

Supplementary Table S3. One-way ANOVA results for each of 26 syllable acoustic features with sequence position as the outcome variable, for the songs of 43 zebra finches (Z). Syllable sequences (motifs) were divided into 5 positions. The degrees of freedom were 4 (*effect*) and 188 (*error*) for all tests. Significance criteria were adjusted for multiple tests with a Bonferroni correction (corrected $\alpha = 0.0019$). ANOVAs with *p*-values less than the corrected α are denoted with asterisks (***). Descriptions of acoustic features are provided in references cited in the Methods. (SS: sum of squares; MS: mean square; Q25: 25th quartile; Q75: 75th quartile; IQR: inter-quartile range; DF: dominant frequency)

<i>Syllable acoustic feature</i>	<i>SS_{effect}</i>	<i>SS_{error}</i>	<i>MS_{effect}</i>	<i>MS_{error}</i>	<i>F</i>	<i>p</i>
duration ***	0.125	0.453	0.031	0.002	12.968	2.4e-9
mean frequency	2.683	36.643	0.671	0.195	3.441	0.0097
standard deviation	0.441	7.565	0.110	0.040	2.740	0.030
median frequency	4.192	59.353	1.048	0.316	3.319	0.012
frequency Q25	3.153	37.040	0.788	0.197	4.001	0.0039
frequency Q75	5.259	79.221	1.315	0.421	3.120	0.016
frequency IQR	3.671	65.080	0.918	0.346	2.651	0.035
time median ***	0.035	0.177	0.009	0.001	9.255	7.6e-7
time Q25 ***	0.007	0.062	0.002	0.000	5.110	0.00063
time Q75 ***	0.078	0.288	0.020	0.002	12.757	3.3e-9
time IQR ***	0.040	0.130	0.010	0.001	14.327	3.2e-10
skew ***	65.531	359.151	15.883	1.910	8.314	3.4e-6
kurtosis ***	5618.698	41517.822	1404.674	220.839	6.361	8.0e-5
spectral entropy ***	0.052	0.461	0.013	0.002	5.344	0.00043
time entropy ***	0.009	0.095	0.002	0.001	4.425	0.0019
entropy ***	0.042	0.332	0.010	0.002	5.910	0.00017
spectral flatness ***	0.370	2.825	0.092	0.015	6.152	0.00011
mean DF ***	9.322	78.312	2.330	0.417	5.594	0.00028
minimum DF	5.346	86.344	1.337	0.459	2.910	0.023
maximum DF ***	24.513	200.849	6.128	1.068	5.736	0.00022
DF range	31.047	357.976	7.762	1.904	4.076	0.0034
modulation index ***	208.031	906.009	52.008	4.819	10.792	6.8e-8
start DF ***	43.163	213.253	10.791	1.134	9.513	5e-7
end DF	1.024	116.014	0.256	0.617	0.415	0.80
DF slope ***	3498.132	25997.536	874.533	138.285	6.324	8.5e-5
mean peak frequency	9.162	149.079	2.291	0.793	2.889	0.024