

**Supplemental Material S6.** Hits and correct rejection rates for sentence memory.

Probe type	Ambiguity	Acoustic clarity	Age group	<i>M</i>	<i>SD</i>	<i>N</i>
Target	Ambiguous	+5 dB SNR	Older	0.709	0.154	30
			Young	0.741	0.163	30
		+15 dB SNR	Older	0.805	0.140	30
			Young	0.769	0.157	30
		Quiet	Older	0.802	0.110	30
			Young	0.790	0.131	30
	Unambiguous	+5 dB SNR	Older	0.813	0.120	30
			Young	0.736	0.169	30
		+15 dB SNR	Older	0.817	0.124	30
			Young	0.760	0.132	30
		Quiet	Older	0.825	0.119	30
			Young	0.778	0.111	30
Foil	Ambiguous	+5 dB SNR	Older	0.806	0.123	30
			Young	0.845	0.127	30
		+15 dB SNR	Older	0.848	0.134	30
			Young	0.838	0.119	30
		Quiet	Older	0.835	0.131	30
			Young	0.849	0.117	30
	unambiguous	+5 dB SNR	Older	0.835	0.175	30
			Young	0.876	0.123	30
		+15 dB SNR	Older	0.860	0.147	30
			Young	0.834	0.161	30
		Quiet	Older	0.863	0.127	30
			Young	0.864	0.103	30

**Response times for participants with perfect intelligibility scores**

Z-transformed response data for young and older adults with perfect intelligibility scores are shown in Supplemental Material S4. Degrees of freedom are Greenhouse-Geisser correct to correct for nonsphericity. As with the full data set, we submitted these data to a 2 (ambiguity: high-ambiguity, low-ambiguity)  $\times$  3 (acoustic clarity: quiet, +15 dB, +5 dB)  $\times$  2 (age: young, older) ANOVA. There was a main effect of ambiguity,  $F(1, 39) = 52.55$ , partial  $\eta^2 = 0.57$ ,  $p < .001$ , such that high-ambiguity sentences produced longer responses compared to low-ambiguity sentences. There was no effect of acoustic clarity,  $F(1.88, 73.49) = 1.10$ , partial  $\eta^2 = 0.03$ ,  $p = .34$ , but as in the full dataset the effect of ambiguity differed as a function of acoustic clarity, indicated by a significant Acoustic Clarity  $\times$  Ambiguity Interaction,  $F(1.74, 67.90) = 4.03$ , partial  $\eta^2 = 0.09$ ,  $p = .027$ . There was not a significant effect of age,  $F(1, 39) < 1$ , partial  $\eta^2 = 0.005$ ,  $p = .65$ . However, there was a significant interaction between Age  $\times$  Ambiguity,  $F(1, 39) = 5.45$ , partial  $\eta^2 = 0.12$ ,  $p = .025$ . There was no significant interaction between Age  $\times$  Acoustic Clarity,  $F(1.88, 73.49) = 1.72$ , partial  $\eta^2 = 0.04$ ,  $p = .19$ . The three-way Ambiguity  $\times$  Acoustic Clarity  $\times$  Age interaction was not significant,  $F(1.74, 67.90) < 1$ , partial  $\eta^2 = 0.01$ ,  $p = .63$ .