

A Vibrational Approach to Teaching a Deafblind Student¹

The inspirational story of Jessica Cook In the Key of C

by: Christine Sauv  Guindon

Jessica Cook was born August 11th 1994, in Welland, Ontario, Canada. Soon after her birth, a rare metabolic condition was diagnosed called Pyruvate dehydrogenase, type 1². Jessica had a severe case which included multiple brain malformations.

Jessica had little residual vision at birth, and would not respond to speech. Her brain defects had rendered her functionally deafblind. Her parents were told: *"Your daughter is blind."* *"She will have severe developmental delays."* *"She won't speak; therefore, she will never communicate."*

The first year was filled with appointments and learning about their daughter's prognosis. They learned about genetics, neurology, and were regulars at their local children's hospital. Jessica wasn't developing normally, and the doctors didn't know even if she was going to survive infancy. She was a severely brain injured child who could neither respond to sight nor sounds during her first several years.

It is when she was old enough to attend a pre-school program that the magic began as we first observed Jessica reacting to sound. She would not react to voices, but appeared to respond to songs! This girl, who initially was perceived as functionally deaf, was smiling and enjoying her classmates sing!

I met Jessica when she was

8 years old and in elementary school. I was consulted because neither the teacher for the Blind or the Language and Speech Pathologist knew what to do with this 'blind girl' who had difficulty communicating. What I discovered was that Jessica, who could not communicate, had a sign for 'MUSIC'. Also, while she did not appear to respond to spoken language, apparently she heard songs! The one word she responded to was: 'MUSIQUE'.

While she appeared to enjoy music, she objected to loud noises. Her combined sensory loss was also inhibiting her from exploring her world tactually. She seemed to enjoy the company of the children at school, but did not truly interact with them.

McInnes and Treffry (1982) taught teachers to work with 'what seemed to interest the child'. Dr. vanDijk (1999) suggested that teachers should use the sensory modality that seemed to best interest a child. My role as the consultant was to help her acquire more language and to help diminish difficult behaviours. Jessica was tactile defensive; tactile cues wouldn't work. She was blind, not attending to visual cues; yet she responded to MUSIC and to SONGS!

Gardner (1993) suggested that we possess many different 'intelligences'. By pluralising the word 'Intelligence', Gardner, wanted educators to teach

the students according to their particular learning styles. I had written (Sauv  Guindon, 1999) that if we could determine the dominant 'intelligence', it would then permit the students' interest to be the 'key that would open the world', moving from their Intrapersonal intelligence to the Interpersonal intelligence. The key to Jessica was music and song. Music was the key to unlocking her world.

If music and song were such powerful tools, could they be used to enhance the total communication approach? We sang to her specific songs with tactile cues to ensure she would understand the activities we would be doing during the day at school. She still couldn't tell us which song she wanted to hear, but we did have a way for her to anticipate her daily routine.

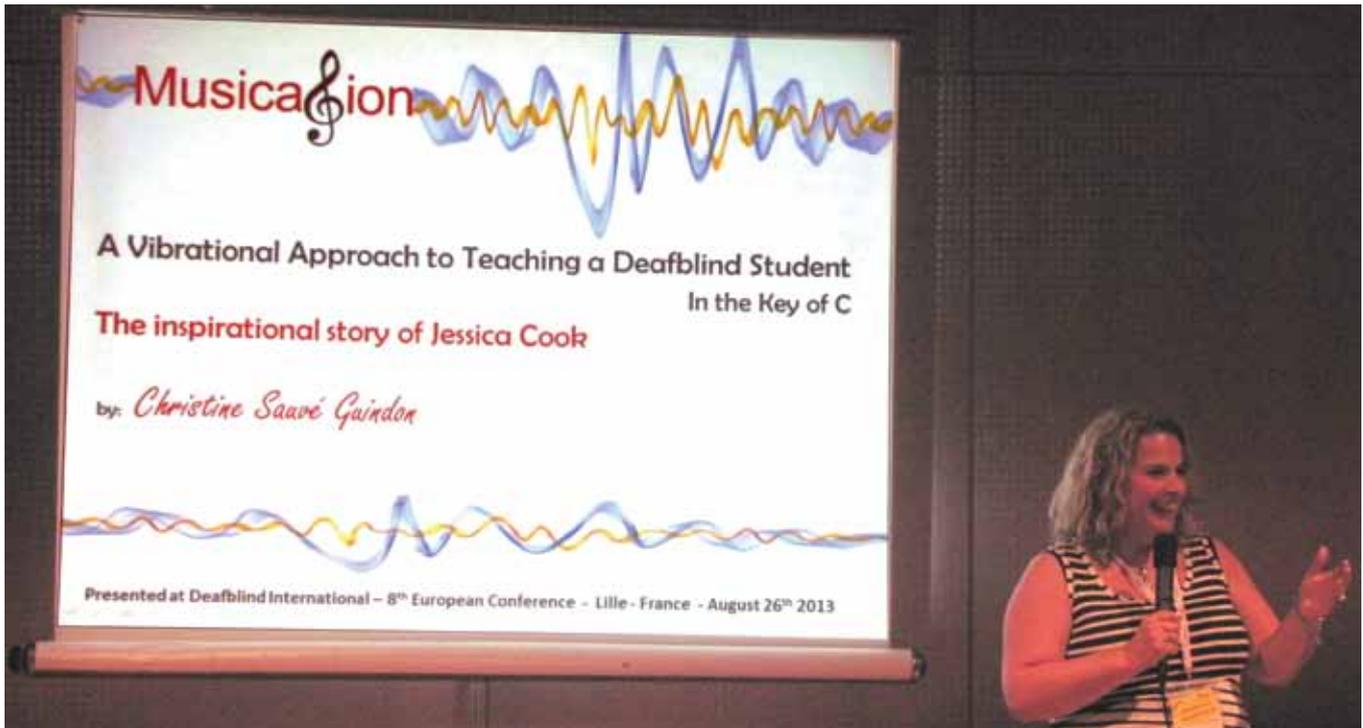
Jessica has Cortical Visual Impairment³. At first, she was not visually attending to many things other than her favourite musical toys. We used various CVI strategies including music and her favourite songs. We discovered that by using various musical selections while doing vision stimulation, an improvement in her vision occurred. Using music during physiotherapy consequently led to improvements.

Norman Doidge (2007 p.xix) wrote in the preface of 'The Brain That Changes Itself', that: "[Scientists] showed that children are not always stuck with the

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² www.ghr.nlm.nih.gov/gene/PDHA1

³ <http://www.childrenshospital.org/health-topics/conditions/cortical-visual-impairment>



Christine Sauve Guindon presenting at Lille Conference

mental abilities they are born with; that the damaged brain can often reorganize itself so that when one part fails, another can often substitute..." And "... that if brain cells die, they can at times be replaced; that many 'circuits' and even basic reflexes that we think are hardwired are not."

Jill Bolte Taylor (2009) explains what transpired to an injured brain in 'My Stroke of Insight'. From this book I understood how we see and how we decode what we see; the difference between hearing, understanding, and interpreting what we hear; proprioception and the movement of the body; the sense of touch; and sensory integration, etc. More importantly, this book taught me not to give up because re-education is possible!

I was starting to understand what seemed to be happening. Music was stimulating her brain! This 'blind' girl was starting to use her vision. This 'deaf' girl was

starting to make sense of her auditory world.

Authors like Oliver Sacks (2007) and Daniel Levitin (2007) have given me the inspiration to go further. They help me understand the power of music and how it can stimulate various parts of the brain.

"Musical activity involves nearly every region of the brain that we know about, and nearly every neural subsystem. Different aspects of the music are handled by different neural regions – the brain uses functional segregation for music processing, and employs a system of feature detectors whose job it is to analyse specific aspects of the musical signal, such as pitch, tempo, timbre, and so on." Levitin (2007), p.85-86

So, could vibration of the songs be breaking Jessica's tactile defensiveness to make her 'feel' music all through her body? We believe this has allowed her to

discover her outside world using a new sense – touch! Consequently we could now hold her hands and work with her hand over/under hand. We would encourage her to further expand her 'new' world through the sense of touch.

We have witnessed wonderful growth over a short period through integrating her senses. For example, the rain stick toy which, in 2006, she would only respond to auditorily, was now being tracked visually in 2013. With time and effort we were able to have Jessica transfer competencies from one area to another. For example, when we saw she could activate a musical toy with her hand, we worked with her so she could transfer this ability to hit a switch. Cause and effect educational goals were then added to her education plan. From hitting a drum, we taught her to hit a switch!

Jessica now has the capability to activate a switch to tell us which



song she would like us to sing. She can also sing along with us by activating the switch. Music was permitting her to participate socially and communicate her wants and needs! Music seemed to stimulate all levels of her brain, and the research in this area is proving this.

Levitin (2007) wrote (Page 86): "Listening to music starts with subcortical structures (cochlear nuclei, brain stem, cerebellum) and then moves up to the auditory cortices on both sides of the brain. Trying to follow along music that you know... recruits additional regions of the brain, including the hippocampus (our memory center) and subsections of the frontal lobe, particularly a region called inferior frontal cortex, which is in the lowest parts of the frontal lobe

Other research also demonstrates that auditory stimulation, while using speech or music, will activate the same areas of the brain.⁴ Music, it would seem, was also creating new neural pathways so that Jessica could now comprehend

speech! If she understands your request (and it is usually music related), she can answer: 'Yes', by nodding her head! What is happening neurologically? Where is speech being decoded? Is this due to repetitive musical stimulation? We still have so many questions.

By nodding 'yes' to us, Jessica can now answer when we ask her questions. This has made her more autonomous, apparently given her personal satisfaction, helps her to concentrate and comprehend more than we ever thought this 'developmentally delayed' girl could ever do!

Can music then be used to enhance her quality of life in other ways? We are now exploring music therapy with her by having her listen to sounds played on a harp. Dr. Piché-Séguin composes songs that have a specific rhythm, with specific notes that will resonate to help the body relax and rejuvenate. We are carrying out a trial with a song performed by Dr. Piché-Séguin. So far, Jessica has

shown a calming reaction to the song. We are studying this further.

In retrospect, I now understand why Jessica would always greet me by activating a toy piano to the song: 'Frère Jacques'. This was the first song I sang to her when we first met.

In conclusion, music and song have been the motivational links that have introduced her to the world. Jessica understands and more importantly, she is now understood! The research on brain plasticity and malleability has given me a whole new perspective on how to educate and work with multisensory deprived children born with brain malformations. Despite the severity of the brain defects, the key to development is to create new neural pathways through sensory stimulation.

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⁴ <http://www.art-et-science.fr/cerebrart/2008/musiqueetsante.htm>