

MIMICKING THE WOMB - DOES IT WORK? HOW DO YOU DO IT?

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You've probably heard the Teddy bear with the recording of a mother's heart-beat (sometimes the bear's heart happens to be made of plastic, lies on the outside of his body, and lights up with every beat). It seems a little spooky - why would someone give something like that to their baby? They do it because it works. How well does it work? Studies indicate that it significantly calms infants more often than do teddy bears without the recording.

Is it really the heartbeat however to credit, or does the credit belong to the rhythmic beat that the teddy bear produces? Rhythmic beats and motions make up the most essential techniques that hypnosis experts use in their work. Without periodic repetition they have no chance of hypnotizing their subjects. This then begs the question: Why are these rhythmic methodologies required to hypnotize the subject? Perhaps it is due to a vestigial memory of the heartbeat of one's mother, hidden in the deep recesses of the subject's mind? It's difficult to say. One thing is certain: for whatever reason, periodic repetition of sounds and movements comprise the most persistent characteristic of sleep inducing techniques.

Although there has been conclusive studies showing that a recording of a mother's heartbeat is helpful, there are also many studies indicating that other periodic (consistent, regular interval) sounds also have that same effect. All mothers can attest to how patting a child on the back at a constant tempo (usually much faster than the mother's heartbeat) can be extremely effective at soothing children. For some children the action has to be rapid to successfully calm them down. For other children it needs to be slower. Bouncing motions help tremendously, and shushing (saying "sh - sh - sh - sh - sh") in the baby's ear around 1-3 times per second can have a dramatic effect. Most of these things are nothing like the sound of a mother's heartbeat, but these sounds do have a lot of similarities with other events that take place in the womb.

One thing is certain... that is that the womb environment is an acoustical smorgasbord. There are so many more noises than the mother's heartbeat in there - often many of them at much higher volumes than the mother's heartbeat. A pre-natal infant is used to hearing two unmatched complex rhythmic beats: there's the beat of their own heart (around 120-170 bpm) only inches away from their ears, and the beat of their mother's heart (40-70 bpm). Both are a complex "ba-dum ba-dum" type of beat instead of a "drum drum" type of beat.

In addition, prenatal babies are also accustomed to constantly hearing gurgling, and swooshing of body fluids, and the hum of their mother's voice (this is why humming is so effective - but it should be started when the baby is in the womb). They are also used to hearing muffled sounds from the exterior too. In short, they experience a busy auditory environment with lots of complex and mostly random sounds and two different periodic and unmatched and fluctuating heartbeats in the background for 9 months straight. That's an acoustical smorgasbord.

Some more things worth considering are the sleeping habits of prenatal babies. They are frequently wide awake when the mother is asleep or trying to sleep (often an aggravation for the mother) - and asleep for the longest times during the day while the mother is very active, sometimes scaring the mother into thinking something is wrong. Can one therefore say that mimicking a slow heartbeat from a sleeping mother soothes a baby better than a normal speed heartbeat? On the contrary, this fact seems to suggest that the speed of the mother's heartbeat may not be such a significant factor if a factor at all.

If taken one step further, the importance of non-heartbeat sounds in the womb seem to be even more important than originally thought. Since frequently a pre-natal infant is more likely to sleep in the daytime when there is a lot more noise around them (non-heartbeat noises) that seems to indicate such a child would also be lulled to sleep by sounds heard in the womb that are unrelated to the heartbeat sound. Not all pre-natal infants exhibit this behavior - but enough do that it is an important consideration.

Also, we can draw on everyday observation - what have mothers traditionally found that works to lull their babies to sleep? Dishwashers work. Vacuums work. Rocking back and forth works. Swaddling works. Driving in the car works. My nephew falls right to sleep whenever someone sings the Superman song. Why do these things work?

Much of it is conditioning, both prenatal and neonatal. You can indeed condition your newborn to sleep to just about any environment so long as you are consistent and try to follow some guidelines related to the sounds that the baby heard before they were born:

- 1) Medium to slow periodic (40-70) softly beating noises in the background are good - this is the tempo of the mother's heartbeat. On the other hand, as mentioned above, in the womb a baby is no more likely to sleep when the mother is sleeping than when she is active. Still, there is overwhelming public belief that slow tempos help babies sleep, and so slow tempos have been implemented in all SleepWave music. This may be mimicked by the tempo of a song.
- 2) Quiet and fairly quick periodic (120-170) soft noises further away in the background are also good - so long as they are soft, as a baby's heartbeat is soft (in relation to the mother's heartbeat). A soft-attack instrument may mimic this by providing quiet but quick and periodic counterpoint melodies.
- 3) Soft muffled sounds like those heard in the womb from an outside source are good. This may be mimicked by Lower String Sections (Cellos and Basses) and some winds like flutes.
- 4) Soft voice-like sounds of various timbres are good. A solo oboe, bassoon, flute, or alto flute may mimic these sounds. A counter point of melodies played by these different instruments closely approximates discussion - at least, as it may be perceived in the fluid prenatal environment.
- 5) Swishing (Upper String Sections, Section winds) and gurgling-like sounds (French horns, muted piccolo, softened harp)
- 6) Regardless of the source of the noise, all noises have a very soft attack. The eardrums are enveloped in fluid so it does not respond very much to abrupt noises, and all hard objects in the mother's body that could be capable of producing hard edge noises are protected in a fleshy coating. The most abrupt and hard edge noise comes from the mother's heart, and even that has a somewhat soft attack to it.

Additional considerations regarding a newborns acoustical frame of reference:

- Newborns don't know any lullabies when they are born. They may however recognize an instrument or a musical idea if it was presented to them while they were in the womb. Ideally a parent should play their favorite music for them while they are in the womb. This is even more effective if the mother hums along with the music while it is being played. An additional benefit to humming is that the prenatal infant experiences a physical sensation in addition to an auditory sensation.
- Variation in musical themes (as opposed to repeating drone melodies) more closely approximate random womb-like noise than repeating melodies. Variation also addresses the concern that an infant could fixate upon and be stimulated by a repeating melody.
- Fully orchestrated pieces of music which span the range of human hearing provide the ideal range of frequencies to mimic the diversity of noises existing in the prenatal auditory environment. Lullabies performed only by a solo or a few instruments are unable to produce the needed range of frequencies to mimic all prenatal sounds.
- Anxious babies have to be persuaded to go to sleep (what works when they are sleepy will not necessarily work when they are anxious). Ideally, when being lulled by music, each successive song should be increase in its ability to soothe.
- Babies come from the womb with a different acoustical frame of reference than do adults. Adults may find a beautiful piano piece peaceful and soothing - but the sounds of a piano are made by a hammer pounding on strings - hardly similar to any events occurring in the womb. It therefore is intuitively doubtful that such music would also be the ideal music for lulling a baby to sleep, regardless of how soothing an adult might find it.

Still, with conditioning, a baby can eventually be just as easily conditioned to fall asleep to the sounds of a noisy dishwasher as they are to a teddy bear that sounds out a mother's heartbeat. The ideal situation however is to use lullaby music that takes all the above things into consideration and is pleasing enough to both mother and baby to help them establish a pleasant routine. Also, an additional benefit to this approach is that the child will be more likely to grow to appreciate fine music. Furthermore, studies show that a full frequency music experience (best approximated with orchestral music) improves neurological development. A teddy bear's heartbeat, a dishwasher, a noisy fan (or any white noise), or Willie Nelson crooning about all his many lost loves will never be able to provide the frequencies that will really help your child in every way.