

**Supplemental Material S1.** The full dataset for Experiment 1 including individual thresholds for each subject on the auditory perceptual measures across both sessions and four conditions: Quiet, background noise (BN) through headphones, external noise (XN), and both background and external noise (BNXN).

Subject	Condition	Session	STM (dB)	Diotic FM (Hz)	Dichotic FM (Hz)	Colocated SRM (TMR dB)	Separated SRM (TMR dB)	SRM (dB)	MTGD (ms)
ID1	Quiet	1	1.07	3.75	0.22	1.36	-5.87	7.23	7.15
ID2	Quiet	1	1.60	1.98	0.44	1.36	-4.84	6.19	6.91
ID3	Quiet	1	2.67	7.07	0.29	4.45	-3.81	8.26	5.42
ID4	Quiet	1	5.72	10.59	0.37	1.36	-1.74	3.10	22.45
ID5	Quiet	1	2.08	3.15	0.50	3.42	-6.90	10.32	6.60
ID6	Quiet	1	2.80	11.89	0.44	2.39	-7.94	10.32	18.44
ID7	Quiet	1	1.20	3.34	7.49	5.48	4.45	1.03	9.66
ID8	Quiet	1	2.93	2.50	0.44	3.42	-3.81	7.23	4.61
ID9	Quiet	1	2.93	9.44	0.15	1.36	-5.65	7.00	9.33
ID10	Quiet	1	2.80	6.67	0.35	5.48	-0.71	6.19	7.58
ID1	Quiet	2	2.53	2.36	0.19	4.45	-2.77	7.23	8.81
ID2	Quiet	2	2.67	4.45	0.29	0.32	-3.81	4.13	8.31
ID3	Quiet	2	2.93	3.15	0.39	2.39	-6.90	9.29	7.41
ID4	Quiet	2	3.07	6.30	1.49	2.39	-5.87	8.26	8.51
ID5	Quiet	2	2.80	4.72	0.42	3.42	-5.87	9.29	7.41
ID6	Quiet	2	2.27	4.20	0.37	1.36	-8.00	9.36	10.23
ID7	Quiet	2	1.60	2.23	0.22	3.42	-5.87	9.29	7.76
ID8	Quiet	2	2.27	1.87	0.22	2.39	-7.94	10.32	5.36
ID9	Quiet	2	2.24	5.61	0.10	2.39	-8.00	10.39	8.03
ID10	Quiet	2	0.96	7.94	0.21	5.48	-7.94	13.42	6.60
ID1	BN	1	2.00	5.00	0.11	1.36	-2.77	4.13	6.60
ID2	BN	1	2.53	4.45	0.25	1.36	-3.81	5.16	7.49
ID3	BN	1	2.13	3.54	0.37	5.48	-1.74	7.23	7.24
ID4	BN	1	3.47	5.61	0.99	3.42	-7.94	11.36	8.91
ID5	BN	1	1.73	7.49	0.33	2.39	-3.81	6.19	7.07
ID6	BN	1	2.40	3.75	0.35	1.36	-3.81	5.16	9.44
ID7	BN	1	3.47	2.97	0.32	5.48	-4.84	10.32	7.32
ID8	BN	1	2.80	4.72	0.23	3.42	-7.94	11.36	5.95
ID9	BN	1	2.40	5.00	0.25	2.39	-4.84	7.23	7.49
ID10	BN	1	3.07	6.30	0.37	3.42	-4.84	8.26	6.52
ID1	BN	2	2.27	1.77	0.11	4.45	-3.81	8.26	6.91
ID2	BN	2	2.13	5.30	0.29	2.39	-2.77	5.16	6.83
ID3	BN	2	2.67	5.95	0.28	1.36	-3.81	5.16	9.01
ID4	BN	2	3.35	3.15	0.13	2.39	-8.00	10.39	8.91
ID5	BN	2	2.93	3.34	0.10	3.42	-8.00	11.42	7.15
ID6	BN	2	3.33	5.95	0.31	1.36	-7.94	9.29	7.24
ID7	BN	2	2.27	2.23	0.29	3.42	-4.84	8.26	5.36

ID8	BN	2	2.27	2.65	0.39	-0.71	-7.94	7.23	5.24
ID9	BN	2	2.93	3.75	0.29	4.45	-8.00	12.45	7.15
ID10	BN	2	2.00	6.67	5.95	4.45	-2.77	7.23	6.23
ID1	XN	1	2.13	2.23	0.12	2.39	-4.84	7.23	7.85
ID2	XN	1	1.33	4.72	0.21	4.45	0.32	4.13	8.03
ID3	XN	1	2.53	5.95	0.16	0.32	-1.74	2.06	5.95
ID4	XN	1	3.73	13.35	0.59	5.48	-4.84	10.32	10.97
ID5	XN	1	3.07	2.50	0.44	4.45	-3.81	8.26	6.37
ID6	XN	1	2.80	7.49	0.29	1.36	-7.94	9.29	7.32
ID7	XN	1	2.93	5.30	0.56	3.42	-1.74	5.16	7.41
ID8	XN	1	2.13	5.61	0.20	0.32	-3.81	4.13	6.16
ID9	XN	1	2.93	6.67	0.25	1.36	-3.81	5.16	19.10
ID10	XN	1	3.60	15.87	0.50	5.48	-0.71	6.19	13.82
ID1	XN	2	1.87	4.45	0.06	3.42	-1.74	5.16	7.15
ID2	XN	2	3.04	2.65	0.17	4.45	-4.84	9.29	7.24
ID3	XN	2	2.13	4.45	0.47	4.45	-0.71	5.16	7.76
ID4	XN	2	3.07	10.00	0.59	3.42	-7.94	11.36	9.77
ID5	XN	2	1.73	2.97	0.28	5.48	-4.84	10.32	3.92
ID6	XN	2	2.53	3.97	0.33	1.36	-6.90	8.26	6.83
ID7	XN	2	3.33	2.81	0.28	3.42	-5.87	9.29	6.83
ID8	XN	2	2.53	2.81	0.29	2.39	-3.81	6.19	5.61
ID9	XN	2	2.80	5.00	0.29	2.39	-8.00	10.39	9.22
ID10	XN	2	3.07	6.30	0.28	5.48	-2.77	8.26	8.91
ID1	BNXN	1	2.27	3.75	0.16	2.39	-3.81	6.19	4.40
ID2	BNXN	1	2.13	2.65	0.37	4.45	-3.81	8.26	6.91
ID3	BNXN	1	2.67	5.61	0.17	5.48	-0.71	6.19	8.91
ID4	BNXN	1	8.67	1.67	2.10	2.39	-2.77	5.16	13.66
ID5	BNXN	1	2.93	7.07	0.50	1.36	-1.74	3.10	9.55
ID6	BNXN	1	2.13	6.30	0.26	2.39	-3.81	6.19	7.32
ID7	BNXN	1	4.27	3.75	8.91	2.39	4.45	-2.06	14.47
ID8	BNXN	1	2.40	2.50	0.29	0.32	-3.81	4.13	5.12
ID9	BNXN	1	2.27	8.41	0.26	1.36	-6.90	8.26	10.47
ID10	BNXN	1	1.20	8.91	0.28	4.45	-3.81	8.26	7.07
ID1	BNXN	2	2.27	2.50	0.09	1.36	-4.84	6.19	6.91
ID2	BNXN	2	0.80	5.00	0.13	3.42	-2.77	6.19	6.99
ID3	BNXN	2	3.47	7.49	0.19	4.45	-2.77	7.23	6.83
ID4	BNXN	2	2.80	7.49	0.35	2.39	-2.77	5.16	8.41
ID5	BNXN	2	1.60	3.54	0.25	2.39	-4.84	7.23	7.41
ID6	BNXN	2	2.80	2.65	0.33	-1.74	-6.90	5.16	6.52
ID7	BNXN	2	2.53	2.36	0.44	1.36	-6.90	8.26	4.83
ID8	BNXN	2	0.64	4.20	0.26	0.32	-6.90	7.23	6.23
ID9	BNXN	2	2.53	7.49	0.29	2.39	-5.87	8.26	8.22
ID10	BNXN	2	2.53	1.18	0.33	5.48	-7.94	13.42	6.52