Supplementary material

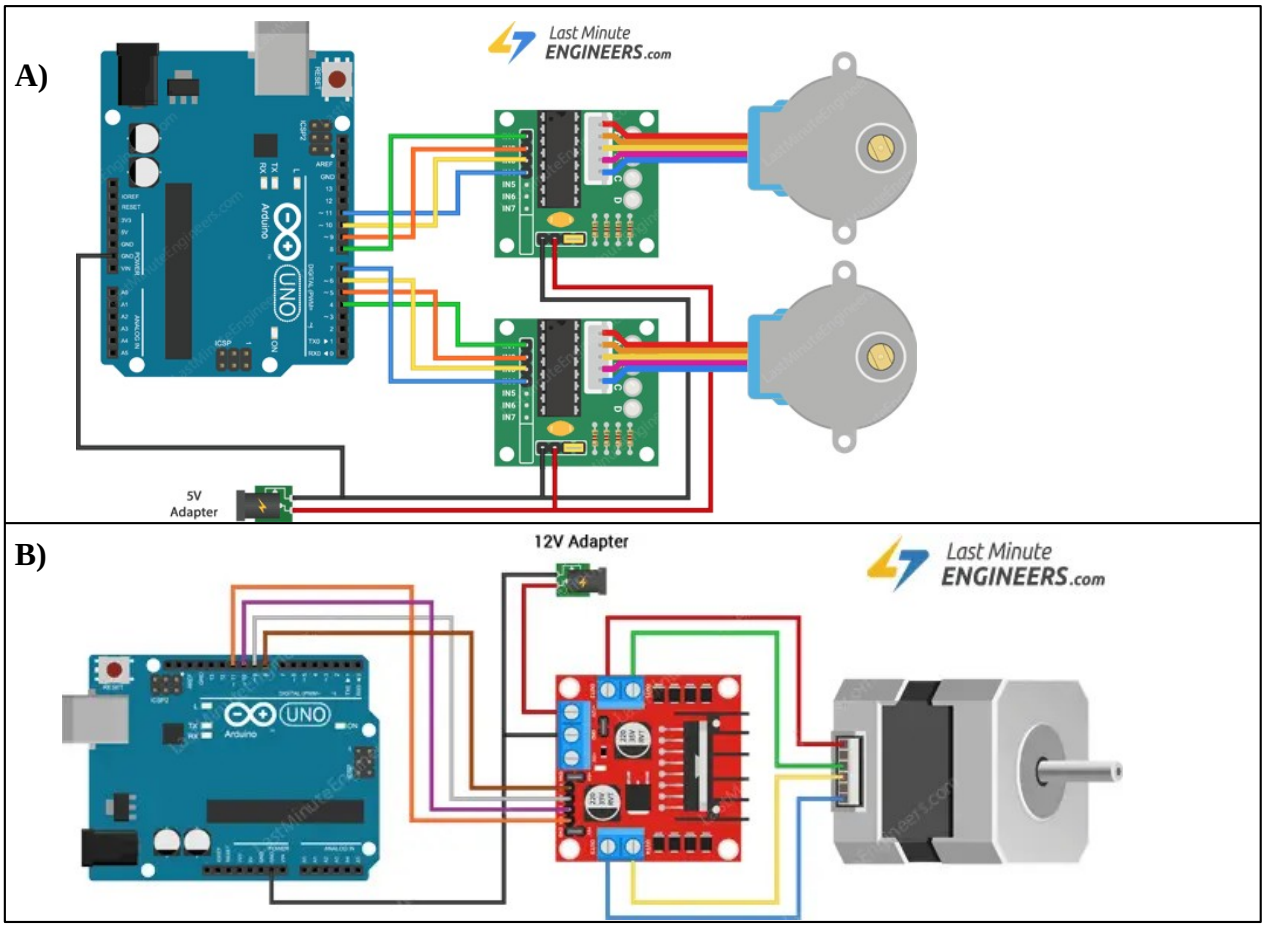

Figure S1: Circuit diagrams. A) Circuit diagram used to open/close the refuge doors, two doors at the same time (image from https://lastminuteengineers.com/28byj48-stepper-motor-arduino-tutorial/). B) Circuit diagram used to trigger the heron model (image from https://lastminuteengineers.com/stepper-motor-l298n-arduino-tutorial/)

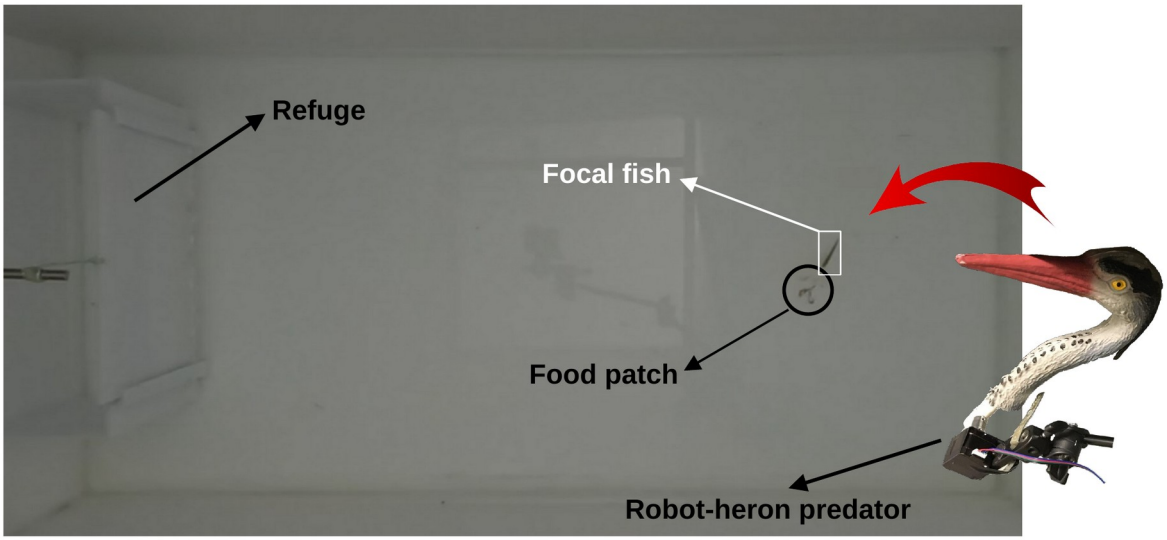

Figure S2. Diagram of the setup. The robot-heron predator was activated when the focal fish entered inside the food patch.

Table S1: Loads of each variable into each PC axis, and cumulative proportion explained by each PC axis. Latency = latency to first leave the refuge, Distance = total distance travelled, BW before = number of bloodworms eaten before the attack, BW after = number of bloodworms eaten after the attack.

	PC1	PC2	PC3	PC4
Latency	-0.5866	-0.01282	-0.8036	-0.1004
Distance	0.5215	-0.73992	-0.3899	0.1687
BW before	0.3478	0.10946	-0.1406	-0.9205
BW after	0.5128	0.66361	-0.4271	0.3379
Cumulative proportion	0.6157	0.8295	0.9447	1

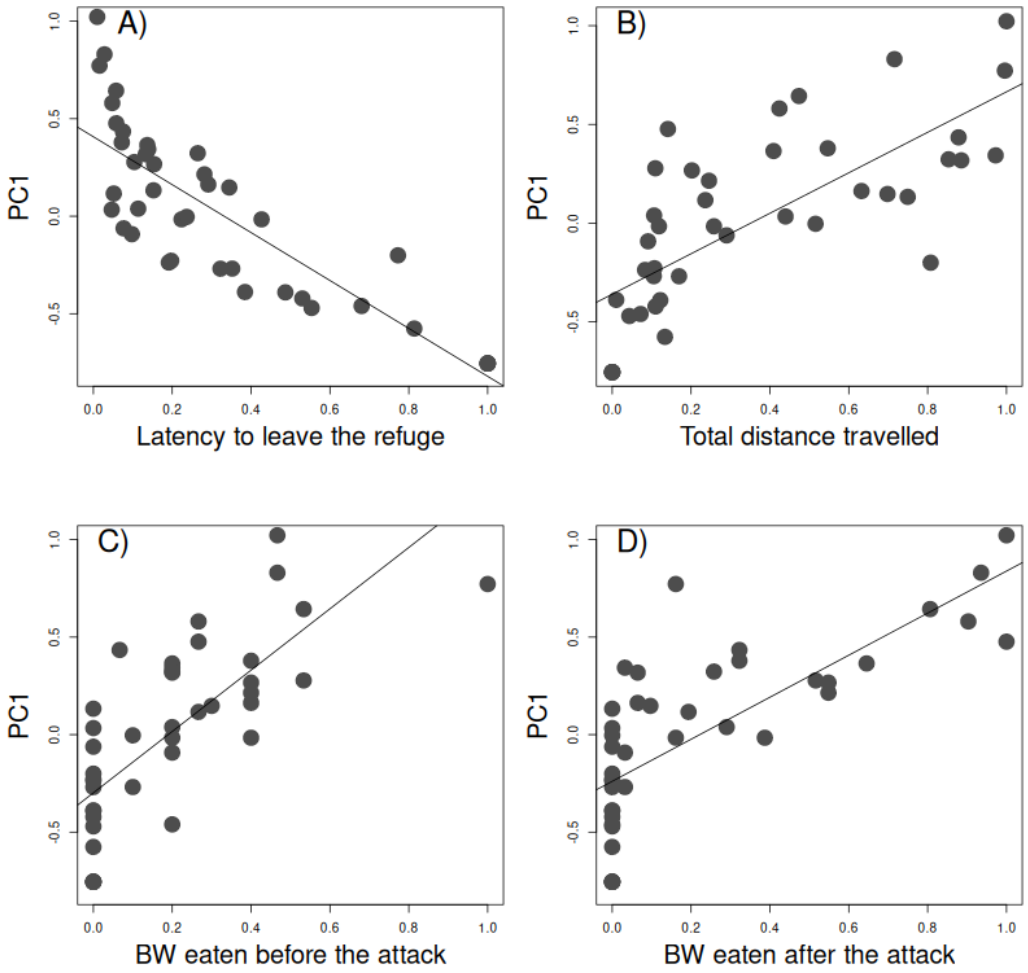

Figure S3: Relationship between PC1 scores (y-axis) obtained with PCA analysis (figure 1 in main text) and each variable (x-axis) used in the PCA. A) Latency to first leave the refuge (boldness), B) total distance travelled (as measure of exploration), C) number of bloodworms eaten before the attack, and D) number of bloodworms eaten after the attack. Dots are the average values for each fish over the three tests.

Table S2: GLMM1. Most parsimonious model highlighted in bold and with asterisks. Table shows the five models with the lowest AICc (or all models with a dAICc lower than 2.0 if those are not included within the five models), and the model with the highest dAICc (bottom).

Response variable: Freeze or flee (Binomial)	dAICc	df
BW before + Distance predator	0.0	4
BW before	0.2	3
BW before + Angle attack + Distance predator	0.2	5
Null model	1.3	2
Angle attack + Distance predator	1.6	4
BW before + Angle attack	1.8	4
BW before + Body length	1.9	4
Distance predator	2.0	3
BW before +Distance predator + Body length	2.0	5
...		
Latency * BW before + Body length + Day + Angle attack	9.3	8

Full model: ~ Latency + BW before + Latency:BW before + Body length + Day + Angle attack + Distance predator + (1|Individual ID) [dAICc = 9.2]
Null model: ~ (1|Individual ID) [dAICc = 1.3]

Description of fixed effects

- Latency = latency to first leave refuge (boldness)
- BW before = number of bloodworms eaten before attack (food intake)
- Latency:BW before = interaction between boldness and food intake
- Body length = body length of the fish
- Day = trial day (1, 2, 3)
- Angle attack = angle (direction) from the attack
- Distance predator = distance from the predator

Table S3: Summary of the most parsimonious model for GLMM1.

	Estimate	SD	z value
(Intercept)	0.849	0.527	1.074
BW before	-0.67	0.397	-1.686

Test of residuals (DHARMa package)

	p-value
KS test p-value	0.95
Dispersion test	0.77
Outlier test	1

Table S4: GLMM2. Most parsimonious model highlighted in bold and with asterisks. Table shows the five models with the lowest AICc (or all models with a dAICc lower than 2.0 if those are not included within the five models), and the model with the highest dAICc (bottom).

Response variable: Escape latency (Gaussian)	dAICc	df
Latency + BW before + Day + Angle attack	0.0	7
Latency + BW before	1.8	5
Latency + BW before + Day	1.9	6
Latency + BW before + Body length + Day + Distance predator	2.1	8
Latency + BW before + Body length + Day + Angle attack	2.1	8
…		
BW before + Body length + Distance predator + Angle attack	12.9	7

Full model: ~ Latency + BW before + Latency:BW before + Body length + Day + Angle attack + Distance predator + (1|Individual ID) [dAICc = 7.3]
Null model: ~ (1|Individual ID) [dAICc = 9.3]

Description of fixed effects

- Latency = latency to first leave refuge (boldness)
- BW before = number of bloodworms eaten before attack (food intake)
- Latency:BW before = interaction between boldness and food intake
- Body length = body length of the fish
- Day = trial day (1, 2, 3)
- Angle attack = angle (direction) from the attack
- Distance predator = distance from the predator

Table S5: Summary of the most parsimonious model for GLMM2.

	Estimate	SD	t value
(Intercept)	0.693	0.116	5.995
Latency	0.177	0.065	2.711
BW before	0.164	0.057	2.906
Day	0.098	0.033	3.006
Angle attack	0.149	0.065	2.300

Test of residuals (DHARMa package)

	p-value
KS test	0.15
Dispersion test	0.84
Outlier test	1

Table S6: GLMM3. Most parsimonious model highlighted in bold and with asterisks. Table shows the five models with the lowest AICc (or all models with a dAICc lower than 2.0 if those are not included within the five models), and the model with the highest dAICc (bottom).

Response variable: Turn rate (Gaussian)	dAICc	df
Distance predator + Curvature	0.0	5
Body length + Distance predator + Curvature	0.5	6
Latency + Distance predator + Curvature	0.7	7
Curvature	1.3	4
Body length + Curvature	1.4	5
BW before + Body length + Distance predator + Curvature	1.6	6
BW before + Angle attack + Distance predator + Curvature	1.9	8
BW before + Body length + Curvature	2.2	6
…		
Latency * BW before + Body length + Day + Angle attack + Distance predator	30.6	10

Full model: ~ Latency + BW before + Latency:BW before + Body length + Day + Angle attack + Distance predator + Curvature + (1|Individual ID) [dAICc = 10.9]
Null model: ~ (1|Individual ID) [dAICc = 13.8]

Description of fixed effects

- Latency = latency to first leave refuge (boldness)
- BW before = number of bloodworms eaten before attack (food intake)
- Latency:BW before = interaction between boldness and food intake
- Body length = body length of the fish
- Day = trial day (1, 2, 3)
- Angle attack = angle (direction) from the attack
- Distance predator = distance from the predator
- Turn rate = turn rate during escape
- Curvature = curvature index, maximum bend of the body during escape (lower index = higher curvature)

Table S7: Summary of the most parsimonious model for GLMM3

	Estimate	SD	t value
(Intercept)	2664.71	104.66	25.46
Curvature	-400.55	82.16	-4.875
Distance predator	146.76	71.87	2.042

Test of residuals (DHARMa package)

	p-value
KS test	0.72
Dispersion test	0.65
Outlier test	1

Table S8: GLMM4. Most parsimonious model highlighted in bold and with asterisks. Table shows the five models with the lowest AICc (or all models with a dAICc lower than 2.0 if those are not included within the five models), and the model with the highest dAICc (bottom).

Response variable: Curvature index (Gaussian)	dAICc	df
Distance predator + Turn rate	0.0	5
Latency + Distance predator + Turn rate	1.9	6
Angle attack + Distance predator + Turn rate	2.2	6
Day + Distance predator + Turn rate	2.6	6
BW before + Distance predator + Turn rate	2.7	6
…		
Latency * BW before + Body length + Day + Angle attack + Distance predator	33.8	10

Full model: ~ Latency + BW before + Latency:BW before + Body length + Day + Angle attack + Distance predator + Turn rate + (1|Individual ID) [dAICc = 16.9]
Null model: ~ (1|Individual ID) [dAICc = 17.7]

Description of fixed effects

- Latency = latency to first leave refuge (boldness)
- BW before = number of bloodworms eaten before attack (food intake)
- Latency:BW before = interaction between boldness and food intake
- Body length = body length of the fish
- Day = trial day (1, 2, 3)
- Angle attack = angle (direction) from the attack
- Distance predator = distance from the predator
- Turn rate = turn rate during escape
- Curvature = curvature index, maximum bend of the body during escape (lower index = higher curvature)

Table S9: Summary of the most parsimonious model for GLMM4

	Estimate	SD	t value
(Intercept)	0.647	0.010	62.042
Turn rate	-0.053	0.010	-5.183
Distance predator	0.022	0.009	2.475

Test of residuals (DHARMa package)

	p-value
KS test	0.95
Dispersion test	0.8
Outlier test	1

Table S10: GLMM5. Most parsimonious model highlighted in bold and with asterisks. Table shows the five models with the lowest AICc (or all models with a dAICc lower than 2.0 if those are not included within the five models), and the model with the highest dAICc (bottom).

Response variable: Initial speed (Gaussian)	dAICc	df
Latency + Body length	0	5
Latency + Body length + Day	0.2	6
Null model	0.6	4
Curvature	0.7	5
Latency + Body length + Curvature	0.8	6
BW before + Body length + Turn rate	1.4	6
BW before + Body length + Angle attack	1.6	6
BW before + Body length + Day + Curvature	1.6	7
Body length + Turn rate	1.8	5
Body length + Day	1.9	5
Latency + Body length	2	5
…		
Latency * BW before + Day + Angle attack + Distance predator + Turn rate + Curvature	19.2	11

Full model: ~ Latency + BW before + Latency:BW before + Body length + Day + Angle attack + Distance predator + Turn rate + Curvature + (1|Individual ID) [dAICc = 18.9]
Null model: ~ (1|Individual ID) [dAICc = 0.6]

Description of fixed effects

- Latency = latency to first leave refuge (boldness)
- BW before = number of bloodworms eaten before attack (food intake)
- Latency:BW before = interaction between boldness and food intake
- Body length = body length of the fish
- Day = trial day (1, 2, 3)
- Angle attack = angle (direction) from the attack
- Distance predator = distance from the predator
- Turn rate = turn rate during escape
- Curvature = curvature index, maximum bend of the body during escape (lower index = higher curvature)

Table S11: GLMM6. Most parsimonious model highlighted in bold and with asterisks. Table shows the five models with the lowest AICc (or all models with an dAICc lower than 2.0 if those are not included within the five models), and the model with the highest dAICc (bottom).

Response variable: Recovery time (Poisson)	dAICc	df
Latency + BW before + Body length + Day + Escape distance	0.0	7
Latency + BW before + Body length + Day + Escape distance + Distance refuge	1.3	8
Latency * BW before + Body length + Day + Escape distance	2.2	8
Latency * BW before + Body length + Day + Escape distance + Distance refuge	3.5	9
Latency + BW before + Body length + Escape distance + Distance refuge	20.6	7
…		
BW before	1130.5	3

Full model: ~ Latency + BW before + Latency:BW before + Body length + Day + Escape distance + Distance refuge + (1|Individual ID) [dAICc = 3.5]
Null model: ~ (1|Individual ID) [dAICc = 1128.4]

Description of fixed effects

- Latency = latency to first leave refuge (boldness)
- BW before = number of bloodworms eaten before attack (food intake)
- Latency:BW before = interaction between boldness and food intake
- Body length = body length of the fish
- Day = trial day (1, 2, 3)
- Escape distance = distance travelled during escape, from the initial movement to full stop (assessed by visual inspection)
- Distance refuge = distance from the refuge when fish stop after escaping (if they flee) or at the position they froze (if freeze).

Table S12: Summary of the most parsimonious model for GLMM6

	Estimate	SD	z value
(Intercept)	4.853	0.164	29.540
Latency	0.161	0.020	7.778
BW before	0.196	0.018	10.875
Day	0.033	0.007	4.942
Escape distance	0.589	0.019	30.255
Body length	-0.422	0.067	-6.279

Test of residuals (DHARMa package)

	p-value
KS test	0.36
Dispersion test	0.39
Outlier test	0.24