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Supplementary Materials for

Inconsistent sexual signaling degrades optimal mating decisions in animals

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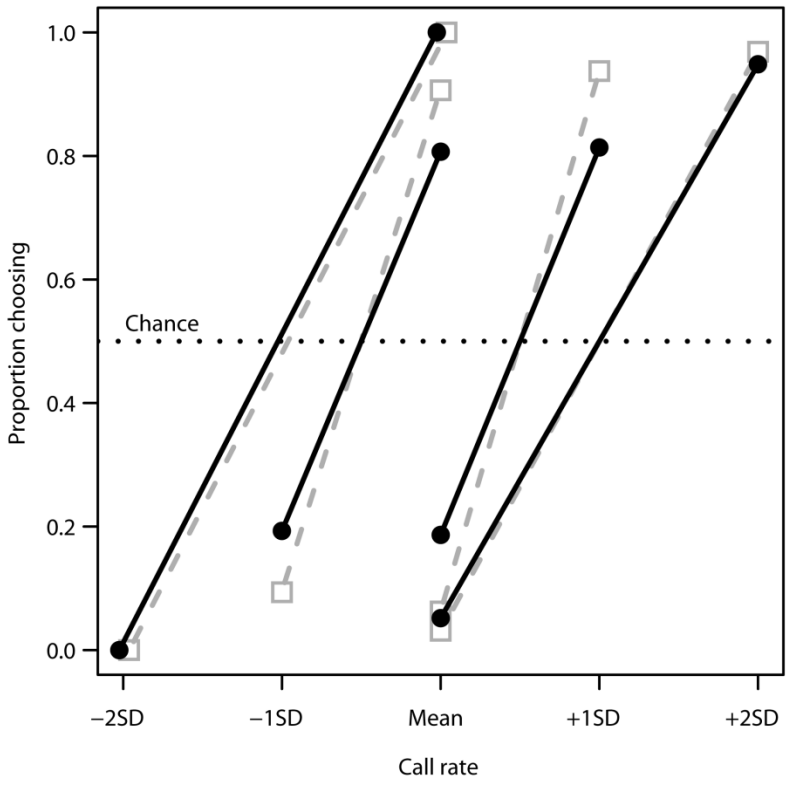
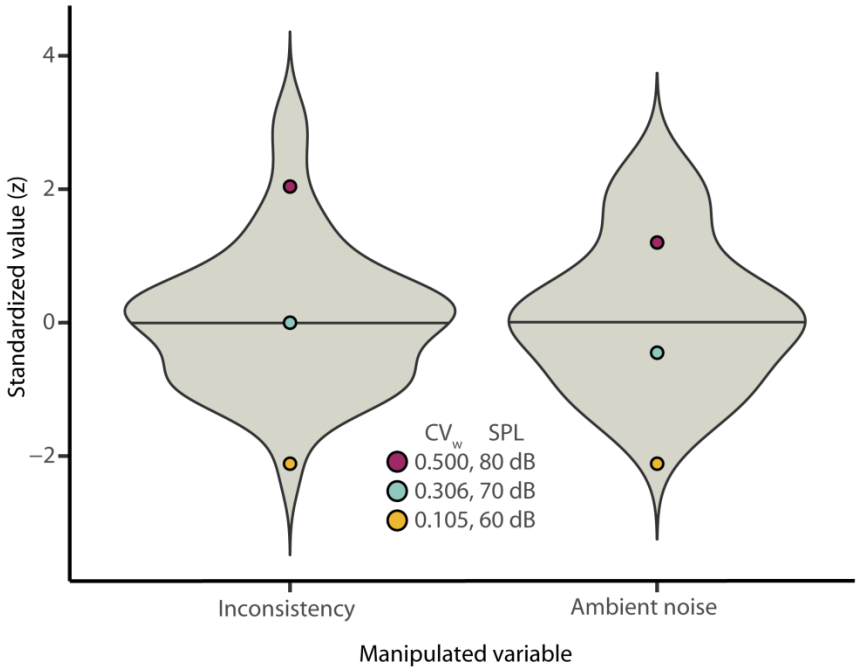
Supplementary Table 1 Results from GEE models for the effect of ambient noise (with perfectly consistent signals) and the joint effects of inconsistency and ambient noise on the probability of choosing the alternative stimulus using ambient noise as a categorical predictor.

Modeled Effects	Parameter	Estimate	Standard error	Wald X^2	*P* value
Ambient noise (with perfectly consistent signals)	Intercept	-0.790	0.057	191.0	< 0.001
	Call rate	0.113	0.005	489.7	< 0.001
	Noise at 70 dB	0.007	0.076	< 0.1	0.925
	Noise at 80 dB	0.356	0.098	13.1	< 0.001
	Call rate × noise at 70 dB	-0.0002	0.007	< 0.1	0.977
	Call rate × noise at 80 dB	-0.030	0.009	11.8	< 0.001
Inconsistency and ambient noise	Intercept	-0.634	0.076	69.4	< 0.001
	Call rate	0.094	0.007	188.5	< 0.001
	Inconsistency	0.974	0.235	17.2	< 0.001
	Noise at 70 dB	0.105	0.080	1.7	0.190
	Noise at 80 dB	0.397	0.088	20.3	< 0.001
	Call rate × noise at 70 dB	-0.010	0.007	2.1	0.143
	Call rate × noise at 80 dB	-0.033	0.007	23.0	< 0.001
	Call rate × inconsistency	-0.072	0.020	13.2	< 0.001
	Inconsistency × noise at 70 dB	0.014	0.150	< 0.1	0.927
	Inconsistency × noise at 80 dB	0.030	0.162	< 0.1	0.853



Supplementary Fig. 1 Preference functions for call rate with perfectly consistent signals in quiet are robust and consistent across studies. Each line connects two points that show the proportions of subjects that chose either the standard stimulus having a call rate, measured in calls per minute, near the population mean or the alternative stimulus with a call rate that was ±1 SD or ±2 SD away from the population mean. These data show results when perfectly consistent signals are presented in quiet and illustrate the directional preference that females of Cope's gray treefrogs express for faster call rates under optimal conditions. The filled black circles and solid black lines depict results from the present study. The open gray squares and dashed gray lines depict previously published results from equivalent two choice tests and illustrate the robust reproducibility of directional preferences for faster call rates in this species (redrawn from Ward et al.(*1*) Fig. 2A).



Supplementary Fig. 2 Manipulated levels of inconsistency and ambient noise spanned natural levels of variation in these two variables. Violin plots depict the distributions of standardized values (z scores) of inconsistency (CV_w) and ambient noise (dB SPL) in the study population. The distribution for inconsistency is based on analyses of 1,000 advertisement calls recorded from 50 actively calling males (20 calls/male)(*1*). The distribution for ambient noise is based on sound level recordings of 17 active Cope's gray treefrog choruses(*2*). Points depict the three manipulated levels of each experimental variable in relation to the natural distributions of both variables in the same standardized units. Manipulated levels of both variables were chosen to represent low, intermediate, and high values based on the range of natural variation present in the population to facilitate comparisons of the relative impacts of inconsistency and ambient noise on preference function shapes.