

9th International Conference on

Neonatology and Pediatric Neurology

November 28-30, 2016 Valencia, Spain



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Effects of Kangaroo care combined with singing for the benefit of the auditory system development in prematurely born infants- brain recordings with ERPs and MEG

Our project aims at studying the effects of singing during Kangaroo care on the development of the auditory system of infants who were born preterm. Previous research shows that the auditory system during the last trimester of pregnancy is a time of fast learning and development. Premature birth can pose a risk for learning in the form of changes in environment: Fetal-uterine sounds are replaced with NICU sounds, providing sound features very different from those relevant to speech perception. Listening to singing and engaging in singing activities may contribute to the development of the auditory system in typically developing children and in children with language-related or auditory challenges. Our goal was to test an intervention group (singing during Kangaroo care) against a control group (silence during Kangaroo care) in terms of brain development and language abilities. We used a specific multi-feature mismatch negativity (MMN) stimulus paradigm to study the auditory responses with ERPs and MEG to semantic and prosodic speech changes. The paradigm captures efficiently the capabilities of the auditory system to discriminate changes in phoneme duration, frequency, intensity, identity, as well as in the prosodic-emotional changes from neutral to angry, happy or sad, including the attentional effects caused by the changes. Our recordings, at present, reveal subtle changes in brain activity in prematurely born infants compared to full-term. In the conference, we will present comparisons between the intervention and control groups.

Biography

Minna Huotilainen works at the Swedish Collegium for Advanced Studies at Uppsala University in Sweden. She is internationally known for her work in the magnetoencephalographic recordings of human fetuses, showing memory-related brain activity. Her work in fetal auditory learning both for speech sounds and for musical sounds is also highly respected. She has published more than 150 journal articles mainly with ERPs and MEG. He is a top 2.5% scholar worldwide according to Research Gate.

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