

# The coevolution of ventral infant carrying with primate vision and vocal signaling

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Primates are characterized by generally orthograde postures and frequently longer hind legs (or arms) for specialized inter-branch locomotion. Cranial features of primates trend towards larger brains, a reduced snout, and convergent eyes. Primate origins hypotheses suggest such cranial configurations likely improve stereoscopic vision for high-impact limb landing. A recent musicality origins hypothesis suggests that proficiency in such binocular image resolution could be signaled by vocal production of a diversity of reappearing sound contours. I hypothesized that infant fur-cling carrying contributes to the origins of both of these (vocal and morphological) traits as it intensifies the physics involved and reflexes required for associated grasp-landing tasks. Using phylogenetically controlled regressions, I reanalyzed an amalgamation of socio-ecological datasets including data on infant carrying. To cover all primate taxa, while still accounting for the presumably more hazardous (ventral) form of carrying, I combined the results of two different studies. My formulation adds these independent ordinal measures together as: park (0), both (1), or ride (2) plus dorsal (1), mixed (2), or ventral (3), totaling to integers ranging from zero to five. Ventral carriage information was not available for non-anthropoids, but was added in post-hoc for lorises and Indri. Multivariate regression results highlight ventral infant carrying, along with mass, leaping, and swinging, as significant predictors for both outcome variables. This suggest ventral infant carrying, like other impactfully hazardous locomotion, may factor as a key influence on primate evolution. Future studies should include information on duration of carriage, weaning times, and higher resolution data for tarsiers.