

Supplementary Information for

## **Evaluation of indicators of acute emotional states in dogs**

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### **This file contains:**

**Table S1** – Results of model pertaining to the effect of anticipated arousal and valence on parameters

**Table S2** - Results of model pertaining to the effect of anticipated arousal and the provision of food on parameters

**Table S1.** – Estimated means/estimated probability ( $\bar{x}$ ) and upper/lower 95% confidence intervals (CI) for contrasts explored within models pertaining to effect of anticipated arousal and valence on primary and secondary parameters. Matching superscript letters within a parameter indicate significant difference in means based on model contrasts ( $\alpha=0.010$ ).

Parameter	Unit	n	Arousal	Valence					
				Positive			Negative		
				$\bar{x}$	Upper 95% CI	Lower 95% CI	$\bar{x}$	Upper 95% CI	Lower 95% CI
Cortisol	ng/ml	204	High	24.051 <sup>a</sup>	28.160	20.542	59.735 <sup>ac</sup>	70.013	50.965
			Low	26.334 <sup>b</sup>	30.107	23.034	34.529 <sup>bc</sup>	39.409	30.252
Heart Rate	bpm	185	High	133.777 <sup>ac</sup>	144.657	122.898	121.151 <sup>ad</sup>	132.019	110.283
			Low	108.452 <sup>c</sup>	118.998	97.906	105.643 <sup>d</sup>	116.194	95.091
Heart Rate Variability (RMSSD)	ms	191	High	132.732	188.415	93.504	118.359 <sup>b</sup>	167.631	83.569
			Low	128.761 <sup>a</sup>	177.498	93.405	176.621 <sup>ab</sup>	243.891	127.905
PC1_Valence	-	231	High	2.187 <sup>ac</sup>	2.529	1.844	-3.573 <sup>a</sup>	-3.230	-3.915
			Low	0.963 <sup>bc</sup>	1.327	0.598	-3.496 <sup>b</sup>	-3.129	-3.863
PC2_Arousal	-	231	High	0.995 <sup>ac</sup>	1.265	0.725	0.116 <sup>a</sup>	0.386	-0.153
			Low	-1.037 <sup>bc</sup>	-0.679	-1.394	0.002 <sup>b</sup>	0.361	-0.358
Serotonin	ng/mL	201	High	1029.377	1503.726	704.660	1078.104	1576.072	737.471
			Low	1036.688	1513.019	710.315	1047.071	1527.485	717.753
ACTH	pg/mL	199	High	16.611 <sup>a</sup>	25.936	10.637	31.934 <sup>ab</sup>	49.947	20.416
			Low	17.979	27.536	11.738	19.007 <sup>b</sup>	29.102	12.412
slgA	µg/mL	198	High	1381.987 <sup>a</sup>	990.2717	1928.65	1499.153	1073.122	2094.319
			Low	2069.414 <sup>a</sup>	1489.077	2875.924	1908.588	1374.296	2650.597
Heart Rate Variability (SDRR)	ms	191	High	156.107	201.258	110.956	136.017	179.549	90.485
			Low	136.041 <sup>a</sup>	171.227	100.856	163.733 <sup>a</sup>	199.114	128.352
Left Eye Mean Temp	°C	220	High	35.489 <sup>a</sup>	36.056	34.922	35.095 <sup>a</sup>	35.660	34.530
			Low	35.315	35.876	34.753	35.380	35.945	34.815
Right Eye Mean Temp	°C	220	High	35.414 <sup>a</sup>	35.967	34.861	35.068 <sup>a</sup>	35.619	34.517
			Low	35.263	35.806	34.720	35.299	35.845	34.753
Eye Mean Temp Difference	°C	220	High	-0.010	0.115	-0.134	0.032	0.162	-0.098
			Low	0.010	0.106	-0.087	-0.018	0.079	-0.116
Left Ear Temp	°C	224	High	38.795 <sup>ab</sup>	39.056	38.535	38.328 <sup>a</sup>	38.587	38.069
			Low	38.273 <sup>b</sup>	38.490	38.055	38.423	38.647	38.199
Right Ear Temp	°C	222	High	38.747 <sup>ab</sup>	39.004	38.489	38.273 <sup>a</sup>	38.530	38.016
			Low	38.330 <sup>b</sup>	38.534	38.126	38.371	38.581	38.161
Ear Temp Difference	°C	222	High	-0.014	0.124	-0.152	-0.008	0.134	-0.150
			Low	0.089	0.237	-0.059	-0.018	0.131	-0.167
Nose Mean Temp	°C	220	High	25.544 <sup>ab</sup>	27.089	23.998	22.309 <sup>ac</sup>	23.846	20.771
			Low	23.552 <sup>b</sup>	25.014	22.089	23.448 <sup>c</sup>	24.926	21.969

Mean Activity Points	-	217	<i>High</i>	3.273 <sup>ab</sup>	3.553	2.993	0.929 <sup>a</sup>	1.207	0.652
			<i>Low</i>	0.737 <sup>b</sup>	0.878	0.595	0.675	0.819	0.531
Proportion of time Sitting	-	209	<i>High</i>	0.024 <sup>ac</sup>	0.084	-0.036	0.092 <sup>a</sup>	0.153	0.031
			<i>Low</i>	0.275 <sup>bc</sup>	0.357	0.193	0.096 <sup>b</sup>	0.178	0.013
Proportion of time Standing	-	209	<i>High</i>	0.939 <sup>ac</sup>	1.013	0.865	0.600 <sup>ad</sup>	0.675	0.525
			<i>Low</i>	0.361 <sup>c</sup>	0.458	0.263	0.408 <sup>d</sup>	0.507	0.310
Proportion on time Lying	-	209	<i>High</i>	0.044 <sup>ab</sup>	0.107	-0.019	0.316 <sup>ac</sup>	0.380	0.252
			<i>Low</i>	0.372 <sup>b</sup>	0.463	0.281	0.501 <sup>c</sup>	0.593	0.408
Proportion of time Panting	-	219	<i>High</i>	0.042	0.183	0.004	0.069 <sup>a</sup>	0.287	0.011
			<i>Low</i>	0.011	0.101	-0.002	0.008 <sup>a</sup>	0.057	-0.005
Probability of Body Shake	-	231	<i>High</i>	0.776 <sup>a</sup>	0.936	0.450	0.100 <sup>ab</sup>	0.363	0.021
			<i>Low</i>	0.650	0.883	0.314	0.383 <sup>b</sup>	0.717	0.132
Probability of Whining	-	115	<i>High</i>	-	-	-	0.189 <sup>a</sup>	0.541	0.044
			<i>Low</i>	-	-	-	0.510 <sup>a</sup>	0.816	0.541

**Table S2.** – Estimated means/estimated probability ( $\bar{x}$ ) and upper/lower 95% confidence intervals (CI) for contrasts explored within models pertaining to effect of anticipated arousal and the provision of food on parameters. Matching superscript letters within a parameter indicate significant difference in means based on model contrasts ( $\alpha=0.010$ ).

Parameter	Unit	n	Arousal	Food Provision					
				Food			No Food		
				$\bar{x}$	Upper 95% CI	Lower 95% CI	$\bar{x}$	Upper 95% CI	Lower 95% CI
Cortisol	ng/ml	203	High	23.920	28.017	20.421	24.000	28.136	20.472
			Low	25.412	29.795	21.673	26.156	30.643	22.325
Heart Rate	bpm	188	High	138.548 <sup>b</sup>	152.534	124.563	134.326 <sup>c</sup>	148.363	120.289
			Low	125.357 <sup>ab</sup>	139.352	111.362	108.455 <sup>ac</sup>	122.445	94.465
Heart Rate Variability (RMSSD)	ms	191	High	126.039	215.680	73.652	128.756	220.790	75.084
			Low	94.003	164.271	53.791	126.194	219.850	72.434
PC1_Valence	-	234	High	2.420 <sup>b</sup>	2.616	2.224	2.182 <sup>c</sup>	2.379	1.984
			Low	1.705 <sup>ab</sup>	2.071	1.340	0.962 <sup>ac</sup>	1.330	0.593
PC2_Arousal	-	234	High	1.257 <sup>ac</sup>	1.586	0.927	0.969 <sup>ad</sup>	1.299	0.638
			Low	-0.556 <sup>bc</sup>	-0.152	-0.959	-1.073 <sup>bd</sup>	-0.667	-1.478
Serotonin	ng/mL	202	High	1062.701	1538.793	733.907	1024.325	1483.323	707.358
			Low	1088.325	1574.593	752.226	1036.464	1499.318	716.497
ACTH	pg/mL	201	High	15.293	26.496	8.825	16.373	28.376	9.445
			Low	15.125	26.420	8.657	17.809	31.090	10.200
slgA	µg/mL	205	High	1190.455	1696.790	835.213	1423.689 <sup>b</sup>	2032.020	997.475
			Low	1334.390 <sup>a</sup>	1919.092	927.832	2175.169 <sup>ab</sup>	3137.266	1508.115
Heart Rate Variability (SDRR)	ms	191	High	134.311	196.461	72.162	155.622	218.53	92.713
			Low	129.486	190.952	68.019	136.027	197.008	75.046
Left Eye Mean Temp	°C	222	High	35.584	36.213	34.956	35.597	36.222	34.971
			Low	35.473	36.103	34.843	35.416	36.040	34.793
Right Eye Mean Temp	°C	222	High	35.578	36.174	34.983	35.584	36.177	34.991
			Low	35.559	36.159	34.959	35.419	36.014	34.825
Eye Mean Temp Difference	°C	222	High	-0.003	0.108	-0.115	-0.010	0.100	-0.121
			Low	0.088	0.193	-0.017	0.004	0.107	-0.098
Left Ear Temp	°C	228	High	38.852 <sup>b</sup>	39.110	38.595	38.812 <sup>c</sup>	39.066	38.557
			Low	38.591 <sup>ab</sup>	38.839	38.342	38.280 <sup>ac</sup>	38.514	38.045
Right Ear Temp	°C	227	High	38.769 <sup>a</sup>	39.032	38.507	38.766 <sup>b</sup>	39.026	38.507
			Low	38.449 <sup>a</sup>	38.701	38.197	38.349 <sup>b</sup>	38.586	38.113
Ear Temp Difference	°C	226	High	-0.059	0.048	-0.166	-0.022	0.087	-0.130
			Low	-0.132	0.030	-0.294	0.090	0.250	-0.069
Nose Mean Temp	°C	222	High	26.382 <sup>a</sup>	28.119	24.645	26.277 <sup>b</sup>	28.003	24.551
			Low	24.323 <sup>a</sup>	26.059	22.587	24.200 <sup>b</sup>	25.909	22.491
Mean Whistle Activity Points	-	219	High	3.108 <sup>b</sup>	3.427	2.789	3.269 <sup>c</sup>	3.588	2.950
			Low	1.366 <sup>ab</sup>	1.499	1.232	0.737 <sup>ac</sup>	0.872	0.603

Proportion of Sitting	-	217	<i>High</i>	0.009	0.028	-0.011	0.018 <sup>b</sup>	0.037	-0.001
			<i>Low</i>	0.044 <sup>a</sup>	0.106	-0.017	0.266 <sup>ab</sup>	0.329	0.203
Proportion of Standing	-	217	<i>High</i>	0.964 <sup>b</sup>	1.024	0.904	0.938 <sup>c</sup>	0.998	0.878
			<i>Low</i>	0.708 <sup>ab</sup>	0.803	0.613	0.354 <sup>ac</sup>	0.451	0.257
Proportion on Lying	-	217	<i>High</i>	0.028 <sup>a</sup>	0.072	-0.016	0.044 <sup>b</sup>	0.088	0.000
			<i>Low</i>	0.248 <sup>a</sup>	0.339	0.158	0.380 <sup>b</sup>	0.472	0.287
Proportion of Panting	-	226	<i>High</i>	0.017 <sup>a</sup>	0.067	-0.001	0.045 <sup>a</sup>	0.147	0.010
			<i>Low</i>	0.012	0.052	-0.002	0.021	0.080	0.001
Probability of Body Shake	-	234	<i>High</i>	0.318 <sup>ab</sup>	0.682	0.092	0.798 <sup>a</sup>	0.949	0.456
			<i>Low</i>	0.712 <sup>b</sup>	0.919	0.352	0.669	0.902	0.308