Early assessment of audiovisual integration after preterm birth and neural correlates: An fNIRS study

Leonardo Zaggia[1,2], Merle Marek[2], Juan Quinones Sanchez[2], Johanna Buhre[1], Andrea Hildebrandt[2,3] & Axel Heep[1,3]

[1]Paediatrics, Department of Human Medicine, School of Medicine and Health Sciences, Carl von Ossietzky Universität Oldenburg, Oldenburg, Germany;

[2]Psychological Methods and Statistics, Department of Psychology, School of Medicine and Health Sciences, Carl von Ossietzky Universität Oldenburg, Oldenburg, Germany;

[3]Research Center Neurosensory Science, Carl von Ossietzky Universität Oldenburg, Germany

Early audiovisual integration (AVI) is essential for the development of cognitive skills such as executive function, intermodal learning and language acquisition, to name but a few. Research shows that infants as young as six months can discriminate between congruent and incongruent audiovisual stimuli, with the so called McGurk effect providing evidence for early language integration. However, preterm (PT) infants often show atypical cognitive development, which may be related to delays in AVI. We designed a study to investigate the effect of prematurity on AVI using a novel eye-tracking controlled McGurk paradigm while recording functional near-infrared spectroscopy (fNIRS) to measure neural responses to congruent and incongruent audiovisual stimuli. We aim to compare behavioral and neural markers of AVI in six-month-old PT infants with their full-term (FT) counterparts. This study aims to add to the current knowledge on early AVI and its relationship with cognitive outcomes in PT infants, and to provide a basis for future longitudinal research on early cognitive development after preterm birth.

At the meeting of the Research Centre for Neurosensory Science we would like to present the study setup. As the data collection is still ongoing, we will only show exemplary data to illustrate the feasibility of the study.