TABLE S1. Details of musicians' musical experience.

Group	ID	Age of onset	Years of training	Training hours per week	Type of training
Older Instrumentalist	1	9	16	17	Viola
	2	17	40	3	Bass
	3	15	47	2	French horn
	4	12	48	7	Cello
	5	12	48	15	Violin
	6	16	48	25	Cello, violin
	7	10	49	15	Bass
	8	12	49	5	Bass
	9	9	50	5	Cello
	10	10	50	11.5	Harp
	11	10	50	12.5	Violin
	12	11	51	3	Violin, viola
	13	12	51	6	French horn
	14	12	51	16	Violin
	15	14	55	3.5	Accordion, bass
	16	8	57	3	Viola
	17	12	57	3	Violin
	18	13	57	10	Cello
	19	8	58	4.5	Violin
	20	12	58	7	Flute
	21	11	59	6	Piano
	22	5	62	7	Piano
	23	5	62	22.5	Piano
	24	7	63	5	Violin
Older Vocalist	1	17	20	9.5	Voice
	2	12	25	10	Voice
	3	9	26	15	Voice
	4	18	27	6	Voice
	5	15	28	6	Voice
	6	10	30	6	Voice
	7	8	30	6	Voice
	8	8	34	4	Voice
	9	9	37	12	Voice
	10	21	39	28	Voice
	11	19	42	8	Voice
	12	20	43	6	Voice
	13	2	43	10	Voice
	14	23	43	2	Voice
	15	18	44	39	Voice

	16	14	49	6.5	Voice
	17	10	50	8.5	Voice
	18	12	51	31	Voice, piano
	19	18	55	6	Voice
	20	13	55	9.5	Voice
	21	13	55	6	Voice
	22	6	57	16	Voice
	23	7	61	1.5	Voice
	24	6	64	2	Voice
Young Wind/String	1	7	12	4	Violin
	2	7	13	21	Trumpet
	3	5	14	3	Violin
	4	5	15	10	Violin
	5	6	15	15	Viola
	6	5	16	18	Violin
	7	3	16	20	French horn, accordion
	8	6	16	25	Flute
	9	6	17	2	Saxophone
	10	4	17	2	Violin
	11	2	17	4	Viola
	12	4	17	14	Violin, piano
	13	4	18	10	French horn
	14	3	19	49	Clarinet
	15	4	19	50	Violin
	16	7	20	10	Violin, piano
Young Pianist	1	5	11	10	Piano, Chinese zither
	2	4	12	6	Piano
	3	7	13	20	Piano
	4	7	13	20	Piano
	5	6	14	5	Piano, guitar
	6	5	14	2	Piano
	7	6	15	6	Piano, flute
	8	6	15	30	Piano
	9	5	16	10	Piano, guitar
	10	7	16	4	Piano
	11	6	16	4	Piano, ukulele
	12	5	17	30	Piano
	13	3	17	20	Piano, Chinese zither
	14	7	19	28	Piano, erhu
	15	7	20	5	Piano
	16	5	21	3	Piano
Young Percussionist	1	5	10	10	Drum-kit
	2	6	10	6	Drum, guitar
	3	5	10	8	Percussion, electronic keyboard

4	4	11	8	Percussion
5	7	12	3	Percussion, piano
6	6	12	3	Snare drum, marimba
7	6	12	10	Percussion
8	4	13	30	Snare drum, piano
9	6	13	3.5	Percussion
10	5	14	6.5	Side drum, kettledrum
11	4	15	15	Percussion
12	6	15	2	Percussion
13	6	15	10	Snare drum, marimba
14	3	17	8	Percussion
15	3	17	7	Side drum, piano
16	4	18	15	Percussion, piano

Training hours per week were recorded for the last 3 years in older musicians and throughout the training experience in young musicians.

TABLE S2. Pearson or Spearman (labeled *) partial correlation coefficients and corresponding p values (in parenthesis) between digit span and SIN threshold under 4 conditions after controlling for hearing and age.

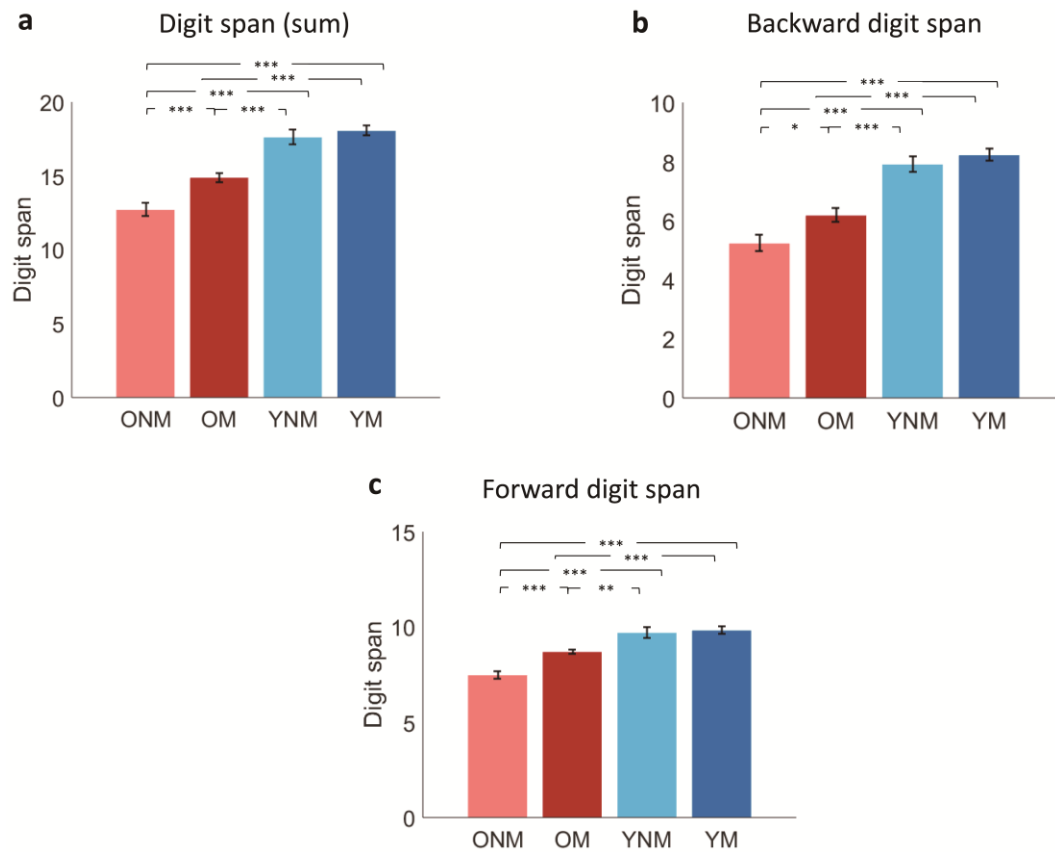|		SIN threshold			
		Noise separation	Noise colocation	Speech separation	Speech colocation
Older	Digit span (sum)	-0.50	-0.46	-0.43	-0.53
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
	Forward digit span	-0.53	-0.50	-0.41	-0.44
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
	Backward digit span	-0.38	-0.34	-0.37	-0.48
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
Young	Digit span (sum)	-0.05	-0.22*	0.08	0.16
		(0.698)	(0.062)	(0.489)	(0.175)
	Forward digit span	-0.01	-0.24*	0.07	-0.18
		(0.911)	(0.048)	(0.566)	(0.141)
	Backward digit span	-0.07	-0.17*	0.08	-0.11
		(0.590)	(0.164)	(0.530)	(0.353)

Figure S1. (**a**) Sum of forward and backward digit span, (**b**) backward digit span, and (**c**) forward digit span in older non-musicians (ONM), older musicians (OM), young non-musicians (YNM) and young musicians (YM). Error bars indicate SEM. * p < .05, ** p < .01, *** p < .001, one-way ANOVA followed by Tukey's multiple comparison tests.
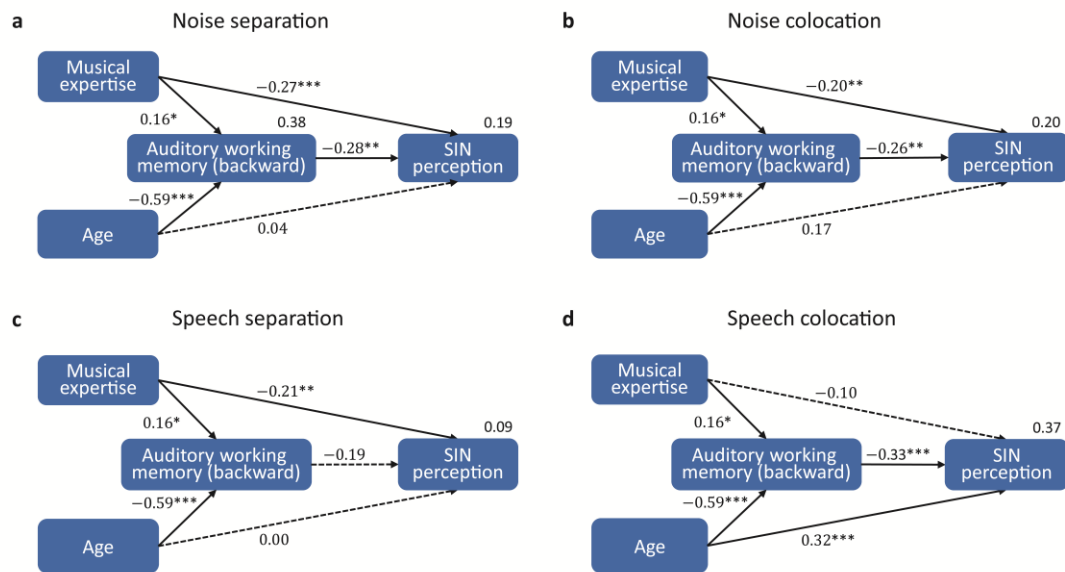
Figure S2. Path models showing the effects of musical expertise (0, non-musician; 1, musician) and age (0, young; 1 older) on SIN perception threshold via auditory working memory (backward digit span) as the mediator under 4 conditions: (**a**) noise separation, (**b**) noise colocation, (**c**) speech separation, and (**d**) speech colocation. Dotted lines indicate insignificant paths. Standardized path coefficients are displayed on direct paths. * $p < .05$, ** $p < .01$, *** $p < .001$.