



Feel the Beat

We aren't exactly sure why, but rhythm changes the brain.

Before there were behavior patterns, before there were belief patterns, even before birth itself, there were rhythmic patterns, either calm and predictable or chaotic and stressful.

The mother's heartbeat is the most powerful, patterned, repetitive vibrating, auditory signal the unborn child's brain stem is exposed to. If the maternal heartbeat is unchaotic and predictable, (somewhere between 60 and 80 beats a minute), then the infant's sleep, respiration, pulse and other reflexive and reactive functions should be better regulated (Perry 2002).

By five months of gestational age, the fetus' neural circuits and auditory memory are forming. The unborn baby's brain profits or (doesn't profit) from the rhythm of the mother's heartbeat and respiration. If the in-utero rhythmic experience is healthy, then each child should experience a healthy rhythm when eating, crawling, walking and relating to others.

If the unborn child's hind brain associated the in utero period with being safe and nurturing, then the child will seek to return to the maternal comfort that period offered or at least be drawn to activities that duplicate the serenity and calmness of that time period, their first state memories. If that period was not safe, predictable, calming and nurturing, then more effort will have to go into creating a predictable, calming rhythmic brain state post-birth.

My in utero experience was chaotic, and my post-birth experience was downright dangerous. I was one of those children for whom the rhythm of the in utero period had to be re-done.

My birth mother was a paranoid schizophrenic who also had borderline personality disorder. It probably didn't help that she also began drinking when she was 3-4 months pregnant with me. I was born stressed with rapidly beating heart, fitful, colicky, and too soon became a red-eared, fast-moving whirling dervish. Rapid dysregulation, from 0 to 100 was a state I easily perfected.

An experience in "rhythm learning:"

When my sister and I would be periodically rescued by relatives and brought into their homes, it was difficult for me to wind down, relax and go to sleep at night — even though I was safe. My brain wasn't telling me I was out of danger, and it was hard to sleep without the safety of others in the room with me. Quite by accident, when I was about 4 years old, my aunt and uncle discovered that their Cuckoo Clock, with its slow, rhythmic "tick-tock" lulled me into a calm, quiet, deep sleep which allowed my brain to rest and regenerate. As a result, my behavior tended to be less annoying to others the next day. No doubt my brain stem was engaged in rhythm learning — I was learning how to de-accelerate while I was asleep.

As a child, I seemed to crave rhythmic movement through song, dance and other activities. Somehow, I think I inherently

The Impact of Rhythm on the Brain

By Beth Powell, LCSW

knew what my brain needed to re-wire it. Throughout my childhood I found some way to experience rhythm: I played piano for a while, I lived on pogo sticks and in hula hoops when they were available. I jumped rope to girlhood familiar chants and played the midline crossing hand-clapping games; I would swing in the back yard for hours at a time, making up songs and singing them in rhythm to the back and forth of the swinging. And I would ride our horse, barebacked and barefooted, as she walked, trotted, galloped, ran... And I would adjust my rhythm to hers.

By night, I listened to the slow, consistent sound of the ebb and flow of the waves of the Mississippi Sound that filtered through an opened, screened window in the summer time. That sound lulled me to sleep along with the cyclical rotation of a summer fan, evening after evening: a seeming progression from the tick-tock of the Cuckoo Clock.

The natural therapy of my childhood and how it helped my brain habilitate in a use-dependent fashion makes sense now.

Dr. Bruce Perry makes sense also. He teaches about the impact rhythm has on the brain. Perry has advocated music, dance and massage programs for early, chronically neglected and abused children so that their lower brain regions could become more organized and developed, with the goal that key regulatory neuro-transmitter systems involved in the stress response would become more normalized (Perry, 2006).

On Sound and Vibration:

The fight-flight-freeze response has its origins in the brain stem. Imagine the impact to the in utero and recently born child when its developing sensory systems are chronically overexposed to the loud, vibrating booms of the ultrasound or the obnoxious bass rhythm so many young people subject themselves and others to. Consider: Should an unborn child or infant experience the loud music of a Christian sanctuary during contemporary worship time?

Native cultures with rhythmic movement rituals set to drum beats, frequently beat and move to 60-80 beats a minute. Chanting or meditating on affirmative statements in a consistent rhythmic fashion by moving the body and pacing the words to the rhythm of the movement and breath should help what is being concentrated on have a more positive effect on the brain and on the mind.

Would a CD of ocean waves, slow Indian drums or repetitive simple affirmations and prayer provide the same effect, especially when one is sleeping? The implications are there that it does. I frequently recommend this technique to parents of the children I see in therapy and refer to it as "sleep learning."

Rhythm and the Cerebellum:

There is a 1998 University of Texas study that indicates the cerebellum, a lower brain structure that is referred to as the brain's "mother board," tracks rhythm. The question would present itself: Can rhythm then activate or even change the cerebellum? The cerebellum regulates much of our

movement and also provides a direct connection to the functions of our autonomic nervous system and brain stem. It is responsible for such functions as pulse and breathing.

Other researchers have noted that the cerebellum might regulate the intricate timing of the development and expression of emotional communication (Trevarthen, 2000).

Coordination of movement is regulated by the cerebellum. It appears the cerebellum not only coordinates physical movement but also social rhythmic synchronicity. It is underdeveloped in individuals with autism (Maurer, 1998). Many people along the Pervasive Development Disorder spectrum, such as those with Autism or Asperger's are physically awkward and socially awkward.

This research regarding the cerebellum presents implications and provides further support for rhythm therapy for those with Autism or Asperger's Syndrome. Learning to walk to a slow, consistent rhythm is a beginning. Helping one establish rhythmic symmetry by moving their arms and legs to counted numbers or song is a start as well. Making basic rhythm with marching, playing drums, hand clapping or even listening to and repeating nursery rhymes to a consistent rhythm also helps to establish the regulation of movement with pleasure. And the rocking chair! Every home should have several. How many adults have ever noticed that they, themselves, feel calmer and more focused when rocking in a rocking chair? I know I certainly do.

What has been missing in traditional mental health, and especially with the developmentally traumatized, are interventions that impact the brain stem and the cerebellum. The evidence appears to be out. Basic, patterned, repetitive rhythmic movement does seem to activate the brain stem and the cerebellum in powerful, yet positive ways, creating people who are happier, healthier, smarter and more pleasant and fun to be around.

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