

Supplementary Materials: The role of mesotocin on social bonding in pinyon jays

Juan F. Duque^{1,2}, Tanner Rasmussen¹, Anna Rodriguez¹, & Jeffrey R. Stevens¹

¹ University of Nebraska-Lincoln

² Arcadia University

Citation: Duque, J.F., Rasmussen, T., Rodriguez, A., & Stevens, J.R. (in press). The role of mesotocin on social bonding in pinyon jays. *Ethology*.

Correspondence concerning this article should be addressed to Juan F. Duque, 450 South Easton Road, 125 Boyer Hall, Arcadia University, Glenside, PA 19038. E-mail: jfduque89@gmail.com

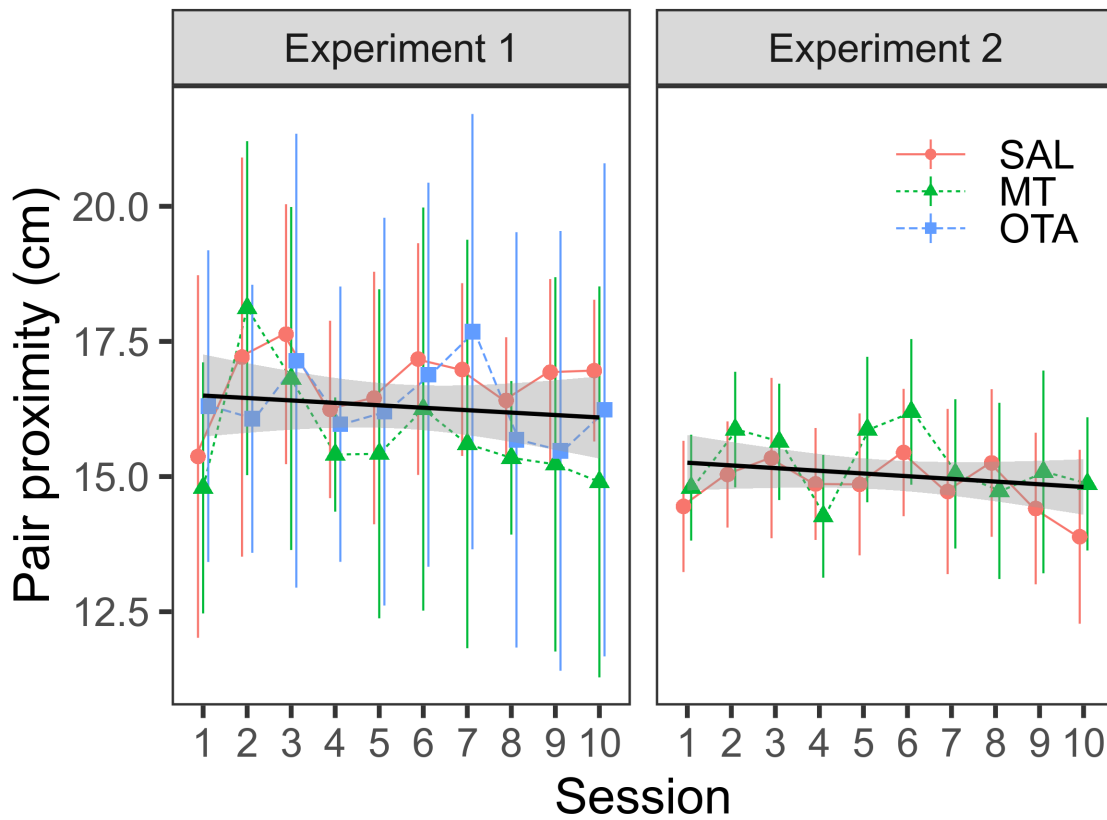


Figure S1. Pair-formation phase pair proximities for each session and condition in Experiment 1 (18 pairs) and Experiment 2 (36 pairs). Experiment 1 showed no effect of hormone condition or session on distance, but Experiment 2 showed a decrease in distance over session. Symbols represent means, error bars represent between-pair confidence intervals.

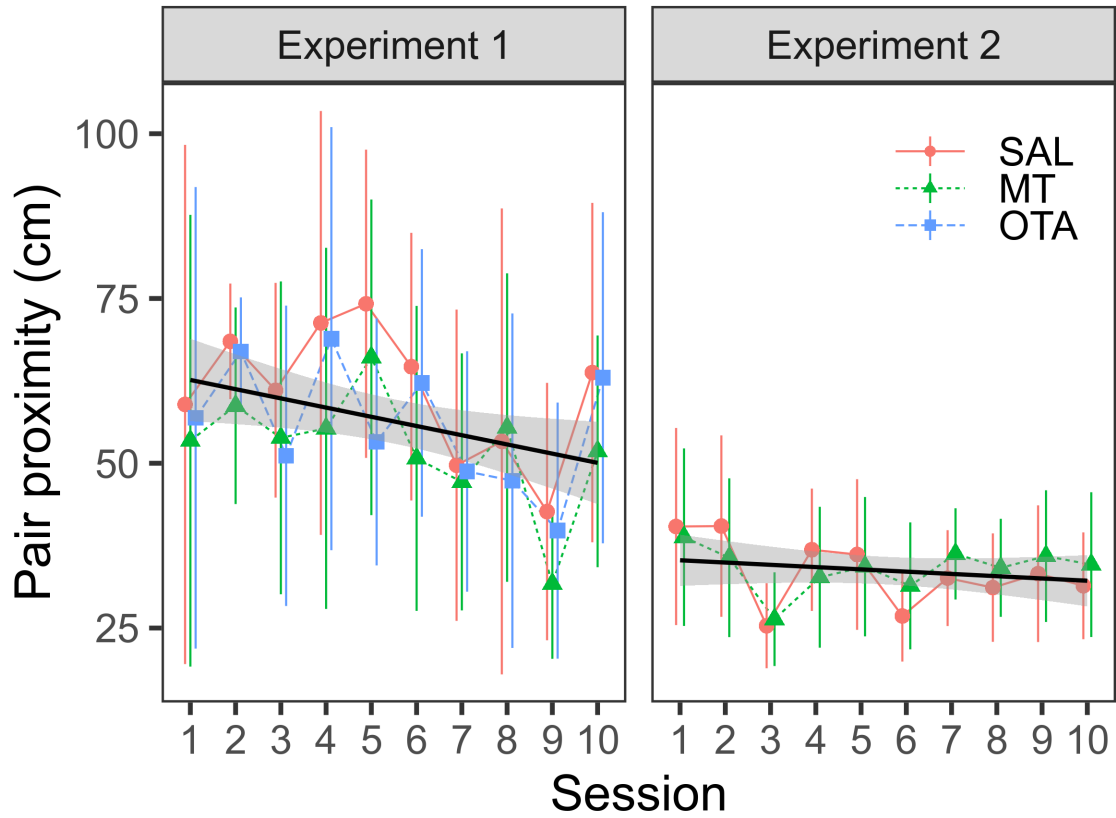


Figure S2. Pair-maintenance phase pair proximities for each session and condition in Experiment 1 (18 pairs) and Experiment 2 (36 pairs). In Experiment 1, pair distances decreased over session, but hormone condition did not influence distances. In Experiment 2, neither hormone condition nor session influenced distance. Symbols represent means, error bars represent between-pair confidence intervals.

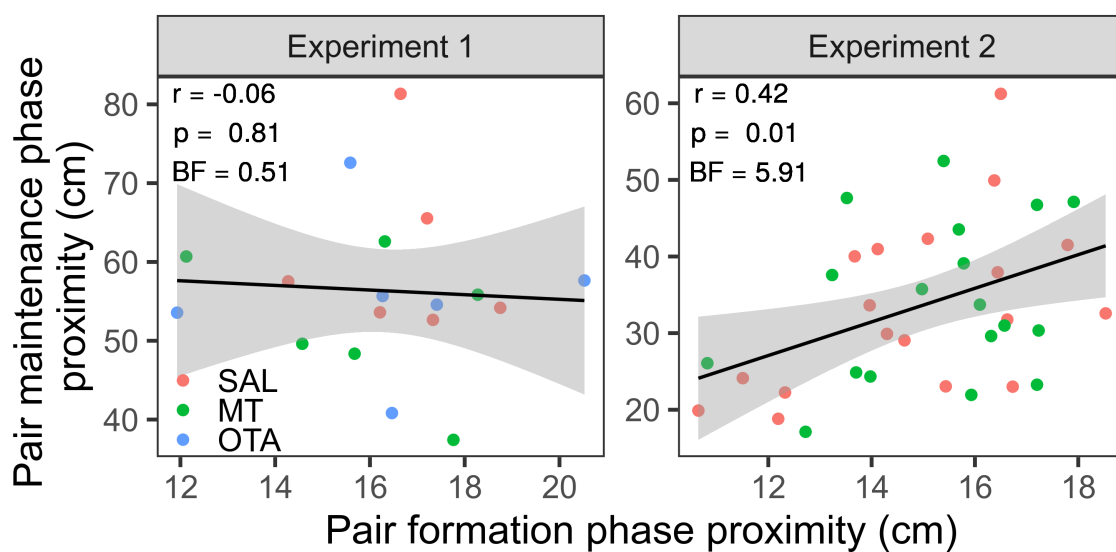


Figure S3. Correlations of pair proximities across pair-formation and pair-maintenance phases in Experiment 1 (18 pairs) and Experiment 2 (36 pairs). In Experiment 1, we do not have evidence that pair proximities correlate across phases, but, in Experiment 2, proximities positively correlated across phases.

Table S1
Experiment 1 Pair-Formation Phase Model Comparison

Model specification	Random effects	Fixed effects	Model fit				Likelihood Ratio Tests			
			AIC	BIC	logLik	df	χ^2	df	p-value	BF
Random effects models										
Pair	(1 pair)	-	797.19	806.77	-395.60	3				
Pair + session slope	(1 + session0 pair)	-	781.21	797.18	-385.61	5	19.98	2	0.000	
Group + pair + session slope	(1 group) + (1 + session0 pair)	-	779.96	799.12	-383.98	6	3.26	1	0.071	
Fixed effects models										
RE only	(1 + session0 pair)	-	781.21	797.18	-385.61	5				
Session	(1 + session0 pair)	session0	782.93	802.08	-385.46	6	0.29	1	0.592	0.007
Condition	(1 + session0 pair)	condition	784.85	807.20	-385.43	7	0.07	1	0.787	0.007
Condition + session	(1 + session0 pair)	condition + session0	786.57	812.11	-385.28	8	0.29	1	0.592	0.001
Condition + session + session squared	(1 + session0 pair)	condition + session0 + session0 ²	786.26	814.99	-384.13	9	2.31	1	0.129	0.000
Condition * session + session squared	(1 + session0 pair)	condition * session0 + session0 ²	789.20	824.32	-383.60	11	1.06	2	0.588	0.000

Table S2
Experiment 2 Pair-Formation Phase Model Comparison

Model specification	Random effects	Fixed effects	Model fit				Likelihood Ratio Tests			
			AIC	BIC	logLik	df	χ^2	df	p-value	BF
Random effects models										
Pair	(1 pair)	-	1557.71	1569.37	-775.85	3				
Pair + session slope	(1 + session0 pair)	-	1539.34	1558.77	-764.67	5	22.37	2	0.000	
Group + pair + session slope	(1 group) + (1 + session0 pair)	-	1541.34	1564.66	-764.67	6	0.00	1	1.000	
Fixed effects models										
RE only	(1 + session0 pair)	-	1539.34	1558.77	-764.67	5				
Session	(1 + session0 pair)	session0	1540.28	1563.59	-764.14	6	1.07	1	0.301	0.090
Session + session squared	(1 + session0 pair)	session0 + session0 ²	1534.39	1561.59	-760.19	7	7.89	1	0.005	0.245
Condition + session + session squared	(1 + session0 pair)	condition + session0 + session0 ²	1536.04	1567.12	-760.02	8	0.35	1	0.553	0.015
Condition * session + session squared	(1 + session0 pair)	condition * session0 + session0 ²	1538.00	1572.97	-760.00	9	0.04	1	0.848	0.000

Table S3
Experiment 1 Pair-Maintenance Phase Model Comparison

Model specification	Random effects	Fixed effects	Model fit				Likelihood Ratio Tests			
			AIC	BIC	logLik	df	χ^2	df	p-value	BF
Random effects models										
Empty	1	-	1644.98	1651.36	-820.49	2				
Pair	(1 pair)	-	1641.93	1651.51	-817.97	3	5.05	1	0.025	
Group + pair	(1 group) + (1 pair)	-	1643.15	1655.93	-817.58	4	0.78	1	0.377	
Group + pair + session slope	(1 group) + (1 + session0 pair)	-	1646.52	1665.68	-817.26	6	0.63	2	0.728	
Fixed effects models										
RE only	(1 pair)	-	1641.93	1651.51	-817.97	3				
Session	(1 pair)	session0	1637.81	1650.58	-814.91	4	6.12	1	0.013	1.592
Condition + session	(1 pair)	condition + session0	1639.51	1658.67	-813.76	6	2.30	2	0.317	0.028
Condition * session	(1 pair)	condition * session0	1643.47	1669.01	-813.73	8	0.04	2	0.980	0.000
Condition * session + session squared	(1 pair)	condition * session0 + session0 ²	1644.95	1673.68	-813.47	9	0.52	1	0.469	0.000

Table S4
Experiment 2 Pair-Maintenance Phase Model Comparison

Model specification	Random effects	Fixed effects	Model fit				Likelihood Ratio Tests			
			AIC	BIC	logLik	df	χ^2	df	p-value	BF
Random effects models										
Empty	1	-	3187.05	3194.82	-1591.53	2				
Pair	(1 pair)	-	3155.75	3167.41	-1574.87	3	33.30	1	0.000	
Group	(1 group)	-	3149.62	3161.28	-1571.81	3	6.13	0	0.000	
Group + pair	(1 group) + (1 pair)	-	3146.00	3161.55	-1569.00	4	5.62	1	0.018	
Group + pair + session slope	(1 group) + (1 + session0 pair)	-	3147.89	3171.21	-1567.95	6	2.11	2	0.348	
Fixed effects models										
RE only	(1 group) + (1 pair)	-	3146.00	3161.55	-1569.00	4				
Session	(1 group) + (1 pair)	session0	3146.92	3166.35	-1568.46	5	1.08	1	0.298	0.091
Session + session squared	(1 group) + (1 pair)	session0 + session0 ²	3146.14	3169.45	-1567.07	6	2.78	1	0.095	0.019
Condition + session + session squared	(1 group) + (1 pair)	condition + session0 + session0 ²	3148.09	3175.29	-1567.04	7	0.05	1	0.824	0.001
Condition * session + session squared	(1 group) + (1 pair)	condition * session0 + session0 ²	3148.53	3179.62	-1566.26	8	1.56	1	0.212	0.000