

is likely determined by the extent to which an individual becomes integrated into the adult male hierarchy. Thus, adolescent males might secure long-term reproductive benefits by establishing relationships with adult males during this period. Previous research has suggested that hormonal changes at adolescence are manifested through shifts in preferred grooming partners and spatial proximity with conspecifics. However, many of the proposed behavioral correlates of the transition to adulthood remain speculative, owing to a relative dearth of data. This study provides an initial analysis of adolescent male behavior in a community of wild chimpanzees. Continued longitudinal research will reveal how aspects of individual variation in behavioral correlates of entering adulthood differentially influence the eventual rank of adolescent male chimpanzees. I conducted all-day focal follows and 10-minute scans of spatial proximity on five adolescent males in the Kanyawara community of Kibale National Park, Uganda from June to August 2013. Proximity data indicated that adolescent males (average age 12.8 years) showed increased proximity to adult males, and decreased proximity to their mothers, compared to younger males. The probability of having an adult male as a nearest neighbor increased more than ten-fold with male age. These findings may reflect attempts by male chimpanzees to enter the adult male hierarchy during the period of adolescence, and suggest an intensified preference for association with adult males at this time.

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Skeletal evidence of infanticide in Virunga mountain gorillas (*Gorilla beringei beringei*) from Volcanoes National Park, Rwanda

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Infanticide, or the killing of an unweaned unrelated infant, is a male reproductive strategy that is proposed to be an influential factor shaping the evolution of social behavior in anthropoid primates. In Virunga mountain gorillas, infanticide accounts for up to 37% of all infant deaths. However, little is known about skeletal trauma inflicted as a result of this event. This study examines patterns of infanticide-related trauma in a large collection of mountain gorilla skeletal remains from Rwanda, many with life history and veterinary records.

In a sample of 36 infants (age 1-3 years), cause of death is reported for 20 individuals; 10 died as a result of infanticide, six due to non-infanticide

related causes, and four with undetermined deaths. We investigated frequencies of perimortem trauma by documenting the presence and location of blunt force fractures, punctures and associated plastic deformation.

Results of this study reveal a characteristic pattern of blunt force and puncture trauma associated with documented cases of infanticide. This trauma pattern was observed on nine skeletons (25% of infants), eight of which are confirmed infanticidal deaths. Infanticide-related trauma is characterized by an increased frequency of fractures affecting bones of the cranium, ribs, and pelvis compared to other skeletal elements. These results provide a basis for identifying infanticide as a potential cause of death for unidentified infants where a similar pattern of skeletal trauma is observed, and thus may shed light on the occurrence of infanticide in other modern and paleontological contexts.

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Bi-acromial and clavicular scaling in hominoids: Implications for locomotor behavior

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The clavicle forms the sole bony connection between the shoulder complex and the thorax, and, with the manubrium, determines bi-acromial breadth. Relative bi-acromial breadth may be a correlate of locomotor behavior and may therefore be a useful trait for interpreting locomotor behavior in fossil hominins. Asian apes have the relatively longest clavicles among hominoids; *Pan* has the relatively shortest, and *Homo* and *Gorilla* fall in between. Here I test the hypothesis that locomotor behavior is reflected in bi-acromial width in hominoids.

Bi-acromial width (the length of both clavicles plus manubrium width at the height of the first rib) was regressed against femoral head height, a common body size proxy, in a log-space least squares regression. A cercopithecoïd outgroup, *Macaca mulatta*, exhibits strong negative allometry, whereas *Pongo* and *Hyllobates* demonstrate strong positive allometry. *Homo* is characterized by slight negative allometry while *Gorilla* is essentially isometric. The *Pan* regression did not reach significance, while for all other taxa bi-acromial width is significantly correlated with femoral head height ($p < 0.0075$). Results did not differ significantly when the clavicles alone were used, however, the regression of manubrium width followed a different pattern.

These results suggest that Asian hominoids have longer-than-expected clavicles, particularly at increasing body sizes, which contrasts with African apes and humans. This could reflect differences in locomotor behavior or be a result of the body size proxy chosen for this study. More research is required to explore this issue as well as the unexpected results regarding clavicle scaling in *Homo* and *Pan*.

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Dietary ecology of wild chimpanzees (*Pan troglodytes verus*) inferred from a comparison of behavioural and bone carbonate ($d^{13}C$ and $d^{18}O$) and collagen ($d^{13}C$ and $d^{15}N$) isotopic analysis

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Activities related to the search for, and consumption of, food are known to play a large role in ecological and behavioural differences among extant human and non-human primate species. The field of great ape isotope ecology is still in its infancy and as such limited isotopic data on wild chimpanzees exists. Our study presents stable isotope data on organic collagen and keratin, as well as inorganic bone and enamel apatite, on the same group of wild Western chimpanzees (*Pan troglodytes verus*). By incorporating behavioural data on the diet of these chimpanzees, our results present more precise fractionation data between organic and inorganic tissue types and provide the opportunity to examine how carbonate isotope data accurately reflects dietary ecology. This research has implications for understanding and interpreting the isotope data on carbonate of extinct fossil hominins.

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Novelty seeking in vervets: Genetic and environmental influences

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Novelty seeking is a trait with important implications for primate life history and for human health and disease. The multigenerational pedigree of vervet monkeys (*Chlorocebus aethiops sabaeus*) at the Vervet Research Colony (VRC) has created the opportunity to study genetic influences, physiological mechanisms and environmental influences on individual differences in novelty seeking in vervets living in stable, matrilineal social groups. The Home Group Novelty Test provides a reliable and trait-like measure of the tendency to approach and show interest in novel and potentially threatening objects. Variance components analysis using the VRC pedigree has shown that individual differences in Novelty Seeking are heritable and are related to variation in the dopamine D4 receptor gene. Baseline levels of cortisol are inversely correlated with Novelty Seeking scores, and a stressful environmental change increased cortisol levels and suppressed Novelty Seeking in adults. Genetic correlations within