

Can Creative Music Therapy Promote Brain Function in Preterm Infants?

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January 5, 2018



Researchers from Switzerland will be conducting a first-ever study to assess whether creative music therapy could promote brain function in preterm infants.

It's an age-old question. We've all heard of the "Mozart effect", the idea that playing classical music to babies might make them smarter. The idea was popularized by research from the University of California in the early 1990s but was quickly dismissed by the scientific community. Nonetheless, businesses have since popped up across the globe advertising Mozart and Beethoven CDs to new and prospective parents.

While there hasn't been any concrete research suggesting that classical music has any value for the average baby, new studies within the last decade have pointed to a specific group of babies for whom music might have a benefit – preterm infants – those born at fewer than 37 weeks gestational age.

One in Ten Babies are Born Premature

Preterm infants represent a growing concern within the pediatric healthcare sector as they are particularly vulnerable to brain injury and exhibit reduced white and gray matter

volumes. Often, these abnormalities can persist into later life and have been linked to various neurodevelopmental impairments including cerebral palsy, motor dysfunction, attention deficit, and weaker memory, reason, and planning.

Both human and animal studies have demonstrated that early auditory experiences, such as music, can alter brain development. This could be particularly useful for preterm babies as their early brains display a high level of neural plasticity. Preliminary work using premature baby mice has demonstrated that music can indeed stimulate neuron development. To investigate whether premature human babies would experience the same effect, researchers in Switzerland will be conducting the first-ever randomized controlled study into how creative music therapy might aid brain development in preterm infants.

The First of Its Kind

Published in the journal *Pilot and Feasibility Studies* the research team has outlined the first-ever protocol for investigating the effects of music on preterm babies. They've already begun conducting a small test trial at a single clinic with 60 preterm infants under 32 weeks of gestational age. Split into a control and treatment group with 30 infants each, those in the treatment program received 20 minutes of music therapy three times a week until they were discharged from the hospital. A trained music therapist sang and hummed for the infants in lullaby style adjusting speed and rhythm to match that of the babies' breathing. At ages two and five, the infant will be re-invited back to the hospital for an MRI to assess changes in brain morphology. Researchers will also be conducting neurological tests to assess language acquisition, motor function, and memory skills.

Depending on the success of this preliminary test, the authors might expand their study into a multi-center trial to include hundreds of babies across the country. If proven to be effective, music could become a low-cost, low-risk intervention method for supporting brain development in preterm infants. So, is the "Mozart effect" fact or fiction? Only time can tell.

Written by Calvin J. Chan, B.Sc.

Reference: Haslbeck, F.B., Bucher, Hans-Ulrich., Bassler, D. and Hagmann, C. (2017). Creative music therapy to promote brain structure, function, and neurobehavioral outcomes in preterm infants: a randomized controlled pilot trial protocol. *Pilot and Feasibility Studies*. 3:36.