TABLE 2.
Comparisons of Acoustic Parameters Between Emotions

Acoustic features (parameters)	Anger	Happiness	Fear	Sadness	Surprise				Comparisons
	M (*SD*)	M (*SD*)	M (*SD*)	M (*SD*)	M (*SD*)	*F*	*P*	pEta2	Post hoc-tests (Bonferroni adjusted)
Frequency-related:									
pitch	5.00 (5.39)	7.18 (6.25)	5.81 (2.31)	3.99 (5.36)	3.56 (4.14)	2.77	0.029	.068	Happiness > Surprise ($P = 0.039$)
jitter	-0.13 (0.38)	0.58 (0.38)	-0.98 (0.41)	0.32 (0.39)	2.14 (0.39)	8.24	<0.001	.178	Surprise > Anger ($P < 0.001$) Surprise > Fear ($P < 0.001$) Surprise > Sadness ($P = 0.014$)
F1Frequency	0.78 (0.34)	1.75 (0.34)	1.47 (0.37)	0.12 (0.35)	0.57 (0.35)	3.60	0.008	.086	Happiness > Sadness ($P = 0.012$)
F2Frequency	1.20 (0.35)	1.94 (0.35)	1.75 (0.37)	0.23 (0.36)	1.03 (0.36)	3.53	0.009	.085	Happiness > Sadness ($P = 0.008$) Fear > Sadness ($P = 0.038$)
F3Frequency	0.80 (0.34)	1.59 (0.34)	0.88 (0.37)	-0.10 (0.35)	0.72 (0.35)	2.95	0.022	.072	Happiness > Sadness ($P = 0.008$)
F1Bandwidth	-1.05 (1.29)	-0.96 (0.95)	-0.44 (0.94)	-0.88 (1.35)	-0.82 (0.88)	1.38	0.244		
Amplitude-related:									
shimmer	-1.03 (0.21)	-1.02 (0.21)	-1.43 (0.23)	-1.02 (0.22)	0.13 (0.22)	7.12	<0.001	.158	Surprise > Anger ($P = 0.002$), Surprise > Fear ($P < 0.001$) Surprise > Happiness ($P = 0.002$) Surprise > Sadness ($P = 0.003$)
loudness	7.16 (0.66)	6.49 (0.66)	5.09 (0.71)	2.96 (0.68)	1.24 (0.68)	13.36	<0.001	.260	Anger > Sadness ($P < 0.001$) Anger > Surprise ($P < 0.001$) Fear > Surprise ($P = 0.001$) Happiness > Sadness ($P = 0.003$) Happiness > Surprise ($P < 0.001$)
HNR	2.36 (0.52)	3.99 (0.52)	4.83 (0.55)	2.16 (0.54)	1.31 (0.54)	7.09	<0.001	.157	Fear > Anger ($P = 0.014$) Fear > Sadness ($P = 0.007$) Fear > Surprise ($P < 0.001$) Happiness > Surprise ($P = 0.004$)
alphaRatio	2.52 (0.40)	2.15 (0.40)	1.14 (0.43)	1.95 (0.41)	0.48 (0.41)	4.05	0.004	.096	Anger > Surprise ($P = 0.005$) Happiness > Surprise ($P = 0.043$)
Hammarberg	-1.57 (0.28)	-1.19 (0.28)	-0.74 (0.30)	-1.4 (0.29)	-0.35 (0.29)	2.97	0.022	.072	Surprise > Anger ($P = 0.032$)
slopeV0V500	2.53 (0.43)	2.68 (0.43)	4.90 (0.46)	2.76 (0.44)	1.81 (0.44)	6.54	<0.001	.147	Fear > Anger ($P = 0.002$) Fear > Happiness ($P = 0.006$) Fear > Sadness ($P = 0.010$) Fear > Surprise ($P < 0.001$)
slopev500V1500	1.45 (0.32)	1.57 (0.32)	1.28 (0.34)	0.35 (0.33)	0.12 (0.33)	4.21	0.003	.100	Anger > Surprise ($P = 0.042$) Happiness > Surprise ($P = 0.019$)
F1Amplitude	-0.3 (0.22)	-0.31 (0.22)	-0.19 (0.24)	-0.49 (0.23)	-0.85 (0.23)	1.30	0.274		
F2Amplitude	0.32 (0.20)	0.43 (0.20)	0.21 (0.21)	0.10 (0.20)	-0.56 (0.20)	3.68	0.007	.088	Anger > Surprise ($P = 0.024$) Happiness > Surprise ($P = 0.007$)
F3Amplitude	0.34 (0.20)	0.46 (0.20)	0.24 (0.21)	0.14 (0.21)	-0.52 (0.21)	3.54	0.009	.085	Surprise < Anger ($P = 0.030$) Happiness > Surprise ($P = 0.008$)
H1H2	1.44 (0.24)	1.61 (0.24)	0.66 (0.25)	0.48 (0.25)	1.13 (0.25)	4.00	0.004	.095	Happiness > Sadness ($P = 0.012$)
H1A3	-0.91 (0.29)	-1.19 (0.29)	-1.61 (0.30)	-1.40 (0.29)	-0.83 (0.29)	1.23	0.301		
Temporal-related:									
loudnesspeaksRate	-1.79 (0.27)	-1.35 (0.27)	-0.71 (0.28)	-1.30 (0.27)	-0.13 (0.27)	5.65	<0.001	.129	Surprise > Anger ($P < 0.001$) Surprise > Happiness ($P = 0.016$) Surprise > Sadness (P=.029)
voicedLength	0.28 (0.19)	0.31 (0.19)	0.17 (0.20)	0.35 (0.19)	-0.40 (0.19)	2.68	0.034	.066	
unvoicedLength	0.15 (0.27)	-0.05 (0.27)	-0.17 (0.28)	0.42 (0.28)	0.22 (0.28)	0.69	0.598		
pseudoyllableRate	-0.34 (0.19)	-0.22 (0.19)	-0.26 (0.20)	-0.38 (0.19)	0.44 (0.19)	3.00	0.020	.073	Surprise > Anger ($P = 0.046$) Surprise > Sadness ($P = 0.034$)

Note: F1Frequency = Frequency- formant 1, F2Frequency = Frequency-formant 2, F3Frequency = Frequency-formant 2, F1Bandwidth = Formant 1 bandwidth, HNR = Harmonics-to Noise ratio, AlphaRatio = Alpha ratio, Hammar = Hammarberg index, v0v500 = Spectral Slope V 0-500 Hz, v500v1500 = Spectral slope V 500-1500 Hz, F1Amp = Formant 1 relative energy, F2Amp = Formant 2 relative energy, F3Amp = Formant 3 relative energy, H1H2 = Harmonic difference H1-H2, H1A3 = Harmonic difference H1-A3, LoudPeak = Rate of loudness peaks, Voice = Length of continuously voiced regions, Unvoice = The length of unvoiced regions, Pseudo = Pseudo syllable rate.