Humans rely on the same rules to assess emotional valence and intensity in conspecific and dog vocalizations

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1 Summary

Humans excel at assessing conspecific emotional valence and intensity based solely on nonverbal vocal bursts that are also common in other mammals. It is not known, however, whether human listeners rely on similar acoustic cues to assess emotional content in conspecific and heterospecific vocalizations, and which acoustical parameters affect their performance.

Here, for the first time, we directly compared the emotional valence and intensity perception of dog and human nonverbal vocalizations. We revealed similar relationships between acoustic features and emotional valence and intensity ratings of human and dog vocalizations: those with shorter call lengths were rated as more positive, while those with a higher pitch were rated as more intense.

Our findings demonstrate that humans rate conspecific emotional vocalizations along basic acoustic rules, and that they apply similar rules when processing dog vocal expressions. This suggests that humans might utilize similar mental mechanisms for recognizing human and heterospecific vocal emotions.

Keywords: dog; human; vocal communication; emotion valence assessment; emotion intensity assessment; nonverbal emotion expressions

2 Introduction

Emotions are an organism's specialized mental states, shaped by natural selection, enabling them to increase fitness in certain contexts by facilitating adaptive physiological, cognitive and behavioural responses [1]. Non-linguistic vocal emotional expressions are ancient, evolutionarily conservative, easily recognized by humans [2], and less affected by cultural differences than prosody or linguistic emotional expressions [3]. Most emotional vocalizations consist of calls that are acoustically highly similar in both humans and other species [4]. These calls, as the smallest meaningful units, are the building blocks of vocal emotion expressions and their acoustic properties affect how listeners perceive their emotional content [5].

According to the 'pre-human origin' hypothesis of affective prosody, the acoustic cues of emotions in human vocalizations are innate and have strong evolutionary roots [6]. Furthermore, according to the Source-Filter Framework, the basic mechanisms of sound production are the same among human and nonhuman animals [7], suggesting that similar vocal parameters may carry information for the listeners about the caller's inner state [8]. We can therefore hypothesize that similar basic rules support vocal emotion recognition both within and across species. However, we have little information about how the wide variety of possible emotional states are encoded and perceived in vocalizations, and whether humans and non-human animals use these parameters or follow other rules when processing emotional sounds.

Dogs, due to their special status in the human society [9] and their numerous vocalization types used in various social contexts [10], can provide an excellent insight into this question. Recent studies showed that the acoustics of dog barks affects humans' inner state assessment following the MS rules [11]: low pitched barks with short inter-bark intervals were rated as aggressive, while high pitched ones with long intervals were considered playful and happy. However, it is not clear yet whether the same principle stands true across the diverse vocal repertoire. More importantly, based on the analogous vocal production mechanisms and the pristine nature of the human nonverbal vocal emotional expressions, we can predict that humans use similar features of human and dog vocalizations to assess the signaller's inner state. Thus, our aim was to compare which basic acoustical properties of dog and human vocalizations affect how human listeners assess their emotional content.

There are two main approaches to study emotions: the framework of discrete emotions is rooted in studies of human facial expressions and claims to focus on "pure" emotions. In contrast, dimensional models aim to account for gradedness found in studies of subjective experiences of emotions, and suggest that inner states can be effectively modelled as coordinates of a two or three dimensional space [12]. Following Mendl's suggestion, we adapted Russell's widely used dimensional model [13] and asked listeners to rate human and dog vocalizations along two parameters: 1) emotional valence, ranging from negative to positive, and 2) emotional intensity (we use this term as a synonym of emotional arousal as in [6]), ranging from non-intense to intense. To explore how specific acoustic cues affect the ratings of human and dog vocalizations, we measured four basic parameters for each vocal stimulus. Fundamental frequency (F0) and tonality (harmonic-to-noise ratio: HNR) are used as inner state indicators in the MS rules, and, as source related parameters, they are potentially affected by arousal and emotional quality [7]. In addition, spectral centre-of-gravity (CG) of vocalizations had been found to affect the perception of valence and arousal in human nonverbal vocalizations [5]. Finally, the average call length (CL) within a sound sample is also a commonly measured temporal parameter linked to the emotional state of the signaller [6,8].

3 Methods

Our subjects were Hungarian volunteers, recruited via the internet and through personal requesting (6 males, 33 females, age: 31±9 years, Table S3). We compiled a pool of 100-100 nonverbal vocalizations of dogs and humans from diverse social contexts and various sound types (for details see Supplementary Methods). Acoustical measurements were carried out with a semiautomatic Praat script. First, each basic vocal unit within a sound sample was marked, to be considered later on as an individual call (Figure S1, see a similar approach in [4]). We measured CL, F0, HNR, and CG in each call. Then, these call-by-call measurements were averaged within each sound sample to characterize each sample by one value of the given parameter (standard deviation across all calls was 2-5 times greater than the average within-sample standard deviation, for all acoustic variables).

A novel online based survey (http://www.inflab.bme.hu/~viktor/sr_demo/) was developed to assess how humans perceive the emotional content of vocalizations. Instead of using independent basic emotion scales, we applied a slightly modified version of Russell's two-dimensional model (Figure1). Subjects rated the emotional valence and intensity of the sounds by clicking on one point of a coordinate system. The system registered the two coordinates (valence: -50–50; intensity: 0-100), and the reaction time. After three practice trials, all 200 stimuli were presented randomly. Every sample was played once for each subject, except for 5-5 selected and randomly repeated dog and human samples used to test the reliability of subjects' responses (See Supplementary material). We also added two breaks, unrestricted in length, after the 70^{th} and the 141^{st} sound. We analysed the data of those (N=39) subjects who completed the survey for all sound samples.

To reveal the effects of acoustic parameters on the responses, multivariate linear regressions were applied. For this, we averaged the valence and intensity ratings within each sample. We used a backward elimination method to find the parameters that affected the ratings most (one dog sample was excluded due to its extreme high fundamental frequency - 3500Hz).

4 Results

The regression models showed significant relationships between emotional ratings and acoustic measures for both dog and human vocalizations. We found that valence ratings were affected by CL in both dog and human samples: the shorter the calls were within a sound sample, the more positively the sample was rated. For human sounds, lower CG values corresponded with more positive valence scores. The intensity scale was also affected by the measured acoustical parameters in both human and dog sounds. Partial regressions showed that the intensity was influenced by F0: higher pitched samples were rated as more intense in both species' vocalizations. We also found species-specific effects where the intensity ratings of dog samples were affected by the change of the other three acoustical parameters: longer and more tonal dog samples were rated as less intense, while higher CG was related to higher intensity ratings (Figure2, for statistical details see Table1).

5 Discussion

This study is the first to directly compare how humans perceive human and dog emotional vocalizations. We show that humans use similar acoustical parameters to attribute emotional valence and intensity to both human and dog vocalizations.

Our results support the pre-human origin hypothesis of affective prosody [6], and are indicative of similar mechanisms underlying the processing of human and dog vocal emotion expressions. Evolutionary ancient systems could possibly be used for processing the emotional load of nonlinguistic human and non-human vocalizations. Alternatively, humans may judge the emotional states of non-human animal sounds on the basis of perceived acoustic similarity to their own vocalisations.

Our results are in agreement with previous studies aiming to assess the acoustic rules underlying the processing of different vocalizations. However, we also reveal novel and previously unexplored relationships. Pongrácz et al. found that, in case of dog barks [11], deeper pitch and fast pulsing can be linked to higher aggression, while low pulsing and higher pitch to positive valence, and higher tonality to higher despair ratings. In contrast, our results show that, with regards to dog vocalizations, long, high pitched and tonal sounds can be linked to fearful inner states (high intensity, negative valence), long, low pitched, noisy sounds to aggressiveness (lower intensity, still negative valence), and short, pulsing sounds independent of their pitch and tonality are connected to positive inner states. Since barks are highly specialized vocalizations of dogs formed by domestication [14], no general rule can be drawn based on their acoustical structure. In our study, high diversity of calls showed clear parallels with assessing human emotional valence and intensity. Sauter et al [5] reported similar effects of fundamental frequency in intensity and spectral-centre-of-gravity in valence ratings, while, in contrast with our results, they found call length affecting the intensity ratings negatively and spectral-centre-of-gravity positively. These differences may be due to the different composition of the presented stimuli. While Sauter's recordings of 10 acted emotions originated from 4 adult vocalizers, our sample (although still cannot be fully representative) covered a wider range of call types and vocalizers resulting in higher acoustic variance and revealing different connections. Besides the basic parameters investigated here, several others may play a role in valence perception (for a review see: [8]).While our within-sample averaging approach was insensitive to the within-sample dynamics of acoustic parameters across consecutive calls, such dynamic changes may also convey relevant information about the inner state of the signaller. More studies are needed to determine whether acoustic similarities between human and dog vocalizations also reflect functional similarity in their emotional states.

To conclude, our results provide the first evidence of the use of the same basic acoustic rules in humans for the assessment of emotional valence and intensity in both human and dog vocalizations. Further comparative studies using vocalizations from a wide variety of species should reveal the existence of a common mammalian basis for emotion communication, as suggested by our results.

6 Acknowledgements

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8 Figure captions

Figure 1: Two-dimensional response plane. X and Y axes represent emotional valence and emotional intensity, respectively. The system projects the cursor's position to both axes (opaque area) to visually help the subjects to rate stimuli along both dimensions at the same time. The white X shows where the subject clicked to rate the actual sound.

Figure 2: The linear relationships between acoustic parameters and emotional scales. Full circles represent dog vocalizations, empty circles represent human vocalizations. The asterisks show significant relationship between the measures (*<0.05; **<0.01; ***<0.001)

9 Tables

Table 1: The results of the multivariate linear regressions. The table shows only the data of models obtained by backward elimination (Model lines), and the partial regressions of the remaining parameters. The grey cells show the eliminated parameters. Std β: Standardized Beta value, CL: call length, F0: fundamental frequency, HNR: Harmonic-to-Noise ratio, CG: spectral centre of gravity.

Acoustic parameters			Valence			Intensity		
Dog	Model		R^2	*F*	*p*	R^2	*F*	*p*
			0.292	37.564	0.00	0.436	17.01	0.00
	Partial regressions		*Std. β*	*t*	*p*	*Std. β*	*t*	*p*
		CL	-0.541	-6.129	0.00	-0.215	-2.214	0.03
		F0				0.320	2.423	0.02
		HNR				-0.453	-4.345	0.00
		CG				0.235	2.088	0.04
Human	Model		R^2	*F*	*p*	R^2	*F*	*p*
			0.119	6.572	0.00	0.179	21.387	0.00
	Partial regressions		*Std. β*	*t*	*p*	*Std. β*	*t*	*p*
		CL	-0.188	-1.969	0.05			
		F0				0.423	4.625	0.00
		HNR						
		CG	-0.282	-2.951	0.00			

10 Short title

Vocal emotion assessment by humans

Supplementary methods

Samples

Samples were 2 s long slices cut from original recordings, containing an average of 3.4 calls (ranging from one call to a series of twelve calls). The samples' time structure and the call series contained were left in their original natural state and were normalized to -26dB RMS, downsampled to 22.5kHz, and saved as 16bit PCM wav files.

We aimed to cover the vocal repertoire of the dog as comprehensively as possible; therefore we picked vocalizations collected from various contexts and representing various vocalization types from the dog sound database of the Family Dog Project (Table S1).

The human nonverbal vocalizations were collected from available databases used in earlier studies to assess emotional expressions [1–3]. These contained both natural and acted expressions, respiratory sounds (e.g. cough, retch), and nonsense babbling (Table S1).

Acoustical measures

During sound analysis, we first applied Praat's built-in automatic utterance finder function, then we checked whether the algorithm determined the call borders properly, and modified if necessary. These borders were used to measure the call lengths. Due to the diverse nature of the sounds, we inspected the spectrogram of every sample and set a possible pitch floor and ceiling for each sample to optimize the fundamental frequency searching algorithm (autocorrelation method). Finally, we applied Praat's cross-correlation based harmonicity function to extract the tonality of each call.

Questionnaire

The webpage of the survey can be found following this link:
http://www.inflab.bme.hu/~viktor/soundrating/index.html

(Please note that the survey at the time of the paper's submission is still active and used for data collection, thus the responses might be used in a new study)

Data analysis

We did not find any differences in either the valence, or the intensity scores between the first and second presentations of the ten repeated samples per subject (valence: $t(38)=0.694$, $p=0.492$; intensity: $t(38)=-0.247$, $p=0.806$), therefore, all second presentations were excluded from the analysis. To avoid the distorting effect of responses with unnaturally long reaction times, trials with reaction times from the upper 5% quartile (>11.3s) were filtered out.

To compare the variances in subjects' responses to dog vs. human vocalizations, we averaged and calculated the standard deviation of the valence and intensity ratings and the reaction times both per sound sample (used for Mann-Whitney U tests) and per subject (for Wilcoxon signed-rank tests).

In order to test the effect of the subjects' dog ownership, ratings within dog and human sounds were averaged for each individual and the range of responses were given by their standard deviation. For this we pooled together the subjects who owned a dog at the time of responding with those who used to have a dog before and considered themselves as owners (N=23).Non-owners were the subjects who had never owned a dog or only their family had one (N=16). Mann-Whitney U tests were used to compare the responses of dog owners and non-dog owners and also to test for possible gender differences.

To validate listeners' valence ratings of dog vocalizations, we grouped the vocalizations with unambiguously valenced contexts (15 out of 16 independent raters) into two groups: threatening, guarding, pup before feeding, bored and separation were classified as negative (N=32) vs. greeting, petting, asking for toy and play as positive (N=33) contexts (see Supplementary Table4). We compared the valence ratings between the two groups with Mann-Whitney U test.

As barks are the most prominent vocalizations of dogs, and 27% of our sample was this type of vocalization, we wanted to test whether the dominance of barks affect our results. For this we ran the same linear regression analysis as in the main study after excluding barks from the sample.

Supplementary results

The emotional ratings of the sound samples also reflected some species-specific differences, (Table S1). Subjects responded slower to dog vocalizations (U= 1865; $p<0.001$) and found them more intense (U=2434, $p<0.001$), while there was no difference between the human and dog vocalizations' valence scores (U=5415, p=0.31). The within sample standard deviation of the dog vocalizations' valence ratings was significantly higher (U=2474; $p<0.001$), whereas the variance of their intensity ratings did not differ (U=5259.5; p=0.526). In contrast, human valence and intensity ratings were both significantly more variable than the ratings of dog stimuli (N=39; valence: W=67; $p<0.001$; intensity: W=121; $p<0.001$).

No gender difference was found (averages: human - valence: U=106, p=0.805; intensity: U=96, p=0.924; dog - valence: U= 96, p= 0.924; intensity: U=87; p=0.662; range: human - valence: U=67, p=0.227; intensity: U=115, p=0.556; dog - valence: U= 54, p= 0.083; intensity: U=63; p=0.171).

Dog ownership had no influence on the average or range of the ratings (averages: human - valence: U=203, p=0.601; intensity: U=139, p=0.207; dog - valence: U= 201, p= 0.641; intensity: U=217; p=0.358; range: human - valence: U=149, p=0.329; intensity: U=144.5, p=0.263; dog - valence: U= 171, p= 0.724; intensity: U=176; p=0.832), or on the reaction times (human: U=150; p=0.343; dog: U=168; p=0.662).

The comparison between the dog sounds originating from social contexts with assumed positive and negative valence showed significant difference in their valence ratings: dog vocalizations recorded in negative contexts were also rated more negative by our subjects (U=789; p=0.001).

Finally our second regression analysis showed that the same acoustical parameters affected the valence ($R^2=0.291$; F=27.718; $p<0.001$; partial regression: CL: Std. $\beta=-0.55$; t=5.265; $p<0.001$) and intensity ($R^2=0.432$; F=27.718; $p<0.001$; partial regressions: CL: Std. $\beta=-0.343$; t=3.089; p=0.003; F0: Std. $\beta=0.457$; t=3.452; p=0.001; HNR: Std. $\beta=-0.46$; t=3.64; p=0.001) ratings after removing dog barks from the sample, with the exception of spectral-centre-of-gravity.

Supplementary discussion

Note that only 15% of the participants were male. This bias most probably arose due to females' higher willingness to participate in studies about pets, as also noted by Gosling and Bonnenburg [4]. The lack of control over subject selection is a possible unavoidable drawback of the open, online questionnaire method applied here. However, despite the possible gender differences in emotion processing (for review see e.g. [5]) we found no gender effect here, suggesting that our results are not compromised by the gender-biased sample.

Subjects gave significantly more negative ratings to dog vocalizations recorded from contexts such as guarding food from another dog, or strange human standing at the fence of the household, than to dog vocalizations recorded in playful or greeting situations. This finding confirms earlier reports that humans tend to attribute adequate inner states to heterospecific vocalizers [6,7].

The fact that the relationship between the call length and fundamental frequency of dog vocalizations and their valence and intensity ratings were the same after excluding dog barks suggests that the pattern we found is not just simply caused by the dominance of barks in our sample , but it is generally true across multiple vocalization types.

The systematic differences in emotional valence and intensity ratings between human and dog stimuli add to the body of evidence showing that the human auditory processing is tuned for conspecific voices [3]. Human valence and human intensity scores were more variable across stimuli, but human valence scores were also more consistent within stimulus, across subjects. These, together with the finding that subjects rated human vocalizations with a faster latency, suggest that humans could assess the conspecific vocal emotional load more easily than that of dogs. The finding that there is no strong effect of dog ownership is also in line with earlier results based on dog barks. Humans recognize dog barks with similar success independently of their prior knowledge about dogs, and the emotional ratings of dog owners and non-dog owners do not differ either [6,8]. This provides further support to the innate nature of emotional valence and intensity perception and to the ‘pre-human origin’ hypothesis [9].

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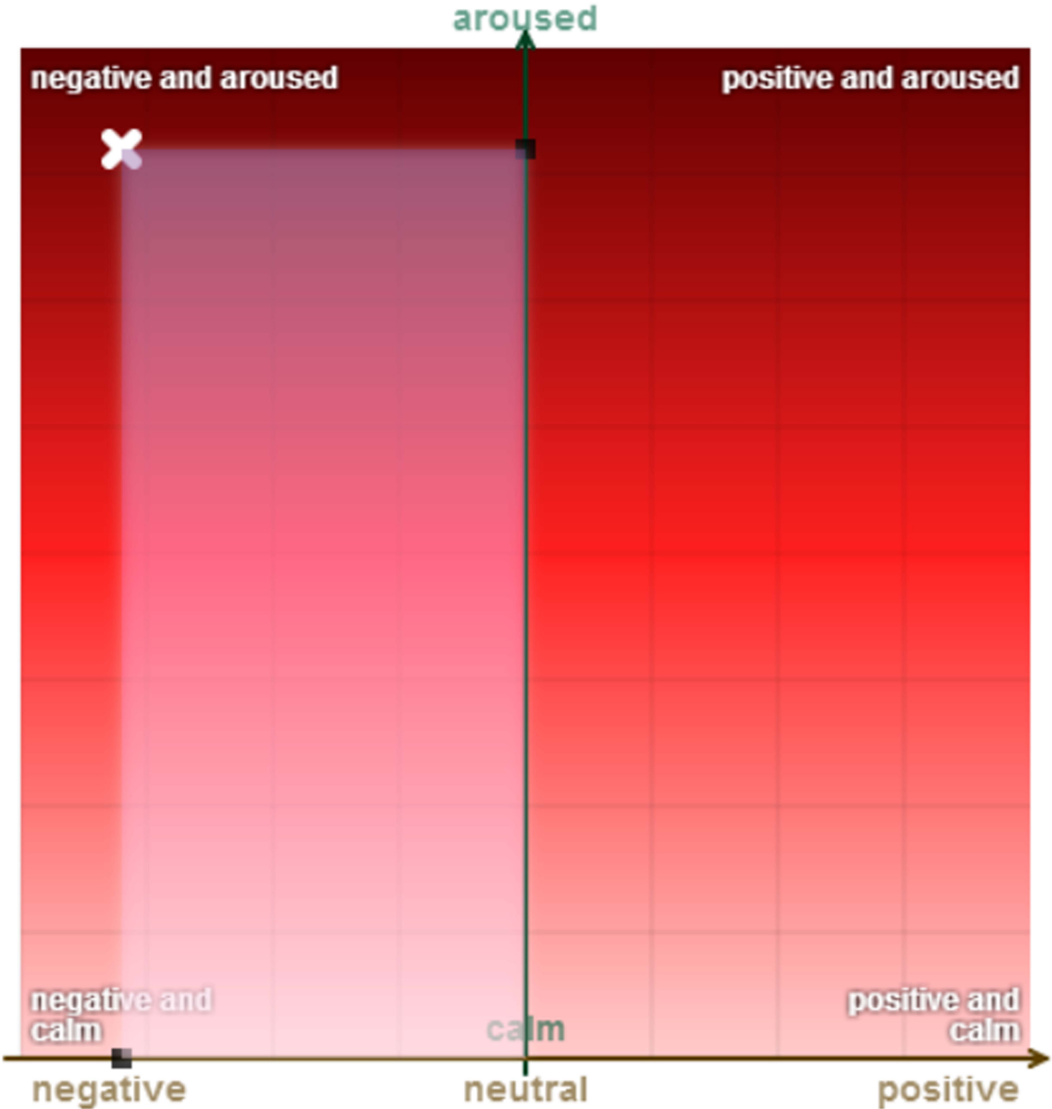
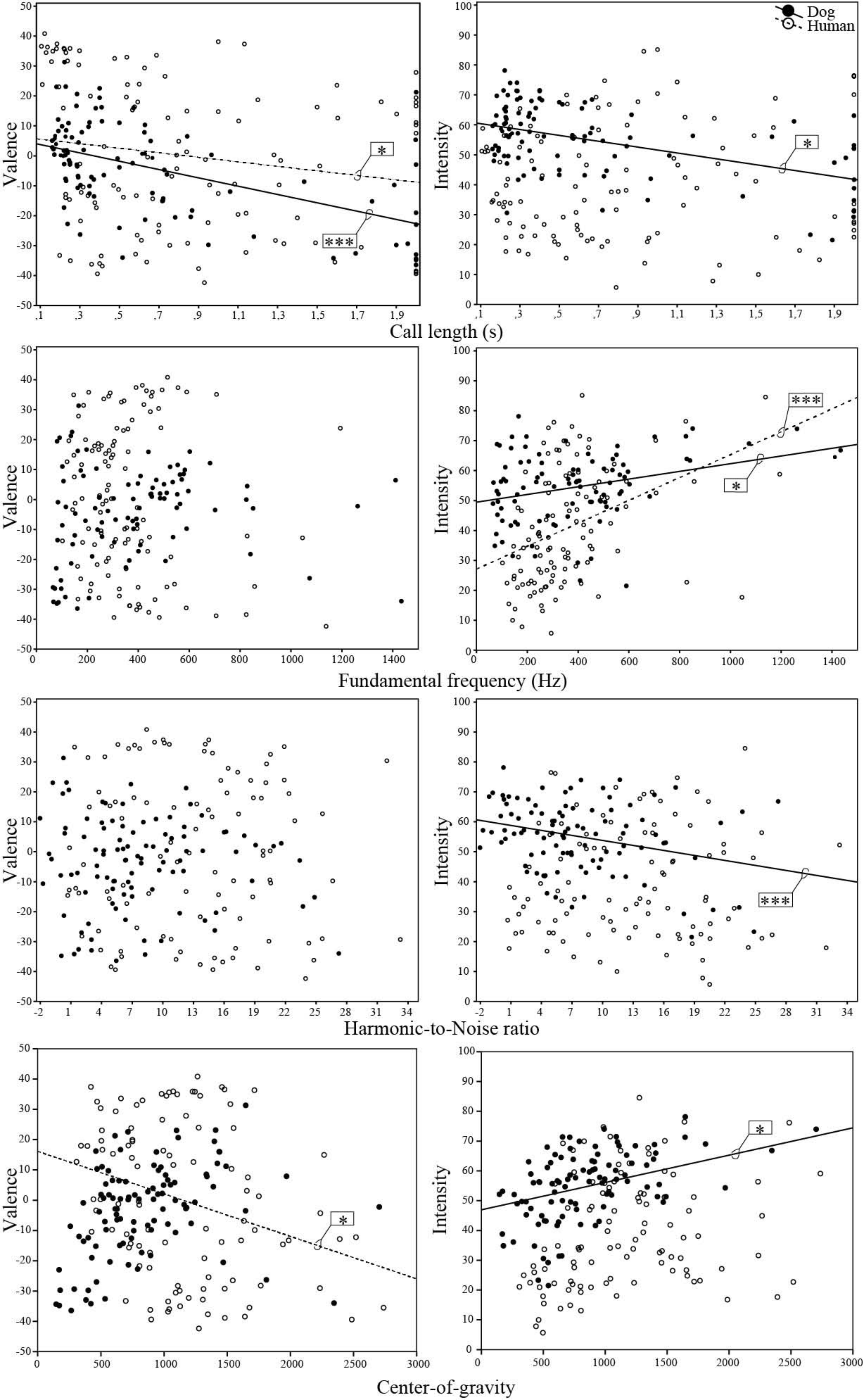

aroused
negative and aroused
positive and aroused
negative and calm
positive and calm
calm
negative
neutral
positive


Dog
Human
Valence
Intensity
Call length (s)
Fundamental frequency (Hz)
Harmonic-to-Noise ratio
Center-of-gravity
*
***

Species	Call type	number of samples
Dog	Bark	27
Dog	Growl	24
Dog	Grunt	11
Dog	Moan	17
Dog	Pant	3
Dog	Whine	14
Dog	Yelp	4
Human	Cough	10
Human	Cry	16
Human	Erotic moan	8
Human	General	21
Human	Human moan	9
Human	Laugh	16
Human	Retch	3
Human	Scream	4
Human	Shout	6
Human	Sigh	5
Human	Yawn	2

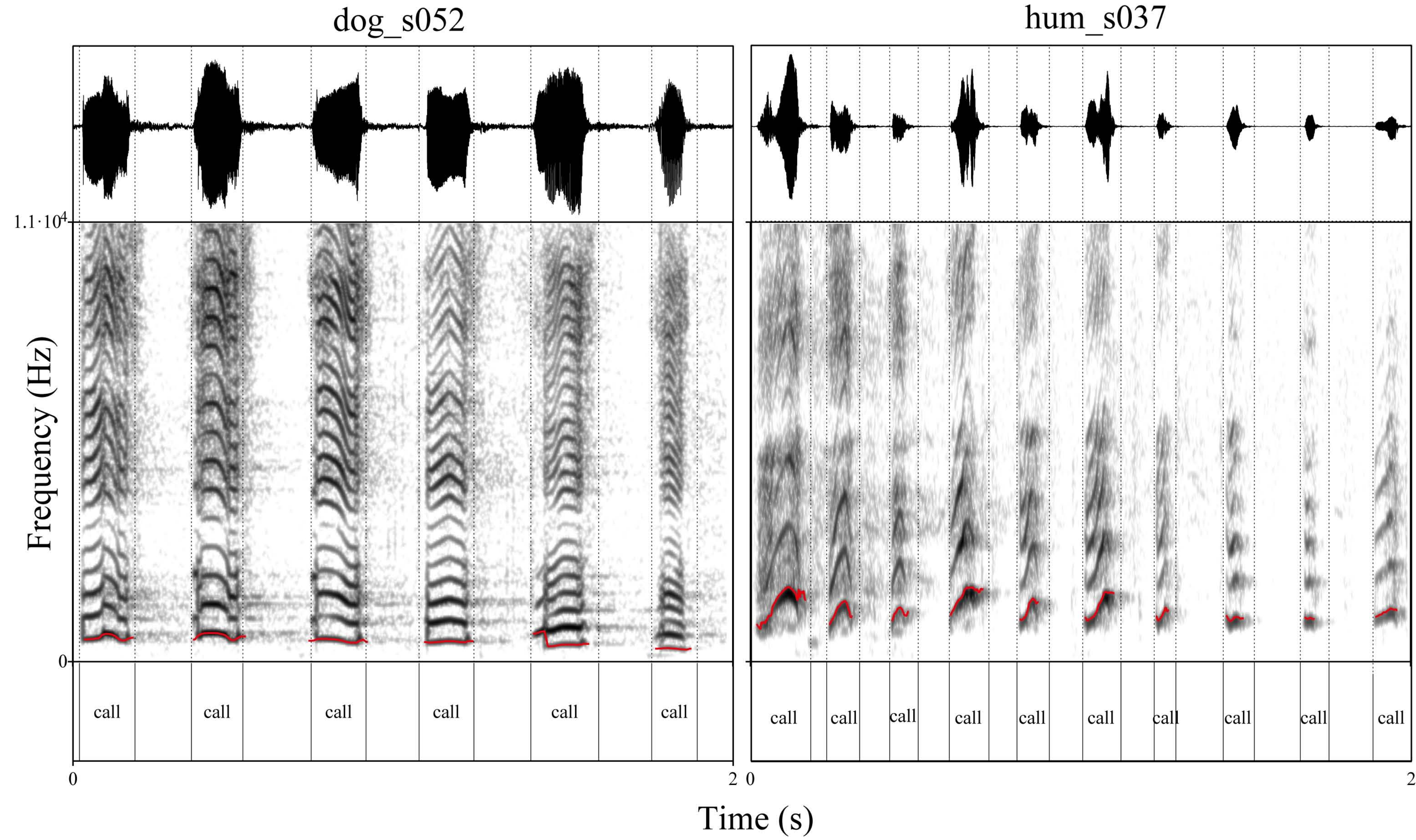
context	assumed valence	aggreement
asking for toy	*+*	*94%*
begging for food	-	63%
before walk	+	88%
bored	*-*	*94%*
before snow shoveling	-	75%
foodguarding	*-*	*94%*
greeting	*+*	*100%*
neutral	+	75%
petting	*+*	*100%*
play	*+*	*100%*
pup before feeding	-	69%
separation	*-*	*94%*
dynamic threatening	*-*	*100%*
asked to speak	+	63%
stranger at fence	*-*	*100%*
threatening stranger	*-*	*100%*

sound ID	Call type	Call number	Call length (s)		Fundamental frequency (Hz)		Harmonic-to-Noise ratio		Spectral Centre of Gravity	Valence		Intensity		Reaction time	
			Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation		Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation
dog_s001	Bark	3	0,30	0,03	374,33	11,45	5,27	0,96	898,90	-9,80	24,60	60,31	28,28	5,52	1,89
dog_s002	Growl	2	0,95	0,63	72,07	3,81	8,18	3,93	178,07	-29,73	18,99	34,86	24,23	5,19	1,53
dog_s003	Growl	1	2,00		86,35		8,26		145,97	-34,35	18,21	52,14	33,33	4,45	1,79
dog_s004	Bark	4	0,18	0,02	550,04	16,19	16,19	1,69	1029,41	6,68	25,27	53,03	24,70	5,18	1,61
dog_s005	Growl	3	0,37	0,09	undefined		0,01	1,09	1030,46	-7,89	30,96	61,92	22,66	5,09	2,53
dog_s006	Bark	2	0,16	0,00	500,74	5,40	12,07	1,01	1051,46	5,09	18,02	51,91	27,18	5,31	1,84
dog_s007	Bark	5	0,24	0,08	426,73	125,79	6,11	1,22	720,77	0,97	25,28	49,55	22,44	5,39	2,04
dog_s008	Bark	4	0,23	0,04	613,17	22,20	6,06	2,35	1335,16	8,53	24,83	61,94	22,47	5,19	1,84
dog_s009	Grunt	4	0,50	0,25	86,16	1,11	2,58	2,25	509,24	11,03	24,75	43,26	27,94	4,81	1,74
dog_s010	Moan	4	0,38	0,23	419,34	46,72	12,71	3,76	939,71	15,91	24,51	65,58	24,73	5,00	1,84
dog_s011	Grunt	6	0,29	0,13	undefined		-1,74	0,68	1090,86	-10,67	26,35	57,17	28,00	5,04	1,71
dog_s012	Growl	3	0,63	0,34	122,02	5,37	0,31	1,02	718,35	-21,34	26,69	67,51	23,66	4,47	1,87
dog_s013	Bark	4	0,22	0,04	503,02	135,78	6,38	0,87	1173,07	-2,76	24,30	65,29	22,52	5,40	2,36
dog_s014	Grunt	6	0,26	0,09	109,68	1,08	0,39	1,16	697,25	6,14	24,81	57,17	26,72	5,57	1,80
dog_s015	Moan	1	2,00		217,06		5,39		428,51	-19,00	21,02	34,78	24,17	5,52	2,15
dog_s016	Bark	4	0,18	0,01	436,62	35,76	5,78	0,48	912,23	3,92	23,01	63,06	23,30	4,79	2,00
dog_s017	Growl	4	0,28	0,06	197,15	19,95	4,09	0,79	655,77	16,68	26,43	71,37	21,32	5,22	2,35
dog_s018	Bark	2	0,23	0,02	443,02	3,69	20,84	2,89	501,52	1,86	18,32	30,57	26,53	5,87	1,62
dog_s019	Growl	1	2,00		77,79		14,12		169,58	-22,97	26,66	38,81	29,59	5,01	1,93
dog_s020	Whine	2	0,78	0,35	506,14	24,50	11,65	5,54	1468,75	-20,53	20,61	49,50	28,55	5,10	1,76
dog_s021	Bark	2	0,32	0,02	486,04	3,85	8,36	0,50	950,83	1,97	14,51	43,03	23,70	5,29	2,31
dog_s022	Moan	2	0,73	0,04	152,75	24,96	3,54	2,16	623,38	-4,69	20,35	42,81	21,57	5,34	1,86
dog_s023	Bark	4	0,22	0,03	393,92	61,75	5,07	2,17	822,99	-17,29	22,41	60,24	24,91	4,95	1,84
dog_s024	Bark	3	0,17	0,01	484,19	7,06	10,36	2,90	654,77	0,42	15,83	50,00	28,58	5,10	1,90
dog_s025	Moan	1	1,43		99,84	0,00	4,54	0,00	258,16	-8,62	26,59	36,11	24,64	5,88	1,92
dog_s026	Whine	2	0,86	0,02	365,91	25,00	15,21	1,67	572,08	-20,38	23,91	55,70	28,15	5,83	2,25
dog_s027	Grunt	9	0,22	0,05	165,61	10,39	0,27	0,59	1646,56	31,32	18,59	78,14	21,19	4,21	1,89
dog_s028	Yelp	6	0,22	0,03	796,44	139,06	17,17	4,08	1089,48	-0,03	26,23	71,47	25,49	5,59	2,14
dog_s029	Growl	1	1,06		149,96		6,92		327,48	-11,97	27,80	49,74	25,91	5,11	1,89
dog_s030	Bark	3	0,29	0,05	299,75	19,20	10,99	1,33	921,52	-6,75	18,51	41,64	25,13	5,32	1,77
dog_s031	Moan	4	0,50	0,17	268,41	16,43	7,88	2,19	487,30	-3,83	26,96	44,94	27,54	5,40	1,69
dog_s032	Growl	1	2,00		159,34		5,44		265,65	-36,42	12,83	52,05	32,18	4,90	2,36
dog_s033	Growl	1	2,00		152,97		3,01		382,17	-32,95	16,13	63,05	27,94	4,75	1,96
dog_s034	Grunt	8	0,23	0,05	undefined		0,57	2,03	1408,36	23,14	21,87	65,97	26,71	4,85	2,31
dog_s035	Pant	4	0,35	0,12	undefined		-2,03	0,57	1491,21	11,18	17,39	51,35	27,27	5,40	1,86
dog_s036	Growl	3	0,62	0,09	246,93	4,23	3,42	0,83	595,85	0,68	29,95	65,46	25,11	4,74	2,01
dog_s037	Yelp	2	0,84	0,05	473,25	21,85	16,00	1,44	591,71	6,53	24,76	52,86	25,83	5,94	2,45
dog_s038	Grunt	5	0,40	0,07	75,04	7,44	0,21	0,89	1398,26	19,42	23,83	68,83	23,58	5,18	2,08
dog_s039	Whine	2	0,87	0,35	840,73	19,04	23,72	5,48	893,96	-18,25	25,70	63,36	28,00	5,40	1,89
dog_s040	Grunt	2	0,49	0,04	84,58	1,62	4,19	0,53	360,87	-0,89	31,18	49,64	27,57	5,55	2,08
dog_s041	Yelp	6	0,28	0,05	720,89	166,31	11,69	2,44	991,35	-2,95	28,84	74,05	23,74	5,23	2,18
dog_s042	Bark	4	0,24	0,03	545,57	45,95	9,33	0,84	975,36	10,92	18,41	55,94	25,60	5,35	2,23
dog_s043	Pant	11	0,18	0,04	109,30	0,00	-0,78	0,39	1098,99	23,05	18,06	69,68	27,30	5,13	2,26
dog_s044	Grunt	7	0,29	0,05	114,60	0,00	0,80	1,35	1111,99	20,64	23,82	68,44	28,50	5,35	2,47
dog_s045	Bark	4	0,20	0,03	380,77	6,23	12,32	4,06	716,11	0,18	23,18	58,61	26,27	5,51	1,73
dog_s046	Whine	8	0,25	0,05	975,23	549,08	7,88	2,86	2703,48	-2,23	33,06	73,97	24,85	5,62	2,21
dog_s047	Bark	3	0,23	0,02	376,09	44,71	3,58	0,69	870,91	-8,31	21,60	56,43	24,18	4,88	1,79
dog_s048	Whine	1	1,89		590,60		18,74		541,51	-9,74	24,68	21,50	20,07	5,74	2,17
dog_s049	Growl	5	0,40	0,14	142,82	9,87	6,87	3,28	714,21	22,56	22,97	71,28	24,94	4,92	2,11
dog_s050	Growl	1	1,58		65,49		1,32		420,83	-34,17	16,78	56,00	30,20	4,36	1,79
dog_s051	Growl	1	1,69		113,21		1,75		533,15	-32,58	21,25	61,14	25,28	4,49	2,04
dog_s052	Whine	6	0,17	0,02	513,49	95,01	19,08	3,46	986,42	2,22	21,24	47,94	31,37	5,38	1,70
dog_s053	Whine	3	0,52	0,18	1428,18	86,71	27,22	3,68	2345,67	-33,97	17,84	66,82	27,51	5,27	2,07
dog_s054	Bark	4	0,16	0,00	581,24	14,17	21,59	1,14	872,01	2,80	20,04	59,63	24,20	5,27	1,86
dog_s055	Growl	1	1,18		90,79		2,03		465,71	-27,00	20,94	56,32	27,46	4,81	2,31
dog_s056	Bark	5	0,24	0,02	351,14	82,97	6,34	1,82	791,16	-22,73	23,38	69,92	19,40	4,75	1,97
dog_s057	Bark	4	0,29	0,07	389,44	70,22	6,95	1,96	760,12	-7,17	18,58	48,97	26,26	5,75	1,81
dog_s058	Growl	1	1,90		97,37		9,84		400,04	-29,78	18,51	47,38	29,46	5,03	2,10
dog_s059	Bark	7	0,25	0,07	405,20	43,28	6,32	2,46	613,99	-2,86	23,69	56,63	24,93	4,71	1,89
dog_s060	Moan	3	0,66	0,25	346,38	10,64	2,29	0,21	996,63	4,97	29,10	57,23	26,40	5,00	2,03
dog_s061	Moan	3	0,57	0,13	582,01	110,31	6,07	1,66	1436,34	16,00	23,63	55,43	26,57	5,51	2,06
dog_s062	Whine	1	1,78		406,14		24,85		459,97	-15,20	32,15	23,29	23,58	5,45	1,79
dog_s063	Moan	1	2,00		134,53		12,28		612,17	21,26	19,86	41,66	30,37	5,33	1,82
dog_s064	Bark	6	0,17	0,03	549,02	77,21	10,25	3,13	1084,42	5,81	21,14	60,17	26,04	4,85	2,21
dog_s065	Growl	1	1,96		51,12		3,01		288,95	-29,35	22,51	48,97	31,09	4,85	2,02
dog_s066	Moan	4	0,41	0,17	137,43	53,08	4,38	1,51	460,72	16,22	21,34	42,05	24,71	5,11	1,91
dog_s067	Growl	2	0,72	0,01	284,29	19,08	6,19	1,50	676,14	-14,26	24,25	54,67	25,55	5,29	2,28
dog_s068	Whine	4	0,41	0,19	556,01	67,90	10,69	3,08	920,68	11,54	27,53	68,22	23,71	4,95	1,40
dog_s069	Grunt	5	0,34	0,05	178,71	24,86	4,03	1,85	559,72	9,70	26,19	62,76	26,92	4,68	1,67
dog_s070	Bark	3	0,23	0,03	495,03	18,07	13,91	3,09	917,12	0,30	22,73	60,62	23,39	5,38	2,16
dog_s071	Moan	2	0,74	0,01	346,74	25,31	9,65	2,53	654,61	-6,17	25,15	44,66	25,60	5,36	1,93
dog_s072	Moan	1	2,00		230,69		23,40		628,13	-2,92	25,64	31,39	25,43	5,92	1,94
dog_s073	Growl	1	0,72		142,70		6,99		649,29	-14,94	22,67	31,47	25,03	5,36	2,21
dog_s074	Moan	2	0,97	0,48	280,49	0,00	4,21	1,46	801,54	0,34	25,34	42,00	25,25	5,85	1,66
dog_s075	Whine	4	0,42	0,14	392,44	34,57	12,02	4,76	627,70	-6,45	28,96	56,15	26,87	5,43	1,78
dog_s076	Whine	4	0,23	0,08	1607,28	2009,48	7,09	4,09	643,82	6,43	27,63	64,51	24,47	4,73	1,96
dog_s077	Bark	4	0,29	0,14	731,53	73,73	10,04	1,48	1645,26	-3,51	26,89	71,30	23,85	4,81	2,00
dog_s078	Bark	3	0,22	0,02	452,55	11,01	6,56	0,96	564,44	1,78	21,87	49,58	22,92	5,21	2,04
dog_s079	Whine	5	0,30	0,15	1074,59	144,43	15,09	3,69	1810,13	-26,29	25,11	69,03	24,71	5,73	2,09
dog_s080	Growl	4	0,35	0,09	215,90	29,96	6,61	3,68	760,26	-10,08	26,24	57,69	25,58	4,91	1,82
dog_s081	Pant	6	0,31	0,06	184,47	34,99	0,46	0,44	1969,52	7,89	21,35	54,30	33,49	5,01	1,58
dog_s082	Bark	3	0,19	0,01	552,73	3,85	12,10	1,52	1012,58	8,30	20,92	52,24	25,24	5,05	2,20
dog_s083	Whine	5	0,35	0,05	694,98	205,43	8,97	1,79	741,79	-12,57	30,00	63,86	28,60	4,85	2,01
dog_s084	Growl	5	0,23	0,11	327,81	112,57	1,04	0,58	1214,68	-7,67	27,15	62,55	26,28	5,39	2,16
dog_s085	Moan	6	0,19	0,12	679,53	248,40	13,81	4,83	1421,91	12,15	24,21	51,35	26,72	5,51	2,13
dog_s086	Growl	5	0,37	0,23	82,64	8,05	2,42	1,77	363,07	-13,56	26,68	45,25	19,85	5,31	1,50
dog_s087	Grunt	3	0,67	0,18	undefined		-1,14	0,89	1243,88	-0,69	27,89	68,42	27,08	5,46	1,97
dog_s088	Grunt	3	0,57	0,15	160,11	75,18	-0,90	0,99	1178,70	-2,46	25,94	56,51	28,28	5,27	1,97
dog_s089	Whine	4	0,50	0,03	3591,86	25,44	2,71	1,71	4398,49	-24,06	27,62	67,53	28,29	5,02	2,26
dog_s090	Bark	3	0,23	0,02	545,11	2,75	9,06	1,06	768,64	1,73	17,76	47,06	24,34	5,05	1,84
dog_s091	Bark	4	0,21	0,01	580,69	53,25	8,09	2,08	956,26	9,89	17,93	57,82	31,37	5,36	1,90
dog_s092	Moan	3	0,63	0,04	429,99	193,20	4,23	1,96	1339,44	7,84	24,19	54,58	31,69	5,68	1,93
dog_s093	Growl	5	0,36	0,07	186,61	16,06	1,63	0,51	531,69	-7,08	27,05	67,97	24,19	5,01	1,89
dog_s094	Moan	2	0,63	0,01	349,10	9,03	5,57	1,54	521,84	0,70	27,33	43,14	28,32	5,43	1,97
dog_s095	Bark	6	0,25	0,03	674,67	50,17	7,53	1,64	1159,34	-1,47	24,28	58,61	25,87	4,94	1,88
dog_s096	Moan	1	2,00		399,37		17,97		539,11	5,35	20,61	29,24	25,89	5,73	1,55
dog_s097	Growl	3	0,67	0,10	271,04	5,27	5,09	1,04	399,57	-12,41	28,76	58,94	29,06	5,18	2,09
dog_s098	Moan	3	0,63	0,13	285,62	23,16	5,06	1,34	469,95	10,34	26,81	56,18	27,22	5,52	1,94
dog_s099	Yelp	3	0,29	0,05	671,35	36,32	10,85	4,79	1390,17	4,47	25,44	63,92	30,24	4,88	1,70
dog_s100	Growl	1	2,00		112,67		0,07		171,06	-34,77	19,42	53,15	31,16	4,92	2,19

hum_s001	Laugh	7	0,11	0,03	600,40	103,01	9,18	4,40	1478,64	36,59	11,43	51,21	33,29	4,09	1,37
hum_s002	Erotic moan	2	0,69	0,11	264,71	15,48	14,05	1,45	658,97	33,59	14,13	69,24	29,50	5,14	2,03
hum_s003	Erotic moan	2	0,54	0,19	315,82	22,74	15,67	5,19	740,09	23,81	28,05	66,95	29,83	4,82	1,33
hum_s004	Erotic moan	2	0,54	0,19	342,73	1,30	14,86	4,09	829,60	32,95	22,52	69,95	28,39	5,03	2,16
hum_s005	Erotic moan	2	0,73	0,01	377,25	2,91	17,33	3,51	985,91	26,56	29,75	74,72	23,76	5,08	2,09
hum_s006	Erotic moan	1	2,00		228,78		19,64		393,61	17,89	25,00	22,47	28,68	4,70	2,08
hum_s007	Erotic moan	1	2,00		241,47		5,35		512,18	16,65	21,10	27,05	30,20	5,49	2,04
hum_s008	Erotic moan	4	0,35	0,04	200,03	21,04	3,74	3,11	749,51	19,95	25,02	59,57	34,59	5,60	2,24
hum_s009	Erotic moan	2	0,57	0,17	263,66	0,38	4,83	2,33	595,95	15,32	25,49	55,68	33,08	4,81	1,71
hum_s010	Laugh	8	0,22	0,09	454,44	52,27	14,16	3,54	1072,71	35,92	14,66	56,41	31,18	4,73	1,65
hum_s011	Laugh	12	0,12	0,03	518,55	169,22	8,41	4,69	1265,20	40,82	9,92	50,95	30,21	4,26	1,93
hum_s012	Laugh	9	0,16	0,05	160,75	14,52	1,35	2,07	1104,23	34,95	16,99	34,72	29,58	4,58	2,20
hum_s013	Laugh	11	0,16	0,09	183,01	37,55	2,67	3,24	783,91	31,45	21,19	34,16	26,49	4,20	1,72
hum_s014	Cough	3	0,50	0,13	256,33	32,09	6,12	1,42	704,38	-11,22	16,68	20,03	22,99	3,91	1,67
hum_s015	Cough	4	0,38	0,07	294,67	48,22	4,75	2,45	722,96	-15,66	16,35	22,94	28,46	3,91	1,54
hum_s016	Cough	5	0,38	0,20	442,07	19,89	6,47	1,56	888,88	-17,31	18,33	29,33	30,28	4,55	1,82
hum_s017	Cough	6	0,23	0,08	439,87	40,97	8,62	1,97	1008,56	-13,97	17,74	22,30	21,15	4,07	1,91
hum_s018	Cry	4	0,41	0,36	467,61	24,03	11,73	7,05	1032,81	-33,44	13,95	54,36	24,91	4,88	1,80
hum_s019	Cry	1	2,00		635,39		19,29		1481,57	-38,85	10,89	70,08	24,87	4,09	1,63
hum_s020	Yawn	2	0,79	0,37	293,33	14,23	20,51	6,21	497,33	0,26	14,68	5,68	7,93	4,91	1,92
hum_s021	Scream	1	2,00		878,43		4,93		1640,00	-38,44	14,79	76,46	27,27	4,56	1,58
hum_s022	Cry	2	0,77	0,55	404,97	0,62	15,11	6,98	1632,77	-6,84	33,57	37,57	26,53	5,22	1,91
hum_s023	Cry	1	1,14		529,80		16,03		1319,02	-19,16	25,20	42,37	26,12	4,48	1,46
hum_s024	Cry	2	0,85	0,01	505,61	12,96	10,81	2,53	1480,03	-29,21	22,92	59,89	28,07	5,14	1,95
hum_s025	Scream	1	0,93		1135,41		23,97		1275,95	-42,36	9,46	84,54	21,92	3,99	2,29
hum_s026	Cough	2	0,52	0,08	152,48	31,76	1,77	0,98	1455,15	-13,82	18,21	29,16	22,93	4,71	1,80
hum_s027	General	3	0,64	0,22	273,56	12,69	12,58	4,88	800,27	-0,43	23,03	21,23	15,34	5,05	2,06
hum_s028	Laugh	6	0,18	0,13	219,87	5,80	10,04	4,03	420,99	37,41	13,32	28,05	24,61	4,47	1,91
hum_s029	Laugh	9	0,22	0,05	288,90	35,68	7,24	4,41	1039,83	35,59	11,98	34,15	28,46	4,54	1,97
hum_s030	Cough	3	0,25	0,01	348,48	12,75	0,68	4,59	1940,91	-14,59	18,00	27,13	24,85	3,75	1,64
hum_s031	General	3	0,63	0,60	448,89	107,57	20,16	2,36	617,64	29,34	15,56	34,82	25,76	4,54	1,90
hum_s032	General	6	0,29	0,11	480,12	81,66	31,93	2,65	498,19	30,39	14,73	17,92	17,12	5,06	1,72
hum_s033	General	1	1,13		557,12		14,50		1458,93	37,36	10,45	33,13	25,88	4,39	1,70
hum_s034	Sigh	1	1,32		259,81		9,76		804,34	-1,55	22,75	13,11	16,88	4,37	1,86
hum_s035	General	2	0,79	0,11	248,16	85,59	2,23	2,07	2237,11	-4,29	20,36	31,61	17,27	5,35	1,57
hum_s036	Scream	1	1,49		857,56		25,61		2234,08	-29,05	18,58	56,36	32,43	5,09	1,84
hum_s037	Laugh	10	0,11	0,03	1183,74	153,07	18,60	4,09	1550,33	23,82	29,36	58,79	30,41	4,22	1,54
hum_s038	General	2	0,75	0,07	270,05	2,80	25,63	0,94	307,83	12,68	20,60	21,08	19,51	5,26	2,18
hum_s039	Cry	2	0,90	0,72	427,03	68,13	13,66	1,69	1347,18	-37,68	12,06	67,70	27,11	4,30	1,88
hum_s040	Cry	5	0,36	0,16	585,81	68,04	24,78	8,91	891,36	-36,22	14,28	47,97	33,35	4,01	1,55
hum_s041	Cough	4	0,31	0,05	830,81	68,32	1,47	0,50	2519,13	-12,21	16,01	22,72	23,11	4,23	1,59
hum_s042	Human moan	1	0,42		281,87		10,77		1655,68	3,11	17,46	26,71	29,36	4,51	2,08
hum_s043	Laugh	11	0,13	0,05	284,77	40,39	7,73	5,39	1285,75	34,47	18,23	52,58	29,49	4,28	1,90
hum_s044	General	1	2,00		305,72		22,35		750,03	19,43	26,04	27,59	24,42	4,54	1,50
hum_s045	Cry	1	2,00		303,53		5,36		2486,08	-39,41	12,31	76,15	28,23	4,37	2,16
hum_s046	General	4	0,22	0,04	360,18	12,93	13,32	11,59	1439,66	15,95	22,85	32,57	24,91	4,53	1,54
hum_s047	Laugh	7	0,14	0,05	436,83	30,40	10,15	5,53	1715,26	36,33	15,86	51,21	30,41	4,46	1,44
hum_s048	Laugh	5	0,19	0,13	342,34	69,71	20,09	7,02	508,01	23,05	22,50	33,67	27,55	4,89	1,87
hum_s049	Shout	3	0,60	0,17	489,26	119,89	21,89	0,96	1274,35	23,94	20,87	49,72	30,22	5,04	1,74
hum_s050	Sigh	2	0,84	0,12	246,41	24,23	0,87	0,24	1750,71	1,32	30,30	38,11	29,14	5,40	2,06
hum_s051	Laugh	5	0,25	0,09	412,10	71,18	10,64	4,71	1226,69	35,87	11,56	33,82	26,01	4,53	1,75
hum_s052	General	3	0,48	0,19	332,76	49,15	20,54	2,14	470,43	32,53	14,92	20,97	18,05	5,29	1,85
hum_s053	General	3	0,32	0,18	257,04	10,42	20,56	5,26	426,85	-10,44	23,52	25,95	23,88	5,48	2,11
hum_s054	Human moan	3	0,58	0,17	282,03	21,66	8,42	3,40	994,63	16,37	17,93	55,87	29,59	5,31	1,67
hum_s055	Laugh	5	0,30	0,17	705,95	34,74	21,88	7,50	980,77	35,11	12,58	52,53	28,40	4,81	2,04
hum_s056	General	1	2,00		349,97		22,91		1534,29	10,34	18,22	31,11	25,36	5,74	2,09
hum_s057	Sigh	1	1,82		255,23		7,17		717,60	18,05	23,00	14,90	20,30	4,60	1,89
hum_s058	Cry	3	0,64	0,37	367,09	12,26	16,85	2,33	1676,10	-35,47	11,45	46,58	26,86	4,74	1,68
hum_s059	General	1	1,90		293,87		14,46		745,92	13,97	18,66	29,32	23,45	4,40	1,58
hum_s060	General	1	2,00		282,38		5,99		789,45	11,15	21,43	33,56	25,44	4,64	1,64
hum_s061	Retch	1	0,72		228,43		18,80		803,18	-15,08	27,43	19,29	20,99	4,06	1,71
hum_s062	Laugh	6	0,24	0,23	415,53	67,98	4,32	4,48	1525,01	31,72	13,29	41,86	25,18	4,33	2,03
hum_s063	Retch	3	0,59	0,42	328,12	31,07	3,71	0,26	1544,29	-26,49	19,06	26,49	23,81	5,07	1,45
hum_s064	Sigh	2	0,84	0,03	306,85	35,65	2,80	2,77	2266,82	14,95	22,26	44,92	31,72	5,72	2,10
hum_s065	Cry	1	1,59		366,50		15,06		2737,72	-35,50	17,89	59,08	29,59	3,60	1,31
hum_s066	Laugh	11	0,18	0,02	204,97	18,37	5,60	2,48	1244,59	35,82	17,42	36,90	27,28	4,45	1,69
hum_s067	Sigh	1	1,51		144,10		11,41		462,62	-3,39	23,34	10,00	13,66	3,96	1,62
hum_s068	General	1	2,00		165,29		16,39		1174,17	27,86	22,41	31,14	28,27	5,25	2,02
hum_s069	Cough	4	0,23	0,05	247,53	0,00	0,83	0,63	2390,69	-12,82	18,37	17,67	21,29	4,14	1,97
hum_s070	General	2	0,94	0,12	152,91	41,02	19,81	0,72	638,92	-1,24	11,72	13,76	15,20	5,36	2,16
hum_s071	General	2	1,00	0,38	147,76	1,76	11,08	2,82	1042,23	14,77	21,46	23,82	24,58	4,60	2,16
hum_s072	Human moan	1	0,96		204,87		26,63		588,75	-9,74	20,14	22,24	17,52	4,16	1,57
hum_s073	Cough	3	0,34	0,04	205,76	21,85	4,55	0,92	1986,88	-13,29	18,93	16,79	19,02	4,01	1,85
hum_s074	General	3	0,59	0,10	355,58	43,97	12,28	2,13	1609,90	-13,30	21,66	30,73	24,09	5,15	1,55
hum_s075	Retch	3	0,61	0,19	150,09	27,44	2,08	0,43	1765,37	-28,21	21,23	23,15	25,60	5,13	1,83
hum_s076	General	1	1,60		114,20		17,41		1233,31	12,61	18,80	22,42	24,01	5,30	1,73
hum_s077	Cough	3	0,47	0,12	231,85	48,07	5,17	3,84	1717,98	-9,86	16,77	22,84	24,77	4,51	2,22
hum_s078	Laugh	6	0,23	0,12	357,92	232,85	6,65	2,52	1018,98	34,46	10,33	39,77	32,21	3,64	1,70
hum_s079	General	2	0,59	0,02	300,29	61,32	18,87	1,99	342,63	18,00	17,90	24,97	20,07	5,00	1,87
hum_s080	General	1	2,00		148,80		13,23		1663,24	7,55	19,50	24,79	23,43	4,96	1,81
hum_s081	General	3	0,54	0,08	124,30	10,81	16,28	0,43	504,42	19,63	20,36	15,47	15,08	4,96	1,74
hum_s082	Yawn	1	1,28		179,29		19,82		441,16	0,31	10,24	7,82	10,81	4,14	1,48
hum_s083	Human moan	1	0,95		162,56		17,55		885,31	-22,33	21,73	20,92	24,09	4,76	2,11
hum_s084	Human moan	1	0,58		217,74		3,91		1307,30	-32,84	15,52	39,39	30,39	4,29	1,89
hum_s085	Shout	1	1,10		184,65		14,82		1073,91	11,64	25,30	46,56	27,81	4,51	1,62
hum_s086	Shout	1	0,75		293,19		20,38		1124,55	-29,89	19,75	66,78	27,30	4,22	1,98
hum_s087	Human moan	1	1,31		392,60		16,92		875,06	-9,70	35,81	46,95	29,59	5,16	2,00
hum_s088	Cry	5	0,39	0,19	480,34	27,11	14,90	4,22	898,50	-39,39	11,68	56,29	32,08	4,64	2,08
hum_s089	Human moan	1	0,67		187,10		15,45		736,26	-14,34	20,39	21,95	17,71	4,24	1,86
hum_s090	Cry	6	0,30	0,13	216,06	35,55	13,66	5,02	805,86	-21,74	28,38	34,36	30,17	5,01	2,05
hum_s091	Shout	1	1,14		314,62		17,12		1195,72	-32,26	15,59	62,55	29,82	4,27	1,64
hum_s092	Cry	7	0,25	0,03	400,86	69,56	5,96	2,48	1127,62	-35,03	20,26	59,41	28,57	4,75	2,13
hum_s093	Shout	1	1,08		352,77		20,48		1332,21	-9,42	27,02	48,79	30,19	4,66	1,64
hum_s094	Cry	5	0,40	0,17	384,42	26,86	11,29	2,06	1041,00	-35,97	11,52	71,50	30,22	4,13	1,55
hum_s095	Shout	1	0,70		279,79		7,45		1352,49	-25,41	22,91	65,73	29,44	4,69	1,82
hum_s096	Cry	7	0,20	0,03	154,52	13,82	5,89	1,65	697,06	-33,26	16,21	47,56	33,15	4,59	1,44
hum_s097	Human moan	1	1,72		211,01		24,29		1092,35	-30,54	17,31	18,03	21,80	4,64	1,51
hum_s098	Human moan	1	1,33		396,03		33,25		1312,72	-29,32	22,96	52,24	28,31	4,71	2,11
hum_s099	Cry	3	0,41	0,12	387,54	4,36	15,87	4,80	1031,79	-36,82	12,87	43,00	31,70	3,93	1,54
hum_s100	Scream	1	1,29		540,61		10,04		1109,26	-28,27	24,88	62,16	28,61	4,94	1,77

testid	Gender	Age	Dog ownership
7	female	29	haddog
8	female	28	never
11	female	24	hasdog
24	female	29	never
29	female	25	never
30	male	27	hasdog
32	male	28	never
33	female	25	never
34	female	42	hadfamilydog
37	female	25	hasfamilydog
43	female	14	hasdog
54	female	29	never
56	female	25	hasdog
63	male	31	hasdog
67	female	43	hasdog
71	female	23	hasdog
76	female	58	hasdog
79	female	30	haddog
82	female	31	hasdog
84	female	29	hasdog
88	female	28	hasdog
90	female	27	hasdog
96	female	25	hasfamilydog
103	female	55	hasdog
108	female	25	hasfamilydog
109	female	54	hasdog
110	female	20	hasfamilydog
111	female	25	hasdog
113	female	27	haddog
114	female	34	hasdog
115	female	30	hasdog
121	male	30	hadfamilydog
123	male	30	never
129	female	27	hasfamilydog
130	male	32	hadfamilydog
132	female	29	never
135	female	37	hasdog
139	female	37	hasdog
140	female	30	hasdog

context	**assumed valence**	**aggreement**
asking for toy	*+*	*94%*
begging for food	-	63%
before walk	+	88%
bored	*-*	*94%*
before snow shoveling	-	75%
foodguarding	*-*	*94%*
greeting	*+*	*100%*
neutral	+	75%
petting	*+*	*100%*
play	*+*	*100%*
pup before feeding	-	69%
separation	*-*	*94%*
dynamic threatening	*-*	*100%*
asked to speak	+	63%
stranger at fence	*-*	*100%*
threatening stranger	*-*	*100%*



dog_s052
hum_s037
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Frequency (Hz)
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Time (s)