

Supplementary Information

Title:

Peer attachment formation by systemic redox regulation with social training after a sensitive period.

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Figure S1. Visualization of social behaviour

a. Definition of seven behavioural parameters.

The coordinate of head centre was marked by a circle such as the illustration in Figure S1.1b. The circle size, the outer colour, and inner colour indicate call frequency, call type, and the object of pecking, respectively. The bar out the circle shows a beak direction.

b. Visualisation of the typical behaviour of an Iso (b1-4) or Grp subject (b5-8).

The result of the behaviour test in two contexts was presented, in the isolation context (b1-2, b5-6) and in the visual/auditory interaction (v+a+) (b3-4, b7-8). These behaviours are also illustrated in 3D in time and space by plotting the 3D coordinate (X, Y, and time). Each 3D illustration (b1, 3, 5, and 7) was paired with a plane showing local preference score (b2, 4, 6, and 8) with colour gradation depicted in Figure S1.1b9. The grouped chicks (Grp) expressed significantly higher LP-G in the v+a+ context, whereas the isolated chicks (Iso) typically showed higher LP-C in the isolation context (one-way ANOVA, n=10 each).

Figure S1

a

7D Head centre XY (2D) + Time (1D) + Beak direction ϕ (1D) + Call frequency (1D) + Call type with first component number (1D) + Peck object (1D)			
1 XY	Locomotion (0<X<100, 0<Y<100)		
2 Time	[sec]		
3 Bar angle Φ	Beak direction ϕ		
4 Symbol size	Frequency [time/sec]	#=0	
		#=1	
		#=2	
		#=3	
		#=4	
5 Symbol outer colour	Morphological Call type [# /sec]	dj-call ($-2 \leq f_2 - f_1 \leq 0$) g-move (-)	#=1
		d-call ($f_2 - f_1 \leq -2$) g-move (-)	#=1
		d-call ($f_2 - f_1 \leq -2$) g-move (+)	#=1
		j-call and/or g-move(+)	detectable
		undetectable	
	neither call nor g-move		
6 Symbol inner colour	peck object	to floor (pk-floor)	
		to wall (pk-wall)	
		to self (pk-self)	

b

