

Supporting Information

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SI Figures

Figure S1: Flow chart of the participant selection process.

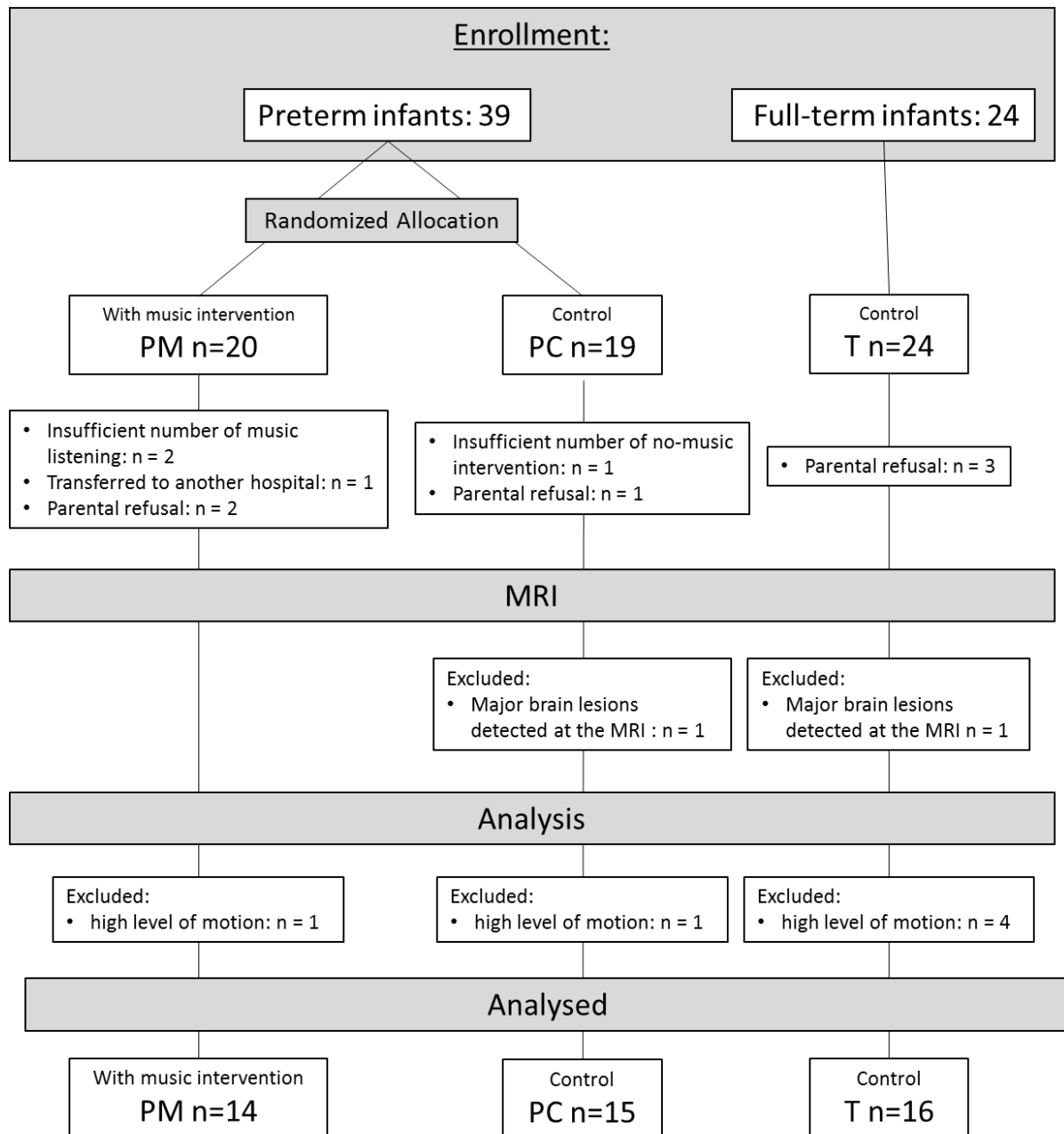


Figure S2: Methodological pipeline.

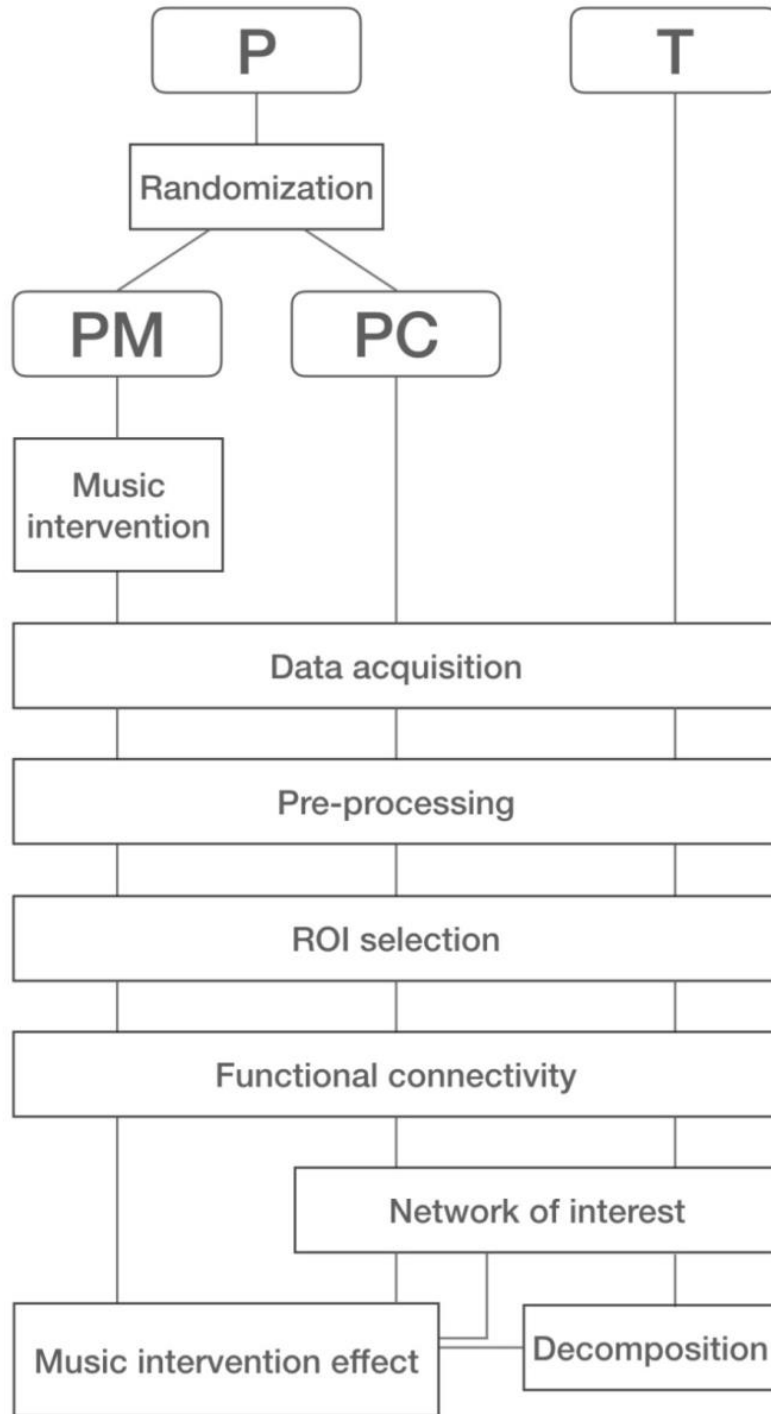


Figure S3: Auditory spectrum of the three music tracks used: a. to help the baby to wake up; b. to interact with an awake baby; and c. to support the baby fall asleep.

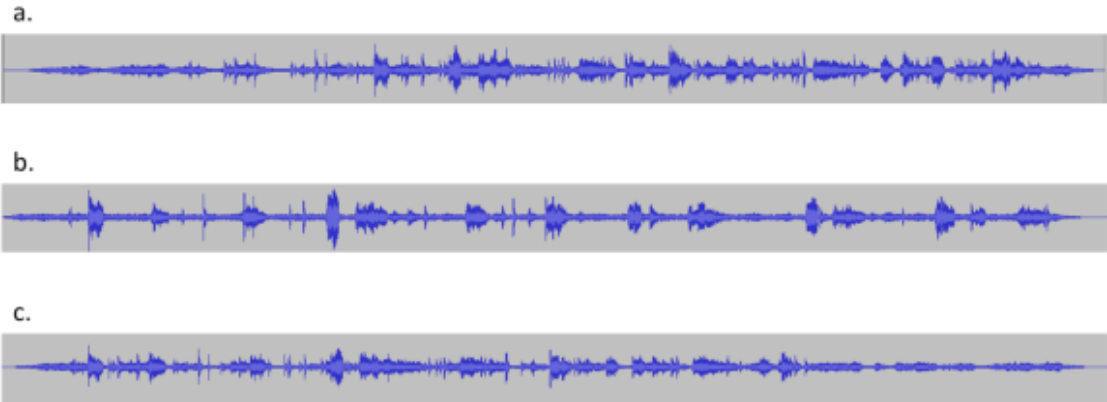


Figure S4: COI including salience node. Red connections represent interconnections between modules. The modularity of this decomposition is 0.29.

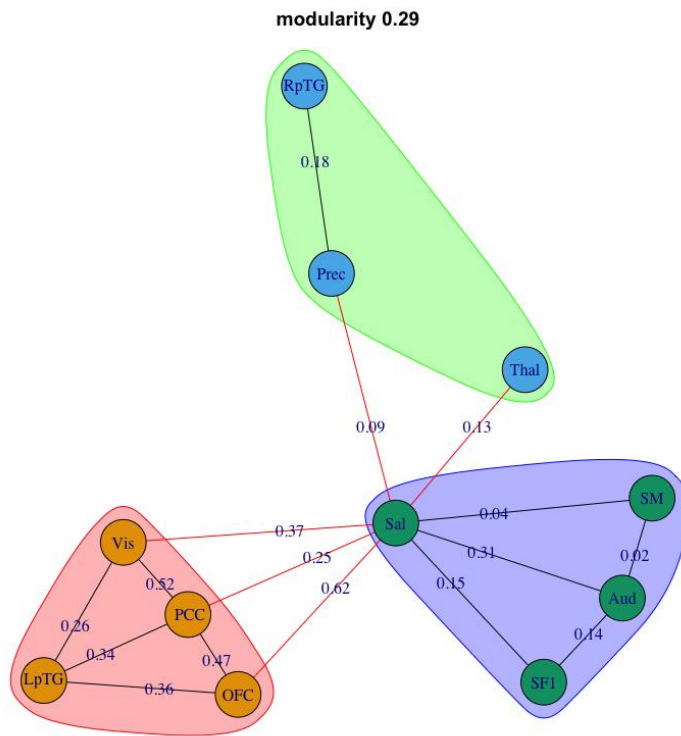
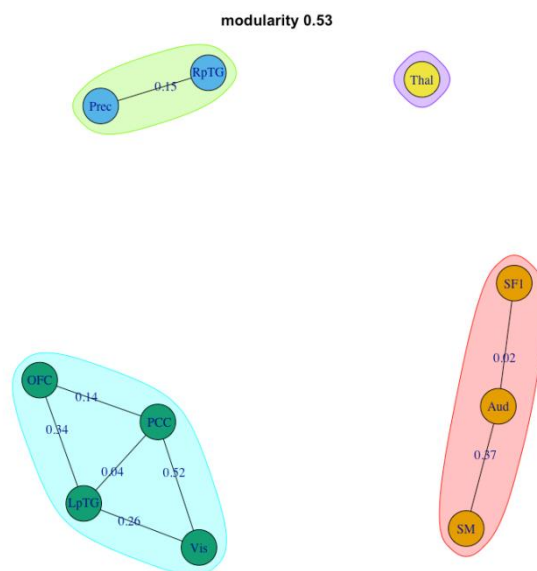


Figure S5: COI without salience node. The modularity of this decomposition is 0.53



SI Tables:

Table S1: Subjects informations

Statistics: Fisher's exact test was used for categorical data, and the Mann-Whitney test and ANOVA were used for continuous data to compare subgroups. SGA, small for gestational age (<10th percentile for birth weight as a function of GA and gender). Socioeconomic status was estimated using a 2-to-12-point scale consisting of the addition of maternal education (range 1-6 points) and paternal occupation (range 1-6 points). Lower scores reflect a higher socioeconomic class.

	Preterm group with music n=14 n (%) or mean (SD)	Preterm group without music n=15 n (%) or mean (SD)	p-value (between preterm groups)	Full-term group n=16 n (%) or mean (SD)	p-value (between the 3 groups)
GA (weeks)	28.3 (2)	29 (1.8)	0.4	39.5 (1.1)	N.A.
Birthweight (g)	1050 (262)	1161 (287)	0.28	3333 (334)	N.A.
SGA	1/14 (7%)	2/15 (13.3%)	1.0	0/16	N.A.
Microcephaly	2/14 (14%)	5/15 (33%)	0.4	0/16	N.A.
Male	5/14 (36%)	7/15 (47%)	0.7	7/16 (44%)	0.87
Socioeconomic status	5.5 (3.6)	6.3 (3.5)	0.44	4.5 (3.06)	0.35
Antenatal steroids	5/14 (36%)	8/15 (53%)	0.46	N.A.	N.A.
Cesarean section	10/14 (71%)	11/15 (73%)	1.0	5/16 (58%)	0.04
Chorioamnionitis	4/14 (29%)	1/15 (7%)	0.16	N.A.	N.A.
Bronchopulmonary dysplasia <i>- mild and moderate level</i>	4/14 (29%)	5/15 (33%)	1.0	N.A.	N.A.
Patent ductus arteriosus <i>Medical or surgical treatment</i>	1/14 (7.1%)	2/15 (13%)	0.52	N.A.	N.A.
Sepsis	2/14 (14%)	4/15 (27%)	0.65	N.A.	
GA at scan (weeks)	40.4 (0.75)	40.5 (0.8)	0.6	39.8 (1)	0.045

Table S2: Regions of interest obtained based on ICA results. The number of voxels in each resting-state network and network labels are shown.

Number of the component	RSN	Abbreviations	Anatomical location	Number of voxels
1	Visual	Vis	Bilateral occipital lobe	1411
2	Sensorimotor	SM	Bilateral precentral gyrus Bilateral postcentral gyrus	1527
3	Superior Frontal	SF 1	Bilateral medial superior frontal cortex	1152
4	Cerebellum	Cer	Bilateral cerebellum	2206
5	Noise	Noise	motion	1738
6	Posterior cingulate cortex	PCC	Bilateral precuneus gyrus Posterior cingulate cortex	1520
7	Noise	Noise	blood vessels	488
8	Precuneus	Prec	Bilateral Precuneus	1075
9	Auditory cortex	Aud	Superior temporal gyrus (primary and secondary auditory cortex) Perigenual anterior cingulate cortex	808
10	Noise	Noise	motion	31
11	Right posterior temporal cortex	RpTG	Right osterior superior temporal gyrus Right posterior middle temporal gyrus	533
12	Left posterior temporal	LpTG	Left posterior superior temporal gyrus Left posterior middle temporal gyrus	795
13	Superior frontal	SF 2	Superior frontal gyrus Middle frontal gyrus Inferior frontal gyrus, orbital part	1295
14	Orbitofrontal	OFC	Medial orbital cortex and gyrus rectus Inferior temporopolar region Planum polare	800
15	Salience	Salience	Insula Perigenual cingulate cortex	561
	Thalamus	Thal	Mesencephalum Thalamus : anteroventral thalamus, ventral anterior thalamic nucleus, anterior thalamus nucleus Dorsal anterior cingulate cortex	139
16	Brainstem and Thalami	Bst+Tha	Brainstem : mesencephalus, pons, Thalamus, anterior thalamic nucleus	593

Table S3: Global analysis of differences between PC and PM groups.

	Region 1	Region 2	uncorrected P.values	corrected P.values
PM > PN	Vis	SM	0,069	1
	SM	Aud	0,020	1
	SM	Sal	0,044	1
	SM	Thal	0,074	1
	SM	Bst&Tha	0,046	1
	Prec	Sal	0,087	1
	Prec	Thal	0,054	1
	Aud	Bst&Tha	0,049	1
	RpTG	Sal	0,100	1
	RpTG	Bst&Tha	0,029	1
	Sal	Bst&Tha	0,096	1
	PM < PN	Cer	Prec	0,032
RpTG		OFC	0,045	1

SI Sound files

Sound file S1: Music track used to help the baby to wake up

Sound file S2: Music track used to interact with an awake baby

Sound file S3: Music track used to help the baby fall asleep