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HYLOBATID POSITIONAL BEHAVIOR AND POSTCRANIAL ANATOMY: TERMINAL BRANCH FEEDING AND THE EVOLUTION OF HOMINOID ORTHOGRADY.

M.G. Nowak, U.H. Reichard

Department of Anthropology, Southern Illinois University, Carbondale, Illinois, U.S.A.

Presenter's Email: mnowak@siu.edu

Early hylobatid field studies postulated that gibbon and siamang suspensory behavior and associated postcranial anatomy were adaptations that improved the exploitation of food resources located on the compliant branches of the terminal canopy; however, there is limited quantitative evidence to support this premise. Here, we test this hypothesis using ~400 hours of detailed data on the positional behavior and substrate use of twenty-four habituated adult white-handed gibbons (*Hylobates lar*) from Khao Yai National Park, Thailand. In agreement with the hypothesis, our data indicates that white-handed gibbons are terminal canopy maximizers who most frequently exploit small branches (i.e., <10cm) via orthograde forelimb suspension when feeding. We also discovered that they are behaviorally highly versatile, most notably; they frequently use complex orthograde positional behaviors (e.g., orthograde clamber and transfer) usually associated with large-bodied apes (e.g., orangutans). In light of these results, we expand the current interpretation of the relationship between hylobatid positional behavior and postcranial anatomy. If large body size was a key factor in the development of orthogrady and associated postcranial specializations in the Hominoidea, as has been suggested, then the presence of orthograde versatility in the relatively small-bodied hylobatids is perplexing. Thus, either large body size did not play a significant role in the development of orthogrady among hominoids, or hylobatids have evolutionarily reduced their size but retained a significant proportion of the orthograde positional modes present in a larger arboreal ancestor. In conclusion, our research highlights the importance of hylobatid taxa in discussions of hominoid behavioral and anatomical evolution.

Keywords: hominoid evolution, body size, orthogrady, terminal canopy