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Rhythmic signatures in the display songs of the African penguin

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African penguins (*Spheniscus demersus*) are colonial seabirds where ecstatic display songs play a crucial role in mate choice and territorial defence. Such vocalisations are uttered mostly by males during the breeding season and consist of a sequence of three stereotyped syllable types combined in a phrase. Ecstatic display songs have been demonstrated to encode individual identity information in their spectral acoustic components. However, whether the rhythmic structure of the song could play a role in completing the acoustic signature remains to be investigated. To fill this gap in knowledge, we collected 136 display songs from eight adult African penguins belonging to the ex-situ colony of the Zoological Garden of Pistoia and 268 songs from eight penguins housed at Zoomarine Italia. Vocalisations were collected during the breeding period in 2017 using a focal animal sampling method. From each song, we measured the Inter-Onset Interval (IOI) of adjacent syllables as a proxy for the rhythmic structure of the song. Using a series of Generalized Linear Mixed Models, we found a significant effect of the emitter to the IOI. We also found a significant effect of the colony to the IOI, suggesting a potential rhythmic convergence within each group of birds. Overall, our results demonstrate that the rhythmic structure of the song can provide cues to the individual identity of the emitter. Further investigations are needed to define whether the genetic component or auditory experience is responsible for determining the rhythmic structure of the ecstatic display songs at a colony level.

The lemur baseline! How lemurs compare to monkeys and apes in a comprehensive cognition test battery

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Understanding the evolution of brain size and its link to cognitive abilities is a central question in behavioural ecology. In order to understand this link, comparable and comprehensive test batteries in several cognitive domains are required. The Primate Cognition Test Battery has been developed to address this question, and it has already been applied to two great ape and two Old World monkey species. These four species showed largely comparable cognitive skills in the physical as well as in the social domain. Since brain size increases disproportionately within the primate order from strepsirrhines to haplorhines and humans, we applied the Primate Cognition Test Battery to three strepsirrhine species, differing in brain size as well as several socioecological traits. We tested 13 black-and-white ruffed lemurs (*Varecia variegata*), 27 ringtailed lemurs (*Lemur catta*) and 19 mouse lemurs (*Microcebus murinus*), the latter having one of the smallest brains among primates. The three lemur species exhibited similar cognitive skills in the physical and social domain, and surprisingly, performed in many aspects at a comparable level to the previously tested haplorhine primates. Overall, lemurs' performance was slightly inferior in the physical domain, while they matched the cognitive abilities of haplorhine primates in the social domain. These results do therefore not support a clear link between brain size and cognitive skills, but suggest a more domain-specific distribution of cognitive abilities in primates.