

Supplemental Table 2. Model-predicted (preweaning) or raw (weaning) means, SE, and 95% CI for all oral behaviors scored, along with model outputs.

Preweaning model predicted means and CI

Behavior	Week 2				Week 4				Week 6			
	Control		Hay		Control		Hay		Control		Hay	
	Emmeans (SE)	95% CI	Emmeans (SE)	95% CI	Emmeans (SE)	95% CI	Emmeans (SE)	95% CI	Emmeans (SE)	95% CI	Emmeans (SE)	95% CI
Ruminating	0.152 (0.020)	[0.116,0.198]	0.207 (0.024)	[0.163,0.261]	0.160 (0.020)	[0.122,0.207]	0.273 (0.027)	[0.220,0.334]	0.150 (0.020)	[0.113,0.197]	0.241 (0.027)	[0.190,0.301]
NNOM	0.202 (0.012)	[0.179,0.228]	0.164 (0.010)	[0.144,0.187]	0.204 (0.012)	[0.180,0.230]	0.161 (0.010)	[0.141,0.184]	0.221 (0.012)	[0.196,0.247]	0.175 (0.011)	[0.153,0.199]
Grooming	0.144 (0.010)	[0.125,0.165]	0.121 (0.009)	[0.104,0.141]	0.146 (0.010)	[0.127,0.168]	0.118 (0.009)	[0.101,0.138]	0.129 (0.009)	[0.111,0.149]	0.122 (0.009)	[0.104,0.143]
Tongue flicks	0.182 (0.014)	[0.155,0.212]	0.182 (0.012)	[0.134,0.185]	0.168 (0.013)	[0.143,0.197]	0.130 (0.012)	[0.109,0.154]	0.176 (0.013)	[0.150,0.205]	0.131 (0.011)	[0.109,0.157]
Eating (overall)	0.036 (0.004)	[0.029,0.044]	0.048 (0.004)	[0.040,0.057]	0.047 (0.004)	[0.039,0.056]	0.067 (0.005)	[0.057,0.079]	0.058 (0.005)	[0.049,0.069]	0.086 (0.007)	[0.074,0.101]
Eating (grain)	0.035 (0.003)	[0.029,0.043]	0.028 (0.003)	[0.023,0.035]	0.047 (0.004)	[0.039,0.056]	0.035 (0.003)	[0.029,0.043]	0.058 (0.005)	[0.049,0.068]	0.052 (0.004)	[0.044,0.062]
Eating (hay)	-	-	0.023 (0.003)	[0.016,0.032]	-	-	0.040 (0.005)	[0.030,0.054]	-	-	0.047 (0.006)	[0.035,0.062]
Drinking water	0.025 (0.002)	[0.021,0.030]	0.018 (0.002)	[0.015,0.022]	0.020 (0.002)	[0.016,0.024]	0.016 (0.002)	[0.013,0.020]	0.019 (0.002)	[0.016,0.023]	0.019 (0.002)	[0.016,0.024]
Sucking milk	0.008 (0.001)	[0.006,0.009]	0.008 (0.001)	[0.007,0.009]	0.011 (0.001)	[0.010,0.013]	0.010 (0.001)	[0.009,0.012]	0.010 (0.001)	[0.009,0.012]	0.011 (0.001)	[0.010,0.013]

Preweaning model results

Behavior	Anova (type 3)										R2	
	DF*	Treatment		DF*	Week		DF*	Interaction		Marginal	Conditional	
		chisq	p-value		chisq	p-value		chisq	p-value			
Ruminating	1	11.322	<0.001	2	0.203	0.904	2	1.945	0.378	0.35	0.742	
NNOM	1	9.997	0.002	2	3.348	0.187	2	0.14	0.932	0.32	0.802	
Grooming	1	4.986	0.026	2	2.194	0.334	2	1.42	0.492	0.158	0.304	
Tongue flicks	1	5.853	0.016	2	1.445	0.486	2	2.274	0.321	0.241	0.782	
Eating (overall)	1	13.691	<0.001	2	23.897	<0.001	2	0.687	0.709	0.533	0.756	
Eating (grain)	1	4.68	0.031	2	29.459	<0.001	2	2.019	0.364	0.468	0.701	
Eating (hay)	-	-	-	2	27.089	<0.001	2	-	-	0.351	0.72	
Drinking water	1	2.47	0.116	2	8.336	0.015	2	4.879	0.087	0.154	0.49	
Sucking milk	1	0.116	0.733	2	24.441	<0.001	2	2.792	0.248	0.403	0.456	

*Numerator DF obtained from the Anova type III SS are presented; denominator DF are known to be erroneous in mixed models and are not presented (e.g. <https://stat.ethz.ch/pipermail/r-help/2006-May/094765.html>)

In reviewing the model summary to confirm conservative analysis outside of DF output, "Calf" is correctly identified as the group (22 calves)

Weaning true means, CI, and T-test

Behavior	Week 8				T-test	
	Control		Hay		t	p-value
	Raw average (SE)	95% CI	Raw average (SE)	95% CI		
Rumination	0.225 (0.016)	[0.189,0.261]	0.233 (0.014)	[0.201,0.265]	-0.366	0.718
NNOM	0.242 (0.022)	[0.195,0.291]	0.191 (0.021)	[0.145,0.238]	1.723	0.1
Grooming	0.083 (0.006)	[0.069,0.097]	0.090 (0.009)	[0.069,0.111]	-0.589	0.563
Tongue flicks	0.113 (0.010)	[0.091,0.136]	0.123 (0.012)	[0.096,0.149]	-0.598	0.557
Eating (overall)	0.148 (0.010)	[0.126,0.170]	0.160 (0.009)	[0.141,0.179]	-0.886	0.387
Eating (grain)	0.078 (0.008)	[0.061,0.096]	0.064 (0.006)	[0.052,0.077]	1.468	0.159
Eating (TMR)	0.085 (0.013)	[0.057,0.114]	0.110 (0.011)	[0.085,0.135]	-1.458	0.161
Drinking water	0.026 (0.003)	[0.020,0.032]	0.028 (0.003)	[0.020,0.035]	-0.313	0.758
Sucking milk	0.004 (0.0004)	[0.004,0.005]	0.004 (0.0004)	[0.003,0.005]	0.579	0.569