

Physiological synchrony in EEG, electrodermal activity and heart rate reflects shared selective auditory attention: supplementary material

Supplementary Table 1. Mean and standard deviation ratings of Valence, Arousal and Dominance of the affective sounds from the IADS-2 database, categorized by Neutral (a), Pleasant (b) and Unpleasant (c) sounds.

(a)

No.	Name	Valence		Arousal		Dominance	
		Mean	SD	Mean	SD	Mean	SD
246	HeartBeat	2.89	1.69	4.48	2.58	5.35	2.07
262	Yawn	5.2	1.31	3.12	1.92	4.92	1.87
373	Paint	5.12	1.54	5.25	1.74	5.57	1.76
376	Lawnmower	5.69	1.32	4.23	1.69	5.86	1.55
382	Shovel	4.55	1.25	4.51	1.73	4.87	1.6
627	Rain1	4.73	1.67	4.61	1.96	5.59	1.87
698	Rain2	5.31	1.97	4.46	2.53	5.03	2.16
700	Toilet	5.12	1.67	3.96	2.14	5.91	1.98
708	Clock	4.46	1.68	3.22	2.25	4.86	2.33
720	BrushTeeth	4.91	1.54	4.13	2.01	5.61	2.14
723	Radio	4.41	1.53	4.22	1.93	5.22	2.02
728	Paper1	4.86	1.34	4.17	1.93	5.58	1.71

(b)

No.	Name	Pleasure		Arousal		Dominance	
		Mean	SD	Mean	SD	Mean	SD
110	Baby	7.64	2.1	6.03	2.1	6.14	1.88
200	EroticCouple	6.71	1.78	7.49	1.52	6.29	2.03
201	EroticFem1	7.87	1.62	8.13	1.36	7.48	1.8
202	EroticFem2	7.9	1.48	7.67	1.8	7.3	1.85
311	Crowd2	7.65	1.58	7.12	1.58	6.09	2.18
352	SportsCrowd	7.17	1.97	7.07	1.97	5.77	2.08
353	Baseball	7.38	1.53	6.62	1.63	6.04	1.88
365	Party	6.97	1.9	6.32	1.9	5.73	1.76
366	Casino1	7.09	1.73	6.26	1.73	6.08	2.19
367	Casino2	7.33	1.74	6.72	1.74	6.41	1.98
415	Countdown	6.46	1.67	6.55	1.67	4.8	2.25
717	SlotMachine2	7.32	1.64	6.56	1.64	6.39	2.3

(c)

No.	Name	Pleasure		Arousal		Dominance	
		Mean	SD	Mean	SD	Mean	SD
115	Bees	1.98	1.32	7.2	1.91	2.58	1.75
255	Vomit	1.71	1.76	7.29	1.91	2.64	1.58
260	BabiesCry	2.28	1.54	6.44	2.09	3.95	2.37
276	FemScream2	2.04	1.38	7.65	1.65	3.16	2.15
277	FemScream3	1.85	1.41	7.55	1.93	2.72	2.04
278	ChildAbuse	1.78	1.57	7.16	2.11	3.96	2.49
279	Attack1	1.9	1.23	7.9	1.31	2.84	2.18
285	Attack2	1.87	1.5	7.49	1.91	2.68	1.92
286	Victim	2.04	1.46	7.69	1.69	2.96	2.33

290	Fight1	1.92	1.54	7.38	1.76	3.7	2.15
292	MaleScream	2.6	1.74	6.97	1.7	3.49	1.99
422	TireSkids	2.72	1.6	7.01	1.77	2.84	1.84

Supplementary Table 2. Specification of the sequences of beeps for all 27 trials. In each trial, either a low (250 Hz, 100 ms) or high (1 kHz, 100 ms) beep was presented every two seconds for a total trial duration of 30 seconds (thus resulting in 15 tones per trial).

No.	Beep 01 - 15														
001	high	low	low	high	high	high	low	high	high	low	high	low	low	high	high
002	high	high	low	high	high	high	high	high	low	high	low	high	low	low	low
003	low	high	high	low	high	low	low	low	high	high	low	low	low	high	high
004	high	low	high	high	low	low	low	high	low	high	low	high	low	high	high
005	high	high	high	low	low	low	high	low	high	low	high	low	low	low	high
006	low	low	high	high	high	high	low	high	high	low	high	low	low	high	high
007	high	low	high	low	low	low	low	high	low	high	low	high	low	high	high
008	high	low	low	low	high	low	high	high	high	low	low	low	high	low	high
009	high	high	low	low	low	high	low	high	low	low	low	low	high	high	high
010	low	high	high	high	low	low	low	low	low	low	low	low	low	high	high
011	low	low	low	high	low	low	high	low	low	low	low	low	low	high	high
012	low	low	low	high	low	low	low	high	high	high	low	high	low	high	low
013	high	low	low	high	high	low	high	high	low	low	low	low	high	high	high
014	high	high	low	high	high	low	high	high	high	high	high	low	low	low	low
015	high	low	low	low	low	low	low	high	low	low	high	high	low	low	low
016	low	high	low	high	high	low	low	low	low	low	high	low	low	high	low
017	high	high	low	high	low	low	high	high	high	low	low	high	high	low	low
018	high	low	high	high	high	low	low	low	high	low	high	low	high	low	high
019	high	high	high	low	high	low	low	high	high	low	high	high	high	high	high
020	high	low	low	high	low	low	low	high	high	high	low	low	high	low	low
021	high	low	high	high	high	low	high	high	high	high	high	low	low	high	low
022	low	low	low	high	high	low	low	high	low	high	high	low	low	low	high
023	low	low	low	low	low	low	high	high	low	high	low	low	high	high	low
024	high	low	high	high	high	high	high	low	low	high	low	low	high	high	high
025	low	low	low	high	low	high	high	low	low	low	low	low	high	low	low
026	high	low	low	high	low	high	high	high	low	high	low	high	high	high	low
027	high	low	low	low	low	low	low	low	high	low	high	high	high	low	low

Supplementary Table 3. Stimulus presentation order and timing for the auditory stimuli as presented to the participants. Besides silent baseline (Silence) and white noise baseline (White noise), participants were presented with one audiobook stimulus (Zure Koekjes), interspersed with three types of stimuli. Stimuli No. 0 correspond to sequences of beeps (see Supplementary Table 2), No. 1 correspond to affective sounds (see Supplementary Table 1) and No. 2 corresponds to the sing-a-song stress test.

No.	Name	Time	Duration
3	Silence	0	60
4	White noise	60	60
	Zure Koekjes	120	
1	ChildAbuse	140	6
1	EroticFem2	192	6
1	HeartBeat	246	6
1	Casino2	292	6
0	001	345	30
0	022	428	30
1	Lawnmower	512	6
0	016	572.1	30
1	Attack1	638.1	6
1	Paint	698.1	6
1	BabiesCry	749.1	6
1	Clock	791.1	6
0	007	835.1	30
1	Vomit	906.1	6
1	Baby	950.1	6
0	019	1006.2	30
1	Crowd2	1089.2	6
0	012	1147.2	30
0	010	1226.2	30
1	Shovel	1307.2	6
0	027	1350.2	30
1	EroticFem1	1425.2	6
1	Countdown	1467.2	6
1	FemScream2	1525.2	6
0	003	1573.2	30
0	013	1655.2	30
1	Toilet	1735.2	6
0	023	1783.2	30
0	011	1852.2	30
1	MaleScream	1924.2	6
1	Victim	1974.2	6
1	FemScream3	2026.2	6
1	Rain2	2075.2	6
0	024	2131.2	30
0	020	2196.2	30
0	009	2268.2	30
0	026	2336.2	30
1	Baseball	2408.2	6
1	BrushTeeth	2455.3	6
0	008	2496.3	3
0	002	2575.3	30
0	021	2654.3	30
1	SlotMachine2	2736.3	6
1	Bees	2786.3	6
1	Casino1	2840.3	6
0	015	2894.3	30
1	Radio	2966.3	6
0	025	3013.3	30
1	Rain1	3092.3	6
1	Attack2	3133.4	6
1	TireSkids	3193.4	6
1	Paper1	3247.4	6
0	006	3290.4	30
1	Yawn	3374.4	6
1	Fight1	3424.4	6
0	004	3484.4	30
1	Party	3569.4	6
0	005	3615.4	30
1	SportsCrowd	3691.4	6
1	EroticCouple	3732.4	6
0	018	3776.4	30
0	014	3848.4	30
0	017	3929.4	30
2	Sing-a-Song Test	4000.4	26.7
1	White noise	4087.3	60
1	Silence	4147.3	60

Supplementary Table 4. Questions and correct answers to the questions reflective of paid attention asked in the post-experiment questionnaire.

Question	Correct answer
The next questions cover the short stimuli presented during the audiobook presentation	
How many beeps were on average played in a sequence of the sequences of beeps?	15
How many high beeps were on average played in a sequence of beeps?	8
How many low beeps were on average played in a sequence of beeps?	7
How many short sounds, such as screaming, did you hear during the audiobook?	36
Describe as many of the short sounds that you heard.	See Supplementary Table 1.
The next questions cover the content of the narrative	
At what time was the last call with Mr. van Averdunk's mobile phone?	15:32
What is the title on Valerie's business card?	Marketing Manager
What address is written on the back of Emma's picture?	Weertjeshof
Who was the only person strongly believing in the sour cookies?	Mr. van Keulen
What is the estimated revenue of Van Averdunk en Co.?	300 million euros
How did Maria meet her husband Willem?	As a nurse in the hospital where Willem was hospitalized
The son of chief inspector Helena Visscher says he has a black eye. Who is guilty according to him?	The neighbor
How did Jurgen react on the confession of Maria van Averdunk?	Not in shock
What did Helena do to blame Mr. van Keulen for the murder?	She wrote a suicide note on behalf of Mr. van Keulen

Supplementary Table 5. Identified attentional condition for all participants based on inter-subject correlations (ISC) in EEG, electrodermal activity (EDA) and inter-beat interval (IBI). Participants are identified as audiobook attending (AA) or stimulus attending (SA). White cells correspond to correct classifications and grey cells correspond to incorrect classifications.

Participant	ISC-EEG	ISC-EDA	ISC-IBI
001	AA	AA	AA
002	SA	SA	SA
003	AA	AA	SA
004	SA	SA	SA
005	SA	AA	SA
006	AA	SA	AA
007	SA	SA	SA
008	AA	AA	AA
009	SA	SA	SA
010	AA	AA	AA

011	SA	SA	SA
012	AA	SA	SA
013	SA	SA	SA
014	AA	AA	AA
015	SA	AA	AA
016	SA	AA	SA
017	AA	SA	AA
018	AA	SA	AA
019	AA	AA	AA
020	SA	AA	SA
021	SA	SA	AA
022	SA	SA	SA
023	AA	AA	AA
024	SA	SA	SA
025	SA	SA	AA
026	AA	AA	AA