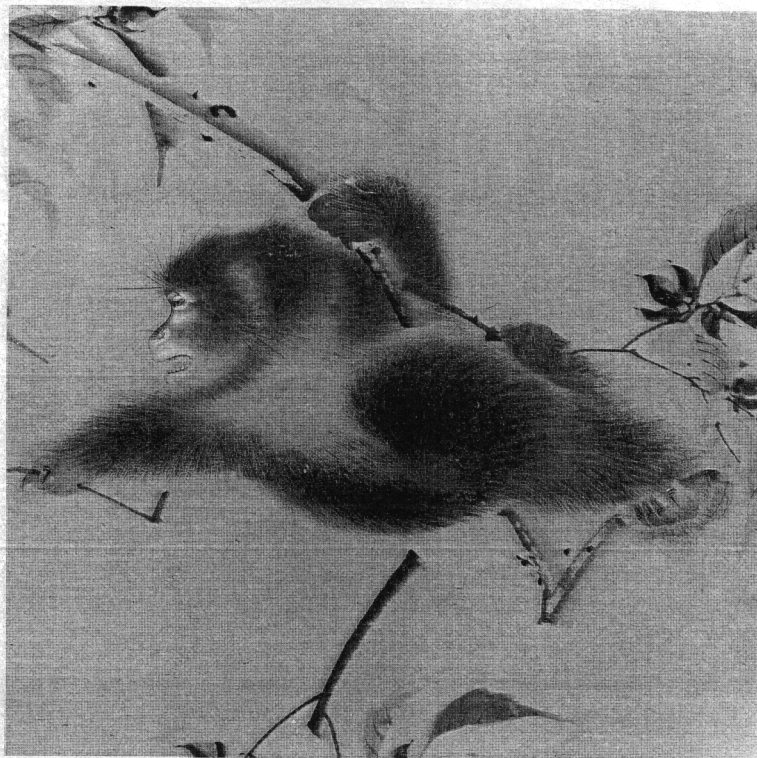


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020

VOCAL COMMUNICATION IN *CALLICEBUS*: NEW PERSPECTIVES FOR THE STUDY OF HUMAN LANGUAGE EVOLUTIONC. Cäsar^{1,2,3}, R. Young³, R. Byrne¹, K. Zuberbühler¹

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The communication capacities of Old World primates, especially guenons, have been relatively well documented in contrast to those of New World species. A typical finding is that individuals produce a range of alarm calls that are acoustically distinct in response to different predator types and that these calls evoke adaptive responses in recipients. Comparable studies are currently not available for New World primates, which is problematic for understanding the evolutionary origins of language-relevant capacities. *Callicebus* monkeys are known for their large repertoire of vocalizations, and some of their calls are combined into long and complex sequences. However, the monkeys' vocal responses to distinct external events have not been studied systematically. We experimentally elicited anti-predator behaviour in five different undisturbed groups of Black-fronted Titi monkeys, using visual models of predators. Preliminary results show that these monkeys produce two different types of calls when first encountering different types of predators. Subsequently they produce a long sequence of calls, in which some calls can be categorized into four acoustic variants, which are obtained by optional suffixation and duplications of the call stem. We discuss field experiments aimed at establishing the relationship between the various levels of acoustic flexibility and some distinct external events. Overall, our results indicate no fundamental differences in New World monkeys to the acoustic flexibility previously reported from Old World monkeys, suggesting an early origin of these capacities within the primate lineage. Funding: FAPEMIG/Brazil. C.C.' PhD scholarship is funded by CAPES/Brazil.

Keywords: alarm calls, Pitheciidae, field experiments, semantic

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ROLE OF VOCAL TRACT MORPHOLOGY IN DETERMINING SPECIES-SPECIFIC VOCAL PATTERNSM. Gamba¹, C. Giacoma¹

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Models of vocal production based on the relationship between the vocal tract area function and the formant output has been the most common framework in voice research for understanding speech production in humans and can be successfully applied to the study of non-human primate vocal production. In this work we used vocal tract computational modeling to investigate the potential of nasal tract and oral tract resonance in generating acoustic cues of species-specificity. We collected morphological measurements of the supralaryngeal cavities in the ring-tailed lemur (*Lemur catta*), the gentle lemurs (*Hapalemur griseus* ssp.), the greater bamboo lemur (*Prolemur simus*), the true lemurs (*Eulemur* spp.), the ruffed lemurs (*Varecia* spp.) and the sifakas (*Propithecus* spp.). We also derived information from anatomical descriptions of the vocal tract of the indri (*Indri indri*). We calculated area functions for each *taxon* to generate anatomically based computational models of the vocal tracts. We have then investigated inter- and intra-specific variation analyzing the acoustic responses of the computational models and comparing these outputs with formants measured from natural sounds. Results showed that most of the congeneric *taxa* had remarkable similarities in vocal tract size and shape. While the acoustic effects of articulatory variation (e.g. mouth opening) require further investigations, nasal cavities clearly play an important role in shaping spectral characteristics of lemur vocalizations.

Keywords: vocalizations, lemurs, modeling, formants

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