

# Singing supports brain development in preterm infants and maternal well-being after premature birth, research finds

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The auditory environment of the intensive care unit can cause physiological stress in preterm infants. Researchers believe it can also affect children's subsequent development. Credit: Pixabay/CC0 Public Domain

According to a recently completed doctoral thesis, singing can promote the development of the auditory cortex in preterm infants. Singing can also support maternal well-being as well as the relationship between mother and baby.

Music therapist Kaisamari Kostilainen's doctoral thesis in the field of psychology was part of the longitudinal Singing Kangaroo study. Kostilainen specializes in [music therapy](#) in [neonatal intensive care](#).

In the study, a portion of the participating parents belonged to an [intervention group](#) where a music therapist motivated and supported them at the beginning of the study to sing or hum during [kangaroo care](#) until the baby's due date. Meanwhile, a control group of parents provided kangaroo care in accordance with the instructions given at the ward, without the music therapist's encouragement to sing.

"Singing during kangaroo care helped mothers relax and establish a closer bond with their babies, while at the same time the singing promoted the development of the infants' brains," Kostilainen says.

## **Singing evidenced in the EEG**

In the study, electroencephalogram measurements were used to map out the effect of singing on the ability of [preterm infants](#) to discriminate between minor changes in speech. This ability is important for normal language development. Maternal anxiety was measured through a survey. In addition, the mothers described how singing to their babies felt and how they thought it affected the babies and themselves.

The infants in the intervention group had larger brain responses to speech sound changes than the infants in the control group. The more days in which the parents sang to their babies, the greater their brain responses.

"In other words, the development of the auditory system appears to benefit from repetition. The effects of singing to preterm infants were already evident by the due date," Kostilainen says.

In the intervention group, a statistically significant reduction in maternal anxiety was seen compared to the mothers in the control group who did not sing.

"The mothers in the intervention group felt that singing relaxed their babies and themselves, elevated their mood and positively affected their well-being. They felt that singing also promoted interaction and an emotional connection. Following the study, all mothers who had received support from the music therapist continued singing in their everyday lives."

## **A guide for parents**

The auditory environment of the intensive care unit can cause physiological stress in preterm infants. Researchers believe it can also affect children's subsequent development.

"Attention should be paid to the auditory environment of the hospital by reducing stressful stimuli and increasing stimuli that support development, such as parental speech and singing," says Kostilainen.

Every year roughly 6% of children born in Finland are born prematurely. Based on her doctoral thesis and other literature, Kostilainen created a guide that motivates and encourages the parents of preterm infants to use their voices after birth.

According to Kostilainen, providing early support and information to parents during care on the ward is justified and important.

"Prematurity increases the risk of problems associated with infants' subsequent development, as in language development. It also predisposes parents to depression and anxiety, which can affect the quality of interaction between baby and parent. Singing is an easy way for all families to support the development of preterm infants, parental well-being and interaction, and it could be more deliberately made part of family-centered care."

Kaisamari Kostilainen, MA (Music Therapy), defended her [doctoral thesis](#) entitled, "The impact of parental singing on neural speech sound processing in preterm infants, maternal well-being, and early relationship after preterm birth—Implications for practice in neonatal care," on 19 June 2023 at the Faculty of Medicine, University of Helsinki. The thesis is also available in electronic form [through the Helda repository](#).

Provided by University of Helsinki

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