AIN-TO-BRAIN SYNCHRONY IN PARENT-CHILD DYADS FOLLOWING PRETRM BIRTH COMPARED TO TER BORN CHILDREN

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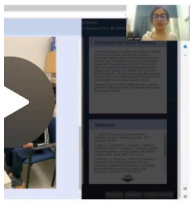

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action.

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ful stimuli, as well as

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Methods

Participants: Ten dyads (Mother-Toddler) will be recruited, of which five will be typically developing children and five will be born preterm. All toddlers will be between the ages of 2 and 6 years old.
For the purpose of this poster, we recruited one dyad with a typically developing child of 5.5 years to show proof of principle of the hyperscanning method in a naturalistic setting.

Experimental procedure: All mother-toddler dyads will participate in three different conditions. In the baseline condition, both the mother and toddler will sit in front of a screen and watch a child friendly video independently. They will not interact or speak to each other during this session. There will be two different social interaction conditions in a naturalistic environment. In both these conditions, the mother and child will sit facing each other across a small table. The first social interaction condition will be to play a game using soap bubbles. The mother will blow bubbles and encourage her child to catch them with a bubble wand. During the second task the dyad will work on a puzzle together. Mothers and toddlers will be instructed to engage in free verbal conversation during each task. Each task will be 3 to 5 minutes.
The complete procedure will be video recorded.

Data acquisition and preparation: Simultaneous EEG data will be recorded from participants using 64-channel EGI system (EGI, Eugene Oregon). Two separate computers and amplifiers will be used which are connected to a clock box for synchronization. The start of each experiment will be marked on both data sets by the experimenter pushing a button which is connected to the same clock box.
Preprocessing steps include Re-referencing (to the average of all channels), filtering (0.5 - 35 Hz) and Independent Component Analysis.

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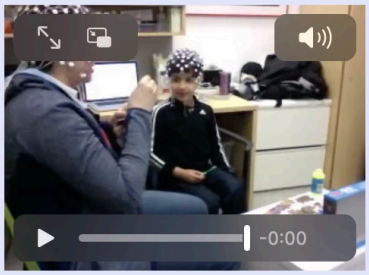
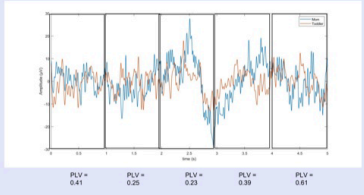
Results



$$PLV = |\frac{1}{N}\sum_{k=1}^{N} e^{i(\phi_t(k)-\phi_m(k))}|$$

Signal from channel F3 (as an example channel) corresponding to the video



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Conclusion and Futu

This first example of an inter
and child shows that collecti
naturalistic setting using a hy
feasible. By correlating the b
(observed in the video) with
data, we were able to calcula
locking value between the m
three conditions. This very p
showed that neural coupling
child changed as a function

Our goal is now to collect ad
protocol in additional dyads
and preterm children.

References

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