

Table S1. Set of generalised linear models explaining honeybees' spontaneous response towards any odour.

Model	K	AIC	Δ_i	w_i
1. Rearing environment*Age*Treatment	16	631.99	7.70	0.01
2. Rearing environment + Age*Treatment	9	632.86	7.55	0.01
3. Rearing environment*Age + Treatment	9	624.30	0	0.46
4. Rearing environment*Treatment + Age	7	630.06	5.76	0.03
5. Rearing environment + Age + Treatment	6	628.90	4.61	0.05
6. Age + Treatment	5	626.95	2.65	0.12
7. Treatment	2	625.13	0.83	0.30
8. Null	1	629.96	5.66	0.03

K is the number of model parameters. Δ_i is the difference in AIC between the model i and the most supported model (lowest AIC value), w_i is the Akaike weight of the model. Although model 3 has the lowest AIC value, model 7 was chosen as the minimal adequate model for making inference from the data as the gain in parsimony outweighed the loss in fit ($\Delta_i = 0.83$).

Table S2. Set of generalised linear mixed effect models explaining honeybees' spontaneous response towards linalool and phenylacetaldehyde.

Model	K	AIC	Δ_i	w_i
1. RE*Age*Treatment*Odour + Bee	32	895.56	93.46	$1.65e^{-21}$
2. RE + Age*Treatment*Odour + Bee	17	847.98	45.88	$3.55e^{-11}$
3. Age + RE*Treatment*Odour + Bee	11	861.47	59.37	$4.17e^{-14}$
4. Treatment + RE*Age*Odour + Bee	17	862.46	60.36	$2.54e^{-14}$
5. Odour + RE*Age*Treatment + Bee	17	868.49	66.39	$1.25e^{-15}$
6. RE + Age + Treatment*Odour + Bee	8	814.19	12.09	$7.71e^{-04}$
7. RE + Treatment + Age *Odour + Bee	10	815.82	13.72	$3.41e^{-04}$
8. RE + Odour + Age*Treatment + Bee	10	833.83	31.73	$4.19e^{-08}$
9. RE + Age + Treatment + Odour + Bee	7	812.70	10.60	$1.63e^{-03}$
10. Age + Treatment + Odour + Bee	6	810.12	8.02	$5.90e^{-03}$
11. RE + Treatment + Odour + Bee	4	807.09	4.99	$2.69e^{-02}$
12. RE + Age + Odour + Bee	6	811.13	9.03	$3.56e^{-03}$
13. RE + Age + Treatment Bee	6	810.13	8.03	$5.87e^{-03}$
14. Treatment + Odour + Bee	3	805.09	2.99	$7.30e^{-02}$
15. RE + Odour + Bee	3	806.09	3.99	$4.43e^{-02}$
16. RE + Treatment + Bee	3	805.09	2.99	$7.30e^{-02}$
17. RE + Bee	2	804.09	1.99	$1.20e^{-01}$
18. Treatment + Bee	2	803.09	0.99	$1.98e^{-01}$
19. Odour + Bee	2	804.09	1.99	$1.20e^{-01}$
20. Bee (null)	1	802.1	0	$3.26e^{-01}$

K is the number of model parameters. Δ_i is the difference in AIC between the model i and the most supported model (lowest AIC value), w_i is the Akaike weight of the model. RE stands for rearing environment.

Table S3. Set of generalised linear models explaining honeybees' gustatory responsiveness.

Model	K	AIC	Δ_i	w_i
1. Rearing environment*Age*Treatment	16	2090,78	7.66	$2.12e^{-02}$
2. Rearing environment + Age*Treatment	9	2083.14	0	$9.79e^{-01}$
3. Rearing environment*Age + Treatment	9	2131.36	48.23	$3.30e^{-11}$
4. Rearing environment* Treatment + Age	7	2129.11	45.98	$1.02e^{-10}$
5. Rearing environment + Age + Treatment	6	2117.51	44.37	$2.27e^{-10}$
6. Age*Treatment	8	2111.48	28.35	$6.84e^{-07}$
7. Age + Treatment	5	2155.48	72.34	$1.91e^{-16}$
8. Rearing environment	2	2157.00	89.92	$2.92e^{-20}$
9. Age	4	2173.05	84.04	$5.50e^{-19}$
10. Treatment	2	2167.18	73.86	$8.94e^{-17}$
11. Null	1	2157.00	101.89	$7.35e^{-23}$

K is the number of model parameters. Δ_i is the difference in AIC between the model i and the most supported model (lowest AIC value), w_i is the Akaike weight of the model.

Table S4. Set of generalised linear models explaining honeybees' odour discrimination during the training phase of a classical PER conditioning.

Model	K	AIC	Δ_i	w_i
1. Age*Treatment	4	576.84	0	0.99
2. Age + Treatment	3	590.28	13.44	$1.19e^{-03}$
3. Age	2	588.63	11.88	$2.60e^{-03}$
4. Treatment	2	588.72	11.79	$2.72e^{-03}$
5. Null	1	587.08	10.23	$5.89e^{-03}$

K is the number of model parameters. Δ_i is the difference in AIC between the model i and the most supported model (lowest AIC value), w_i is the Akaike weight of the model.

Table S5. Set of generalised linear models explaining honeybees' odour discrimination during the testing phase of a classical PER conditioning.

Model	K	AIC	Δ_i	w_i
1. Age* [*] Treatment	4	206.66	0	$9.91e^{-01}$
2. Age + Treatment	3	225.16	18.51	$9.57e^{-05}$
3. Age	2	223.50	16.64	$2.43e^{-04}$
4. Treatment	2	223.30	16.84	$2.20e^{-04}$
5. Null	1	221.63	14.98	$5.59e^{-04}$

K is the number of model parameters. Δ_i is the difference in AIC between the model i and the most supported model (lowest AIC value), w_i is the Akaike weight of the model.