (“ECE” - birth through age 5) in any music education curriculum.

The core reason for considering the issue of beginning musical instrument study and musical ECE at such early ages is that this type of study provides the most effective and extensive brain development of any other activity. As we look at this goal of brain development, we may ask the question, “**Why** is it so important to pursue such a goal?” The answer is simply that a bigger and stronger brain will give a child greater ability, potential, and fulfillment in all areas of life. Dare I say that a whole generation of children growing up with bigger, stronger, and more creative brains could ultimately change our society, health system, economics, and our world as a whole for the better!

Let us first take a look at the major processes in early childhood brain development:

- **Neurogenesis** – the process of forming neurons, the first process in brain development which occurs in utero before a baby is even born.
- **Neural Migration** – the development of the brain’s early filing system, organizing neurons to specific areas of the brain, based on their function; begins in utero and continues for approximately 8-10 months after the baby is born.
- **Synaptogenesis** – the process of creating synapses (connections in the brain between axons and dendrites) which create information transfer throughout the body; begins in utero and continues throughout life.
- **Synaptic Pruning** – the process of “weeding out” unnecessary synapses and strengthening the most important and often used ones, based on the child’s experiences; begins in utero and continues through approximately age 28-30.

Focusing on the last of these processes – Synaptic Pruning – we must consider that the stronger we build a child’s brain in their earliest years, the stronger it will stay throughout their whole life, and the more prepared they will be for virtually anything that they choose to pursue, and anything that comes their way. Although the process continues into early adulthood, scientific research shows that the majority of Synaptic Pruning occurs between the ages of 2-10, slowing down as the child approaches the upper end of that age range, and slowing down at an even greater rate beyond age 10. Early pruning – that which occurs in utero, at birth, and in infancy – is based on genes, while later pruning is based on experiences and environment. The largest amount of pruning takes place

between the ages of 2-5, after the child has already had a significant number of experiences and learning processes introduced. Additionally, it is astounding to realize that 80% of brain growth occurs by age 3, and by age 5 a child's brain has grown to 90% of its full size. Therefore, it stands to reason that parents and educators must do all that we can to nurture and shape the optimal environment and experiences for a child in the years before they enter school.

So why Musical Instrument Study?

Again, the short answer is because the study of a musical instrument is the most complete brain workout there is! Much like going to the gym and doing a total body workout that incorporates upper body, lower body, core, and cardio all in one. Science has shown that musical instrument study – beyond simply listening to music – creates brains which function far more effectively and creatively than those without it. It connects all three major areas of the brain – the motor, visual, and auditory cortices – allowing them to work together quite efficiently and effectively. Additionally, musicians were found to have a larger “corpus callosum” – or bridge – connecting the left and right hemispheres of the brain, allowing messages to travel faster and in more creative pathways. What does this mean in daily life? Musicians have higher levels of Executive Functions: Emotional Control, Flexibility, Goal-Directed Persistence, Metacognition, Organization, Planning, Response Inhibition, Sustained Attention, Task Initiation, Time Management, and Working Memory.

An interesting and compelling argument regarding the connections that occur inside the brain when playing music has to do with children who have various learning challenges or disorders. Many of these are thought to be a result of miscommunication between the left & right sides of the brain. When we introduce Musical Instrument Study, that child's corpus callosum – the bridge between the two hemispheres of the brain – is increased and strengthened. Additionally, children with ADD or ADHD are believed to have a mistiming between the motor, visual, and auditory cortices of the brain. Again, we come back to Musical Instrument Study, which connects these three major areas of the brain and enables them to work together better. Imagine what our society would be like (not to mention pediatric health care and the associated economics) if the rate of childhood challenges and learning disorders such as autism, ADD/ADHD, and dyslexia were to be drastically reduced!

Furthermore, scientific research has shown us that learning music uses similar pathways and processes as learning a language. So if we are to look at the most ideal language study – that of learning our mother tongue – we realize that this “study” is begun before a baby is even born, as babies in utero can already hear and process sounds that occur outside of the mother's body. Once that baby is born, it is actively “studying” language every time it hears people speaking to it or to one another. The “delay” in speaking is simply due to the baby not yet possessing the physical skills to put words together with its mouth. But as soon as the baby can begin to form words orally, the vocabulary that already exists in the child's brain is activated and the words begin to come out in great quantity over the next several months and years. So it is with Musical Instrument Study. If the child begins hearing music in utero and interacting with it upon birth, the musical vocabulary can begin to flow out once the child is old enough to handle the instrument and begin to “operate” it properly.

As a very personal observation, I would be so bold as to say that the classical stringed instruments – violin, viola, cello, bass – provide the most comprehensive “total brain workout” of all the instruments. Depending on which stringed instrument teacher you ask, a beginning student acquires anywhere from 40-100+ new skills by the time they have learned their first piece of music. This is within a 6-18 month time frame, depending on the starting age of the student. Thanks to the constant growth of those stronger connections between the three cortices and the two hemispheres of the brain throughout their journey of learning to play a stringed instrument, students will develop: awareness of body posture and how it affects their playing; fine & gross motor skills on both sides of the body; an ability to make quick adjustments with one hand or another in order to change pitch, tone or volume; listening skills – nuance as well as actual pitch/words/sounds; decision-making skills (sometimes at lightning speed!); social skills when playing with other students... This is only the beginning of a long list of skills and abilities that a child learns through stringed instrument study.

When considering a program of Musical Instrument Study for young children, the Suzuki Philosophy is the ideal choice in just about any context. The three main pillars of the Suzuki Philosophy are:

- Every Child Can Learn
- Ability Develops Early
- Environment Nurtures Growth

Adding to these three pillars its key features of beginning at an early age, much listening and repetition, parental involvement, group involvement, and an unwavering commitment to the pursuit of mastery and excellence, a program based on the Suzuki Philosophy stands poised and ready to build better brains and shape the character and life skills of the whole child. Although there are sometimes significant challenges that come with starting a Suzuki String Program at the preschool level (schedules, parental involvement, funding), the benefits far outweigh those challenges and are worth pursuing. Considering the evidence presented regarding neural and synaptic development from birth, one could even go so far as to say that the addition of a Suzuki ECE program would be in order if a school wanted to give each child every opportunity to build a stronger, better, bigger, and more creative brain for life!

REFERENCES AND RESOURCES:

Rob Baedeker: [7 Ways Music Benefits Your Child's Brain](#) (2013)

Better Brains for Babies (bbbgeorgia.org): [Brain Development Processes](#)

Jacquelyn Cafasso: [What Is Synaptic Pruning?](#) (2018)

CarnegieHall.org: [Why Making Music Matters: Music and Early Childhood Development](#)

Anita Collins: [How playing an instrument benefits your brain](#) (YouTube video, TED-Ed, 2017)

Anita Collins: [What if every child had access to music education from birth?](#) (YouTube video, TEDxCanberra, 2014)

FirstThingsFirst.org: [Brain Development](#) (2017)

John Iversen: [Does Music Change a Child's Brain?](#) (YouTube video, TEDxSanDiego, 2015)

Robert Myers, PhD: [Music is An Important Ingredient for Child Development and Parent-Child Relationships](#) (2019)

Maeve O'Hara & Victoria Szczepaniak: [Neuroscience and Suzuki: Brain Development from Age Zero, and the Impact of Early Childhood Music Education](#) (2019)

Mark Reybrouck, Peter Vuust and Elvira Brattico: [Music and Brain Plasticity: How Sounds Trigger Neurogenerative Adaptations](#) (2018)

Anne Steinhoff: [The Importance of Music in Early Childhood Development](#) (2016)

Suzuki Association of the Americas (suzukiassociation.org): [About the Suzuki Method](#)

Suzuki Association of the Americas (suzukiassociation.org): [Suzuki in the Schools](#)

Suzuki Association of the Americas (suzukiassociation.org): [What is SECE?](#)

Adrienne L. Tierney and Charles A. Nelson, III: [Brain Development and the Role of Experience in the Early Years](#) (2009)

University of Pittsburgh Medical Center (upmc.com): [How Music Affects the Developing Brain](#) (2014)

Wikipedia: [Synaptic Pruning](#)