

Supplementary material

1 **Appendix 1**

2 **Additional intra-individual tests of negative feedback**

3 As an additional procedure for testing age effects on the intensity of the negative feedback estimated intra-
4 individually, we also built a third set of GLMMs that used $\Delta\text{Cortchange}$ (Models c1-c5) as response variable. We
5 calculated this new variable taking into account the increment in STRESS-Cort levels experienced within a stress
6 series between pre-treatment (i.e. 30-minutes sample) and post- treatment samples (i.e. 65 or 95-minutes
7 samples), and the change recorded in this measure between sequential stress series (i.e. DEX minus SAL
8 treatments). In other words, we first calculated Cort levels at each sampling time post-treatment minus Cort levels
9 at 30 min (i.e., $\Delta\text{Cort}_{65-30}$ and $\Delta\text{Cort}_{95-30}$) and then, Cort-DEX minus Cort-SAL changes (i.e., $\Delta\text{Cortchange}_{65}$ and
10 $\Delta\text{Cortchange}_{95}$; N=32). The fixed and random factors included in the models were identical to those previously
11 reported in Table 1-Approach b (i.e., Models b1-b5).

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13 **Appendix 2**

14 **Table A1. Results from the multiple comparisons of means (Tukey contrasts) allowing the analysis of the significant**
 15 **two-way interaction "Sampling time X Treatment" from the Model a1 in Table 1 (i.e. the best model explaining**
 16 **inter-individual variability in plasma Cort levels of nestling white storks). Reported P-values are adjusted following**
 17 **Bonferroni method (P-value codes: "*"<0.05; "***"<0.001).**

Group 1		Group 2		Tukey contrast			
Sampling time	Treatment	Sampling time	Treatment	Estimate	Std. Error	z value	P
30	SAL	0	SAL	32.09	2.76	11.63	**
65	SAL	0	SAL	38.39	2.76	13.91	**
95	SAL	0	SAL	34.64	2.76	12.55	**
0	DEX	0	SAL	-1.45	2.70	-0.54	>0.05
30	DEX	0	SAL	33.08	2.68	12.35	**
65	DEX	0	SAL	29.47	2.68	11.00	**
95	DEX	0	SAL	18.09	2.68	6.75	**
65	SAL	30	SAL	6.30	2.76	2.28	>0.05
95	SAL	30	SAL	2.55	2.76	0.93	>0.05
0	DEX	30	SAL	-33.54	2.70	-12.43	**
30	DEX	30	SAL	0.99	2.68	0.37	>0.05
65	DEX	30	SAL	-2.61	2.68	-0.98	>0.05
95	DEX	30	SAL	-13.99	2.68	-5.23	**
95	SAL	65	SAL	-3.75	2.76	-1.36	>0.05
0	DEX	65	SAL	-39.84	2.70	-14.76	**
30	DEX	65	SAL	-5.31	2.68	-1.98	>0.05
65	DEX	65	SAL	-8.92	2.68	-3.33	*
95	DEX	65	SAL	-20.30	2.68	-7.58	**
0	DEX	95	SAL	-36.09	2.70	-13.38	**
30	DEX	95	SAL	-1.56	2.68	-0.58	>0.05
65	DEX	95	SAL	-5.17	2.68	-1.93	>0.05
95	DEX	95	SAL	-16.55	2.68	-6.18	**
30	DEX	0	DEX	34.53	2.37	14.56	**
65	DEX	0	DEX	30.93	2.37	13.04	**
95	DEX	0	DEX	19.54	2.37	8.24	**
65	DEX	30	DEX	-3.60	2.35	-1.54	>0.05
95	DEX	30	DEX	-14.99	2.35	-6.39	**
95	DEX	65	DEX	-11.39	2.35	-4.85	**

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19 **Table A2. Results of the subgroups analysis (data subsetting), allowing the study of the significant two-way**
 20 **interaction "Sampling time X Age" from the Model a1 in Table 1 (i.e., the best model explaining inter-individual**
 21 **variability in plasma Cort levels of white stork nestlings).** Δ AICc values were calculated in relation to null models
 22 containing only the intercept (i.e. AICc of the model displayed in the table minus AICc of the null model). P-value
 23 codes: "*" < 0.05; "***" < 0.01.

Model	Sampling time (N)	Tested effects	Estimate (\pm s.e.m.)	Chi^2 (1 df)	P-value	AICc	Δ AICc
a1.1	0 min (91)	Intercept	5.14 (\pm 4.27)	1.45	0.23	505.46	2.27
		Age	0.02 (\pm 0.07)	0.07	0.79		
a1.2	30 min (93)	Intercept	14.30 (\pm 12.74)	1.26	0.26	726.56	-1.70
		Age	0.44 (\pm 0.22)	3.99	*		
a1.3	65 min (93)	Intercept	-29.42 (\pm 19.36)	2.31	0.13	808.86	-8.98
		Age	1.23 (\pm 0.34)	13.17	**		
a1.4	95 min (93)	Intercept	-68.75 (\pm 18.06)	14.49	**	805.50	-24.63
		Age	1.77 (\pm 0.31)	31.47	**		

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44 **Table A3. Comparison of models aimed at testing whether developmental changes in Cort secretion in birds**
 45 **occur as a consequence of an age-related attenuation of negative feedback mechanisms (Negative Feedback**
 46 **Attenuation Hypothesis) versus growth and maturation of the HPA tissues (Maturation Hypothesis). The negative**
 47 **feedback was estimated intra-individually as Δ Cortchange (see Appendix 1 for details) .The best model (Model**
 48 **c1) revealed a negative change (i.e., a significant decrease) in plasma titers associated to DEX treatment (Intercept**
 49 **\pm s.e.m: -11.06 ± 2.76 ; $\chi^2_1 = 16.08$; $P < 0.01$), but age and sampling time post-treatment had no effects on such**
 50 **decrease (Models c1-c5). These results were consistent with those shown in Table 1 (i.e., Models b1-b5).**

Approach	Response (N)	Model	Tested effects	K	AICc	Δ AICc
c (intra-individual*)	Δ Plasma Cort change, ng ml ⁻¹ (N=32)	c1	Null model (only intercept)	4	263.61	0.00
		c2	Age	5	265.83	2.22
		c3	Sampling time	5	266.43	2.83
		c4	Age	6	268.88	5.28
			Sampling time			
		c5	Age	7	271.58	7.97
			Sampling time			
Age X Sampling time						

51 * General Linear Mixed Models always considered brood and individual as random terms.

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