

NOTA DE PRENSA

Begging signals of nestling birds reflect their health status beyond mere hunger

- In an experiment conducted by the CSIC, spotless starling nestlings signaled for food with less intense postures and distinctiv sounds when a harmless infection was induced under controlled food deprivation conditions.



Spotless starling nestlings asking for food // Daniel Parejo

Sevilla, 23 de octubre de 2024. Researchers from the [Institute for Game and Wildlife Research](#) (IREC) and the [Doñana Biological Station](#) (EBD), centres belonging to the Spanish National Research Council (CSIC), has conducted a study that reveals that the signals conveyed by nestlings to ask for food are not only indicators of hunger, but also reflect their state of health.

‘In a competitive scenario, nestlings strive to show that they are more valuable than their siblings, i.e. healthier, in order to attract the limited resources provided by their parents. However, members of the same

family also share genes and a common fate, so they should also cooperate,' explains [Tomás Redondo](#), a researcher at the Doñana Biological Station.

It has been known for a long time that nestlings convey signals asking for food depending on how hungry they are. But, do they also reveal their health? Do they do so if they find themselves falling behind in the competition for food? This is what the scientific team set out to find out. To do so, they designed a novel experiment that considered several variables affecting the nestlings' signals, such as their nutritional status or their own individual characteristics.

During the experiment, spotless starling nestlings were inoculated with a vaccine that simulated a harmless infection. Specifically, they were injected with lipopolysaccharide, an antigen triggering an immune response without causing damage. In this way, the parents could not directly perceive the health status of the offspring. Other nestlings were injected with a placebo to compare their sounds. The researchers then observed the behaviour of the nestlings under controlled conditions of food deprivation, also considering the idiosyncrasies of the individual nestlings, as not all respond equally to the same treatment.

The results indicated that, for the same degree of hunger, nestlings that received the vaccine demanded food with less intense postures and begged with less intensity and a higher entropy, related to energy dispersal, than before receiving the vaccine. This was also true when compared to chickens that received a placebo.

Why does a sick nestling ask for food with less intensity and with distinctive calls? 'Although our experimental design did not allow us to know the exact reason, the most apparent explanation could be that induced sickness weakens them and making them unable to beg more intensely, like when we don't have enough energy when we have a fever,' explains Daniel Parejo, researcher at the Institute for Game and Wildlife Research - CSIC. Another explanation could be related to the response they could provoke in their parents. 'But, in addition, with their signals, nestlings could indicate that they are sick, either to warn their parents and siblings about their state of health or possible contagion, or to inform their parents that, for the moment, they needed to be warmed rather than fed,' explains Parejo.

Although the details of how such experiments simultaneously affect health status and hunger are not yet well understood, this research paves the way for more rigorous experiments that consider the physiological mechanisms involved in the behaviour of baby birds, which is essential for understanding the evolution of communicative signals.

Referencia: Parejo-Pulido, D., Redondo, T. & Pérez-Rodríguez, L. Immune challenge reduces begging effort and modifies begging call structure in spotless starling nestlings. *Behav Ecol Sociobiol* 78, 81 (2024).
<https://doi.org/10.1007/s00265-024-03497-w>