

EEG Coherence

EEG RECORDING - GENERAL SET-UP:

During the study infants sat on their parent's lap or on a highchair facing at approximately 65 cm distance a 23-inch Full HD IPS LG black computer monitor (refresh rate 60 Hz, 1920 x 1080 resolution, full details: LG 23MB35PM-B; dimensions in cm 51.3 (w) * 28.7 (h); screen calibrated at 120 candela/m²). There are two possible infant labs: room 0.41 and room 0.42. Each testing room is semi-dark and controlled for luminance (between 8-20 lux, usually around 12 ± 2) and temperature (between 18-25°). Parents were instructed not to interact with their child during the experiment. A video camera (HD pro webcam C920; cf. <https://www.logitech.com/nl-nl/product/hd-pro-webcam-c920>) sampling at 15Hz placed below the screen recorded the child's behaviour. By using ffmpeg tools through the Matlab and recording laptop interface, we could timestamp frames from the video to correspond with the onset of each trial: the video also 'received' a binary code block in the top left of the video, which allows for (automatic) trial trigger code lookup to scroll to only task-relevant video-frames. (Note that we have home-build software to accomplish this; 'videocoder').

Continuous EEG was recorded using a 32-channel ActiveTwo BioSemi system (Amsterdam, Netherlands), configured to the standard International 10-20 System (channels: 28 lateral channels FP1/2; F7/8; F3/4; AF3/4; FC1/2, FC5/6, C3/4, T7/8, CP1/2, CP5/6, P3/4, P7/8, O1/2, PO3/4, plus 4 midline channels Fz, Cz, Pz, Oz). For some children, an additional eye-electrode was placed behind the child's left eye (Ex3), and/or additional loose electrodes were positioned at the mastoids (Ex1-2). Electrodes offset were less than 20µv. The EEG data were recorded relative to common mode sense and driven right leg (CMS/DRL) electrodes placed near Cz. Continuous EEG was acquired at a 2048Hz sample rate

using Actiview (version 7.05) from a Dell latitude E5540 laptop (operating system Windows 10 Professional; in lab 0.41 version details: i5-4310U CPU @ 2,00 GHz 2,60GHz 8GB; in lab 0.42, version details: i3-4010U CPU @ 1,70 GHz 1,70GHz 4GB). Tasks were programmed in Matlab using Psych-Toolbox 3 (Brainard & Vision, 1997) from a second laptop (MacBookPro 11,1 13 inch retina OSX 10.9.5 Intel Core i7 2,8 GHz 16GB 1600 MHz DDR3). Roy van Koten was the person who programmed all tasks.

General markers: - begin and end of a task (250, 251 respectively)

- Begin and end of a pause (124, 125 respectively)
- Attention grabbers: sound (120) or video clip (121)
- Quit task : 122 (but cancelling the quit-command will give you 123)

STIMULI

Stimuli were two sets of videos. One is a set of 'non-social' videos depicting moving toys without human interference, earlier used in a study by Emily Jones and colleagues (Developmental changes in infant brain activity during naturalistic social experiences. *Developmental Psychobiology*, 57(7; 2015)). The other is a set of 'social' videos each depicting a woman singing Dutch nursery songs (Dutch stimuli created by Sabine Hunnius and colleagues). Both sets are 60 seconds long.

PROCEDURE

During testing, the infants are passively watching both sets of social and non-social videos three times interleaved. The starting condition (social or non-social) is randomized. In between video sets a black screen is shown for 1 second. The complete task lasted approximately 6 minutes. Task-specific Markers: At onset of

a set of videos a marker was presented corresponding to the condition (Social videos: 129, Non-social videos: 139).