

**Supplemental Material S3.** A repeated-measures ANOVA, treating input SNR, the number of background talkers, compression speed, and audiogram as the independent variables, the individual 2-second time windows as the random effects factor, and the difference in output SNR between the WDRC-only and WDRC+NR conditions as the dependent variable.

Audiogram (A)	$F(3, 42) = 5.08, p < .05, \eta^2_p = .266$
Compression Speed (CS)	$F(1, 14) = 0.5, p = .491, \eta^2_p = .034$
Number of Talker (NT)	$F(1, 14) = 101.729, p < .001, \eta^2_p = .879$
Input SNR (IS)	$F(4, 56) = 235.797, p < .001, \eta^2_p = .944$
A × CS	$F(3, 42) = 12.327, p < .001, \eta^2_p = .468$
A × NT	$F(3, 42) = 19.305, p < .001, \eta^2_p = .58$
CS × NT	$F(1, 14) = 0.073, p = .79, \eta^2_p = .005$
A × CS × NT	$F(3, 42) = 7.757, p < .001, \eta^2_p = .357$
A × IS	$F(12, 168) = 30.373, p < .001, \eta^2_p = .684$
CS × IS	$F(4, 56) = 4.748, p < .05, \eta^2_p = .253$
A × CS × IS	$F(12, 168) = 9.723, p < .001, \eta^2_p = .41$
NT × IS	$F(4, 56) = 18.756, p < .001, \eta^2_p = .573$
A × NT × IS	$F(12, 168) = 3.535, p < .001, \eta^2_p = .202$
CS × NT × IS	$F(4, 56) = 3.052, p < .05, \eta^2_p = .179$
A × CS × NT × IS	$F(12, 168) = 9.371, p < .001, \eta^2_p = .401$