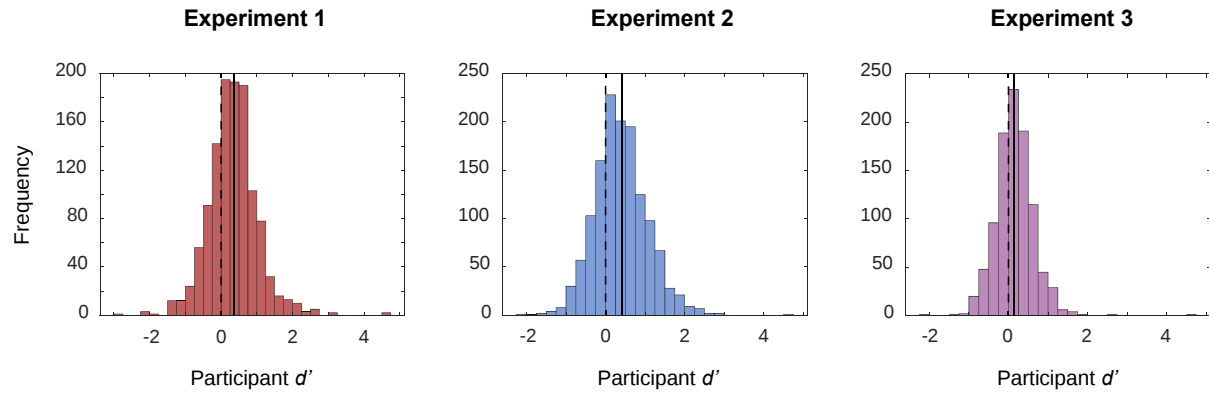
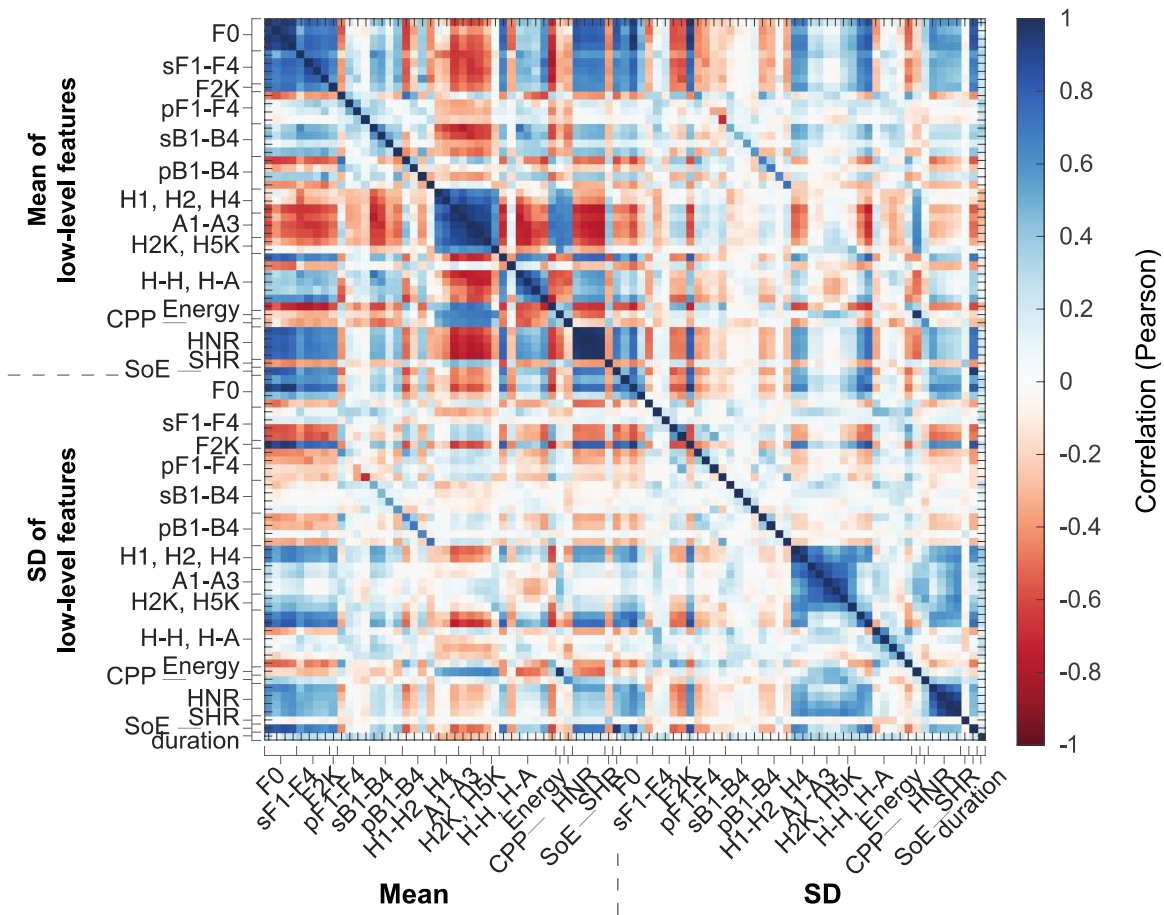

The memorability of voices is predictable and consistent across listeners

In the format provided by the
authors and unedited

<u>Figure/Table</u>	<u>Page</u>
Supplementary Figure 1: Histograms of participant d' values.	2
Supplementary Figure 2: Correlation matrix of Sentence 2 low-level features.	3
Supplementary Table 1: Stepwise regression model predicting Sentence 1 d' from Experiment 1.	4
Supplementary Table 2: Stepwise regression model predicting Sentence 2 d' from Experiment 2.	5
Supplementary Table 3: Mixed effects regression model predicting d' of both sentences from Experiment 1 and 2.	6
Supplementary Figure 3: Pearson correlation between RMS energy and stimulus d' .	10



Supplementary Figure 1. Histograms of participant d' values. Each plot shows the distribution of average d' at the participant level for each experiment. Solid lines are placed at the mean, and dashed lines are placed at 0. Two-sided t -tests confirmed that for all experiments, average participant d' was significantly greater than zero (Exp. 1: $p = 2.06 \times 10^{-55}$, Exp. 2: $p = 3.82 \times 10^{-90}$, Exp. 3: $p = 1.75 \times 10^{-23}$; see main text for statistics).



Supplementary Figure 2. Correlation matrix of Sentence 2 low-level features. Similar to Figure 4, this matrix contains mean measures of the 44 low-level acoustic features of Sentence 2 stimuli, followed by the standard deviation (SD) of the same features, followed by the “duration” measure. Many strong correlations can be seen between related features.

Sentence 1 Model

	β estimate	SE	t -statistic	p -value	95% CI
Duration	0.15	0.05	2.95	0.003	[0.05, 0.25]
SD of pB3	-0.16	0.05	-3.26	0.001	[-0.26, -0.06]
Duration: SD of pB3	-0.18	0.05	-3.44	6.5×10^{-4}	[-0.29, -0.08]
<i>Model Stats:</i>					
$F(2,374) = 12.3, p = 1.12 \times 10^{-7}$					
Adj. $R^2 = 0.08$					

Supplementary Table 1. Stepwise regression model predicting Sentence 1 d' from Experiment

1. Significant model predictors include duration of the voice clip, standard deviation of the bandwidth of the 3rd formant (B3), and their interaction. A closer look at the interaction term revealed that duration had a greater effect on memorability the lower the standard deviation of B3. The beta estimate, standard error of the estimate, two-sided t -statistic, p -value, and 95% confidence interval (CI) of all model predictors are reported. Model summary statistics, including results of a two-sided F -test and the adjusted R^2 value, are also reported.

Sentence 2 Model

	β estimate	SE	<i>t</i> -statistic	<i>p</i> -value	95% CI
shrF0	0.25	0.06	4.40	1.4×10^{-5}	[0.14, 0.37]
pF3	0.19	0.05	3.83	1.5×10^{-4}	[0.09, 0.29]
SD of sF4	0.21	0.06	3.63	3.2×10^{-4}	[0.10, 0.32]
SD of H4-H2K	-0.15	0.05	-2.88	0.004	[-0.25, -0.05]
Energy	0.26	0.05	5.31	1.9×10^{-7}	[0.17, 0.36]
shrF0: pF3	-0.14	0.05	-2.63	0.009	[-0.25, -0.04]
shrF0: SD of H4-H2K	0.12	0.05	2.43	0.02	[0.02, 0.22]
<i>Model Stats:</i>					
$F(7,370) = 10.1, p = 1.26 \times 10^{-11}$					
Adj. $R^2 = 0.15$					

Supplementary Table 2. Stepwise regression model predicting Sentence 2 d' from Experiment 2. Layout of regression table as in Supplementary Table 1. Significant model predictors include the fundamental frequency (F0), frequency of the third formant (F3), standard deviation of the frequency of the fourth formant (F4), standard deviation of the amplitude difference between the 4th harmonic and the harmonic nearest 2000 Hz (H4-H2K), and root mean square energy. The model also includes an interaction term between F0 and F3, in which F3 had a greater effect on memorability the lower the F0, and a second interaction term between F0 and SD of H4-H2K, in which SD of H4-H2K had a greater effect on memorability the higher the F0.

Combined Sentence Model

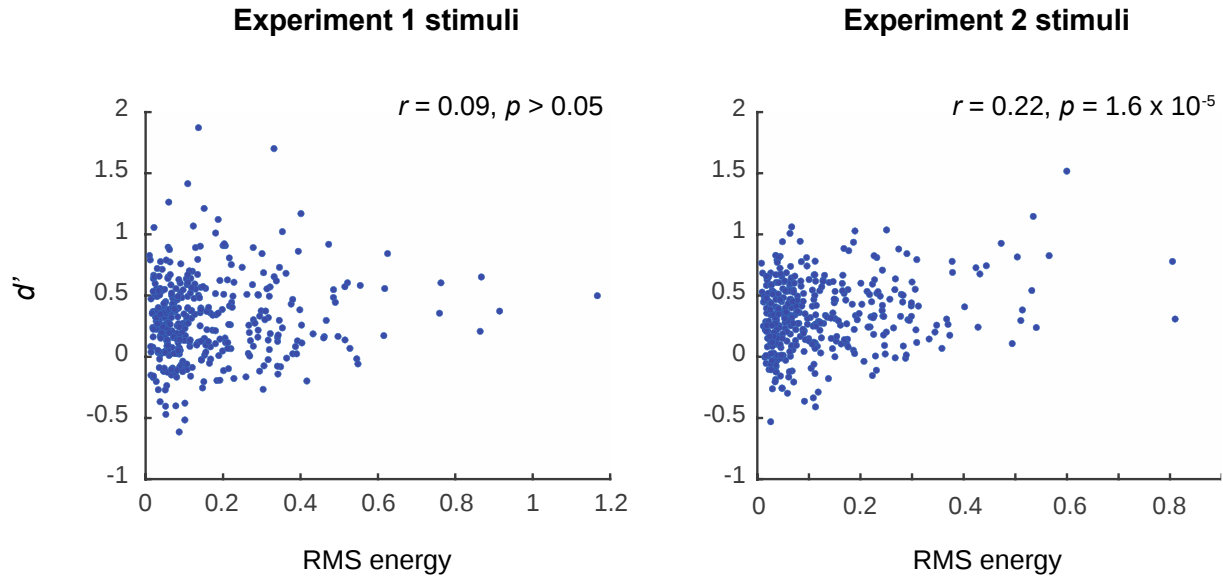
	β estimate	SE	t-statistic	p-value	95% CI
strF0	1.5	0.59	2.55	0.01	[0.35, 2.66]
sF0	0.07	0.29	0.22	0.82	[-0.51, 0.64]
pF0	-0.36	0.3	-1.2	0.23	[-0.95, 0.23]
shrF0	0.04	0.26	0.15	0.88	[-0.48, 0.55]
sF1	-0.09	0.76	-0.11	0.91	[-1.59, 1.41]
sF2	-0.95	1.03	-0.92	0.36	[-2.97, 1.08]
sF3	-0.23	0.61	-0.37	0.71	[-1.43, 0.98]
sF4	0.12	0.12	0.98	0.33	[-0.12, 0.35]
F2K	-0.03	0.07	-0.46	0.65	[-0.16, 0.1]
pF1	-0.02	0.13	-0.12	0.9	[-0.28, 0.24]
pF2	-0.01	0.1	-0.09	0.93	[-0.2, 0.18]
pF3	0.12	0.09	1.33	0.19	[-0.06, 0.29]
pF4	-0.04	0.08	-0.44	0.66	[-0.2, 0.12]
sB1	0.02	0.13	0.17	0.87	[-0.23, 0.27]
sB2	0.07	0.12	0.6	0.55	[-0.17, 0.32]
sB3	-0.01	0.09	-0.08	0.94	[-0.18, 0.16]
sB4	0.17	0.07	2.51	0.01	[0.04, 0.31]
pB1	0.01	0.08	0.11	0.91	[-0.15, 0.17]
pB2	0.09	0.07	1.25	0.21	[-0.05, 0.23]
pB3	-0.06	0.07	-0.81	0.42	[-0.2, 0.08]
pB4	0.07	0.08	0.91	0.36	[-0.08, 0.23]
H1	-3.53	1.48	-2.38	0.02	[-6.44, -0.62]
H2	-0.79	0.39	-2.02	0.04	[-1.56, -0.02]
H4	-1.04	0.33	-3.18	0.002	[-1.69, -0.4]
A1	5.39	2.6	2.08	0.04	[0.3, 10.49]
A2	-4.04	3.42	-1.18	0.24	[-10.76, 2.68]
A3	-0.4	0.87	-0.45	0.65	[-2.1, 1.31]
H2K	0.42	0.25	1.7	0.09	[-0.06, 0.91]

H5K	3.91	2.2	1.77	0.08	[-0.42, 8.23]
H1-H2	1.99	1.31	1.52	0.13	[-0.57, 4.56]
H2-H4	1.83	1.02	1.79	0.07	[-0.18, 3.83]
H1-A1	2.72	1.33	2.05	0.04	[0.11, 5.33]
H1-A2	-2.43	2.14	-1.13	0.26	[-6.63, 1.77]
H1-A3	-0.45	0.59	-0.75	0.45	[-1.61, 0.71]
H4-H2K	3.39	1.81	1.87	0.06	[-0.16, 6.93]
H2K-H5K	5.59	3.13	1.79	0.07	[-0.55, 11.74]
Energy	0.39	0.19	2.01	0.04	[0.01, 0.77]
CPP	-0.15	0.14	-1.05	0.3	[-0.42, 0.13]
HNR05	-0.12	0.57	-0.2	0.84	[-1.24, 1.01]
HNR15	-0.29	0.96	-0.3	0.76	[-2.18, 1.59]
HNR25	0.5	1.25	0.4	0.69	[-1.96, 2.95]
HNR35	0.17	0.78	0.22	0.82	[-1.35, 1.7]
SHR	0.07	0.06	1.05	0.3	[-0.06, 0.19]
SoE	0.07	0.19	0.36	0.72	[-0.3, 0.43]
SD of strF0	0.05	0.07	0.74	0.46	[-0.08, 0.18]
SD of sF0	0.59	0.22	2.69	0.01	[0.16, 1.02]
SD of pF0	-0.08	0.05	-1.62	0.1	[-0.17, 0.02]
SD of shrF0	-0.04	0.07	-0.53	0.6	[-0.18, 0.1]
SD of sF1	0.05	0.1	0.5	0.62	[-0.15, 0.25]
SD of sF2	0.04	0.09	0.39	0.7	[-0.15, 0.22]
SD of sF3	-0.03	0.08	-0.42	0.68	[-0.19, 0.12]
SD of sF4	0.13	0.06	2.21	0.03	[0.01, 0.24]
SD of F2K	-0.39	0.3	-1.29	0.2	[-0.98, 0.2]
SD of pF1	-0.07	0.12	-0.57	0.57	[-0.3, 0.16]
SD of pF2	-0.08	0.08	-0.99	0.32	[-0.23, 0.08]
SD of pF3	-0.03	0.06	-0.48	0.63	[-0.15, 0.09]
SD of pF4	-0.02	0.08	-0.23	0.82	[-0.17, 0.13]
SD of sB1	0.02	0.07	0.31	0.76	[-0.11, 0.15]
SD of sB2	-0.15	0.06	-2.67	0.01	[-0.26, -0.04]

SD of sB3	0.03	0.05	0.58	0.56	[-0.07, 0.13]
SD of sB4	-0.05	0.05	-1	0.32	[-0.15, 0.05]
SD of pB1	0.07	0.06	1.14	0.26	[-0.05, 0.19]
SD of pB2	-0.09	0.07	-1.38	0.17	[-0.22, 0.04]
SD of pB3	-0.08	0.06	-1.54	0.12	[-0.19, 0.02]
SD of pB4	-0.04	0.06	-0.56	0.58	[-0.16, 0.09]
SD of H1	0.04	0.15	0.24	0.81	[-0.26, 0.34]
SD of H2	-0.08	0.16	-0.51	0.61	[-0.4, 0.24]
SD of H4	0.31	0.13	2.33	0.02	[0.05, 0.58]
SD of A1	-0.34	0.19	-1.76	0.08	[-0.71, 0.04]
SD of A2	0.19	0.17	1.16	0.25	[-0.13, 0.52]
SD of A3	0.04	0.13	0.29	0.77	[-0.22, 0.3]
SD of H2K	-0.16	0.13	-1.26	0.21	[-0.42, 0.09]
SD of H5K	0.09	0.06	1.45	0.15	[-0.03, 0.22]
SD of H1-H2	-0.05	0.08	-0.66	0.51	[-0.21, 0.1]
SD of H2-H4	-0.06	0.1	-0.57	0.57	[-0.26, 0.14]
SD of H1-A1	0.14	0.1	1.41	0.16	[-0.06, 0.35]
SD of H1-A2	-0.01	0.07	-0.17	0.86	[-0.14, 0.12]
SD of H1-A3	-0.02	0.07	-0.31	0.75	[-0.15, 0.11]
SD of H4-H2K	-0.08	0.05	-1.51	0.13	[-0.18, 0.02]
SD of H2K-H5K	-0.08	0.07	-1.29	0.2	[-0.21, 0.04]
SD of Energy	-0.2	0.17	-1.16	0.25	[-0.53, 0.14]
SD of CPP	-0.02	0.1	-0.19	0.85	[-0.22, 0.18]
SD of HNR05	0.19	0.1	1.91	0.06	[0, 0.39]
SD of HNR15	-0.51	0.17	-3.01	0.003	[-0.84, -0.18]
SD of HNR25	0.59	0.31	1.91	0.06	[-0.02, 1.2]
SD of HNR35	-0.27	0.22	-1.25	0.21	[-0.7, 0.16]
SD of SHR	-0.06	0.05	-1.24	0.22	[-0.16, 0.04]
SD of SoE	-0.16	0.21	-0.75	0.46	[-0.57, 0.26]
Duration	0.13	0.06	2.3	0.02	[0.02, 0.24]
Female	-0.05	0.24	-0.22	0.83	[-0.53, 0.43]

Northern	-0.07	0.15	-0.47	0.64	[-0.37, 0.23]
North Midland	0.25	0.16	1.59	0.11	[-0.06, 0.55]
South Midland	0.35	0.15	2.32	0.02	[0.05, 0.65]
Southern	0.16	0.15	1.06	0.29	[-0.13, 0.45]
New York City	-0.03	0.17	-0.18	0.86	[-0.36, 0.3]
Western	0.15	0.16	0.94	0.35	[-0.16, 0.46]
Army Brat	0.01	0.19	0.05	0.96	[-0.36, 0.38]
<i>Model Stats:</i>					
Adj. $R^2 = 0.10$					

Supplementary Table 3. Mixed effects regression model predicting d' of both sentences from Experiment 1 and 2. Layout of regression table as in Supplementary Table 1 and 2. Unlike the previous fixed effects models resulting from stepwise regression, this model includes all low-level features, gender, and dialect as predictors, as well as speaker and sentence number as random intercepts. Significant predictors, in bold, include the fundamental frequency (F0), bandwidth of the fourth formant (B4), amplitude of the first, second, and fourth harmonic (H1, H2, H4), amplitude of the harmonic nearest the first formant (A1), amplitude difference between the first harmonic and the harmonic nearest the first formant (H1-A1), root mean square energy, standard deviation of F0, standard deviation of F4, standard deviation of B2, standard deviation of H4, standard deviation of the harmonic-to-noise ratio between 0 and 1500 Hz (HNR15), duration of the voice clip, and the South Midland dialect. Several of these significant predictors, including F0, energy, SD of F4, and duration, also appear in the individual sentence models.



Supplementary Figure 3. Pearson correlation between RMS energy and stimulus d' . We observed no significant correlation between energy and d' of stimuli in Exp. 1, but a significant correlation for stimuli in Exp. 2 (both two-sided).