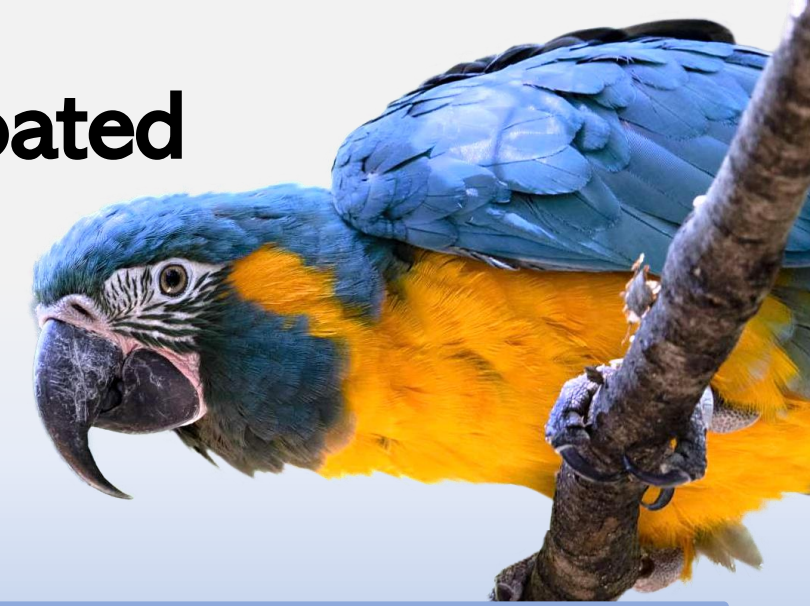


Investigating episodic-like memory abilities in blue-throated macaws using the violation of expectation paradigm

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Background

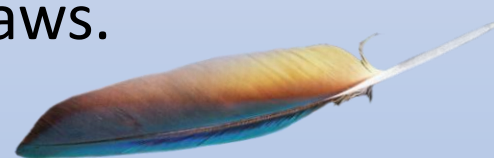
Episodic-like memory has been a challenging subject to study in animals, as it requires a test to be unexpected to minimize the chance of the subject preparing a behavioral response.

For the first time, the violation of expectation paradigm was used to study episodic-like memory in macaws. This paradigm states that subjects tend to look longer at the source of a violation when a situation is unexpected, than when a situation is expected.



Aims

- To test blue-throated macaws (*Ara glaucogularis*) for evidence of episodic-like memory;
- To validate the effect of the violation of expectation paradigm in macaws.



Results

Group level: Macaws performed correctly in 7 out of 18 sessions (38.89%) → Results not above chance level.

Individual level: Two macaws showed promising results: three out of three correct responses for Gargamel, two out of three correct responses for Long John.

Violation of expectation: Macaws took on average 0.38 seconds to respond with a behavior in an expected situation, and 1.04 seconds in an unexpected situation ($p = 0.031$). **First documented effect of this paradigm in this bird group.**

Observed trend for macaws to respond incorrectly when copying a conspecific more often after the unexpected trial, than before it.

Methods

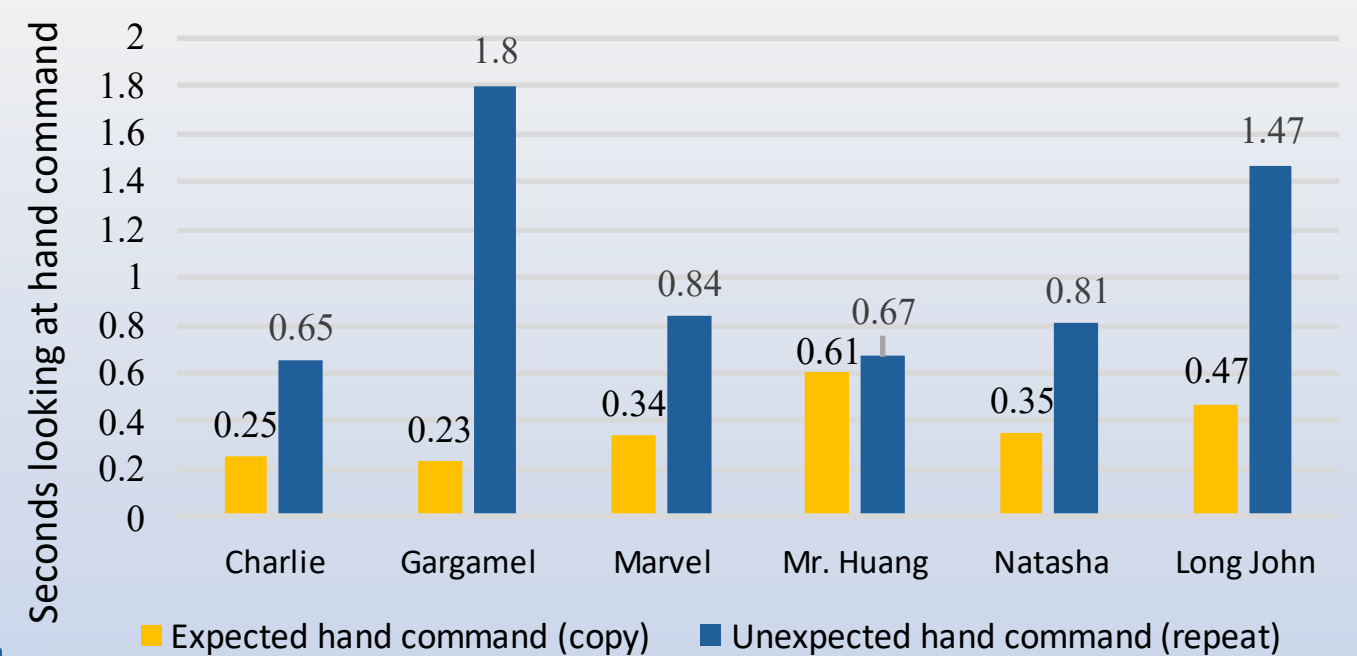
Macaws ($n = 6$) were trained to:

- Copy the action of a conspecific;
- Repeat their last own behavior.

After being habituated to routinely participate in copy training sessions (consisting of 24 trials each), macaws were unexpectedly asked in the middle of a session to repeat the behavior they performed in the previous trial, instead of copying the conspecific in the current trial as usual. Time spent looking at the hand command for copy (expected command) and repeat (unexpected command) were recorded, as well as the number of incorrect responses before and after the unexpected trial. Each macaw was tested three times, totalling to 18 sessions.



Scan to watch a session example!



Average time (s) spent gazing at a hand command expected by the subject (normal copy trials) VS when it was unexpected (unexpected repeat trials).

