challenging environments for large, arboreal frugivores like the orangutan. For adult female orangutans with dependent offspring, obtaining enough energy to support lactation is expected to be difficult, particularly during periods of low fruit availability. However, little is known about how female primates modify their caloric intake to support dependent offspring. We examined variation in Bornean orangutan daily caloric intake in relation to fruit availability and reproductive state at the Tuanan Field Station, an alluvial, peat-swamp habitat. We predicted that caloric intake would increase with fruit availability and that adult females with dependent offspring would have higher caloric intake compared to solitary adult females. We examined 1,707 nest-to-nest focal follows collected from 2003 to 2008 using Generalized Linear Mixed Models. We found a positive relationship between fruit abundance and daily caloric intake ($p<0.0001$). Adult females with dependent offspring and immature independent females consumed significantly more calories compared to adult females without dependent offspring during periods of high and middle fruit availability, but not when fruit availability was low. During periods of low caloric intake, individuals appear to have less flexibility in the amount of calories consumed. Our results suggest that females with dependent offspring increase their daily intake to account for extra calories lost to lactation, but this strategy is not possible when fruit availability is low. Instead, we suggest that during these periods, lactating females rely on body fat stores and tissues to support their offspring.

A craniometric approach to the question of postmarital residence in European Mesolithic and Upper Palaeolithic populations.

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An important aspect of social organisation is postmarital residence, as it informs us about how outsiders are incorporated into an already existent residential network. Integration contributes to the maintenance of the group within the larger regional network by promoting stability between neighbouring groups. It also provides a framework for establishing and maintaining alliances and trade networks. While patrilocality is the predominant form of postmarital residence in recent foraging societies, it is not known whether this was also the case for modern humans living in Europe prior to the Neolithic.

This is the first study to explicitly examine postmarital residence in European Upper Palaeolithic and Mesolithic populations using craniometric data. Data were collected on a total of 1,[illegible] skulls with a 3D digitiser and examined using geometric morphometrics and multivariate statistics. The predominant form of postmarital residence was examined in the entire dataset, as well as a subset consisting of Mesolithic specimens from the Portuguese Muge Valley sites.

In both analyses males were more variable than females. Additionally, females showed a greater correlation with geography, suggesting that they were moving less than males. This is a pattern consistent with matrilocality. These results suggest that the predominant form of postmarital residence in these populations was inclined towards matrilocality. This pattern was observed in both the complete and Mesolithic datasets. The exact pattern of residence is undoubtedly much more complex than what can be derived from the present data. Limitations of this study and suggestions for future research are also discussed.

This research was funded by the Irish Research Council for the Humanities and Social Sciences.

Growth and development in the genus *Pan*: a life history approach.

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The current study applies a holistic approach to understanding both chimpanzee and bonobo skeletal development by means of integrating data on dental development, epiphyseal union, and long-bone dimensions in a cross-sectional sample of sub-adults from museum collections. These data build upon prior research where there has been study of specific regions but a lack of integration of all three types of data in a single sample of significant size.

Included in this sample are 37 *Pan paniscus* and 177 *Pan troglodytes*, the majority of which were wild shot. Epiphyseal fusion state was evaluated using an ordinal classification system based on McKern and Stewart. The dentition was scored by the Demirjian method using radiographs. Diaphyseal length was measured for all long-bones. It was found that the overall epiphyseal fusion pattern was largely similar for both species. Comparisons to humans suggest that the pattern is similar with some exceptions such as the earlier fusion of the ischium of the pelvis in *Pan*. However, despite the similarities in fusion patterning, analysis of timing of epiphyseal events relative to dental development and long-bone growth suggests notable deviations when compared to the human pattern. Full dental maturity is completed significantly before skeletal maturity whereas in humans this is not usually the case. These results will have implications for our understanding of the evolution of positional behaviour adaptations and will contribute to our understanding of life-history patterns in these species.

Impact of tool use on brain development of non-human primates.

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Correlations between brain evolution and behavior in non-human primates may offer a glimpse into the evolutional forces pertaining to Hominin brain evolution. To the extent that endocranial size and shape reflects features of the underlying brain, associations between behavioral variables and endocranial morphology might give clues to the behavior of fossil species. Tool-use is one behavioral variable that has been suggested as a possible driving factor in human evolution. Research on how tool-use might influence site-specific endocranial morphology has yet to be conducted. Open Research Scan Archive CT scans fromtwelve non-human primate species were used to assess localized correlations between endocranial morphology and incidence of tool use reported in the literature. Morphology was assessed using non-rigid deformation methods, in which endocasts were morphed into one common atlas (*Pan troglodytes*), rendering voxel-based differences across the entire endocranial surface. These voxel differences were then correlated with instances of tool use. Preliminary results show areas of higher correlation in the prefrontal cortex – areas which are associated with language, social interactions and behavioral planning. An additional area of higher association included the cerebellum, possibly indicating increased ability in muscle movement, locomotion and timing. These data suggest that endocranial morphology might be useful for making inferences about hominin tool-use.

Thanks to NSF for funding ORSA.

Microbial adaptations facilitate non-ruminant *Theropithecus gelada* grazing behavior in northern Ethiopia.

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Microbiomes refer to microbial genomes, including their environmental contexts and associations. Among catarrhines, intestinal microbiomes evolve in conjunction with their hosts, indicating phylogenetic conservatism, while diet clearly influences these communities. Such findings suggest that gut microbial communities are shaped by dynamic tensions between inheritance and diet, although roles of