

**SUPPLEMENTAL MATERIAL: PROCESSING OF NOVEL FOOD REVEAL  
PAYOFF AND RANK-BIASED SOCIAL LEARNING IN A WILD PRIMATE**

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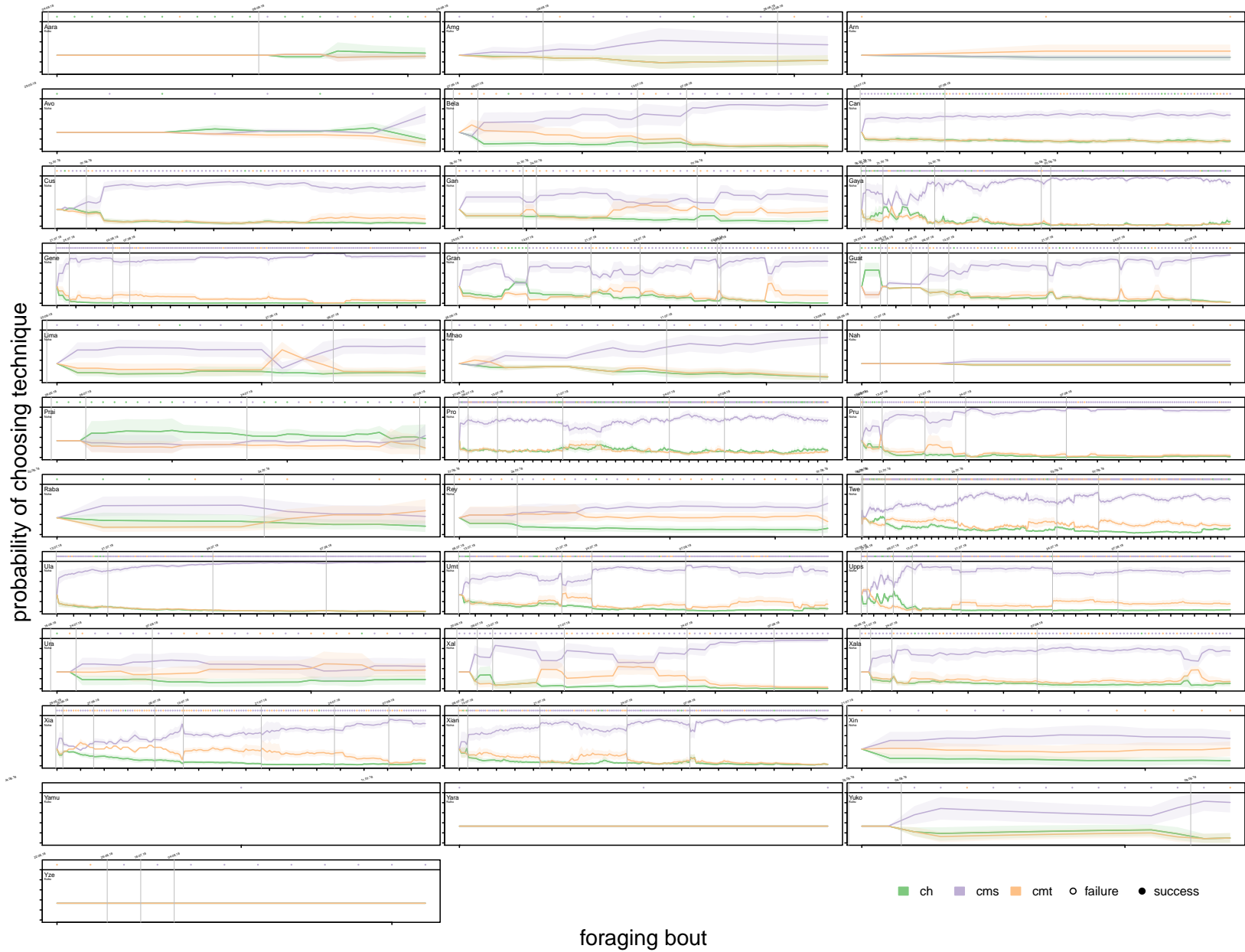


FIGURE S1. Model predictions of probability of choosing all 3 behavior at each foraging bout. Each panel is for a unique individual. Individual IDs are in top left corner, below that is individual group membership. Colors correspond to technique, line is posterior mean predictions corresponding to the probability of choosing a technique at each timestep, shaded area is 89% HPDI. Top row of each plot is raw data showing observed behavioral choice at each foraging bout. Filled circles correspond with successes, empty circles correspond with failures. Gray lines are drawn between experimental days.

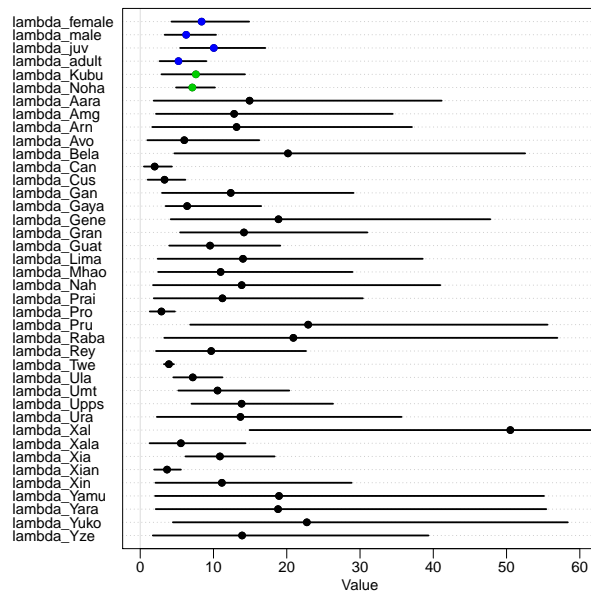


FIGURE S2. Dot plots of posterior predictions from the global model for all values of  $\lambda$ , the sensitivity to attraction scores. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects. Values closer to zero indicate less sensitivity to differences in attraction scores.

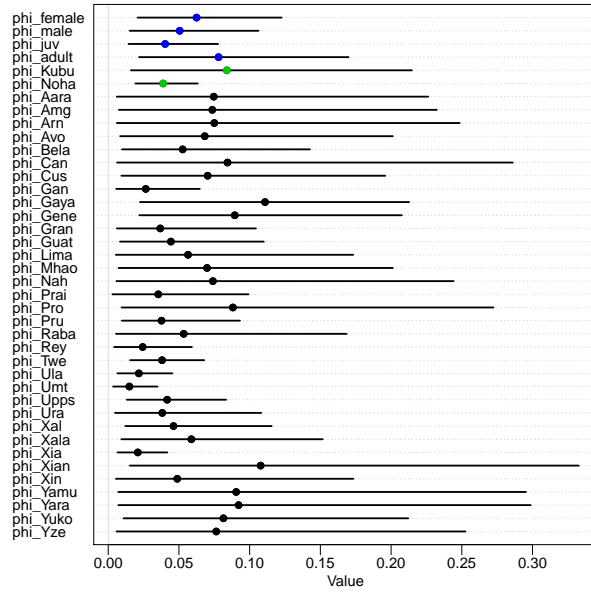


FIGURE S3. Dot plots of posterior predictions from the global model for all values of  $\phi$ , the weight given to recent experience. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects. Lower values mean less weight given to recent experiences and a greater reliance on past memories.

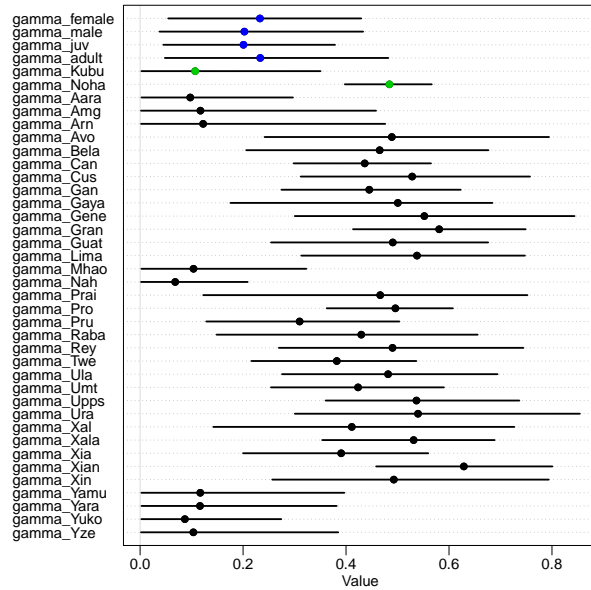


FIGURE S4. Dot plots of posterior predictions from the global model for all values of  $\gamma$ , the weight given to social information. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects. Higher values indicate a greater reliance on social information than individual information.

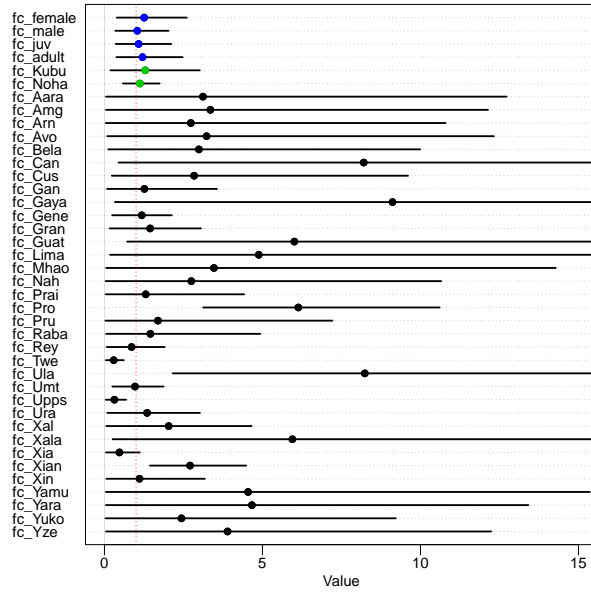


FIGURE S5. Dot plots of posterior predictions from the global model for all values of  $f^c$ , the strength of frequency dependence. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects. Values  $< 1$  are consistent with negative frequency-dependence, values of 1 indicate unbiased social learning, values  $> 1$  indicate positive frequency dependence.

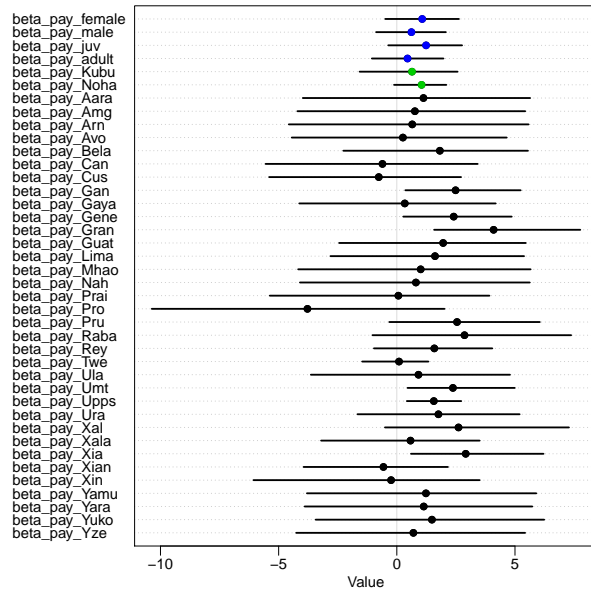


FIGURE S6. Dot plots of posterior predictions from the global model for all values of  $\beta_{pay}$ , the strength of payoff-bias. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects.

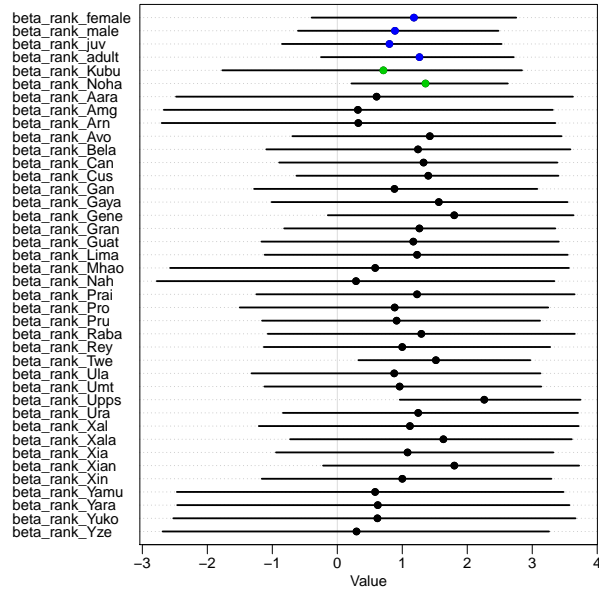


FIGURE S7. Dot plots of posterior predictions from the global model for all values of  $\beta_{rank}$ , the strength of payoff-bias. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects.

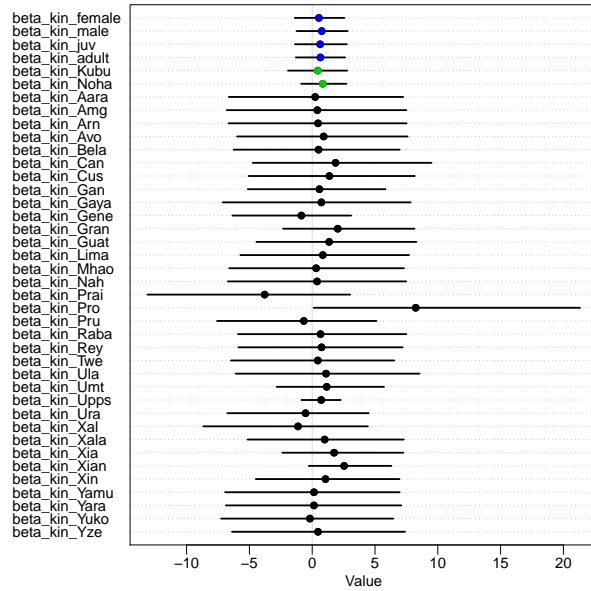


FIGURE S8. Dot plots of posterior predictions from the global model for all values of  $\beta_{kin}$ , the strength of payoff-bias. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects.

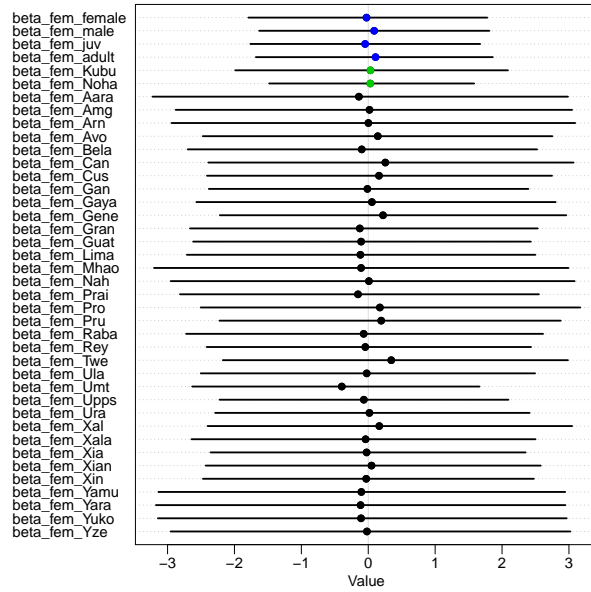


FIGURE S9. Dot plots of posterior predictions from the global model for all values of  $\beta_{fem}$ , the strength of payoff-bias. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects.

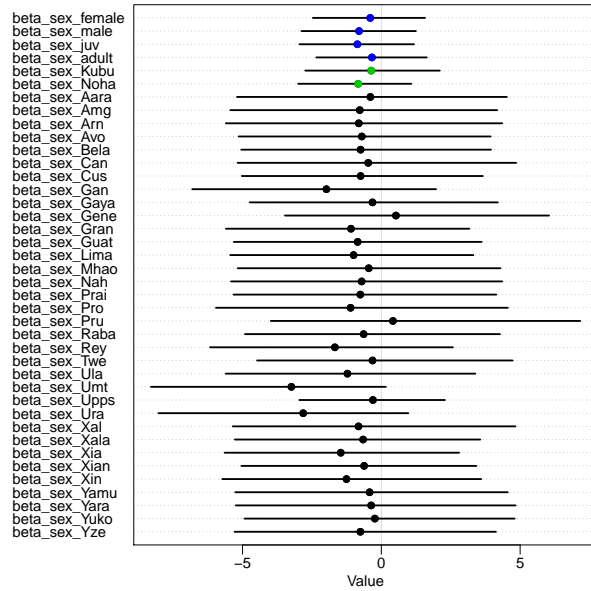


FIGURE S10. Dot plots of posterior predictions from the global model for all values of  $\beta_{sex}$ , the strength of payoff-bias. Points lie at posterior mean, line spans 89% HPDI. Blue points are main effects for each age and sex class, green points are varying effects of both groups, black points are individual-level varying effects.

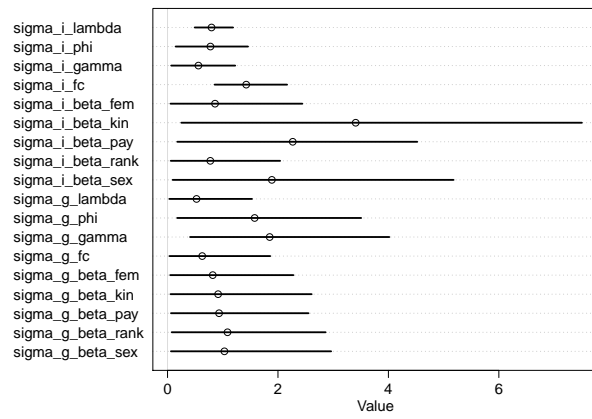


FIGURE S11. Dot plots of posterior predictions of variance,  $\sigma$ , for varying effects of parameters for the global model. Points lie at posterior mean, line spans 89% HPDI.  $g$  is group level and  $i$  is individual level variances.



Group	Individual	Age	Sex	Rank	Std. rank	Latency first success	Order first success	First technique used	N success	N manipul.	N success observed	N manipul. observed	N success being observed	N manipul. being observed	Time available
Kubu	Aar	infant	male	NA	NA	4737	1	CMS	16	44	0	3	29	81	20929
Kubu	Aara	juvenile	female	12	0.61	23616	9	CH	1	16	3	15	1	29	2050
Kubu	Aare	adult	female	7	0.33	NA	NA	NA	NA	NA	2	9	NA	NA	NA
Kubu	Amg	infant	male	14	0.72	19673	8	CMS	3	12	33	59	3	9	5993
Kubu	Amur	adult	female	8	0.39	NA	NA	NA	NA	NA	4	6	NA	NA	NA
Kubu	Arn	juvenile	male	6	0.28	6985	2	CMT	1	3	14	33	2	6	18681
Kubu	Lif	adult	male	1	0.00	NA	NA	NA	NA	NA	0	6	NA	NA	NA
Kubu	Mal	juvenile	male	17	0.89	NA	NA	NA	NA	NA	5	13	NA	NA	NA
Kubu	Mara	adult	female	15	0.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kubu	Mhao	juvenile	female	18	0.94	7011	3	CMS	16	25	10	14	22	22	18655
Kubu	Mokc	infant	female	16	0.83	NA	NA	NA	NA	NA	2	2	NA	NA	NA
Kubu	Nah	juvenile	male	10	0.50	NA	NA	NA	NA	11	4	8	0	14	NA
Kubu	Ness	adult	female	9	0.44	NA	NA	NA	NA	NA	1	9	NA	NA	NA
Kubu	Yalu	adult	female	2	0.06	NA	NA	NA	NA	NA	6	18	NA	NA	NA
Kubu	Yamu	juvenile	female	3	0.11	18650	7	CMS	1	1	2	8	1	1	7016
Kubu	Yara	infant	female	13	0.67	13953	5	CMS	1	3	1	2	2	4	11713
Kubu	Yeni	adult	female	4	0.17	NA	NA	NA	NA	NA	0	1	NA	NA	NA
Kubu	Yuko	juvenile	female	5	0.22	7413	4	CMS	5	15	4	20	4	7	18253
Kubu	Yze	infant	male	11	0.56	18570	6	CMS	1	12	1	5	1	19	7096
Noha	Avo	adult	male	25	0.73	122	1	CMS	2	6	5	11	12	24	30744
Noha	Bela	juvenile	female	24	0.70	11707	11	CMT	13	31	95	159	16	51	19159
Noha	Can	adult	male	13	0.36	24270	24	CMS	73	114	290	464	188	299	6596
Noha	Cus	adult	male	16	0.45	17876	19	CMS	68	94	107	172	94	132	12990
Noha	Gan	infant	male	18	0.52	23137	23	CMS	13	56	153	222	36	138	7729
Noha	Gaya	adult	female	4	0.09	13996	15	CMS	141	236	218	348	588	881	16870
Noha	Gene	adult	female	3	0.06	20861	20	CMS	144	196	310	476	239	322	10005
Noha	Gran	juvenile	female	1	0.00	159	2	CMS	51	108	264	402	172	369	30707
Noha	Guat	juvenile	female	6	0.15	6187	5	CMS	37	109	175	277	110	306	24679
Noha	Lima	juvenile	female	26	0.76	9354	6	CMS	13	26	46	96	11	39	21512
Noha	Prai	juvenile	female	12	0.33	2158	4	CH	14	33	44	72	17	44	28708
Noha	Pret	adult	female	11	0.30	NA	NA	NA	NA	NA	26	50	NA	NA	NA
Noha	Pro	juvenile	male	19	0.55	11538	10	CMS	225	403	485	769	333	617	19328
Noha	Pru	juvenile	male	23	0.67	13985	14	CMS	87	174	435	709	147	274	16881
Noha	Pye	infant	male	31	0.91	NA	NA	NA	NA	NA	16	41	NA	NA	NA
Noha	Raba	juvenile	female	32	0.94	9760	8	CMS	4	9	28	59	1	2	21106
Noha	Renn	adult	female	27	0.79	NA	NA	NA	NA	NA	4	8	NA	NA	NA
Noha	Reva	adult	female	34	1.00	NA	NA	NA	NA	NA	4	4	NA	NA	NA
Noha	Rey	juvenile	male	30	0.88	11791	12	CMT	21	36	63	110	47	70	19075
Noha	Rioj	infant	female	33	0.97	NA	NA	NA	NA	NA	5	16	NA	NA	NA
Noha	Roma	adult	female	28	0.82	NA	NA	NA	NA	NA	5	6	NA	NA	NA
Noha	Rosl	juvenile	female	29	0.85	NA	NA	NA	NA	NA	5	9	NA	NA	NA
Noha	Twe	adult	male	2	0.03	16388	17	CMS	374	431	112	198	1489	1996	14478
Noha	Ula	juvenile	male	10	0.27	16954	18	CMS	156	222	434	722	452	630	13912
Noha	Umt	juvenile	male	14	0.39	13938	13	CMS	139	233	566	911	290	491	16928
Noha	Upps	adult	female	7	0.18	9806	9	CMT	200	312	401	658	569	998	21060
Noha	Ura	infant	male	21	0.61	26886	25	CMS	6	30	476	715	24	115	3980
Noha	Wol	adult	male	5	0.12	NA	NA	NA	NA	NA	8	11	NA	NA	NA
Noha	Xal	infant	male	20	0.58	9573	7	CMS	16	73	142	233	44	168	21293
Noha	Xala	adult	female	8	0.21	21090	22	CMS	54	105	217	335	217	402	9776
Noha	Xia	juvenile	male	17	0.48	173	3	CMS	79	157	163	260	207	419	30693
Noha	Xian	adult	female	9	0.24	14823	16	CH	138	200	222	386	485	638	16043
Noha	Xin	infant	male	22	0.64	21056	21	CMT	8	14	218	357	30	52	9810
Noha	Yan	adult	male	15	0.42	NA	NA	NA	NA	NA	27	64	NA	NA	NA

TABLE S1. Composition of the two study groups Noha and Kubu. Individual level variables (individual, age, sex, rank, normalized rank); latency of first peanut opening success (in seconds); order of first peanut opening success; first technique used; number of successes; number of manipulations (successes + attempts); number of successes observed; number of manipulations observed; number of times being observed when succeeding; number of times being observed when manipulating; time available over the whole experiment after the first success (in seconds). NA indicates individuals did not manipulate or succeed to open peanuts.